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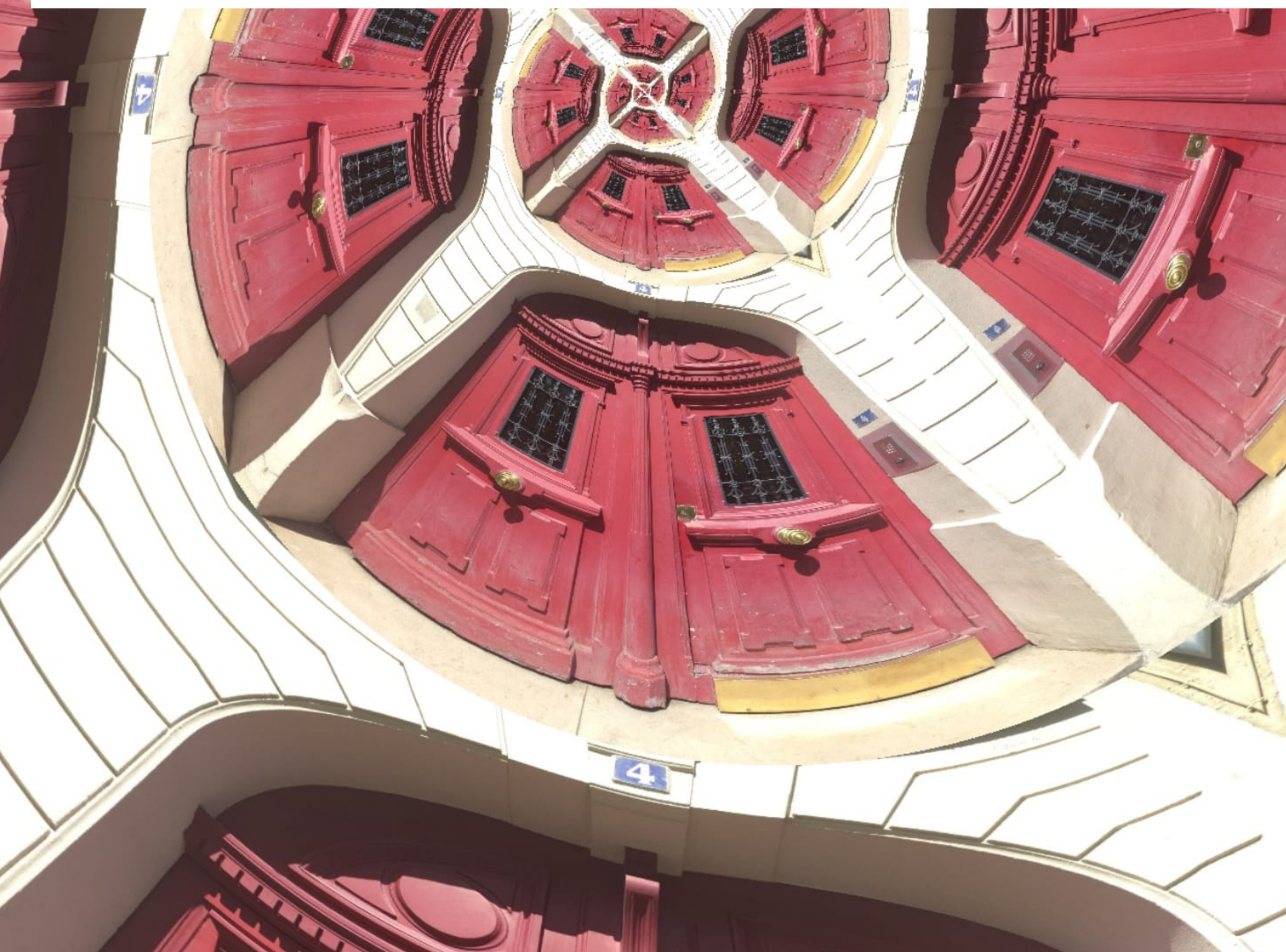

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ORIGINAL PAPER

European Identity in the Context of Economic, Political and Cultural diversity

Ștefan Viorel Ghenea[1)]

Abstract:
This paper explores the construction of European identity in the context of economic, political and cultural diversity within the European Union. The central argument is that European identity does not replace national identities but rather complements them, functioning as a distinct layer of affiliation grounded primarily in shared values and political principles.
The analysis begins by examining the relationship between national and European identities, drawing on constructivist theories of nationalism. It highlights that national identity itself is not a fixed or natural given, but a historically constructed phenomenon, which opens the possibility for the development of a supranational identity. In this context, the concept of constitutional patriotism is used to frame European identity as based on adherence to democratic values, rather than ethnic or cultural homogeneity.
The paper further investigates the impact of economic and political asymmetries within the European Union. It argues that structural inequalities between member states, often conceptualized in terms of center-periphery dynamics, can undermine solidarity and contribute to the rise of Euroscepticism. Finally, the study addresses cultural and religious diversity, emphasizing that European identity cannot be built through homogenization. Instead, it must rely on the recognition and integration of diversity, as reflected in the European Union's motto "United in diversity." While acknowledging the historical influence of Christianity, the paper argues that contemporary European values are largely secularized and compatible with pluralism.

Keywords: *European Identity, National Identity, Economic and political differences, Cultural and religious diversity.*

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Introduction

The issue of European identity represents one of the most complex and debated topics of contemporary reflection on the European integration process. Beyond the institutional, legal and economic dimension of the European Union, the question arises whether there is a coherent form of belonging that transcends the borders of nation-states and offers individuals a common symbolic framework. In this sense, European identity is often analyzed in relation to national identities, cultural and religious diversity, but also to the economic and political asymmetries existing between member states.

This paper aims to analyze how European identity is constructed in the context of this diversity, arguing that it is not constituted in opposition to national identities, but as a complementary level of belonging, of a predominantly normative and political nature. At the same time, it is influenced by the economic and cultural differences existing within Europe, which can function both as resources and as obstacles in the symbolic integration process.

National identity and European identity

First, the question arises whether national identities can be an obstacle or a lever in the formation of a European identity. This issue is old and much discussed. At first glance, the attachment to the nation of origin, to common values and traditions would represent an obstacle to a new identity attachment: the European one. On the principle that, in order to create a new identity, we must give up our current one, some thinkers have become skeptical about building a European identity, on the grounds that the strength of the bond that an individual has with their nation is greater, due to its antiquity, common history, language, customs and collective memory. However, modern theories of nationalism do not support the natural or immutable character of national identity. Ernest Gellner suggested that attachment to the nation is the result of complex historical and social processes, not a spontaneous and inevitable bond. „Nationalist theory pretends that culture is given to the individual, nay that it possesses him, in a kind of ideological *coup de foudre*. But, in the love of nations as in the love of men, things tend to be more complex than the mystique of spontaneous passion would allow" (Gellner, 1993: 16). In the same vein, Benedict Anderson defines the nation as an "imagined community", emphasizing that collective identities are constructed through institutions, discourses and symbolic practices (Anderson, 2000: 11-12). This perspective allows the analysis to be extended to the European level, where identity is not a given, but a process in the process of being established.

On the other hand, some authors can be noted as enthusiastic about creating a new European identity, based on the same principles as the constitution of national identity. It is only a matter of changing attachments, without denying existing ones. Benedetto Croce captures this idea when he states that Europeans will end up turning their thoughts towards Europe, without denying their previous identities, but integrating them into a broader framework (Croce, 1959: 430).

I do not deny that the connection between the individual and the nation is one and of an affective nature, but we consider that it is not necessary to replace one attachment with another (Ghenea, 2026a). It is not necessary that the same factors that underlie attachment to the nation also constitute the premise of a European identity. Nor does it need to be an identity of the same type as the national one. European identity can function as a distinct level of belonging, without entering into direct competition with national identity. In this sense, the concept of "constitutional patriotism", proposed by Jürgen

Habermas, provides a relevant theoretical framework (Habermas, 1996). European identity is not based on ethnicity, language or tradition, but on adherence to common values and principles, such as democracy, the rule of law and fundamental rights (Ghenea, 2014b). European identity therefore depends more on the possibility of sharing these values than on the existence of a homogeneous cultural background. The values of tolerance, solidarity, mutual respect, peace and democracy are those that, through education and cultural policies, can support the formation of a European identity (Ghenea, 2014a). This does not imply the amputation of existing identities, but the consolidation of a common identity, which commits us all through the sense of belonging to contemporary European culture and civilization.

Economic and political differences

As we know, the European Union was founded on economic and political reasons. These can represent solid levers for the creation of a European social and cultural unity, but they can also constitute, through the differences they create, an obstacle to the achievement of this unity. Gabriela Tănăsescu highlights the instrumental-institutional character of the European Union, drawing attention to the fact that the expression "European identity", although frequently used, "appears to lack consistency, its own substance" (Tănăsescu, 2013: 112).

Robert Schuman's declaration of 9 May 1950 highlighted the fact that European peace could be secured through economic cooperation. The pooling of basic resources was seen as a first step towards a European federation capable of preventing conflicts. Thus, the economic dimension was the foundation of a broader political project (Zorgbibe, 1998: 42-43).

We note that peace is the goal of a united Europe, but a first step in achieving it is economic. Economic collaboration, which will have the effect of improving the well-being of the parties involved, will lead to overcoming conflicts, ultimately succeeding in establishing peace. Many European elites, seriously committed to consolidating the Union project, agree with the bright perspective outlined by Schuman. The European Union is seen as an institutional aggregate, which is capable of protecting us from the great social, economic and political problems of the European past. It can bring peace and prosperity among the member countries, something impossible to achieve by national governments alone.

However, the development of the European Union has generated significant asymmetries between the member states. Economic differences between West and East, as well as between North and South, have led to the emergence of a "multi-speed" Europe. These realities can also be interpreted through the lens of the core-periphery model, in which developed economies occupy a dominant position and less developed ones are integrated in a dependent manner. These differences influence the perception of the European Union and contribute to the emergence of Euroscepticism. The attitude towards the "European dream" is differentiated, ranging from enthusiastic support to reasoned criticism or outright rejection. The specialized literature distinguishes between hard and moderate Euroscepticism, depending on the degree of opposition to European integration. The phenomenon was initially specific to the U.K., becoming an emblem of the English attitude towards the project of political and economic integration of continental Europe, which ultimately led to Brexit, however, various forms of Euroscepticism were assumed in political debates throughout Europe. The term *Euroscepticism* seems to have entered British political and journalistic language since the mid-1980s. *The Oxford English*

Dictionary defines Eurosceptic as "a person who is not enthusiastic about the growing power of the European Union" and provides a quote from an article in T*he Times*, from June 1986, as a reference for the first use of the term (Harmsen & Spiering, 2004: 12; Arató & Kaniok, 2009: 40). Initially, the term *Euroscepticism* is associated with an anti-integrationist attitude, but, in the case of the U.K., it refers to a broader context (George, 2000: 15-33). At its core, British Euroscepticism is more than an opposition to the institutions that have been assumed by European integration; it has deeper, cultural and even literary roots, in which the continental part of Europe (dominated by the French and Germans) is perceived in terms of otherness (Spiering, 1997: 97-112). This perception of certain states or parts of Europe leads to deeper differentiations than those of a political and economic nature, affecting the idea of European identity. The phenomenon of Euroscepticism is not limited to political elites, but is also found among citizens. In the case of the U.K., it has deep cultural roots, being associated with a perception of continental Europe as otherness. The orientation towards the English-speaking space and the special relationship with the United States have contributed to this symbolic distancing. This sense of otherness from the continental European, seen as the other, is often associated with a certain sense of solidarity with a wider community of English speakers. We could say that the British look more towards the West, towards the United States, to which they feel closer in many ways, not just linguistically. The special link with the United States and other English-speaking countries may constitute, in the opinion of some authors, what can be called an *Anglosphere*, seen as a tacit alternative to European integration (Tiersky, 2001: 299-300).

Euroscepticism is not unique to the British, but extends to political debates within the continent. When this attitude is adopted, it depends on the social, political and cultural context of the country concerned, as well as on the citizens' experience of the European integration process. It is clear that this type of attitude raised specific issues related to European identity in the respective countries. In the case of the British, the otherness towards continental Europe had a certain historical and cultural tradition. In northern Europe we encounter what some authors call "Nordic superiority", an attitude specific to Swedes and Norwegians, but even in countries without a Eurosceptic tradition, a change in the discourse on European integration is observed (for example, in France, Germany, the Netherlands and Ireland) (Sunnus, 2004: 193-206).

In Central and Eastern Europe, the discourse has evolved differently. During the period when they were candidate states, they displayed a Eurosceptic attitude, while when the chances of integration increased and they finally joined the European Union, they perceived this change as a "return to Europe or to the West" (Harmsen & Spiering, 2004: 26). But the asymmetric relations between the states remained visible. Persistent economic gaps contribute to perceptions of inequality and subordination.

First-mover advantage creates a pole of power between the founding countries of the Union and those that have joined for a longer time. What can prevent the time lags in accession, followed by (or underlying) economic gaps, from providing equal opportunities for all countries that have joined or will join the Union? Of course, officially (under the imperative of a fair policy and economy) they will have equal opportunities, but how will things be in reality? You don't have to be a Eurosceptic to ask yourself such a question. There are opinions that, from an economic perspective, there are no equal opportunities between the countries that founded the European Union or that joined immediately after and those that joined successively in the decades that followed. The relationships are rather one of subordination of the latter, and possibly, exploitation by the former. The economic gaps between the countries of Western and Eastern Europe are well known, to which can be added those between North and South. The interest of the great economic powers of Europe would not be to support the less developed countries to integrate successfully, but to use them to increase their own power.

The case of Greece is illustrative of the tensions generated by these asymmetries. The economic crisis and austerity measures have been interpreted by some authors as evidence of the limits of the European economic model. Although such interpretations may be reductive, they reflect real social perceptions that influence citizens' attitudes towards the European project. Despite the fact that from the mid-1990s to the first decade of the 21st century, Greece tended towards economic growth, starting in 2008 it found itself in a growing crisis, due to goods imported from rich European countries, due to banking speculation, etc. When this flawed development model collapsed, a stabilization and reform program was adopted, which mainly involved increasing taxes and reducing public spending. In order to implement the reform, Greece signed a contract ('Memorandum') with the IMF, the European Union and the European Central Bank. This program had two components: a stabilization component, through which Greece would achieve budget surpluses with which it would be able to pay its debt, and a reform component, through which it would be able to encourage investment. Some authors believe that, despite the declared goal of getting Greece out of the crisis, this program led to the worsening of the situation (Tsipras, 2014: 6).

Beyond the strictly economic aspects and social consequences of the Greek crisis, Tsipras suggests that the situation is due to the wrong decisions of the European Union. Such decisions would not have their origin in ignorance of economic realities and processes, but in indifference or, worse, in the pursuit of economic interests. The fictitious nature of the reform is due, in the author's opinion, to the fact that there is no real intention for reform in Greece, the aim being only the gain of the institutions and European powers involved. In this context, the economic dimension also acquires a symbolic significance. The single currency is not only an economic instrument, but also a symbol of European unity (Ghenea, 2026b). Economic instability thus affects not only material well-being, but also identity cohesion. The economic security offered by membership in the European Union, and especially the single currency, is shaken when some countries go bankrupt. This may also herald a bleak scenario for other European states that have adopted the single currency or are about to do so. In addition, it could lead to Euroscepticism in the case of countries that have not yet joined the E.U.

Capitalism and neoliberal political and economic ideology are the main accused by Tsipras, who puts forward the idea of a conspiracy carried out by a small number of capitalists in pursuit of profit (Tsipras, 2014: 8). Obviously, this type of thinking is very close to Marxist ideology, and the author's arguments are questionable. However, we note that although at first glance, Euroscepticism involves political and economic aspects, when radicalized by the situation of an economic crisis, it involves aspects related to European identity.

In this context, the concept of "multi-speed Europe" becomes relevant to describe the differentiated dynamics of European integration. It refers to the fact that Member States do not advance uniformly in the integration process, with some benefiting from a higher degree of economic development and superior institutional capacity, which allows them to participate more actively in common projects (e.g. the euro area or the Schengen area), while others remain in a peripheral position. This reality can also be analyzed through the lens of the world system theory proposed by Immanuel Wallerstein, which distinguishes between centers, semi-peripheries and peripheries, depending on the level of economic development and the position in the international division of labor (Wallerstein, 1974). Applied at the European level, this perspective suggests that Western European states occupy a central position, characterized by consolidated economies and increased political influence, while Central and Eastern European states are integrated more as peripheries or semi-peripheries, dependent on capital flows and economic decisions of the center. Under these conditions, European integration risks reproducing or even accentuating these structural inequalities, affecting social cohesion and the perception of the fairness of the European project.

Cultural and religious diversity

Cultural heritage and religious affiliation are important factors in building identity. The question arises: how do these factors act in the formation of European identity? Are we Europeans regardless of religion and culture? Although a significant part of the values associated with the European Union today can be historically linked to the Christian tradition, they have, over time, been secularized and universalized, becoming part of a normative framework compatible with religious and cultural pluralism.

The problematic nature of cultural homogenization is highlighted by Alain Dieckhoff, who emphasizes that Europe lacks coercive mechanisms for cultural uniformity. Furthermore, such uniformity would be incompatible with the democratic values promoted by the European Union (Dieckhoff, 2003: 221).

Europeanization does not mean uniformity by erasing differences and imposing values, even fundamental ones. Identity is built from within, and European identity is not possible without accepting diversity. The task would be to open access to values, to cultivate them (Ghenea, 2015). Cultural experience, even if it is not independent of a common background and cultural heritage, is and must be individual. European identity is not built by eliminating differences, but by accepting and valuing diversity. The *motto* “Unity in diversity” reflects this orientation, emphasizing that cultural pluralism is a resource. It was first used in 2000 with the aim of showing that European unity aims for peace and prosperity, but under the conditions of acceptance of diversity and openness to cultural values, traditions and national languages. The possibility of this goal is widely debated (Farrell, Fella & Newman, 2002 and Arts, Hagenaars & Halman, 2003).

As regards religion, although the Christian tradition has profoundly influenced European culture, the values promoted by the European Union today have been largely secularized. They cannot be attributed exclusively to a religious tradition, being compatible with confessional pluralism and non-religious options. From a secular perspective, European identity can be interpreted as the result of political modernity, the Enlightenment and the development of the rule of law, rather than as the expression of a specific religious tradition. European belonging does not depend on religion, but on participation in a common normative framework.

Conclusions

European identity cannot be reduced to a single model, nor understood as a replica of national identities. It represents a complex form of belonging, built at the intersection of shared values, institutions and diverse historical experiences. Rather than substituting national identities, European identity complements them, functioning as an additional layer of symbolic and political integration.

Europe's economic and cultural diversity is both a challenge and a resource. Economic asymmetries can generate tensions and mistrust, fueling Euroscepticism, while cultural pluralism requires a model of coexistence based on tolerance and mutual respect.

European identity is not a given, but a process under continuous construction, dependent on the European Union's capacity to manage differences and to consolidate an inclusive framework. The future of this identity depends not only on economic and political developments, but also on how European citizens will manage to relate to diversity as a constitutive element, not as an obstacle.

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ORIGINAL PAPER

The Architecture of Power: The Systemic Impact of Electoral Models on the Structure and Dynamics of Political Parties. A Look into the Future

Dorina Țicu[1)]

Abstract

This article explores the causal relationship between voting rules and the configuration of party systems. The analysis starts from the classical premises of political science analyses concerning electoral engineering and integrates recent developments from the European political landscape of 2026, such as the digitalization of the electoral process and the adaptation of parties to increasingly restrictive representation thresholds. The analytical framework is expanded by including recent data on democratic resilience and losers' consent, highlighting how the perception of legitimacy is mediated by negative partisanship in contexts of extreme polarization. The central conclusion is that the electoral system functions as an institutional filter that determines not only the number of political actors, but also their degree of internal cohesion and their capacity to adapt to emerging digital infrastructures, such as the "Democracy Stack".

Keywords: *electoral system, political party, voting, majoritarianism, proportionality, artificial intelligence, Democracy Stack, digital integrity.*

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Introduction

In contemporary political science, electoral systems are considered the most concrete alterable variable of a democratic political regime. They are not simple tools for counting citizens' options, but represent the set of rules that define the political market. Beyond their accounting function, electoral systems directly influence the quality of participation. In the year 2025, strategies to support democracy at the European level underwent a structural recalibration, prioritizing the protection of internal democratic norms against the rise of far-right parties and governance crises that fueled public disillusionment.

Recent research demonstrates that the simple personalization of the vote through open-list systems does not automatically generate an increase in voter turnout; paradoxically, it can decrease voting efficacy by increasing the rate of electoral errors and voided ballots due to heightened cognitive complexity for voters. Empirical evidence collected from the Spanish electoral system confirms that open lists do not produce incentive effects on turnout compared to closed lists, but instead introduce a critical trade-off between freedom of choice and procedural complexity that can undermine the initial intention of democratic inclusion.

In a context marked by electoral volatility and the emergence of populist movements in the first half of the 2020–2030 decade, analyzing the impact of these systems on political parties becomes crucial for understanding democratic stability in 2026.

This article analyzes how electoral design influences party system fragmentation, elite selection, and campaign strategies, while also integrating the perspective of disinformation mechanisms and hybrid aggression that threaten the stability of European states, particularly in eastern regions.

Theoretical Framework: From "Duverger's Laws" to Game Theory

Starting from the techniques specific to different categories of electoral systems, the starting point for any academic analysis of the topic remains the contribution of Maurice Duverger. In 2026, although societies are much more complex than in 1951, his postulates remain valid under certain conditions.

The first postulate, the **Mechanical Effect**, suggests that majoritarian "single-member district" (SMD) systems tend to under-represent small parties whose votes are geographically dispersed, favoring the concentration of seats among large parties.

The second postulate, the **Psychological Effect**, describes the behavior of voters who avoid wasting votes on candidates with no real chances, while political elites tend to merge to achieve the critical mass necessary to win a seat.

Continuing the classical perspective offered by Duverger, subsequent literature refined and, in certain respects, nuanced both effects. Gary W. Cox (1997), in his work *Making Votes Count*, formalizes these mechanisms through the concept of "strategic coordination" at the voter and elite levels (Cox, 1997). Cox demonstrates that the effective number of competitive candidates in a district tends to be limited by the M+1 rule, where M represents district magnitude. Thus, in SMD systems (M=1), competition converges toward two relevant candidates, providing a formal foundation for the two-party law (Cox, 1997).

This perspective is complemented by the contributions of Rein Taagepera and Matthew Shugart (1989), who introduced the concept of "effective number of parties" (ENP) as an empirical tool to measure party system fragmentation (Taagepera & Shugart, 1989). Their studies show that not only the electoral formula, but also the broader institutional structure (including federalism, presidentialism, or electoral thresholds) influences the degree of fragmentation. In particular, Taagepera (2007) proposes predictive models that directly link district magnitude to ENP, suggesting that increasing \$M\$ leads almost mechanically to an increase in political pluralism (Taagepera, 2007).

From a game theory perspective, elections can be modeled as coordination games with imperfect information. Voters face a strategic dilemma: vote sincerely (for their true preference) or strategically (for a viable candidate). Myerson and Weber (1993) developed the concept of "coordination equilibrium" in electoral contexts, showing that outcomes critically depend on voters' common expectations regarding candidate viability (Myerson & Weber, 1993). In this sense, opinion polls and media signals become central tools in stabilizing these equilibria.

More recently, Blais and Nadeau (1996), as well as Gschwend (2004), empirically analyzed strategic voting, demonstrating that it is more frequent in majoritarian systems than in proportional ones, though it does not completely disappear in proportional representation (Blais & Nadeau, 1996) (Gschwend, 2004). This suggests that Duverger's psychological effect is conditioned by voter information levels and the clarity of competition.

Regarding voter turnout, the literature is more divided. Franklin (2004) suggests that proportional systems tend to increase turnout by reducing wasted votes, whereas other authors, such as Jackman (1987), indicate that the effects are mediated by contextual factors like party mobilization and perceived competitiveness. Thus, the aforementioned contraction effect is not universal, but depends on how competition is reconfigured at the national versus local level (Jackman, 1987).

Integrating game theory with institutional analysis leads to an important conclusion: electoral systems do not mechanically determine outcomes, but rather structure a strategy space within which actors (voters, parties, candidates) interact. In this sense, Aleman and Tsebelis (2011) show that electoral rules can be understood as "equilibrium institutions" that stabilize certain patterns of political competition (Aleman & Tsebelis, 2011).

Contemporary analyses indicate that the transition from majoritarian systems to proportional representation (PR) generates a contraction effect in the distribution of mobilization effort. Long-term studies show that introducing proportional representation can reduce voter turnout in districts that were previously highly competitive under a majoritarian system, because the stake of a direct local victory is diluted in favor of a national party logic.

On the other hand, regarding how electoral engineering influences party dynamics, perhaps the most important technical variable of an electoral system is not necessarily the seat allocation formula (D'Hondt, Sainte-Laguë), but the district/constituency magnitude (M — the number of seats allocated in a constituency). According to Arend Lijphart (2012), there is an inverse correlation between district magnitude and the degree of disproportionality. In small districts (M=1), the entry barrier is immense, forcing parties to merge to survive. Conversely, in proportional systems with national lists (e.g., the Netherlands, where Magnitude = 150), fragmentation is at its maximum.

Another important aspect is the role of explicit and implicit electoral thresholds. Lijphart (1994) emphasizes that legal thresholds (e.g., 5%) function similarly to district magnitude in limiting access for small parties (Lijphart, 1994). At the same time, Carey and Hix (2011) introduce the concept of the PR "sweet spot," arguing that medium-magnitude systems offer an optimal balance between representativeness and governability, avoiding both hyper-fragmentation and major distortions (Carey & Hix, 2011).

Therefore, in addition to the variables mentioned above, the role of electoral thresholds requires closer analysis when attempting to explain how party dynamics are influenced by various forms of electoral engineering.

Party Dynamics and Electoral Thresholds

Legal electoral thresholds act as mechanisms of political engineering, limiting fragmentation even within proportional systems. They force small parties to form pre-electoral alliances, thereby altering the configuration of the party system before voting takes place. This trend is visible across the European Union, where the 2018 Electoral Law reform and subsequent 2022 proposals aim to introduce mandatory thresholds between 2% and 5% for member states with large constituencies, intending to prevent excessive fragmentation within the European Parliament.

Gary Cox (1997) extends Duverger's analysis through the theory of strategic coordination. He argues that the electoral system operates like a set of market rules limiting the number of viable "products" (parties). In plurality systems, coordination occurs at the district level, whereas in proportional systems, coordination occurs nationally. If a party consistently fails to cross the threshold or win seats, political elites and financial backers will abandon that entity in favor of one with viable chances.

Electoral thresholds do not merely act as technical barriers, but as institutional tools with anticipatory effects on actor behavior. Literature shows that they generate a process of "anticipatory coordination," in which elites and voters alike adjust strategies prior to balloting (Cox, 1997). Thus, the electoral threshold not only filters results, but restructures the political supply *ex ante*. Small parties are forced to decide between merging, forming alliances, or making a strategic withdrawal—a choice influenced by organizational resources, access to funding, and ideological positioning (Golder, 2006).

At the same time, threshold effects are conditioned by district magnitude and the electoral formula. According to Taagepera and Shugart (1989), a mathematical relationship exists between constituency magnitude and the effective number of parties, meaning a formal threshold of 3% can yield vastly different effects in a nationwide list system compared to regional constituencies. In the European Parliament, where some states use single nationwide constituencies, implementing uniform thresholds between 2% and 5% can significantly reduce the number of represented parties without entirely eliminating fragmentation, instead reconfiguring it around broader political blocs.

Cox's theory of strategic coordination becomes even more relevant in today's context of polarization. Voters are no longer merely rational consumers choosing the ideologically closest party, but actors calculating electoral success probability and strategic vote consequences. This behavior is also conceptualized in literature on tactical voting, which appears more frequently in threshold systems or tight competitions (Tyszler & Schram, 2016).

By 2026, however, this mechanism is amplified by negative partisanship. Recent studies indicate that political identification is increasingly defined by opposition to a "political enemy" rather than attachment to one's own party (Abramowitz & Webster, 2016). This dynamic profoundly alters strategic coordination logic: voters not only avoid wasted votes, but are willing to support larger parties or broad alliances to prevent the victory of a rival perceived as unacceptable.

This transformation directly affects the concept of *losers' consent*. In classical theory (Anderson et al., 2005), democratic legitimacy stems from losers accepting the rules of the game. Under negative partisanship, this acceptance becomes emotionally and instrumentally conditional: voters are more inclined to accept outcomes when the "greater evil" is defeated, even if their preferred party loses. Conversely, when an ideological rival wins, perceived legitimacy drops sharply, increasing the likelihood of contested results, protests, or radicalized political rhetoric.

Furthermore, research on affective polarization suggests that this form of partisanship reduces readiness for post-electoral compromise and cooperation (Iyengar et al., 2019). Combined with electoral thresholds, the outcome can be paradoxical: while the system appears less fragmented at an institutional level, it becomes more rigid and contentious politically. Pre-electoral alliances formed strategically to clear thresholds may be ideologically fragile, complicating subsequent governance (as illustrated in Table 1).

Table 1: Comparative Analysis of Electoral Systems and Fragmentation (2025–2026 Data)

Country	**Electoral System**	**District Magnitude (M)**	**Electoral Threshold**	**Effect on Party System**
Netherlands	Pure Proportional	150 (Single district)	0.67%	Extreme multi-party system; governmental fragility
Germany (2025)	Reformed Mixed	630 (Fixed seats)	5%	Forced concentration; elimination of overhang seats
Spain	Proportional (D'Hondt)	Small-medium average (52 districts)	3% (local)	Rigid ideological blocs; favors large parties
France	Majoritarian (Two-round)	1	—	Forced bipolarization; pre-electoral alliances required
Romania (2024)	Proportional	Variable	5%	Rise of anti-system parties; dependence on state subsidies

In the context of heightened polarization in recent years, negative partisanship has become a central element of electoral behavior, redefining how citizens relate to politics and democratic legitimacy. Unlike the classical model where voters were motivated primarily by allegiance to their own party, recent research shows that individuals increasingly act out of a desire to block power access for a rival deemed undesirable. Literature highlights that negative partisanship is not merely a temporary reaction, but can solidify into a stable social identity comparable in intensity and durability to positive identification, generating hostility toward rival party supporters and eroding social cohesion. In this sense, voters no longer define themselves solely by what they support, but by what they reject—a phenomenon conceptualized as political "disidentification".

This shift carries direct consequences for voting behavior and perceptions of political competition. Comparative studies indicate that negative assessments of parties and leaders significantly drive vote choice, and in some Western democracies, negative partisanship levels exceed positive affiliations. At the same time, affective polarization causes voters to view politics as an existential conflict where a rival's victory threatens core values. This perception boosts voter mobilization while diminishing readiness for compromise and dialogue.

Normatively, the implications for democratic legitimacy are profound. The traditional concept of *losers' consent*, rooted in accepting democratic rules regardless of outcome, is eroded by this dynamic. Accepting electoral results becomes emotionally and partisan-conditioned: voters accept defeat more readily if the opponent is weakened or delegitimized, but contest outcomes when the hated side prevails. Consequently, legitimacy no longer derives purely from process, but from partisan satisfaction or frustration. Democracy risks being viewed not as a neutral framework for competition, but as an instrument of conflict between antagonistic identities, where rules are respected only when producing desired outcomes.

In conclusion, electoral thresholds should not be analyzed in isolation as mere tools for reducing fragmentation, but as elements interacting with broader dynamics—strategic coordination, polarization, and negative partisanship. In today's European landscape, these interactions can produce party systems that appear more consolidated on the surface, yet are simultaneously more tense and vulnerable to political challenge.

Conversely, this perspective brings forward another essential dimension: if electoral system design affects party counts, and if thresholds, magnitude, and voter behavior exert similar influences, it is necessary to examine the internal organization of parties as they adapt to different formulas of electoral engineering.

Impact on Internal Party Organization

The electoral system dictates how a party exercises authority over its members. Closed-List Proportional Representation systems solidify central party power. Because candidate ranking on the list is set by leadership, parliamentary discipline remains high. Party members tend to remain loyal to the leader to secure an eligible spot in the next election. In contrast, Preferential Voting or Open-List systems shift competition from external (between parties) to internal (among candidates of the same party). This leads to the personalization of politics and frequently weakens ideological cohesion, as candidates are forced to build personal financial and electoral support bases independent of the central apparatus.

The evolution toward the digital party or platform-party in 2026 has redefined these dynamics. The use of information and communication technologies (ICT) enables direct interaction between leaders and supporters, bypassing traditional media. However, research shows digitalization is not a neutral process: left-wing parties tend to use digital tools to boost internal democracy and deliberation, whereas new parties lacking organizational legacy deploy digital innovations as functional substitutes for missing infrastructure. This model of distributed centralism allows grassroots supporters to participate actively in specific decisions, while consolidating strategic control within a small elite managing the platform.

Another major trend in 2026 is party adaptation to new party financing regulations. In proportional systems with high thresholds, mid-sized parties are forced into cartelization strategies, working closely with the state to secure subsidies essential for surviving against anti-system parties.

Romania's 2025 case study illustrates the risks of this model. The political system became almost entirely dependent on state subsidies, which in 2025 were capped at approximately 290 million RON (a 25% reduction compared to 2024, yet still considered excessive by independent observers). This massive funding facilitated opaque investments in friendly media outlets, distorting public messaging and allowing anti-system actors to gain ground through non-conventional campaigns on platforms like TikTok, outside the strict regulations imposed on television networks.

Party system fragmentation is not purely a result of electoral engineering, but a reflection of how parties exploit identity configurations. Recent studies indicate that particularism and expansivism are minority stances, with pluralist identity serving as the norm. Research by Martin Lukk demonstrates a causal link between income inequality and radical-right party success through "boundary consolidation" (Lukk, 2024).

Economic inequality creates social status threats, prompting exclusionist shifts in defining national belonging. This reactive ethnonationalism becomes the primary mobilization lever for the radical right, which leverages cultural protectionism to attract voters feeling abandoned by traditional elites.

This dynamic is exacerbated by affective polarization. Voters no longer judge government performance through economic indicators, but through the satisfaction of seeing ideological opponents defeated. Data from 2026 show that accepting election results relies critically on negative partisanship: citizens accept unfavorable results more easily if their most disliked party failed to secure a decisive victory.

Additionally, in the present context, digitalization and artificial intelligence are once again reshaping and re-particularizing the framework of this analysis.

Technological Transformation: Digitalization and Electoral Integrity

In the political landscape of 2026, Artificial Intelligence has transitioned from an experimental tool to a systemic variable. AI's capacity to generate "persuasion at an industrial scale" using logical arguments and plausible evidence (even if not always factual) has redefined political campaigns. Experiments from 2024–2025 show that interactive AI dialogues can shift political preferences more effectively than traditional media, with information density accounting for 44% of persuasive impact (Olejnik, 2026).

The European Union responded via the AI Act, establishing clear technical criteria in February 2025 to determine systemic risk (models exceeding 10^{23} FLOPS). Regulations strictly prohibit AI usage for psychological manipulation while allowing permissible influence based on logical reasoning. Nevertheless, vulnerabilities persist;

July 2025 experiments revealed that responses from models like ChatGPT could be manipulated through strategic content placement on low-authority domains, suggesting AI systems remain susceptible to hybrid influence operations.

Blockchain-based voting systems have emerged as a major technical solution to combat fraud and enhance transparency. Research from 2025 and 2026 proposes multi-level models (Booth, District, State, Country) using asymmetric cryptography (ECDSA) and hash functions (SHA3_256) to secure data. These systems enable full auditability and remove reliance on a central authority, lowering the risk of internal tampering (Yao et al., 2020).

In January 2026, International IDEA launched the concept of the **Democracy Stack** in response to the rise of digital authoritarianism. This framework proposes that Digital Public Infrastructure (DPI) be designed with democratic values at its core, rather than as an afterthought. The Democracy Stack integrates digital identity systems that safeguard individual rights, inclusive payment mechanisms, and information flows designed to counter disinformation (Marskell et al., 2023).

The Democracy Stack thus introduces a paradigm shift: democratic values—such as rights protection, transparency, accountability, and inclusion—must be embedded from the initial design phase of digital infrastructure, not added later as corrective measures. The conceptual framework emphasizes reconfiguring all DPI layers, from digital identity and payment systems to information flows and data governance, to uphold citizen agency and political participation (Marskell et al., 2023). In this regard, the concept aligns with literature framing the "stack" as a multi-layered architecture of digital power, where every level—infrastructural, algorithmic, and interface—helps shape relations of sovereignty and control (Rodriguez, 2026).

Analytically, the Democracy Stack can be interpreted as a response to three major trends identified in academic literature:

1. **The rise of "digital authoritarianism,"** characterized by using digital infrastructure for surveillance, control, and information manipulation. Recent studies indicate that profit-driven digital platforms tend to amplify disinformation and polarization, undermining democratic deliberation and public trust (Mueller-Bloch & Ciriello, 2026). In this context, embedding democratic mechanisms of information governance—such as algorithmic transparency or responsible moderation—becomes essential.
2. **The legitimacy crisis in digital democracies,** where technological infrastructure is frequently controlled by private actors or configured without public participation. E-democracy literature notes that while technology can expand participation, it introduces risks related to algorithmic bias, power concentration, and digital exclusion (Rodriguez, 2026). The Democracy Stack addresses this tension by promoting public-interest infrastructure where citizens are not merely users, but co-beneficiaries and ideally co-governors of the system.
3. **The imperative of "digital sovereignty,"** meaning the capacity of states and societies to control the critical infrastructures shaping their political and economic lives. DPI is already regarded as critical infrastructure for democratic resilience, and examples like the "India Stack" demonstrate both scaling potential and risks associated with surveillance and exclusion (Shackelford, 2025, p. 240). Here, the Democracy Stack offers a normative alternative: digital infrastructure that is not only efficient, but fundamentally democratic. A central element of this framework is the functional integration of three components: digital identity, payment systems, and the information ecosystem. Digital

identity must guarantee universal access without compromising privacy rights; payment systems must be inclusive and reduce inequality; and information flows must be designed to limit disinformation and foster pluralism. This integration reflects a systemic view of digital democracy where civic participation is not separate from technological infrastructure, but mediated and shaped by it.

In conclusion, the Democracy Stack represents an effort to reconcile technological shifts with democratic norms, moving from profit- and efficiency-driven digital infrastructure toward one centered on rights and participation. By "future-proofing" democracy, the concept suggests that the survival and adaptation of democratic regimes in the digital age depend not only on political institutions, but also on the technological architecture supporting them. Without such reconceptualization, digital infrastructure risks becoming a vector of democratic erosion rather than a catalyst for its renewal, even beyond the casting of votes or the application of electoral mechanisms established by various systems.

Conclusions and Future Trends

The impact of an electoral system on political parties is structural and multidimensional. In 2026, it is evident that no ideal system exists, only trade-offs between accurate representation and executive efficiency. Political parties are not autonomous entities, but organisms that adapt biologically to the environment created by electoral laws.

The analysis demonstrates that democratic stability in the second half of the decade depends on the ability to manage two divergent forces: the demand for institutional simplification and efficiency versus the push for personalization and digital inclusion (promoted by platform-parties).

Any future voting reform will need to incorporate digital integrity clauses to prevent AI manipulation while maintaining losers' consent within a landscape marked by deep affective polarization.

In essence, the future of political parties will be defined by how successfully they navigate between the traditional logic of electoral engineering and the new realities of the Democracy Stack. Success will belong to those organizations capable of demonstrating campaign algorithm transparency and mobilizing the electorate without exacerbating the social fractures that threaten the very foundation of democratic consensus.

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ORIGINAL PAPER

ESG-Integrated Lending and Credit Allocation to Underserved Populations

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Abstract:
The integration of Environmental, Social, and Governance (ESG) criteria into financial systems is fundamentally transforming traditional credit risk assessment. While this shift promotes sustainable economic practices, its direct impact on financial inclusion remains complex and insufficiently explored. This paper investigates the evolution of ESG-integrated lending, examining its implications for macroeconomic credit allocation and the financial accessibility of underserved populations. By analyzing recent market trends, the study contrasts the approaches of traditional banking institutions with agile Fintech platforms to understand how ESG metrics influence capital distribution. The analysis reveals a significant dichotomy: traditional banks often apply ESG mandates as rigid risk-mitigation filters that inadvertently restrict credit for marginalized demographics lacking formal green footprints, whereas Fintech companies increasingly leverage alternative data to balance ESG compliance with broader financial access. Ultimately, the findings suggest that Fintech-driven models are more adept at addressing the Social pillar of ESG, effectively reallocating credit toward underserved groups. The research concludes that the pursuit of environmental and governance targets must not compromise social equity and advocates for a calibrated lending framework that harmonizes robust ESG objectives with the imperative of financial inclusion.

Keywords: *ESG Integration, Financial Inclusion, Fintech, Credit Allocation, Sustainability, Credit Risk Assessment.*
JEL Classification: G21, G23, Q56, E58, O16.

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1. Introduction

The global financial architecture is undergoing a deep structural transformation from the traditional model of shareholder primacy to a sustainability-oriented model that explicitly incorporates environmental resilience, social responsibility, and corporate governance. Over the past two decades, the incorporation of Environmental, Social, and Governance (ESG) criteria has evolved from a voluntary set of corporate social responsibility guidelines into a mandatory normative standard reshaping capital markets globally. In this new paradigm, capital is no longer treated as a neutral factor of production, but as a strategic lever to accelerate the transition toward a sustainable, low-carbon economy and to mitigate systemic long-term risks.

Traditional financial institutions have historically evaluated credit risk through a retrospective lens focused almost exclusively on audited financial statements, historical debt-repayment records, and physical collateral. The compulsory inclusion of ESG metrics in lending practices radically alters this calculus. Financial institutions must now assess a borrower's long-term sustainability in relation to climate transition risks, environmental regulations, and shifting market preferences. This integration has been effective in channeling substantial volumes of capital toward green infrastructure and low-polluting industries, thereby protecting financial portfolios from potential future climate shocks. However, it has also generated a complex and unexpected socioeconomic paradox, the paradox of green exclusion.

A critical analysis of current lending practices reveals a clear structural imbalance among the three pillars of the ESG framework. The Environmental (E) pillar has dominated both analysis and regulation, driven by relatively easily quantifiable metrics such as carbon emissions, renewable energy use, and resource efficiency. By contrast, the Social (S) pillar – encompassing financial inclusion, poverty reduction, community resilience, and fair access to capital – is notoriously difficult to standardize and therefore often relegated to a secondary role in formal credit assessments. When lending institutions employ environmental mandates as rigid, defensive risk-reduction filters, they inadvertently create systemic barriers for borrowers who lack the financial and administrative capacity to produce formal, audited sustainability reports. As a result, developing countries are witnessing a growing exclusion of micro-enterprises, informal entrepreneurs, and low-income groups from formal credit markets, since these actors typically lack a documented green footprint. In this dynamic, policies designed to save the planet can inadvertently penalize economic vulnerability, pitting environmental sustainability against social equity.

This article examines the growing operational and philosophical differences between traditional banks and Fintech platforms in order to understand the macroeconomic and social consequences of this shift. Traditional banks are heavily regulated and constrained by legacy infrastructure and, as a result, tend to interpret ESG compliance as a binary risk-mitigation mechanism. In their standard models, the absence of formal environmental compliance or traditional collateral often translates into automatic credit rejection, effectively capping capital allocation to large, mature corporations that can afford the cost of compliance.

In contrast, the paper explores how Fintech platforms are redefining credit allocation by using big data, machine learning, and alternative data sources to assess creditworthiness. Fintech models can accurately evaluate risk without relying on rigid green audits or conventional property collateral, instead using dynamic, non-traditional behavioral metrics such as utility and telecommunication payment regularities, digital transaction flows, mobile commerce patterns, and real-time cash-flow analytics. This technological agility enables decentralized lending platforms to reach populations that have historically been invisible to the formal banking sector.

The analysis investigates Fintech's lending paradigm and its capacity to reinforce and revitalize the Social pillar of ESG, thereby democratizing access to capital and redistributing financial resources to previously underserved groups. It also considers how alternative data can serve as a crucial bridge between environmental compliance and financial inclusion, allowing institutions to assess a borrower's trajectory and potential, not only their historical documentation. Furthermore, the study analyzes how this dual financial system shapes the macroeconomy by contrasting the risk-averse, centralized capital allocation of legacy banks with the decentralized, inclusion-driven models of Fintech platforms.

Finally, the study argues that a truly sustainable global economy cannot be built on financial exclusion. The necessary push toward net-zero emissions and robust corporate governance must not come at the expense of social fairness and economic upward mobility. On this basis, the paper outlines the basic principles of a calibrated lending framework, grounded in current market trends and institutional arrangements, that combines rigorous environmental targets with the moral and economic imperative of universal financial inclusion, ensuring that no community is left behind in the global transition to sustainability.

2. Literature review

Over the past decade, sustainable finance has moved to the forefront of economic research, driven by the growing consensus that financial systems must actively support climate mitigation. While existing literature provides a robust foundation for the macroeconomic models, green instruments, and risk-management frameworks of sustainable finance, it exhibits a clear thematic imbalance. Researchers have extensively theorized the environmental mechanics of green finance, yet the intersection between these frameworks, social equity, and financial inclusion remains significantly understudied.

Tracing the evolution from macroeconomic mandates to commercial banking practices, this review summarizes the dominant strands in the green finance literature and identifies the research gap that the present study seeks to address.

An examination of the theoretical foundations and top-down macroprudential mandates governing sustainable finance shows that the integration of environmental criteria into financial systems is fundamentally rooted in the economic need to internalize environmental externalities. In their foundational theoretical study, Ağirman and Osman (2018) argue that traditional financial markets inherently fail to account for the long-term social and ecological costs of environmental degradation. Green finance emerges in this context as a corrective mechanism designed to realign capital flows with sustainable development objectives, ensuring that financial returns do not come at the expense of ecological stability. This theoretical foundation is further reinforced by comprehensive literature syntheses, such as the review conducted by Fathihani et al. (2021), which highlights how sustainable green finance has rapidly evolved from a niche academic concept into a dominant research paradigm in global economic literature.

Recent bibliometric evidence confirms that, over the 2001–2025 period, green finance research has expanded rapidly in volume but remains heavily concentrated on climate change mitigation and environmental risk, with only a limited share of studies analysing distributional and inclusion effects (Spulbar & Dupir, 2026).

The operationalization of these theoretical concepts has been driven primarily by top-down regulatory frameworks and macroprudential policies. A significant portion of contemporary research focuses on the pivotal role of central banks and monetary authorities in steering the green transition. Volz (2017) contends that central banks can no longer remain neutral spectators in the face of environmental degradation, but have an institutional responsibility to enhance green finance by incorporating sustainability criteria into macroprudential supervision and monetary frameworks.

This perspective is expanded by Dikau and Volz (2018), who show that climate change poses direct, systemic threats to financial stability. Their research demonstrates that central banks worldwide are increasingly mandated to treat physical and transition climate risks as core financial risks, compelling commercial financial institutions to adapt their lending and investment strategies accordingly. As monetary authorities have assumed a more proactive stance, scholars have sought to classify and systematize the diverse policy instruments deployed across jurisdictions. Dziwok and Jäger (2021) provide a critical taxonomy of these approaches, distinguishing between passive regulatory adjustments and more assertive green monetary policies. Their classification indicates that, while regulatory frameworks are becoming increasingly sophisticated, they often rely on rigid, standardized criteria designed primarily to safeguard institutional portfolios against climate-related financial depreciation.

As top-down macroprudential mandates have reshaped the regulatory landscape, academic inquiry has increasingly shifted toward their institutional implementation and commercial banking realities. Altunina and Alieva (2021) examine current global and regional trends in the development of green finance systems, focusing on the methodological tools and practical frameworks adopted by lending institutions. Their analysis reveals that methodological rigor in assessing environmental impact has improved significantly, particularly within developed European markets, but that practical application frequently requires complex auditing processes, standardized ESG reporting, and substantial compliance infrastructure.

The macroeconomic efficacy of these green financing mechanisms in driving regional sustainable development is well documented. Empirical evidence from the European market shows a strong, positive correlation between the expansion of green finance and sustainable economic growth (Afzal et al., 2022). Their findings confirm that dedicated green capital allocation effectively channels resources toward renewable energy, clean infrastructure, and eco-efficient industrial projects, thereby accelerating progress toward regional environmental targets.

At the microeconomic and organizational level, researchers have investigated how the adoption of green lending practices influences the internal performance and risk profiles of commercial banks. Zhang et al. (2022) analyze the mediating effect of green financing on banking operations and conclude that active engagement in green banking activities significantly improves a bank's overall environmental performance and sustainability rating.

3. Comparative Analysis: Traditional Banks vs. Fintech and Alternative Green Finance Models

An examination of the macroeconomic shift and the divergence of intermediation models shows that the accelerated global transition toward sustainable economic practices has triggered a fundamental transformation in how credit is evaluated and allocated across markets. As sustainability metrics evolve from optional corporate disclosures into mandatory components of macro-financial stability, a sharp institutional divergence has emerged between legacy banking systems and alternative financial platforms (Dziwok and Jäger, 2021). While both organizational architectures ultimately aim to channel capital toward eco-efficient activities, their operational methodologies, risk-tolerance criteria, and target demographics differ significantly. Traditional banking institutions tend to approach green finance through a centralized, regulatory-driven lens that prioritizes institutional stability and portfolio risk mitigation, whereas alternative financial platforms rely on decentralized, market-driven mechanisms that emphasize accessibility and technological agility (Fathihani et al., 2021). This systemic discrepancy in credit scoring goes beyond a simple technical distinction and represents a profound macroeconomic shift that directly determines which segments of the real economy gain access to the capital required for sustainable development.

A focus on traditional banking, risk mitigation, and spread optimization shows that commercial banks primarily integrate Environmental, Social, and Governance (ESG) criteria into their lending frameworks as a defensive mechanism designed to shield asset portfolios from transition risks and supervisory penalties. Credit risk reduction and profitability optimization are closely tied to environmental compliance for legacy lending institutions (Chen et al., 2022). Evidence from the commercial banking industry indicates that actively increasing a bank's exposure to green lending significantly reduces its overall default probability while also improving the intermediation spread and the profitability margin between borrowing and lending rates (Chen et al., 2022). Furthermore, participation in structured green banking activities generates a positive feedback loop that improves banks' internal environmental performance and sustainability ratings, enabling them to align with global sustainability targets and institutional investor expectations (Zhang et al., 2022). Consequently, traditional banks are strongly incentivized to expand their green loan portfolios, provided that the underlying assets conform to rigorous institutional risk parameters.

However, a critical reading of the exclusionary mechanics of legacy green finance reveals the major structural barriers created by this traditional banking approach. To comply with regulations and minimize financial risk, traditional banks rely on standard balance-sheet instruments, syndicated loans, and dedicated special-purpose vehicles (SPVs) designed for large-scale renewable energy installations, industrial retrofits, and major green infrastructure projects (Schäfer, 2017). These sophisticated financial engineering tools are highly effective for deploying large amounts of capital to mature, compliance-ready corporations, but they paradoxically create prohibitive barriers for micro-enterprises, small businesses, and marginalized borrowers (Schäfer, 2017). These smaller economic actors frequently lack the financial resources, administrative capacity, and formal documentation required to obtain standardized green certifications or third-party environmental audits. When legacy banks apply rigid green screening tools universally, borrowers operating in the informal economy or rural sectors are systematically categorized as high-risk, resulting in widespread financial exclusion under the banner of environmental sustainability.

This paradox is clearly illustrated by the current macroeconomic landscape. The transition to a green economy is inevitable, but empirical data show that climate-relevant sectors still play a systemic role in Romania, contributing 40.6% of gross value added, holding 48.4% of total assets, and accounting for 51.7% of the total corporate loan stock as of September 2024, while green loans represent only 2.9% of bank exposure to non-financial companies (BNR, 2024). Such a divergence highlights the risk that inflexible

ESG filters may cut off funding to a significant part of the real economy, intensifying the tension between the objectives of environmental sustainability and social equity. Today, Small and Medium Enterprises (SMEs) are at the crossroads of three major transitions – green, digital, and demographic (Slăvoiu, 2025a). Within the traditional banking approach, enforcing strict environmental standards risks turning the green transition into a form of economic elitism, in which SMEs are excluded due to a lack of ESG know-how and high reporting costs. In this context, Fintech models and digitalization act as crucial accelerators, lowering operational costs and enabling the efficient processing of complex ESG data (Slăvoiu, 2025a). Digital financial infrastructure, such as B2B platforms and digital scoring, is essential for making green investments scalable and accessible for SMEs, thereby preventing their marginalization.

These institutional frictions become even more pronounced when analyzing emerging market barriers and commercial bank limitations. Underdeveloped capital markets in developing and transitional economies often make private commercial banks the main, if not the only, drivers of green finance adoption (Zheng et al., 2021). Despite this central role, these institutions face significant structural impediments, including prohibitively high transaction costs for small-scale green lending, entrenched default-averse cultures, and overly complex procedures for verifying environmental impact (Zheng et al., 2021). Private commercial banks in emerging markets typically adopt an overly conservative lending stance to protect their balance sheets from these compounded risks, demanding extensive physical collateral and formal documentation that the average local borrower cannot provide. As a result, even as green finance frameworks expand at the institutional level in developing countries, the practical constraints of legacy banking prevent this capital from reaching the real economy, limiting broad financial access and amplifying socioeconomic disparities (Zheng et al., 2021).

An examination of Fintech agility, alternative data, and the operationalization of the Social pillar shows how technological innovation redefines sustainable credit distribution in sharp contrast to existing institutional limitations. Financial technology platforms and alternative financing models display superior operational agility, positioning them as particularly well suited to address the Social (S) pillar of existing ESG frameworks (Fathihani et al., 2021). Fintech lenders rely on predictive behavioral analytics rather than retrospective, audit-heavy assessment techniques, since they are not constrained by traditional brick-and-mortar overheads or legacy IT infrastructures. By leveraging big data, machine learning algorithms, and alternative data streams – such as real-time cash-flow velocity, mobile payment regularities, and digital supply-chain interactions – these platforms can quantify creditworthiness without demanding formal green certifications or conventional property collateral. This technological capability enables digital lenders to identify creditworthy borrowers within historically excluded demographics, transforming environmental compliance from an exclusionary barrier into an inclusive opportunity for sustainable economic advancement.

Lastly, decentralized crowd-investing models and alternative banking structures accelerate the democratization of sustainable capital. Beyond algorithmic credit scoring, innovative structural models such as peer-to-peer (P2P) lending, equity crowdfunding, and crowd-investing eliminate traditional banking frictions by mobilizing private capital directly toward small-scale sustainable projects (Schäfer, 2017). These alternative financial structures allow retail investors to participate in green project financing with minimal capital thresholds, thereby democratizing both the provision and the receipt of sustainable investment. By using online platforms to connect capital providers directly with eco-entrepreneurs, community renewable energy initiatives, and rural agricultural projects, alternative financing models bypass the complex assessment procedures and high overhead costs of traditional banks. As Schäfer (2017) notes, these cutting-edge platforms effectively redistribute capital to marginalized groups and foster broad financial inclusion while maintaining a strong commitment to environmental sustainability.

4. The Role of Central Banks and Institutional Frameworks in Credit Allocation

The effective reallocation of credit toward sustainable and inclusive sectors cannot rely solely on market forces and private initiatives; it requires a strong institutional architecture led by central banks. An examination of market failures, carbon underpricing, and institutional intervention shows that, despite their enormous potential for innovation and capital deployment, private financial markets and emerging technologies are structurally constrained by pervasive externalities, most notably the systematic underpricing of carbon emissions and ecological degradation. Consequently, central banking authorities are uniquely positioned to address these market failures and to ensure that environmental risks are accurately reflected in financial markets.

By standing at the apex of the monetary and financial system, central banks possess both the supervisory mandate and the macroprudential leverage needed to internalize environmental costs, transforming climate risk from an ignored external factor into an unavoidable component of institutional capital allocation. As Slăvoiu (2025b) notes, institutions such as the European Central Bank (ECB) and the National Bank of Romania (BNR) increasingly treat environmental degradation as a core threat to price stability and financial security, driven by transition risks that can trigger inflation, cost shifts, and investment uncertainty. At the same time, the European Parliament insists that monetary authorities must respect market neutrality and avoid distorting free markets by exclusively favoring green assets, which reinforces the need for an institutional framework that supports the transition without creating sudden imbalances in carbon-intensive sectors.

An analysis of green macroprudential tools, stress testing, and reserve adjustments illustrates how monetary authorities can actively re-engineer the financial system's risk architecture. To achieve these objectives, central banks can deploy a diverse array of green microprudential and macroprudential policies. In addition to strategically modifying legal reserve requirements to favor portfolios rich in green assets, these supervisory interventions include the implementation of stringent climate-related stress tests designed to assess the financial system's structural resilience to severe environmental shocks. By simulating physical and transition climate scenarios on commercial balance sheets, regulators force lending institutions to recognize the true risk profile of carbon-intensive assets. Recalibrating reserve ratios simultaneously enables central banks to lower the regulatory capital cost of sustainable loans, altering the commercial lending risk-reward calculation in favor of green economic activities.

The operationalization of this supervisory influence extends into targeted monetary policy instruments and preferential refinancing lines. Beyond passive risk monitoring, monetary authorities can establish dedicated refinancing facilities that provide commercial banks with preferential funding terms for sustainable investments or even accept carbon certificates as part of commercial banks' eligible collateral to reduce the funding cost of low-carbon projects. Through these proactive monetary mechanisms, central banks effectively dual-track the cost of capital within the banking sector.

Institutions that channel credit toward verified sustainable infrastructure or low-carbon transition projects obtain liquidity at subsidized rates, whereas those maintaining carbon-intensive portfolios face progressively higher borrowing costs. This direct intervention in interbank markets accelerates the macroeconomic shift toward sustainability by creating powerful financial incentives for commercial banks to identify and support green projects.

However, an assessment of governance structures, institutional quality, and environmental degradation shows that the surrounding legal and regulatory environment is intrinsically linked to the effectiveness of monetary policy. Beyond central banks, the broader institutional framework plays a critical role in determining the success of green finance. Macroeconomic research on European economies indicates that financial development coupled with high institutional quality significantly reduces environmental degradation, underscoring that strict environmental regulations and effective governance are essential for sustainable policies to take root. Transparent property rights, strong legal enforcement, and robust accounting standards provide the confidence required for long-term green investments. When these institutional pillars are strong, financial markets can distinguish effectively between genuine sustainability and superficial greenwashing, ensuring that funds are allocated to projects that generate real environmental improvements.

Conversely, the paradox of financial deepening in the absence of regulatory supervision reveals the substantial risks associated with market expansion in institutional voids. Without robust institutional monitoring, financial deepening and foreign direct investment can paradoxically lead to higher carbon emissions and accelerated depletion of natural resources. In jurisdictions characterized by weak governance, permissive environmental standards, or regulatory capture, an influx of capital often exacerbates ecological destruction, as investors exploit regulatory loopholes to finance highly profitable, high-emitting industrial activities. A coordinated effort that combines active central bank engagement with strong, transparent governance is therefore essential to create an environment in which green finance can flourish and support sustainable economic development. Ultimately, establishing a truly sustainable and inclusive credit market requires a symbiotic relationship between proactive monetary authorities and high-quality governance frameworks, ensuring that financial innovation remains firmly anchored in regulatory integrity.

5. Conclusions

A critical structural change within the global financial architecture is being driven by the incorporation of environmental, social, and governance criteria into credit risk assessment. As financial systems move from traditional, profit-centric models toward holistic sustainability frameworks, capital allocation has become a primary instrument for shaping macroeconomic and ecological stability. This analysis shows that the pursuit of a green economy cannot be understood solely as an environmental imperative, but must be framed as a comprehensive strategy that balances ecological preservation with social equity and financial inclusion. A financial transformation that prioritizes carbon reduction while neglecting socioeconomic accessibility risks creating new structural fractures in the global economy and ultimately undermining the long-term objectives of sustainable development.

Synthesizing the traditional banking dichotomy between profitability and exclusion highlights the operational complexities embedded within legacy financial institutions. Traditional banks have demonstrated that adopting green lending practices can be financially advantageous, improving profitability spreads and mitigating default risks, yet their rigid compliance filters simultaneously threaten to exclude marginalized populations from accessing essential credit. While commercial banks benefit institutionally from greening their portfolios through enhanced reputation and reduced exposure to transition risks, their heavy reliance on retrospective financial disclosures, formal environmental audits, and standardized collateral often alienates small enterprises, informal entrepreneurs, and developing communities. Without methodological adaptation, standard risk-mitigation strategies applied by legacy banks can inadvertently turn green finance into a mechanism of socioeconomic exclusion.

To bridge this exclusionary gap, the evaluation of technological democratization, alternative data, and peer-to-peer frameworks underscores the transformative potential of digital financial intermediation. Fintech and alternative financing models emerge as indispensable components of the modern financial ecosystem, demonstrating a strong capacity to democratize capital access and address the social dimensions of sustainability through innovative data utilization and decentralized intermediation structures. By leveraging machine learning algorithms, forward-looking behavioral analytics, and alternative data streams, agile technological platforms can assess risk without relying on rigid green certifications or traditional property collateral. In doing so, they operationalize the Social (S) pillar of the ESG paradigm by decentralizing traditional banking services and enabling retail and institutional capital to reach grassroots sustainable projects, micro-entrepreneurs, and underserved demographics.

At the same time, the need for central bank intervention and macroprudential guidance confirms that technological innovation and market forces alone cannot deliver systemic realignments. The transition toward sustainable development requires a proactive approach from state actors and central banks, which must implement calibrated green monetary policies and macroprudential regulations to correct market failures and guide private investment. Monetary authorities have to shape the financial risk architecture by internalizing environmental externalities through climate stress testing, adjusting reserve requirements, and deploying preferential refinancing lines for sustainable lending. In doing so, central banks provide the regulatory incentives needed to align commercial lending strategies with macro-environmental goals while preserving financial stability by dual-tracking the cost of capital within the banking system.

Advancing a calibrated lending framework and an institutional architecture for universal inclusion represents the synthesized normative outcome of this study. Achieving a truly sustainable and inclusive economy requires a harmonized framework in which robust environmental and governance objectives are integrated with the imperative of financial accessibility. To attain this balance, regulatory authorities and financial institutions must adopt a calibrated lending approach that actively compensates for a borrower's initial lack of formal green documentation by evaluating their potential for positive socioeconomic impact and local resilience. This ambitious goal depends on the continuous strengthening of institutional quality, the promotion of environmental education, and close cooperation between traditional and alternative financial institutions. As recent contributions emphasize, a just and sustainable transition in financing should rest on three core principles: proportionality (relative to company size), adequacy (sectoral and geographical), and gradualness (conditionality based on green or digital performance indicators). To avoid the discretionary exclusion of vulnerable firms, the calibrated framework should incorporate hybrid financing products, such as green and transition loans backed by public guarantees and cost-sharing mechanisms. Ultimately, inclusive financing must be understood not as a mere compliance cost, but as a strategic investment in which the development of human capital – the Social dimension of ESG – receives at least as much attention as green infrastructure.

Authors' Contributions:

The authors contributed equally to this work.

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ORIGINAL PAPER

Navigating Stock Market Turbulence: The Dynamic Effect of Time-Varying Volatility on the Poland WIG 20 Index via an Exogenous EGARCH Approach

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Abstract

This paper investigates how time-varying volatility, market shocks, and exogenous price factors influence return dynamics in the Poland's equity market. Using a comprehensive dataset of 7,642 daily observations of the WIG20 Index spanning from January 1996 through July 2026, we apply a suite of GARCH-family specifications including standard GARCH(1,1), Exogenous GARCH, Exponential GARCH (EGARCH), and Component GARCH (CGARCH) models following preliminary ADF, KPSS, and ARCH-LM diagnostic testing. The empirical findings c onfirm that daily log returns on the WSE exhibit stationary behavior accompanied by strong leptokurtosis and pronounced volatility clustering. Incorporating lagged intraday price dimensions reveals that prior-day open returns positively affect conditional volatility, whereas lagged low returns exert a stabilizing negative influence. The EGARCH variance estimates reveal a statistically significant asymmetric leverage effect ($\boxed{\gamma = -0.0489, p < 0.001}$), confirming that negative shocks generate disproportionately higher market volatility than positive news of equal magnitude. Furthermore, the Component GARCH results demonstrate a clear structural split between transitory variance and a persistent, long-memory permanent trend ($\boxed{\rho = 0.9968}$). These insights offer institutional investors, risk managers, and market regulators a nuanced framework for modeling conditional risk across Eastern European financial markets.

Keywords: WIG20 Index, Volatility Clustering, Exogenous EGARCH, Asymmetric Leverage Effect, Component GARCH, Warsaw Stock Exchange, Conditional Variance

JEL Classification: C32, G10, G12, G17

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Introduction

Understanding risk dynamics in emerging and transition equity markets remains a central challenge in financial economics. The Warsaw Stock Exchange (WSE) serves as a primary financial hub in Central and Eastern Europe, with its benchmark WIG20 Index, comprising twenty of the largest and most liquid listed firmsacting as a crucial barometer for capital flows across the region. Over the past three decades, the Poland's capital market has experienced major structural evolutions, shifting economic policy regimes, and international integration. These transitions make the WIG20 a compelling candidate for long-run volatility modeling.

A foundational assumption in classical finance is that return variances remain constant over time. However, empirical stock returns consistently display non-linear properties, such as fat-tailed error distributions, persistent volatility clustering, and distinct reactions to market shocks. While traditional GARCH structures account for basic autoregressive conditional variance, they struggle to capture direction-dependent reactions (leverage effects) or integrate information from short-term intraday price ranges.

This study examines these dynamics using a 30-year sample of WIG20 daily returns. By deploying an Exogenous EGARCH framework alongside asymmetric and component variance architectures, we isolate the impact of immediate shocks, historical intraday price bounds (Open, High, Low), and long-term structural variance. In doing so, this paper clarifies how information gets processed in the Poland's equity market, offering practical tools for portfolio optimization, derivative pricing, and systemic risk monitoring.

Review of Literature

Numerous empirical research studies analyze the behavior of stock markets, making it an area of high interest and widely debated in the specialized literature. For instance, it is relevant to highlight recent research studies such as the following: Meher et al. (2023), Trivedi et al. (2022), Kumar et al. (2021), Spulbar et al. (2023a), Aman et al. (2024), Anand et al. (2023) and many others. Chirilă conducted an empirical research study on the stock market in Poland before but also during the COVID 19 pandemic considering the linkages between certain economic sectors, but also the dynamics of volatility. Bieszk-Stolorz and Markowicz (2022) analyzed the behavior of Warsaw Stock Exchange in the context of COVID-19 pandemic while being focused on listed companies.

Jareño et al. (2021) have conducted a comparative empirical study on the non-linear linkages as reciprocal relationship of most important indices of the European stock markets in Poland and Spain, but also several other relevant stock markets in Germany, USA, China and UK. Spulbar et al. (2023b) developed a comparative empirical research study on the dynamics of European stock markets in Poland and Italy using GARCH models.

Stereńczak (2020) investigated the impact of stock liquidity for the case of Polish stock market, such as Warsaw Stock Exchange. Będowska-Sójka and Echaust (2019) have conducted an empirical research study based on certain emerging European stock markets such as Hungary, the Czech Republic, Poland, Russia and Turkey considering essential aspects such as liquidity. Moreover, the issue of stock liquidity premium was analyzed in detail based on this applied empirical study considering other key aspects such as stock market volatility, stock returns but also the liquidity volatility. Moreover, Nawrocki and Szwajca (2022) examined the implications of reputation on the dynamics of Polish capital market.

Research Gap

While an extensive body of literature applies standard symmetric GARCH model frameworks to evaluate conditional volatility across developed and emerging stock markets, significant empirical gaps remain regarding the Poland's equity market specifically the WIG20 Index.

First, existing empirical research on Central and Eastern European (CEE) markets predominantly utilizes baseline univariate models that assume symmetric variance responses to market shocks. This creates a critical gap in understanding how directional news asymmetries specifically the leverage effect operate over extended multi-decade periods that span diverse economic regimes, regulatory shifts, and structural market transitions.

Second, conventional ARCH/GARCH modeling approaches routinely treat conditional variance as a closed function of lagged squared residuals and historical variance terms. Few studies incorporate short-term intraday price dynamic ssuch as lagged open, high, and low price returns directly into the conditional variance equation as exogenous predictors. Consequently, there is a lack of empirical evidence regarding how prior-day price bounds act as exogenous news drivers that alter immediate risk behavior in the WIG20 Index.

Third, standard volatility models fail to separate short-run transitory fluctuations from long-run structural trend components. Most existing studies evaluate overall persistence without decomposing whether volatility shocks in the Poland's market exert a permanent structural impact or merely temporary noise.

This study directly addresses these interconnected gaps by applying a comprehensive, multi-model empirical framework combining Exogenous GARCH-X, Exponential GARCH (EGARCH), and Component GARCH (CGARCH) models to a continuous 30-year daily dataset of the WIG20 Index (7,642 observations). By simultaneously evaluating exogenous price signals, leverage asymmetries, and permanent-versus-transitory volatility decomposition, this paper provides a more complete framework for understanding time-varying risk dynamics in Poland's primary stock index.

Scope and Limitations of the Study

1. **Scope of the Study:**

- **Sample Period:** Analyzes 7,642 daily closing observations from January 5, 1996, to July 21, 2026, capturing long-term market trends across different economic cycles.
- **Model Suite:** Evaluates conditional variance dynamics using GARCH(1,1), Exogenous GARCH-X, Exponential GARCH (EGARCH), and Component GARCH (CGARCH) models formulations.
- **Variable Integration:** Combines transformed daily logarithmic return series with lagged intraday price components (opening, high, and low levels).

2. **Limitations of the Study:**

- **Exogenous Inputs:** Exogenous variance predictors are restricted to internal price metrics (Open, High, Low); macroeconomic variables (such as central bank policy rates, inflation indicators, and exchange rate shifts) are excluded from the variance specification.

- **Distributional Assumptions:** Estimation relies primarily on standard normal innovation distributions, which may not fully capture extreme tail risks during severe market distress.
- **Single-Index Focus:** The empirical scope is limited to the composite WIG20 Index, meaning sector-level dynamics and individual asset spillovers within the WSE fall outside the study's framework.

Objective of the study

To examine the effect of lag volatility of WIG20 on today's price.

To quantify the size effect, sign effect and persistence level on the volatility of WIG 20 return.

To analyse existence of short term and long-term components in WIG20 price.

Research hypothesis

$\mathbf{H_{01}}$**:**There is no effect of lag volatility price of WIG20 index on today's price of WIG20

$\mathbf{H_{02}}$**:**There is no effect of size, sign and persistence level on the volatility of WIG20 return.

$\mathbf{H_{03}}$**:** There is no existence of short term and long-term components in WIG20 price.

Research methodology

Data Description

As per objective the study examines the effect of news and lag volatility on the stock price of Poland WIG20 by using daily data from 5th Jan. 1996 to 21st July 2026 with 7642 observations by applying different econometrics tools and techniques.

Tools & Techniques

During the study we have applied ADF/Unit Root Test for checking the stationarity in series, ARCH LM test used for heteroskedasticity and different GARCH family model like GARCH (1,1), Exogenous GARCH, TGARCH, Exponential GARCH and Component GARCH model applied to achieve objectives of the study.

Research methodology

We convert all data series into natural logarithm series by the formula

$$\mathbf{Ln\ (Pt\ /P\ t\text{-}1)*100}$$

Where Pt Closing price of the same day

Pt–1 Closing price of the previous day.

In this study, we have employed augmented Dickey Fuller (ADF) test of Dickey and Fuller (1979) and Phillips Perron test (PP) of Phillips and Perron (1988) to test stationarity of data series. We find all return series are stationary at level. There after we use GARCH family models to capture volatility effect as well as component effect. The specifications of models are as follows.

Augmented Dickey–Fuller Tests (ADF)

The Augmented Dickey-Fuller (ADF) test is an extension of the Dickey-Fuller test that is suitable for larger and more complex time series samples. While the simple Dickey-Fuller test is limited to AR (1) processes, the ADF test allows for capturing the presence of p lags in the model.

The general equation for ADF is applied in the series as follow:

$$\mathbf{\Delta\ yt = \alpha + \beta t + \gamma\ yt\text{-}1 + \delta 1\ \Delta yt\text{-}1 + \ldots\ldots + \delta p \Delta yt\text{-}p + et}$$

Where α is a constant, β is the coefficient on a time trend and p is the lag order of the autoregressive process.

ARCH LM test

ARCH LM test for examine the existence of Volatility Clustering Financial time series data often demonstrate volatility clustering, meaning that volatility in the data tends to be auto correlated. This violates the assumption of constant variance for the error term in regression analysis. To address this issue, one approach is to use an ARCH (Autoregressive Conditional Heteroscedasticity) model, which not only models the mean but also models the conditional variance. In an ARCH model, the conditional variance is permitted to depend on the lagged values of squared error terms. This can be expressed in the following equation:

$$\mathrm{Var}\,(\epsilon_t|I_{t-1}) = \alpha_0+\sum{}^{p}_{i=1} \alpha_i\epsilon^2{}_{t-i}$$

Where $\epsilon_t$represents the error term at time t, I_{t-1}denotes the information set available up to time t-1, α_0 is the constant term, α_i (for i = 1 to p) represents the coefficients of the lagged squared error terms, and p is the lag length.

EXOGENOUS EGARCH (1,1)Model

The exogenous EGARCH (Exponential Generalized Autoregressive Conditional Heteroskedasticity) model is a variant of the popular EGARCH model that incorporates exogenous variables to capture additional information and improve the modelling of conditional volatility. In the exogenous EGARCH model, the conditional variance of a time series is modelled as a function of lagged conditional variances, exogenous variables, and the past shocks. The model allows for asymmetry in the volatility response to positive and negative shocks.

Mathematically, the exogenous EGARCH model can be represented as follows:

$$\mathrm{Log}(\sigma_t{}^2)= \omega +\sum{}^{p}_{i=1} \alpha_i\,(|\,r_{t-i}| - \gamma_i\, r_{t-i}\,) + \sum{}^{q}_{j=1} \beta_j \log(\sigma^2{}_{t-j}\,) + \sum{}^{m}{}_{k=1} \delta_k x_{tk}$$

Where:

1.$\Sigma_t{}^2$represents the conditional variance at time t,

2.Ω is the intercept term,

3. P is the order of the absolute value shock term,

4.R t−i denotes the past shocks,

5.Γi captures the leverage effect, which measures the asymmetry in the response to positive and negative shocks,

6. Ai and βj are the model parameters,

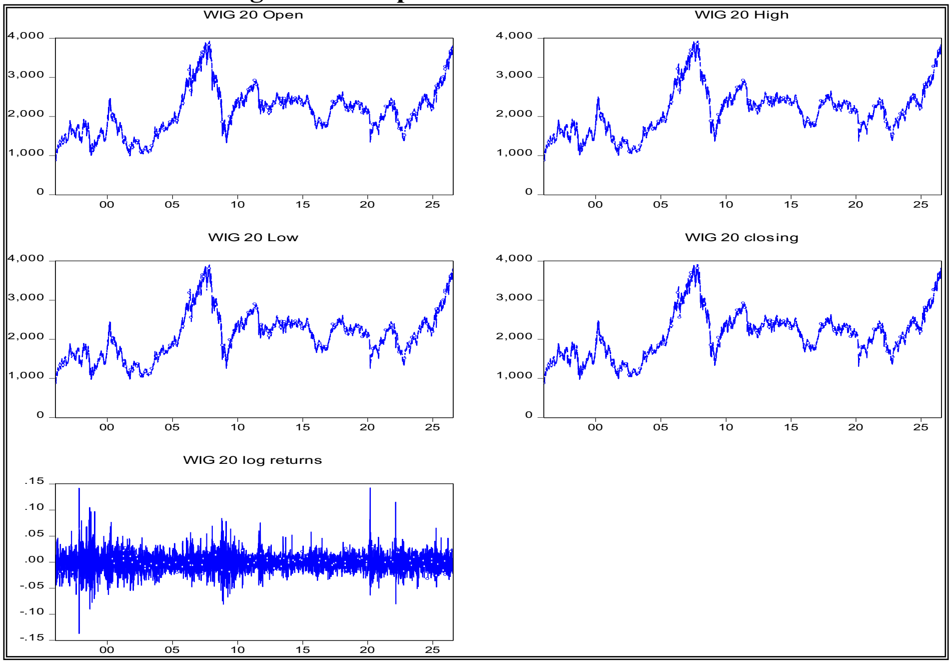
7. $\mathrm{Log}(\sigma^2{}_{t-j}\,)$ represents the logarithm of the conditional variance at time t−j,

8.Q is the order of lagged conditional variances, and

9.X_{tk} denotes the exogenous variables at time t and their corresponding coefficients δ_k

- **Graphical Presentation of the series:**

Figure 1 - Graphical Presentation of the series



Source: *Author's Own Calculation*

Descriptive Statistics:

Table 1 - Descriptive Statistics

	WIG_20_ OPEN	WIG_20_ HIGH	WIG_20_ LOW	WIG_20_ CLOSING	WIG_20_ LOG_RE TURNS
Mean	2119.789	2136.224	2101.707	2119.346	-0.000194
Median	2161.360	2177.270	2142.965	2158.595	-0.000122
Std. Dev.	592.3897	596.2103	586.9608	591.8807	0.016043
Skewness	0.477708	0.480024	0.474132	0.477931	0.300313
Kurtosis	3.144499	3.154868	3.135968	3.144976	8.308236
Jarque-Bera	297.3055	301.1196	292.2083	297.6214	9085.823
Probability	0.000000	0.000000	0.000000	0.000000	0.000000
Observations	7642	7642	7642	7642	7641

Source: *Author's own Calculation*

The empirical evaluation encompasses 7642 Observations of the Poland top WIG 20 Index across various Training dimension Including opening price, closing prices and logarithmic returns the price series demonstrate consistent Central tendencies with mean and median values closely aligned average price level fluctuate between two 101.7 and 2136.224. Price indicators show robust standardisation Raising from approximately 586.96 To 596.21 Highlighting substantial absolute Price Dispersion within the market. Skew miss coefficient across all variable remaining positive ranging from 0.300313 to 0.480024 Indicating Slight rifled asymmetric Price metrics exhibits procure statistics near Thing where Wiz For the withdrawal reveals high leptokurtic peak of 8.308236.

Unit Root/Stationarity Test/ ADF Test

Table 2 - Unit Root/Stationarity Test/ ADF Test

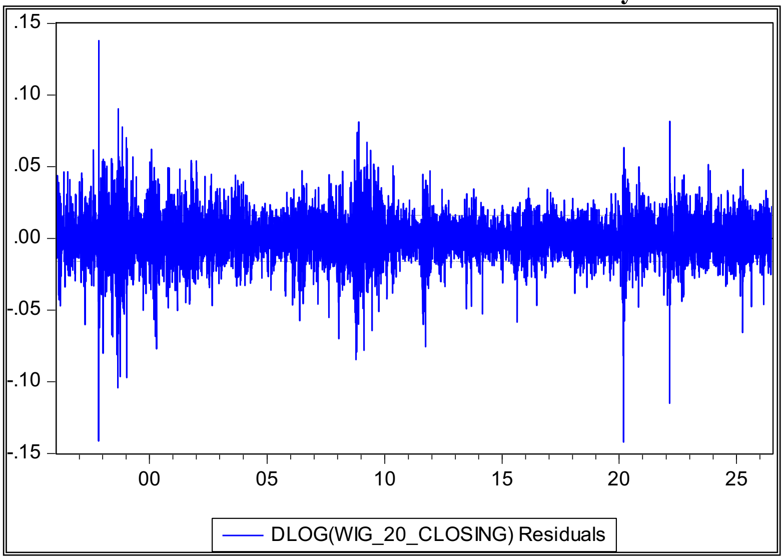
ADF and KPSS Unit Root Test for the Return series of Poland WIG20 Closing Price				
Model with Intercept as well as Trend & Intercept at level				
	ADF Test		**KPSS Test**	
	Data at level		**Data at level**	
Variable	**Intercept**	**Trend &Intercept**	**Intercept**	**Trend &Intercept**
WIG 20 lnclosing	-86.78315 (0.0001)	-86.77815 (0.0001)	0.077701	0.068494

Source: *Author's own Calculation*

Table 2 represents the result of ADF and KPSS test for checking the stationarity of the series. Here, the analysis used the return series for examine the unit root problem and result depicts that the transformed series is coming stationary at level in both KPSS and PP test. Generally, it was found that the data of stock exchange most probably comes non-stationary at level when we check it at original series. So, these series are behaving in the same line and it comes stationary at first difference when we check it at original series.

ARCH LM Test /Heteroskedasticity Test: ARCH for measuring the existence of Volatility Clustering

Table 3 - ARCH LM Test /Heteroskedasticity Test

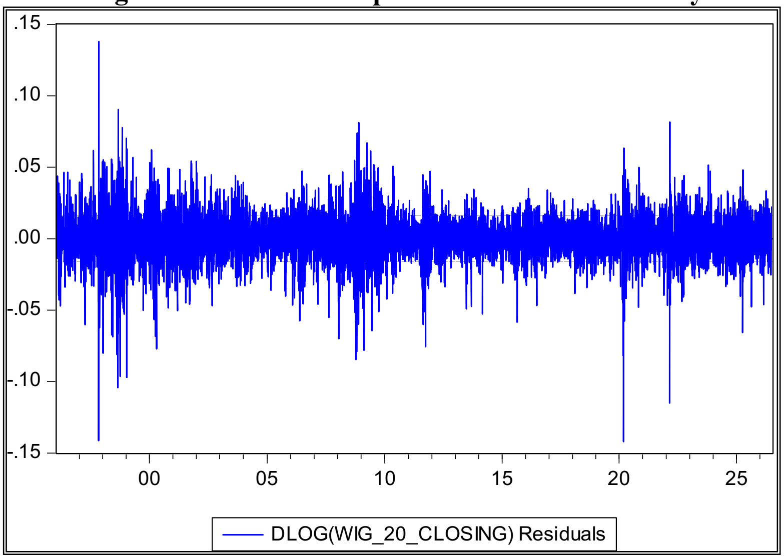


Source: *Author's own Calculation*

Table 3 display the result of Autoregressive conditional Heteroskedasticity Lagrange Multiplier Test performed to examine the existence of volatility clustering Within the model residuals. The probability value for both the F statistic and observed R-squared are strictly less 0.05, the Null Hypothesis of Homoskedasticity is rejected. This confirmed the presence of significant conditional Heteroskedasticity and robust Volatility cluster in the series Justifying the application of ARCH/GARCH Model frameworks.

Residual Graph for existence of volatility

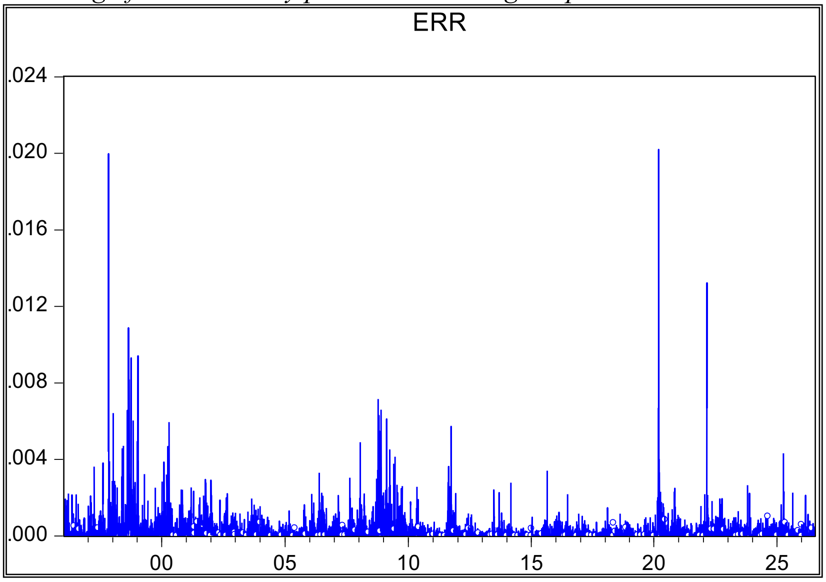
Figure 2 - Residual Graph for existence of volatility



Source: *Author's own Calculation*

Figure 3 depicts the significant volatility period exist during the period where Spikes represent heteroskedasticy rather than homoskedasticity.

Figure 3 - Significant volatility period exist during the period



Source: *Author's own Calculation*

Application of GARCH Family Models

GARCH (1,1) Model

GARCH = C(6) + C(7)*RESID(-1)^2 + C(8)*GARCH(-1)

Table 4 - GARCH (1,1) Model

Dependent Variable: DLOG(WIG_20_CLOSING)				
Mean Equation				
Variable	Coefficien t	Std. Error	Z-Statistic	Prob.
C	0.000349	0.000268	1.302939	0.1926
AR(1)	-0.180190	0.874774	-0.205985	0.8368
AR(2)	0.254691	0.605195	0.420841	0.6739
MA(1)	0.196491	0.874186	0.224770	0.8222
MA(2)	-0.262003	0.613163	-0.427298	0.6692
Variance Equation				
C	**0.000107**	1.39E-05	7.697542	0.0000
RESID(-1)^2	**0.149850**	0.019532	7.671992	0.0000
GARCH(-1)	**0.599850**	0.044643	13.43674	0.0000

Source: *Author's own Calculation*

Table 4 depicts the intercept parameter © captures the baseline or unconditional long term variance level within the conditional volatility framework and RESID(-1)^2 shows the coefficient for the lagged squared residual term quantifies the immediate transmission of market shocks or recent news (**0.149850**) innovations onto current conditional volatility. GARCH(-1) reflects the degree of persistence (**0.599850)**, measuring how preceding condition volatility forecasts influence the present days predicted variance. So combined parameter magnitude remains below one indicating mean reverting behaviour and decaying volatility dynamics where current market variance diminishes relative to prior periods.

Exogenous GARCH Model:

GARCH = C(4) + C(5)*RESID(-1)^2 + C(6)*GARCH(-1) + C(7)*DLOG(WIG_20_OPEN(-1)) + C(8)*DLOG(WIG_20_HIGH(-1)) + C(9)*DLOG(WIG_20_LOW(-1))

Table 5 - Exogenous GARCH Model

Mean Equation				
Variable	Coefficient	Std. Error	Z-Statistic	Prob.
C	0.000198	0.000154	1.291702	0.1965
AR(1)	-0.573714	0.194784	-2.945382	0.0032
MA(1)	0.595800	0.191026	3.118955	0.0018
Variance Equation				
C	**2.91E-06**	3.65E-07	7.957517	0.0000
RESID(-1)^2	**0.060208**	0.003393	17.74480	0.0000
GARCH(-1)	**0.928553**	0.003983	233.1203	0.0000
DLOG(WIG_20_OPEN(-1))	**0.001337**	0.000412	3.244643	0.0012
DLOG(WIG_20_HIGH(-1))	0.000288	0.000435	0.661017	0.5086
DLOG(WIG_20_LOW(-1))	**-0.002184**	0.000480	-4.545306	0.0000

Source: *Author's own Calculation*

Table 5 presents the estimation results of the Exogenous GARCH model, integrating both conditional mean dynamics and conditional variance properties augmented with exogenous market covariates derived from the WIG20 index series. In the mean equation, the autoregressive parameter AR(1) coefficient of -0.573714 (p=0.0032) and MA (1) coefficient of 0.595800 (p=0.0018) both are statistically significant, indicating robust short term serial dependency and adjustment mechanism in the conditional mean return. In the variance equation the lagged residual term (RESID(-1)^2) exhibits a significant Coefficient of 0.060208 reflecting the immediate transmission of market shocks. Furthermore, the lagged conditional variance depicts high and statistically significant coefficient of 0.928553, demonstrating extreme volatility persistence in the market. In the exogenous variable Incorporating Neg Now return of the WIG 20 index dimensions show mixed significant effect on conditional volatility. Specially, DLOG(WIG_20_OPEN(-1)) display positive and significant effect of (**0.001337 , p= 0.0012**), whereas DLOG(WIG_20_LOW(-1)) reveals a significant inverse relationship between todays return and previous day high return.(**-0.002184, p=0.0000).** Conversely, the high price exogenous regressor **(**DLOG(WIG_20_HIGH(-1)) remains Statistically insignificant (0.5086).

Exponential GARCH Model:

LOG(GARCH) = C(4) + C(5)*ABS(RESID(-1)/@SQRT(GARCH(-1))) + C(6)*RESID(-1)/@SQRT(GARCH(-1)) + C(7)*LOG(GARCH(-1))

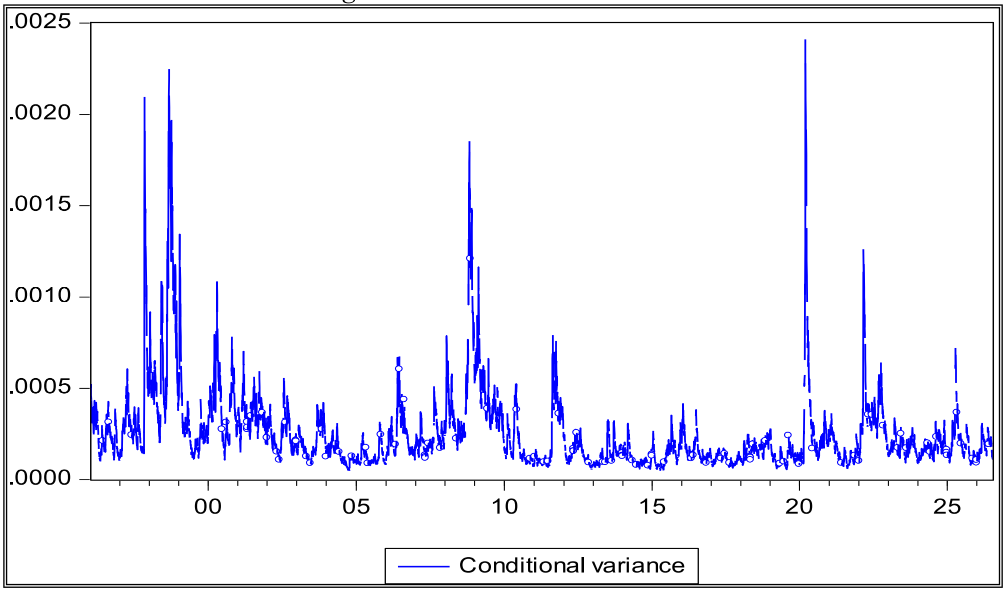
Table 6 - Exponential GARCH Model

Dependent Variable: DLOG(WIG_20_CLOSING)				
Sample (adjusted): 1/09/1996 7/21/2026				
Included observations: 7640 after adjustments				
Mean Equation				
Variable	**Coefficient**	**Std. Error**	**Z-Statistic**	**Prob.**
C	0.000175	0.000153	1.147123	0.2513
AR(1)	-0.279911	0.398080	-0.703153	0.4820
MA(1)	0.305510	0.394916	0.773607	0.4392
Variance Equation				
C(4)	-0.247094	0.018036	-13.69983	0.0000
C(5)	**0.146944**	0.006445	22.79954	0.0000
C(6)	**-0.048942**	0.004261	-11.48665	0.0000
C(7)	**0.984203**	0.001878	524.1416	0.0000

Source: *Author's own Calculation*

Table 6 represents the estimation outcomes for the exponential GARCH Model applied to the WIG 20 closing log return across 7640 adjusted observations. Asymmetric volatility and shock magnitude C (5) and C6; In the various equation the coefficient C(5) is estimated at 0.146944 (P - 0.0000), capturing the magnitude effect or the overall impact of shock on volatility. Meanwhile, the asymmetric parameter C(6) is negative (-0.048942) and statistically Significant (p-0.0000), confirming the presence of Asymmetric Leverage effect Where negative markets shocks (bad news) are induce higher volatility than positive shock of an equivalent Scale. The persistence coefficient C(7) associated with {GARCH}(-1)) is Significant at 0.984209 (p–0.0000), demonstrating extreme persistence of shock and long memory in the conditional variance of the market Index.

Figure 4 - Conditional Variance



Source: *Author's own Calculation*

Table 7 - CGARCH Model

Dependent Variable: DLOG(WIG_20_CLOSING)				
Sample (adjusted): 1/09/1996 7/21/2026				
Mean Equation				
Variable	**Coefficient**	**Std. Error**	**Z-Statistic**	**Prob.**
C	0.000375	0.000144	2.598253	0.0094
AR(1)	0.315088	0.225535	1.397070	0.1624
MA(1)	-0.314415	0.225392	-1.394968	0.1630
Variance Equation				
C(4)	**0.000236**	5.34E-05	4.414699	0.0000
C(5)	**0.996810**	0.001563	637.6894	0.0000
C(6)	**0.022798**	0.008233	2.768965	0.0056
C(7)	**0.045502**	0.009082	5.010049	0.0000
C(8)	**0.918777**	0.014779	62.16641	0.0000

Source: *Author's Own Calculation*

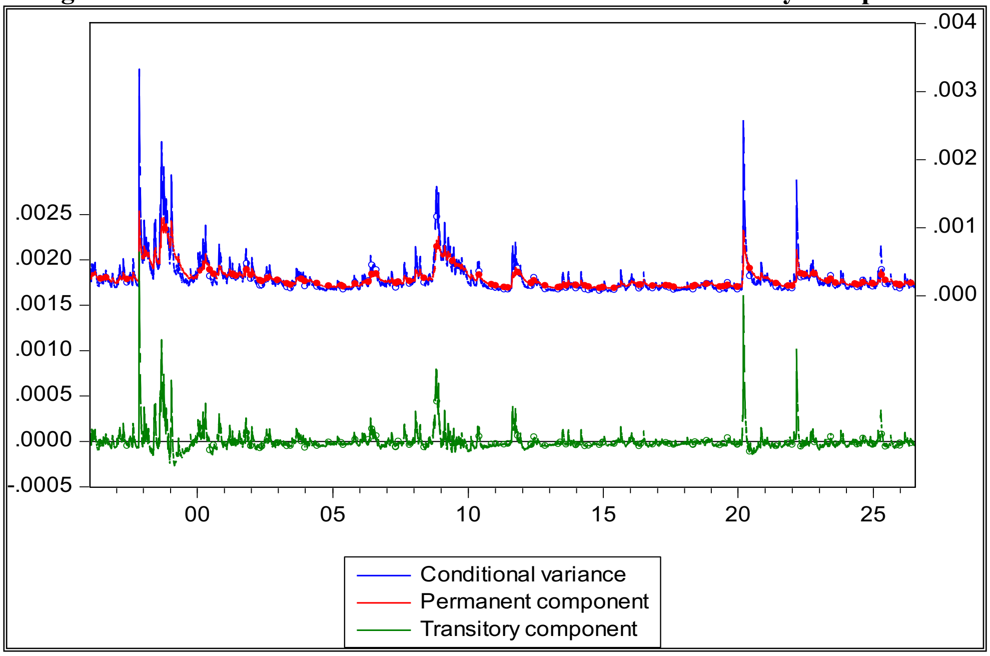
Component (CGARCH) Model

Model : Q = C(4) + C(5)*(Q(-1) - C(4)) + C(6)*(RESID(-1)^2 - GARCH(-1))
GARCH = Q + C(7) * (RESID(-1)^2 - Q(-1)) + C(8)*(GARCH(-1) - Q(-1))

Table 7 depicts the estimation output for the component GARCH model applied to WIG20 closing log return across the adjusted sample period. Permanent component dynamics C4 and C-5; In the variance equation, the Permanent component Intercept C(4) is positive and significant at 0.000236 (P - 0.0000) Furthermore, the persistence parameter after permanent volatility component C-5 is highly significant at 0.99681 (p-0.0000), indicating an extremely high degree of longevity and slow mean reversion for the trend component of variance.

Permanent component and shock parameter (C(6) C(7) C(8)); The transitory volatility dynamics are captured by parameters C(6) C(7) C(8), Which are Statistically Significant at 1% level (p-0.0000 to 0.0056) . Specially, the innovation term C (6) is 0.022798 While C7() and C(8) are recorded at 0.045502 and 0.918777 respectively, Validating the decomposition of conditional variance into permanent and transitory component.

Figure 5 - Conditional Variance and Permanent and Transitory Components



Source: *Author's own Calculation*

Conclusion and discussion of empirical findings

The empirical evaluation of the Poland stock market demonstrates that log return exhibit near zero means with high positive Kurtosis (8.308). For volatility clustering and heteroskedasticity ARCH-LM test diagnosed and confirms the presence of robust conditional heteroskedasticity and volatility clustering, Evidence by highly significant F-statistics (259.745) and Obs. R-square values (915.086) at the 1% level. Baseline and GARCH-X model confirm extreme shock persistence and mean -reverting decay properties, where exogenous variables such as opening price and low price exert statistically significant distinct impacts on market variance.

Advanced modeling via the EGARCH models framework establishes a significant leverage effect (C(6)=-0.0489), proving that negative shocks generate higher volatility than positive innovations. Furthermore, the component GARCH model successfully separates variance into a highly persistent permanent trend (C(5)=0.9968) and a transitory component offering critical insights into the risk structure and shock transmission mechanisms within the Poland's financial market.

Authors' Contributions:

The authors contributed equally to this work.

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ORIGINAL PAPER

Energy Output and (De)industrialisation: Redefining the Socio-Economic and Cultural Fabric of the World's Three Major Blocs (EU, US and China)

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Abstract:
Energy production has become a decisive factor shaping the economic competitiveness and industrial development of major global powers. This paper examines the relationship between energy output and processes of industrialisation and deindustrialisation in the world's three major economic blocs: the European Union, the United States, and China. While the United States has strengthened its position through increased domestic energy production, particularly in oil and natural gas, China continues to expand its energy capacity to sustain large-scale industrial growth. In contrast, the European Union faces significant challenges related to energy dependency, rising costs, and energy transition policies, which may influence its industrial competitiveness. These differences in energy availability and strategy are redefining not only industrial production but also the broader socio-economic and cultural fabric of these regions. The study argues that energy output and energy policy will play a crucial role in shaping future patterns of industrial development, labour markets, and geopolitical influence among these three global economic blocs.

Keywords: *the European Union, the United States, China; industrialisation; global economy; energy policy.*

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1. Energy, Industrial Capacity and the Changing Logic of Global Competition

Energy has always been a fundamental component of industrial development, but its strategic significance has increased considerably in the twenty-first century. The international economy is simultaneously undergoing electrification, digitalisation, decarbonisation and geopolitical fragmentation. Each of these processes increases the importance of reliable energy systems. Industrial competitiveness therefore depends not simply on the quantity of energy available, but on the interaction between output, cost, accessibility, technological capability, infrastructure and security of supply. The comparison between the European Union, the United States and China illustrates three markedly different approaches to this problem.

Industrialisation historically required concentrated sources of energy capable of sustaining manufacturing at scale. Coal supported the first industrial revolution, while petroleum, natural gas and electricity became indispensable to subsequent phases of industrial development. In the contemporary economy, the relationship has become more complex. An advanced economy can reduce the energy intensity of each unit of GDP while simultaneously increasing its dependence on electricity for data centres, semiconductor production, electric vehicles, artificial intelligence, advanced manufacturing and the electrification of transport and heating. Energy efficiency does not consequently eliminate the strategic importance of energy output. It changes the form in which energy is required.

A comparison of the three blocs must also distinguish between deindustrialisation as economic evolution and deindustrialisation as loss of productive capacity. In wealthy economies, manufacturing employment may decline naturally as productivity rises and services expand. Such structural change need not represent economic weakness. A more serious form occurs when economically viable production is displaced because firms face persistently higher input costs, inadequate infrastructure, regulatory uncertainty or insufficient access to energy. The distinction is particularly important in Europe. Research examining European economies after the energy shock associated with the war in Ukraine identifies the possibility that energy-intensive industries may relocate outside Europe and stresses the danger of secondary effects when these firms occupy important positions within manufacturing supply chains (Grömling et al., 2023, p. 212).

Energy must therefore be considered an industrial ecosystem variable. A steelworks, chemical complex, battery factory or semiconductor facility does not respond simply to national energy production figures. It responds to predictable prices, grid capacity, continuity of supply, transport networks, environmental requirements, taxation and investment conditions. An energy-rich economy may fail to translate resources into industrial advantage if its infrastructure is deficient. Conversely, an energy-importing economy can remain highly competitive through technological specialisation and energy efficiency. Nevertheless, large differences in energy prices and availability become increasingly important in industries where energy constitutes a substantial share of production costs.

The three blocs examined here embody different configurations. The United States combines enormous hydrocarbon output with nuclear power and rapidly expanding renewable electricity. China combines unparalleled industrial scale with equally ambitious expansion across coal, nuclear, hydroelectric, solar and wind capacity. The European Union possesses significant technological expertise and increasingly large renewable capacity, but it has fewer indigenous fossil-energy resources, considerable variation among member states and a recent history of exposure to imported-energy shocks. The result is not a simple division between winners and losers. Rather, energy is contributing to the creation of three different models of economic organisation, with consequences that extend from factories to employment, regional identities, universities and vocational education.

2. Three Energy-Industrial Models: The United States, China and the European Union

The American energy position has changed significantly since the expansion of shale oil and gas production. Horizontal drilling and hydraulic fracturing transformed resources that had previously been uneconomic into commercially exploitable reserves. This development altered the relationship between the United States and global energy markets. It reduced dependence on imported hydrocarbons, expanded export capacity and provided domestic industry with access to comparatively inexpensive natural gas. The importance of this development is especially visible in industries in which gas functions both as an energy source and as a feedstock, including chemicals, petrochemicals and fertilisers.

Research on the US shale transformation suggests that lower American natural-gas prices relative to European prices contributed to an increase of approximately 3 per cent in industrial activity and approximately 2 per cent in investment, even though the overall effect across the entire manufacturing sector was more limited than claims of a complete manufacturing renaissance might imply (Kirat, 2020, p. 1). Energy abundance therefore does not automatically reverse decades of industrial restructuring, automation or offshoring. What it does provide is a favourable platform upon which industrial policy can operate.

This distinction has become increasingly significant as the United States attempts to strengthen domestic production in strategically important industries. Semiconductor fabrication, battery manufacturing, electric vehicles, artificial intelligence infrastructure and advanced materials require enormous investments in physical assets and electricity networks. Domestic energy resources provide the country with a form of strategic flexibility. Policymakers can promote electrification and renewable generation while retaining substantial oil and natural-gas production. This creates tensions in environmental policy, but it also permits a gradual transition in which conventional and low-carbon energy systems coexist.

China represents a different model. Its economic rise has been inseparable from rapid industrialisation, urbanisation and extraordinary growth in energy consumption. Unlike the United States, China remains heavily dependent on imported oil and gas, while coal continues to provide an important domestic foundation for its energy system. Yet China has responded to vulnerability not through a single energy source but through diversification and scale. It has expanded coal generation while simultaneously becoming the world's central manufacturing base for many renewable-energy technologies. Solar panels, batteries, electric vehicles, wind equipment and important elements of clean-energy supply chains have consequently become part of Chinese industrial strategy.

The relationship between energy and Chinese industrial growth is visible empirically. A study of 37 Chinese industrial sectors found a long-run equilibrium relationship between energy consumption and industrial economic growth, estimating that a 1 per cent increase in energy consumption was associated with a 0.871 per cent increase in real industrial value added (Hu et al., 2015, p. 9400). This does not mean that industrial output must permanently grow at the same rate as energy consumption. Efficiency, technological change and changes in industrial structure can weaken that relationship. It does demonstrate why energy security occupies such a prominent position in China's development strategy.

China's approach also challenges the assumption that decarbonisation necessarily implies deindustrialisation. The country has attempted to transform the energy transition itself into an industrial opportunity. Renewable generation requires factories, minerals, transmission systems, batteries, power electronics and extensive construction. The transition therefore generates new forms of energy-intensive manufacturing even while seeking to reduce the carbon intensity of the energy consumed. This helps explain why Chinese energy policy often appears contradictory when evaluated solely through emissions. Coal can provide near-term energy security while renewables, nuclear power, storage and electrification support a longer-term transformation of the productive system.

The scale of energy-intensive industry remains economically significant. Research using Chinese provincial data from 2000 to 2019 estimated that 23.96 per cent of the effect of economic growth on energy consumption was transmitted indirectly through the development of energy-intensive industries (Ji et al., 2022, p. 12). China's challenge is consequently not whether to choose between industrial development and energy transformation in absolute terms, but how to upgrade industrial production while preventing energy demand, pollution and resource dependency from becoming constraints on future growth.

The European Union confronts the opposite structural dilemma. European integration created one of the world's largest and most sophisticated industrial markets, with major strengths in automobiles, machinery, chemicals, pharmaceuticals, aerospace and specialised manufacturing. Yet Europe has historically depended substantially on imported fossil fuels. The disruption of Russian energy supplies after 2022 exposed the vulnerability created by this model. The consequences were particularly severe for natural-gas-intensive production because European manufacturers had to compete internationally against firms operating under very different energy-cost conditions.

Energy-price competitiveness had already attracted scholarly attention before the crisis. Faiella and Mistretta's analysis of European manufacturing found that energy purchases, which had represented roughly one seventh of labour costs in the first decade of the century, subsequently increased to more than one quarter. Their work also identifies final energy prices as a major contributor to increases in unit energy costs, despite improvements in energy efficiency (Faiella & Mistretta, 2020, p. 19). The European problem is thus not reducible to an absence of technological sophistication. Highly efficient production can still become vulnerable when competitors enjoy structurally cheaper energy.

Europe's energy transition may ultimately reduce this vulnerability. Expanded renewable generation, nuclear power where politically accepted, stronger interconnections, storage technologies, efficiency and electrification could lower dependence on imported hydrocarbons. The critical question is temporal. Industrial investment decisions are made in the present, whereas a fully transformed energy system requires years or decades to construct. If the transition period imposes significantly higher costs before abundant low-carbon electricity becomes available, industries may relocate before the benefits materialise. The strategic problem for Europe is therefore one of sequencing: decarbonisation, energy security and industrial competitiveness must advance together rather than successively.

3. From Energy Systems to Labour Markets, Social Structures and Geopolitical Power

Industrial change affects much more than national GDP. Manufacturing creates networks of suppliers, transport operators, engineers, technicians, research institutions and local services. Large industrial facilities frequently become anchors of regional economies. Their expansion or closure consequently alters employment patterns, tax bases, demographic movements and collective identities.

The United States illustrates how energy production can reshape regions. The expansion of shale development generated investment in areas connected to drilling, pipelines, processing, petrochemicals and associated manufacturing. At the national level, greater domestic production also changed the geopolitical position of the country. Energy exports became an instrument of foreign economic policy, while American LNG acquired particular strategic importance for European countries seeking alternatives to Russian gas.

Yet the social benefits of energy abundance should not be exaggerated. Modern energy production is capital intensive, and advanced manufacturing is increasingly automated. Reindustrialisation in the twenty-first century therefore cannot be expected to recreate the mass factory employment characteristic of the twentieth century. A new semiconductor plant or automated battery factory may be economically and strategically important without employing the numbers associated with earlier industrial complexes. The political vocabulary of "bringing manufacturing back" can consequently conceal a transformation in the kind of manufacturing that returns.

China faces another social configuration. Industrial expansion contributed to one of history's largest movements of people from rural to urban areas and created enormous manufacturing centres integrated into global value chains. Energy availability facilitated not merely economic output but a new social geography organised around cities, ports, industrial clusters and transport corridors. As wages rise and demographic growth slows, however, the sustainability of a model based predominantly on labour-intensive export manufacturing becomes weaker. China increasingly seeks to move toward automation, robotics, high-value manufacturing and technological leadership.

The cultural consequences are considerable. Industrial capacity is increasingly connected with narratives of national modernity and technological sovereignty. Electric vehicles, high-speed rail, nuclear reactors, batteries and renewable technologies are not merely commodities. They can be represented domestically as evidence of scientific capability and national advancement. Energy infrastructure therefore participates in the cultural construction of political legitimacy and collective confidence.

The European experience is more ambivalent. Post-industrial development has often been associated with higher education, services, environmental regulation and quality of life. Yet the decline of manufacturing in particular regions can weaken communities built historically around factories, mines, ports and engineering occupations. Industrial closure may therefore produce a form of cultural as well as economic dislocation. When a steel plant or chemical complex disappears, a region does not simply lose measured output. It can lose occupational traditions, apprenticeship networks, technical knowledge and an important element of local identity.

This helps explain why energy policy can become politically contentious. Consumers view energy through household bills, while industrial workers may view it through employment security. Environmental groups may emphasise emissions reduction, whereas industrial communities may fear that rapid restrictions will transfer production abroad rather than eliminate global emissions. Governments must reconcile these perspectives if the energy transition is to maintain social legitimacy.

The concept of strategic autonomy further strengthens the relationship between energy and geopolitical power. The pandemic, war in Ukraine and growing US-China rivalry have encouraged governments to reconsider the assumption that economic efficiency should always be maximised through globally dispersed supply chains. Semiconductors, batteries, critical minerals, pharmaceuticals and energy technologies are increasingly treated as strategic assets. Industrial policy has consequently returned to political agendas after decades in which many advanced economies placed greater emphasis on liberalisation and market allocation.

Energy output becomes essential within this framework because reshoring or expanding industrial production raises domestic electricity demand. An economy cannot simultaneously electrify vehicles, heating and industry, construct energy-intensive data centres, expand semiconductor production and expect electricity requirements to remain static. Industrial strategy and energy strategy must therefore become integrated.

The divergence among the three blocs is likely to influence international power. The United States possesses strong advantages in resources, technology, finance and higher education. China possesses extraordinary manufacturing depth, infrastructure, scale and state capacity for large projects. The European Union possesses technological expertise, a wealthy integrated market and considerable regulatory influence, but must resolve the tension between ambitious environmental goals and the costs of maintaining industrial capacity during transition. The global balance will depend increasingly on which bloc can combine energy abundance with technological sophistication rather than on energy production alone.

4. Education, Skills and the Cultural Infrastructure of the Energy Transition

The educational implications of these industrial transformations are substantial because energy transitions are ultimately implemented by people. Engineers design grids and reactors, electricians install equipment, technicians maintain industrial machinery, chemists improve batteries, software specialists manage intelligent energy systems, and economists, lawyers and public administrators construct regulatory frameworks. Consequently, the competition among the EU, the United States and China is also a competition over human capital.

This has several implications for educational policy. First, vocational education is likely to regain strategic importance. Industrial economies require large numbers of technicians whose qualifications cannot be replaced simply by increasing university participation. Electricians, welders, specialised construction workers, maintenance technicians, machinists and operators will remain necessary even in highly automated environments. The clean-energy transition adds new specialisations in heat pumps, solar installations, wind turbines, battery systems, hydrogen technologies, smart grids and industrial electrification.

European research already identifies workforce availability as a potential bottleneck. A Joint Research Centre report on skills for the clean-energy transition argues that insufficient numbers of workers with appropriate skills in the appropriate locations can obstruct the green and digital transition. It also notes the continuing difficulty of incorporating standardised clean-transition content into mainstream university and vocational programmes (Czako, 2022, p. 3). This is particularly important for Europe because educational policy must support two transformations simultaneously: replacing declining industrial competencies where old technologies disappear and developing new capabilities fast enough for emerging industries to remain located within Europe.

Second, higher education will become more interdisciplinary. Energy can no longer be treated exclusively as a concern of electrical, mechanical or chemical engineering. The contemporary energy system intersects with artificial intelligence, cybersecurity, international relations, economics, environmental science, law and communication. Future university programmes are therefore likely to combine technical knowledge with systems analysis. An engineer working on an electricity grid may require knowledge of digital systems and cybersecurity. A lawyer working in energy regulation may require an understanding of carbon markets and electricity trading. Economists examining industrial policy must increasingly understand material supply chains and physical infrastructure. This transformation will also place greater pressure on language and communication education to adapt to increasingly specialised and technologically mediated professional environments. In her analysis of English for Specific Purposes, Maria-Magdalena Lăpădat emphasises that contemporary ESP instruction must respond to technological change, learner needs and real professional contexts, incorporating digital literacy and authentic communicative tasks rather than limiting instruction to conventional linguistic structures (Lăpădat, 2025, p. 61). This perspective is particularly relevant to the emerging energy economy. Engineers, energy specialists, technicians and researchers will increasingly operate within international and interdisciplinary environments in which technical expertise must be accompanied by the ability to communicate specialised knowledge, interpret digital information and collaborate across professional and linguistic boundaries.

Third, the meaning of "green skills" itself requires careful consideration. Stroud, Antonazzo and Weinel argue that educational systems should not conceptualise green skills simply as narrow packages of new competencies. Their study of vocational education and the European steel transition emphasises that successful "greening" emerges through the broader functioning of vocational systems, institutions and pedagogical practices (Stroud et al., 2024, p. 343). This interpretation is particularly valuable because the energy transition will modify existing occupations as often as it creates entirely new ones.

The three blocs are likely to follow distinctive educational paths. In the United States, the interaction among universities, private firms, federal laboratories, community colleges and state-level training systems may support rapid specialisation in areas receiving industrial investment. The principal challenge will be geographical and institutional coordination. A new factory cannot depend on national averages of educational attainment. It needs electricians, engineers and technicians in the region in which it operates. Industrial subsidies without local training capacity may therefore encounter labour shortages.

China is likely to continue using the scale of its education system to strengthen engineering, applied sciences and technologically intensive industries. Its enormous manufacturing base provides an additional educational advantage because skills can develop through production itself. Manufacturing knowledge is partly tacit. It consists of experience accumulated by engineers, suppliers and workers in solving practical production problems. Maintaining dense industrial ecosystems therefore creates a feedback mechanism between education and industry. Universities supply knowledge to firms, while industry provides practical problems, employment pathways and technical experience to educational institutions.

Europe possesses world-class universities and strong vocational traditions in several member states, but fragmentation can complicate the alignment of education with industrial strategy. The greatest risk would be a circular process of industrial decline. If industries contract, fewer students may choose technical occupations associated with them; training institutions may reduce specialised programmes; the supply of skilled labour then falls; and firms considering new investments may encounter additional reasons to locate elsewhere. Deindustrialisation can therefore destroy educational capacity as well as productive capacity.

The reverse is also possible. Energy transition can become a mechanism for educational revitalisation. Universities can develop programmes in energy engineering, battery chemistry, advanced nuclear technologies, hydrogen, carbon management, energy economics and grid digitalisation. Vocational schools can form direct partnerships with employers. Micro-credentials and continuing education can permit mid-career workers to adapt without completing entirely new degrees. Industrial regions can transform their technical heritage rather than abandon it.

By the 2030s, successful education systems are therefore likely to treat energy literacy as a broader competency. This does not imply that every student must become an engineer. Citizens will increasingly encounter public debates concerning electricity prices, grid expansion, nuclear energy, renewable generation, carbon taxation, industrial subsidies and energy security. Basic understanding of the economic and environmental trade-offs involved could become an important component of civic education. Energy is becoming sufficiently central to social organisation that energy literacy may eventually occupy a position comparable to digital literacy.

5. Future Trajectories: Energy Abundance, Industrial Strategy and the Reorganisation of Society

The emerging competition among the EU, United States and China suggests that twenty-first-century industrial power will depend on the ability to combine abundant energy, reliable infrastructure, technological innovation and human capital. None of these variables is sufficient independently. Energy without technological capability can leave an economy dependent on commodity exports. Technology without sufficient energy can make advanced production expensive or physically difficult to expand. Industrial subsidies without skilled labour can produce factories that struggle to recruit. Education without productive investment can generate skilled workers who migrate toward stronger industrial ecosystems.

The United States appears well positioned because it can draw on extensive domestic energy resources while simultaneously expanding renewable electricity, nuclear technology and advanced manufacturing. Its principal advantage is optionality. It does not need to complete decarbonisation before providing substantial quantities of energy to expanding industry. The challenge is whether infrastructure, transmission networks and education can keep pace with investment and rising electricity requirements. Political changes may also produce shifts in energy and climate policy, creating uncertainty for long-term industrial projects.

China's principal strength is integration. Energy expansion, infrastructure construction and manufacturing development form part of a mutually reinforcing system.

Its enormous internal market creates demand at a scale that can lower production costs and accelerate technological learning. However, this model faces important constraints, including dependence on imported fuels and raw materials, environmental pressures, demographic change, trade tensions and the possibility that other countries will increasingly protect strategic domestic industries. China's future competitiveness will therefore depend on improving energy efficiency and technological sophistication while reducing vulnerabilities created by its resource-intensive growth model.

The European Union faces the most difficult transition but also one with considerable transformative potential. Europe cannot realistically compete with the United States through equivalent hydrocarbon abundance or with China through identical manufacturing scale. Its comparative strategy must instead integrate efficiency, technological sophistication, low-carbon electricity, circular production and high-value manufacturing. Yet such a model remains viable only if energy costs permit industrial firms to remain internationally competitive.

European deindustrialisation is not inevitable. The danger lies in treating industrial policy, energy policy, environmental policy and education as separate domains. If renewable and nuclear generation, where nationally appropriate, are expanded alongside grids and storage, Europe can reduce external vulnerability. If carbon policy is accompanied by mechanisms that prevent simple relocation of emissions and production, decarbonisation can support rather than undermine strategic autonomy. If universities and vocational institutions are closely connected to emerging industries, technological transition can create new employment pathways rather than simply eliminate old ones.

This leads to a broader conclusion concerning the concept of industrialisation itself. Future industrial power should not be measured solely by the number of people working in factories or by manufacturing's percentage of employment. Advanced industry is increasingly embedded in research, software, logistics, design, services and education. The boundary between manufacturing and the knowledge economy is therefore becoming less clear. A semiconductor plant is simultaneously an industrial facility, an energy consumer, a research ecosystem and a centre of highly specialised human capital. A modern electricity grid is both physical infrastructure and a digital network.

For this reason, energy output is capable of reshaping cultural expectations as well as economic structures. Societies that expand industrial and energy systems may place renewed value on engineering, skilled trades and scientific education. Regions that experience industrial contraction may instead orient their labour markets toward services while confronting the cultural consequences of disappearing productive identities. These transformations influence how societies understand progress, environmental responsibility, work and national economic security.

The most plausible future is consequently neither a straightforward return to twentieth-century industrialisation nor the universal arrival of a post-industrial economy. The United States, China and Europe are entering a period of reindustrialisation under new technological and environmental conditions. Energy is central to that process because artificial intelligence, electrification, advanced manufacturing and decarbonisation all require large quantities of dependable power.

The strategic issue for the three blocs is thus not simply who produces the most energy. It is who can convert energy into durable productive capability while simultaneously maintaining social cohesion, environmental sustainability and educational adaptability. The United States possesses the advantage of resource abundance; China possesses the advantage of industrial scale; the European Union possesses sophisticated institutions, technology and considerable potential for an integrated low-carbon industrial model. Their relative success will depend on how effectively each connects its energy system to manufacturing, labour-market policy, education and technological development.

Energy policy should therefore be understood as a form of social policy and educational policy as much as industrial policy. Decisions made about power generation today will influence where factories are constructed, which regions attract investment, what occupations young people enter, which competencies universities teach and how communities understand their economic future. Industrialisation and deindustrialisation are not merely changes in economic statistics. They reorganise the material and cultural foundations of society. In the emerging global order, the capacity to produce reliable and economically viable energy, and to educate a population capable of transforming that energy into technological and industrial value, will constitute one of the principal determinants of geopolitical power.

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Energy Output and (De)industrialisation: Redefining the Socio-Economic and Cultural Fabric of the World's Three Major Blocs (EU, US and China)

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ORIGINAL PAPER

Fuzzy expert system for analyzing the Thucydides Trap in the US–China competition

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Abstract:
In recent decades, researchers in the field of international relations have sought to model competition and conflicts between states using mathematical or computational methods. Models based exclusively on binary logic have often proved insufficient for describing socio-economic and political variables characterised by ambiguity and uncertainty. In this context, fuzzy logic provides a methodological alternative by introducing the concept of degrees of truth, allowing for a nuanced representation of social phenomena.
This paper proposes the development of a fuzzy expert system entitled SECONF (Expert System for Assessing the Possibility and Probability of Conflict Occurrence between States), designed to analyse the likelihood of the emergence of the Thucydides Trap in the relationship between the United States of America and the People's Republic of China. The system is implemented using Matlab Fuzzy Logic Designer and Simulink and integrates nine key variables that capture the geopolitical, economic, and military dimensions of the bilateral relationship. The experimental results indicate a high probability of a Thucydides Trap-type scenario, confirming trends also highlighted by traditional geopolitical analyses.

Keywords: *fuzzy logic, expert systems, Thucydides Trap, geopolitics, international relations, conflict prediction*

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Introduction

Over time, numerous attempts have been made to develop mathematical models of conflicts between states (Omwenga V. O., Singh C. B., Manene M. M., Pokhariyal G. P., 2015; Nickholas Shallcross and Darryl Achner, 2019; Stephen L. Quackenbush and Frank C. Zagare, 2010; Frank C. Zagare, 2007). These models have sought to transform complex social variables into binary variables that can be processed by computers. The approach based on the principle of the excluded middle, rooted in Aristotelian logic, has long dominated Western logical and philosophical thinking.

This principle states that for any proposition, either the proposition or its negation must be true, with no possibility of a third value. While this model has proved effective in the exact sciences, its application to the social sciences has been problematic, as socio-political reality is characterised by ambiguity and gradation.

Fuzzy logic, introduced by Lotfi Zadeh in the 1960s, represents a fundamental paradigm shift. Unlike binary logic, it allows for degrees of truth between 0 and 1, thereby facilitating the modelling of complex phenomena and human perceptions (James. K. Peckol, 2021: 9-10; Hung T. Nguyen, Carol L. Walker, Elbert A. Walker, 2019:2-4). Through the use of fuzzy logic, it becomes possible to analyse socio-economic variables expressed in linguistic terms such as: very low, low, medium, high, and very high.

This approach is particularly useful in analysing competition between great powers (Tshilidzi Marwala, Monica Lagazio, 2004; Huilai Zhi, Jinhai Li, Yinan Li, 2022; Myron S. Karasik, 2023), especially in the case of the relationship between the United States and China, often described in the literature through the concept of the Thucydides Trap. (Graham Allison, 2015; Graham Allison, 2017: 29; Enescu Madalin Ciprian, 2025).

According to Graham Allison the Thucydides Trap is a concept to describe the systemic competition between the hegemon and the rising power inside an international power system. The name came from the competition between Sparta and Athens during the Peloponnesian Wars, when the two power dispute their hegemony to the city-states system in the Ancient Greece. In order to support this theory Graham Allsion analyzed 16 cases where the power transition took place, in 12 of these cases the power transition took place after a war, but in four cases the transition was peaceful and the rising power manage to become the new hegemon (Graham Allison, 2017: 30-33).

Computational Systems for Conflict Analysis

In the field of international relations, several software tools have been developed for conflict analysis. Among these are:

- **Violence Early-Warning Systems (VIEWS)**

This system, developed by Uppsala University and the Peace Research Institute Oslo, analyses the probability of the occurrence of armed conflicts using historical databases on political violence. The model focuses primarily on intrastate conflicts and has a predictive capacity of up to approximately 36 months.

The software uses data collected over the period 1990–2020 and focuses particularly on Africa and the Middle East. Although a more recent version, *fatalities002*, has already been released, the system remains largely concentrated on specific types of conflict rather than interstate ones. Nevertheless, its predictive capability can extend to up to 36 months(VIEWS, 2026; The Views Team, 2022:5).

- **International Futures (IFS)**

International Futures is a software tool designed to analyses how certain global trends may generate conflicts or even social crises. It began to be developed during the Cold War period and incorporates several analytical modules, including demography, agriculture, energy, economics, politics, and the environment. Each of these modules employs a set of specific variables in order to generate predictions regarding global trends. To simplify the analysis, countries are grouped into geographical regions, allowing for the observation of the dynamics and interactions among the main variables used by each module, with a predictive horizon extending to the year 2100.

The analysis of interstate conflicts is conducted through the political module, in which the developer of this software has included variables such as fiscal policy, the distribution of state revenues, variables assessing mutual threats between states and the likelihood of their escalation into arms races and potential conflict, as well as variables capturing social changes associated with state development.

However, despite the inclusion of such variables, the software relies heavily on global trends driven by demographic, technological, and economic development and does not directly analyse the underlying causes that may generate interstate conflicts (Barry B. Hughes, 2002: 151-175).

The Proposed Expert System: SECONF

First, it must be clarified whether the classical design of a fuzzy-based expert system (Constantin Virgil Negoita, 1985; Itisha Gupta, Garima Nagpal, 2020: 321-322) still makes sense for analyzing a problem in the context of contemporary ML/LLM/GenAI systems. The specialized literature (Hafsaa Ouifak, Ali Idri, 2025) confirms that it does — but not as a universal solution, and not in the same form in which it was viewed during the classical era of expert systems.

Today, a fuzzy expert system remains particularly relevant when the problem exhibits the following characteristics:

- expert knowledge exists and can be formulated as rules;
- explainability is important;
- data are scarce, noisy, or difficult to label;
- the domain requires predictable and auditable behavior — for example, industrial control, technical diagnosis, risk assessment, or engineering decision support.

Recent literature continues to treat fuzzy logic as a relevant tool precisely because of its interpretability, its ability to handle uncertainty, and its integration with XAI and hybrid ML approaches, rather than as an "obsolete" technology (Hafsaa Ouifak, Ali Idri, 2025).

What has changed is its positioning:

1. it no longer competes directly with deep learning or large language models in tasks where abundant data are available and raw performance is required;
2. it performs favorably in contexts where linguistic rules such as "if temperature is high and vibration is moderate, then risk is high" are needed — that is, where human understanding and the ability to modify the system are essential. Recent reviews highlight exactly this niche: fuzzy logic enhances the interpretability of opaque models but has limitations in terms of scalability and optimization (Hafsaa Ouifak, Ali Idri, 2025).

More specifically, its use is justified when:

- a transparent model is required;

- the number of variables is relatively small and their relationships can be expressed semantically;
- the domain is stable;
- human experts are able to define meaningful membership functions and rules.

These conditions are met in the case of our problem (a risk assessment): analyzing the probability of the emergence of the Thucydides Trap between the United States and China (Graham Allison, 2015; Graham Allison, 2017: 29; Enescu Madalin Ciprian, 2025). Accordingly, we have developed the SECONF expert system.

The implementation was carried out using MATLAB (Yi Chen, Long Huang, 2024), Fuzzy Logic Designer (The MathWorks Inc, 2023), and Simulink (The MathWorks Inc, 2026). The system employs a set of nine main linguistic variables:

1. Strategic Interests (IntStrat)
2. Ideological Differences (DifId)
3. Cooperation (Colab)
4. Power Competition (ComPu)
5. Cultural Differences (DifCult)
6. Economic Competition (CompEc)
7. Alliances and Treaties (AlTrat)
8. Transnational Challenges (ProvTrans)
9. Military Conflict Potential (PotConflMil)

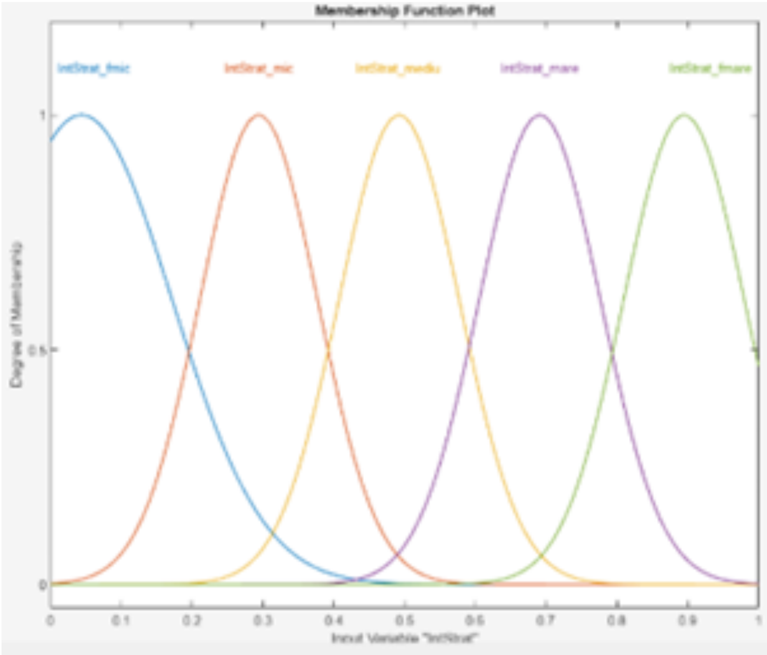
Each variable can take one of the following linguistic values: very low, low, medium, high, and very high. The system's output variable is SECONF, a Mamdani-type fuzzy output expressing the probability of the emergence of the Thucydides Trap.

The simple fuzzy variables are Cooperation (Colab) and Economic Competition (CompEc), while the others are complex composite variables. The complex variables are derived through the combination, via fuzzy subsystems, of secondary variables that are semantically related. Some of these secondary variables, in order to reduce the overall system complexity, are assigned only binary truth values (singleton, Yes or No) as well as linguistic truth values: very low, low, medium, high, and very high.

4.Modelling the Fuzzy Variables

The system variables are of two types: fuzzy and Boolean. A linguistic variable is described by a set of linguistic values, and each linguistic value is associated with a membership function that expresses the degree to which each numerical value of the variable belongs to that linguistic description, as shown in Figure 1.

Figure 1 Representing a variable with multiple degrees of truth through membership functions



- **Strategic Interests**

  The IntStrat variable is composed of four primary variables:
  1. interest in natural resources;
  2. interest in territories;
  3. access to maritime routes;
  4. geopolitical influence.

  The first three variables take binary values (true/false), while geopolitical influence is expressed in fuzzy degrees.

- **Ideological Differences**

  This variable is defined through two components:
  - divergent ideologies
  - incompatibility of political systems

  Both components are treated as binary values.

- **Cooperation**

  Colab is a binary variable (YES/NO) that measures the extent to which countries engaged in competition are willing to cooperate in order to address bilateral or international issues, or to reduce existing tensions between them.

- **The struggle for power**

  The ComPu variable comprises two components:

• competition for expanding the sphere of influence
• competition for maintaining the sphere of influence

Both are expressed in fuzzy degrees.

- **Cultural differences**

This binary variable refers to the existence of cultural differences between different states. These may include cultural differences generated by language, customs and traditions (*DifCult_Cult*); and religions, superstitions, religious beliefs or religious ethics (*DifCult_Rel*).

- **Economic competition**

Economic competition is modelled using a fuzzy variable with five degrees of truth.

- **Alliances and treaties**

This binary variable refers to the way in which states that are in the Thucydides Trap form or adhere to a series of international alliances or treaties. In this case, it concerns alliances and treaties with military purposes (*AlTrat_Mil*) and security purposes (*AlTrat_Sec*), whether they are offensive or defensive.

- **Transnational challenges**

ProvTrans represents one of the most complex variables in the proposed system. Through this variable, we measure whether countries engage in addressing key international challenges, such as transnational terrorism *(ProvTrans_Ter),* nuclear proliferation *(ProvTrans_PAN),* and climate-related issues that may have an impact on the international system *(ProvEcol).*

- **Military conflict potential**

The **PotConflMil** variable includes:

  - nuclear power
  - military size
  - military budget

Military size is determined by:

  - number of ships
  - number of personnel
  - number of aircraft

The data used are drawn from The Military Balance (2009–2023), which made a comprehensive image regarding the way the US and China military forces and military budgets (The Military Balance 2009-2023). In order to obtain the results of the variables we use the data from the *The Military Balance* and put them in separate categories. Each category was designed using the biggest value from each section, navy, infantry and avion. We also limit the types of the units we used because in the China's case the data were not so relevant in this period of time and it was impossible to compare them with those from the US. Also, there was a shift in the period of 2010-2013 when the Chinese army changed itself from a soviet style army, where the heavy infantry and heavy ships were used to more modern technology, where they use more lighter and fastest ships, build at least three aircraft carrier placed in the north, west and south regions of the Pacific Ocean. On the other hand, the Ukrainian war started in 2022, had showed that a drone war will be more effective than a conventional war in the next years.

Using this data, the results are transformed into fuzzy degrees based on numerical intervals.

a. Fuzzy System Rules

The analysis is based on a set of **64 fuzzy** rules, defined in the form: *IF condition1 AND condition2 ... THEN result*

Weights between **0** and **1** are applied to the rules, determining their influence on the final outcome [15].

The fuzzy rule set was carefully constructed, given that the accuracy, realism, and validity of the results depend on it. Obtaining correct outputs from the system is as important as the model's structure. Figure 2 shows the way it is loaded into the system, while Figure 3 illustrates a possible modification after running the model.

Figure 2 The way in which the final rules were entered into the designed system

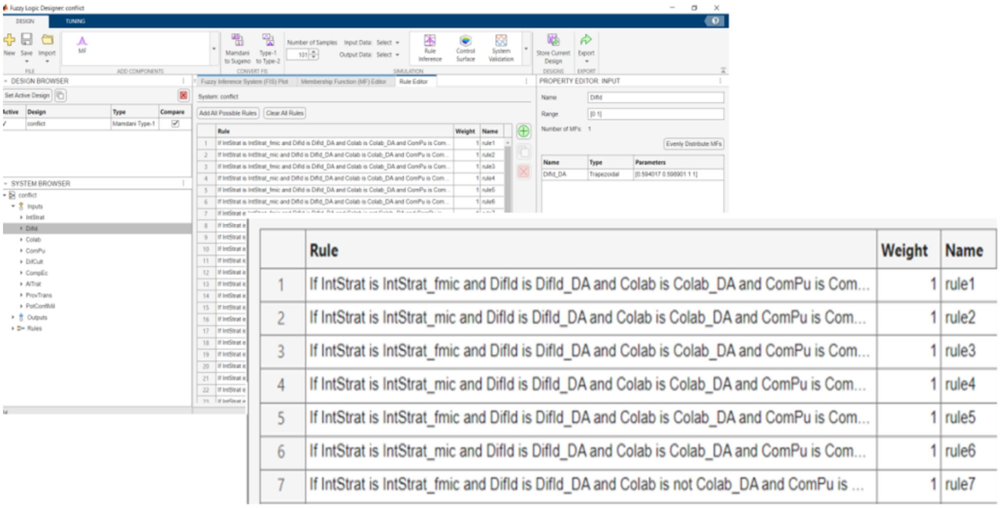
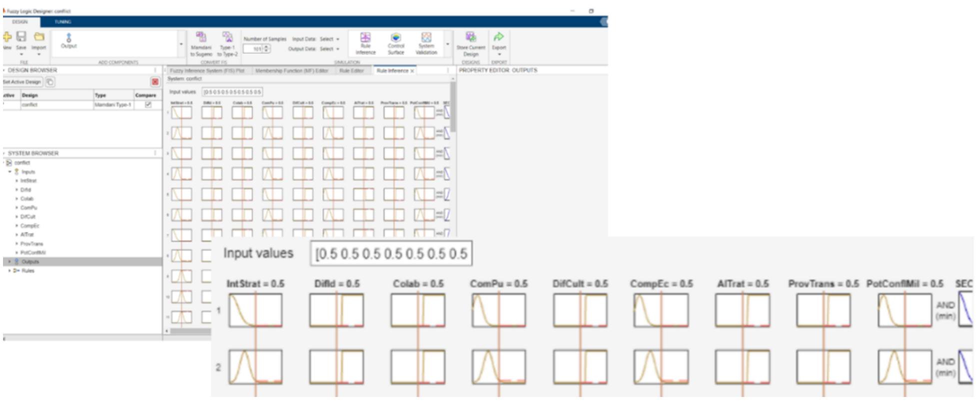


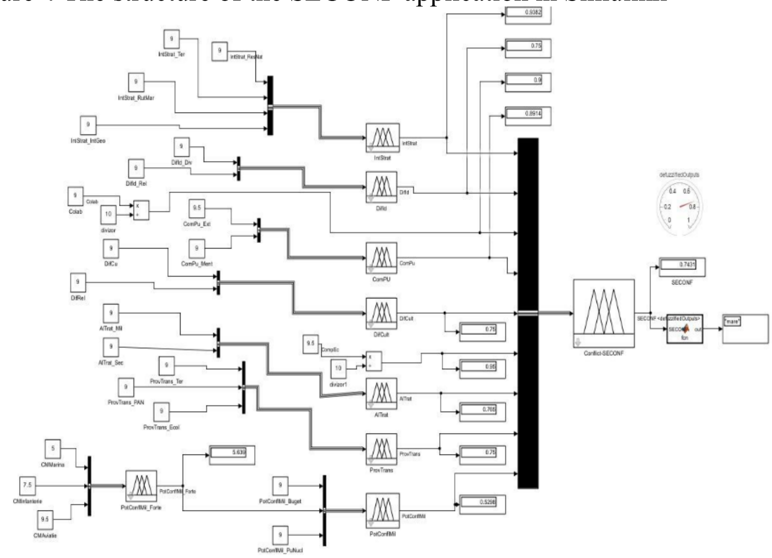
Figure 3 The way in which modifications can be made to the analysis rules after running the program



- System Implementation

The next stage in the construction of this system is the development of the program in which the fuzzy inference systems (FIS) are connected in order to obtain both the main variables and the final output. In this respect, Figure 4 illustrates graphically the way in which the program was designed; thus, on the left-hand side the input data can be observed, while on the right-hand side the final result is displayed.

Figure 4 The structure of the SECONF application in Simulink



A graphical display module has also been added for the final value generated by the system, so that users who are not familiar with such models can view on screen both the fuzzy linguistic output and the numerical value corresponding to the respective degree of truth.

It should be noted that the final value resulting from the analysis of the main variables is a numerical value, representing a degree of truth ranging between 0 and 1. In this way, the interval between 0 and 1 has been divided into five distinct response categories.

Thus, a value between:

- [0, 0.2] represents a very low probability;
- [0.2, 0.4] a low probability;
- [0.4, 0.6] a medium probability;
- [0.6, 0.8] a high probability;
- [0.8, 1] represents a very high probability.

At the end, the system will analyse each value and rule entered by the user and will display in the graphical output module both the resulting value and the corresponding degree of truth.

This system output is assigned to a variable called SECONF, which represents for the user the degree to which the Thucydides Trap between the USA and China is likely, or not, to occur.The system architecture is illustrated in Figure 1.

The left side of the system contains the input variables, while the right side displays the final output.

The final SECONF value is expressed numerically on a 0–1 scale, which allows the probability of conflict occurrence to be interpreted:

SECONF	**Conflict Occurrence**
0 – 0.2	very low probability
0.2 – 0.4	low probability
0.4 – 0.6	medium probability
0.6 – 0.8	high probability
0.8 – 1	very high probability

- Experimental Results

The system was tested using several sets of values. For eight testing versions (Vt1–Vt8), using the values specified in Table 1, the results shown in Table 2 were obtained. It should be noted that the test values were considered within the context of the model under study, namely the USA–China competition.

Table 1. Table of Variables SECONF (Test versions: Vt1 – Vt8)

No.	Vt1	Vt2	Vt3	Vt4	Vt5	Vt6	Vt7	Vt8	Primary Variables		Composite Variables	Fuzzy Result
1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	IntStrat_ResNat		IntStrat (1)	SECONF
2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	IntStrat_Ter			
3	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	IntStrat_RutMar			
4	High	High	High	Very High	High	Very High	Very High	High	IntStrat_InfGeo			
5	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	DifId_Diver		DifId (2)	
6	No	Yes	Yes	Yes	Yes	No	No	No	DifId_Incomp			
7	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Colab		Colab (3)	
8	Very High	High	High	Very High	Very High	High	Very High	Very High	ComPu_Ext		ComPu (4)	
9	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	ComPu_Ment			
10	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	DifCult_Cult		DifCult (5)	
11	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	DifCult_Rel			
12	Very High	Very High	High	Very High	Very High	Very High	Very High	Very High	CompEc		CompEc (6)	
13	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	AlTrat_Mil		AlTrat (7)	
14	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	AlTrat_Sec			
15	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	ProvTrans_Ter		ProvTrans (8)	
16	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	ProvTrans_PAN			
17	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	ProvEcol			
19	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	PuNucl		PotConflMil (9)	
20	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	CMMarina	PotConflMil_Forte		
21	High	High	High	High	High	High	High	High	CMInfantry			
22	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	CMAviation			
23	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	PotConflMil_Budget			

Table 2. Results obtained from running the program using the test values in Table 1

Nr.crt.	**Valori de test**	**SECONF**
1	Vt1	Very High
2	Vt2	High
3	Vt3	High
4	Vt4	High
5	Vt5	High
6	Vt6	Very High

7	Vt7	High
8	Vt8	High

- Analysis of the USA–China Scenario

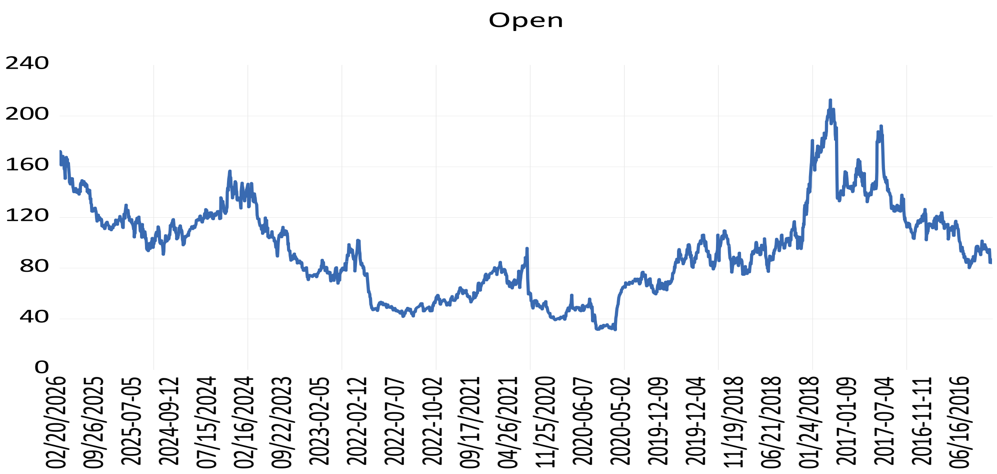
For the scenario considered the most realistic, the variable values are presented in Table 3.

Table 3. Main values established to test the occurrence of the Thucydides Trap in the case of USA–China relations

<table>
<tr><th>No.Item</th><th>Variable Values</th><th colspan="2">Primary Variables (II)</th><th>Fuzzy Composite Variables (IV)</th></tr>
<tr><td>1</td><td>Yes</td><td colspan="2">IntStrat_ResNat</td><td rowspan="4">IntStrat (1)</td></tr>
<tr><td>2</td><td>Yes</td><td colspan="2">IntStrat_Ter</td></tr>
<tr><td>3</td><td>Yes</td><td colspan="2">IntStrat_RutMar</td></tr>
<tr><td>4</td><td>Very High</td><td colspan="2">IntStrat_InfGeo</td></tr>
<tr><td>5</td><td>Yes</td><td colspan="2">Difid_Diver</td><td rowspan="2">DifId (2)</td></tr>
<tr><td>6</td><td>Yes</td><td colspan="2">Difid_Incomp</td></tr>
<tr><td>7</td><td>Yes</td><td colspan="2">Colab</td><td>Colab (3)</td></tr>
<tr><td>8</td><td>High</td><td colspan="2">ComPu_Ext</td><td rowspan="2">ComPu (4)</td></tr>
<tr><td>9</td><td>Very High</td><td colspan="2">ComPu_Ment</td></tr>
<tr><td>10</td><td>Yes</td><td colspan="2">DifCult_Cult</td><td rowspan="2">DifCult (5)</td></tr>
<tr><td>11</td><td>Yes</td><td colspan="2">DifCult_Rel</td></tr>
<tr><td>12</td><td>Very High</td><td colspan="2">CompEc</td><td>CompEc (6)</td></tr>
<tr><td>13</td><td>Yes</td><td colspan="2">AlTrat_Mil</td><td rowspan="2">AlTrat (7)</td></tr>
<tr><td>14</td><td>Yes</td><td colspan="2">AlTrat_Sec</td></tr>
<tr><td>15</td><td>Yes</td><td colspan="2">ProvTrans_Ter</td><td rowspan="3">ProvTrans (8)</td></tr>
<tr><td>16</td><td>Yes</td><td colspan="2">ProvTrans_PAN</td></tr>
<tr><td>17</td><td>Yes</td><td colspan="2">ProvEcol</td></tr>
<tr><td>18</td><td>Yes</td><td colspan="2">PotConflMil _PuNucl</td><td rowspan="5">PotConflMil (9)</td></tr>
<tr><td>19</td><td>Medium</td><td>CMMarina</td><td rowspan="3">PotConflMil _Forte</td></tr>
<tr><td>20</td><td>Very High</td><td>CMInfanterie</td></tr>
<tr><td>21</td><td>High</td><td>CMAviatie</td></tr>
<tr><td>22</td><td>Very High</td><td colspan="2">PotConflMil_Buget</td></tr>
</table>

The final result indicates a high probability of a Thucydides Trap-type situation occurring. The result is illustrated in Figure 5.

Figure 5. Result of the analysis performed for the values using the SECONF program



Conclusions

The paper presented the development of a fuzzy expert system for the analysis of interstate conflicts. The SECONF system demonstrates that fuzzy logic can be used to model complex geopolitical phenomena.

The results suggest that:

• The strategic competition between the United States and China is significant.
• The risk of a Thucydides Trap-type situation occurring is high.

However, the final outcome regarding the emergence of a conflict remains dependent on the **human factor**, which can alter the course of events through political and diplomatic decisions.

Authors' Contributions:

The authors contributed equally to this work.

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ORIGINAL PAPER

The Main Elements of Romania's Demographic Decline

Georgiana Virginia Bonea[1], Mihai Horia[2]

Abstract:
Romania confronts a profound demographic crisis that threatens the fundamental socio-economic structures of the country, manifesting through a sustained decline in natural population growth over the past three and a half decades. This study examines the principal components of Romania's demographic decline through quantitative secondary data analysis, utilizing national statistics from INS, Eurostat, and United Nations databases to assess population dynamics from 1990 to 2025. The research reveals a dramatic demographic transformation following the post-communist transition, characterized by the population decreasing from approximately 23 million inhabitants in 1990 to 19,053,815 inhabitants recorded at the 2021 census, the most recent national enumeration. The analysis demonstrates that Romania entered a period of negative natural increase beginning in 1992, which has persisted uninterruptedly, with the fertility rate remaining consistently below the replacement level of 2.1 children per woman. Contributing factors include massive emigration of the reproductive-age population, profound socio-economic transformations, changing reproductive behaviors, economic instability, and the devastating impact of the COVID-19 pandemic, which exacerbated mortality rates in 2020. The study identifies an accelerated demographic aging process, with the elderly population exceeding the young population and the dependency ratio increasing from 15.6% in 1990 to 31.2% in 2024. Population projections indicate a continued decline, with Romania potentially reaching 16 million inhabitants by 2050, representing a 12.7% decrease over the 2030-2050 period, necessitating comprehensive policy interventions to address this demographic challenge.

Keywords: *Romania, natural increase, birth rate, mortality, aging population.*

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Introduction

Over the past three and a half decades, Romania has faced a continuous decline in natural population growth, generating a profound demographic crisis that threatens the country's fundamental socio-economic structures. This demographic transformation represents one of the most significant challenges facing contemporary Romanian society, with implications extending far beyond statistical observations to encompass fundamental questions about national viability, economic sustainability, and social cohesion.

The magnitude of this crisis is reflected in the dramatic reduction of Romania's population from approximately 23 million inhabitants in 1990 to 19,053,815 inhabitants recorded at the 2021 census, the country's most recent national enumeration, representing a loss that has fundamentally altered the country's demographic landscape and raised urgent concerns about its long-term development trajectory. By integrating multiple statistical sources, this study offers a systematic analysis of quantitative secondary data to examine the primary drivers of Romania's demographic decline. Drawing upon national statistics provided by the Romania's National Institute of Statistics (INS), supplemented by Eurostat databases and United Nations demographic projections, this research traces the evolution of Romania's population dynamics across the period from 1990 to 2025. The analytical framework encompasses multiple demographic indicators, including birth rates, mortality patterns, fertility trends, natural increase, population aging processes, life expectancy, dependency ratios, and emigration flows, enabling a multidimensional understanding of the demographic transition that has characterized post-communist Romania.

The demographic collapse that commenced following the events of 1989 marks a decisive rupture with previous population trends. Romania transitioned abruptly from a regime characterized by pronatalist policies and population growth to one defined by persistent natural decrease and accelerating demographic decline. Beginning in 1992, Romania entered a period of negative natural increase that has continued uninterrupted through the present day, representing an unprecedented duration of demographic contraction that distinguishes the country's experience within the broader European context.

This sustained negative trajectory reflects the convergence of multiple interrelated factors, including massive emigration flows particularly concentrated among the reproductive-age population, profound socio-economic transformations associated with the post-communist transition, fundamental shifts in reproductive behaviors and family formation patterns, protracted periods of economic instability, and the exacerbating impact of the COVID-19 pandemic, which delivered a devastating blow to mortality rates in 2020 and subsequent years.

The analytical approach employed in this study relies primarily on secondary data research, utilizing time-series statistical information to document long-term demographic trends and identify critical inflection points in Romania's population evolution. While this methodological framework provides robust empirical foundations for understanding demographic patterns, it is important to acknowledge certain inherent limitations, particularly regarding the unavailability of the most recent statistical information for certain indicators, which can affect the precision of assessments concerning the latest demographic rhythms.

Beyond documenting the quantitative dimensions of population decline, this research illuminates the accelerated process of demographic aging that has fundamentally restructured Romania's population composition. The analysis reveals that the elderly population now significantly exceeds the young population, with the dependency ratio increasing dramatically from 15.6% in 1990 to 31.2% in 2024, creating mounting pressures on pension systems, healthcare provision, and social welfare structures. This demographic aging process, combined with sustained low fertility rates that have remained consistently below the replacement level of 2.1 children per woman, establishes conditions for continued population decline that demographic projections suggest will persist well into mid-century.

The structure of this article proceeds through examination of the key dimensions of Romania's demographic crisis. Beginning with an analysis of population trends and natural increase patterns, the study moves to the investigation of birth rates, fertility dynamics, and mortality evolution. Subsequent sections address the processes of population aging, dependency ratio increases, life expectancy trends, and emigration patterns, each supported by empirical evidence drawn from statistical sources.

Current trends in Romania's demographic structure: The demographic decline in the last 35 years

Despite the importance of secondary data in socio-demographic research, this analysis faces major hurdles due to a lack of up-to-date statistics on Romanian population trends, making it difficult to spot ongoing patterns. Furthermore, the study is constrained by broader gaps in data continuity, timeframes, and indicator compatibility, issues that were particularly pronounced during times of political shifts and administrative restructuring. Given these constraints, this analysis draws primarily on two authoritative sources: Eurostat and INS. From Eurostat, we utilize data on life expectancy by age and sex (2024), fertility indicators including the total fertility rate (2025a), population structure with an emphasis on the old-age dependency ratio (2025b), and emigration statistics (2025c). These sources provide harmonized European-level data that ensure cross-national comparability. To complement these datasets and capture country-specific trends, we incorporate several INS publications: methodological clarifications (2015), analyses of migration phenomena (2023a), the Demographic Events Yearbook (2023b), the Romanian Statistical Yearbook (2024), the final results of the 2021 Population and Housing Census (2023c), and the most recent population estimates by domicile as of January 2025 (2025). A methodological caveat is in order: Eurostat indicators are calculated on the resident (de facto) population, while the INS press releases on the population by domicile (de jure) capture all Romanian citizens with legal domicile in Romania regardless of where they actually live. As of 1st January 2025 these two figures differ by roughly 2.7 million persons (21.74 million by domicile against 19.04 million resident), reflecting the scale of post-1990 emigration; we flag the relevant figure type at each point in the analysis where the distinction matters.

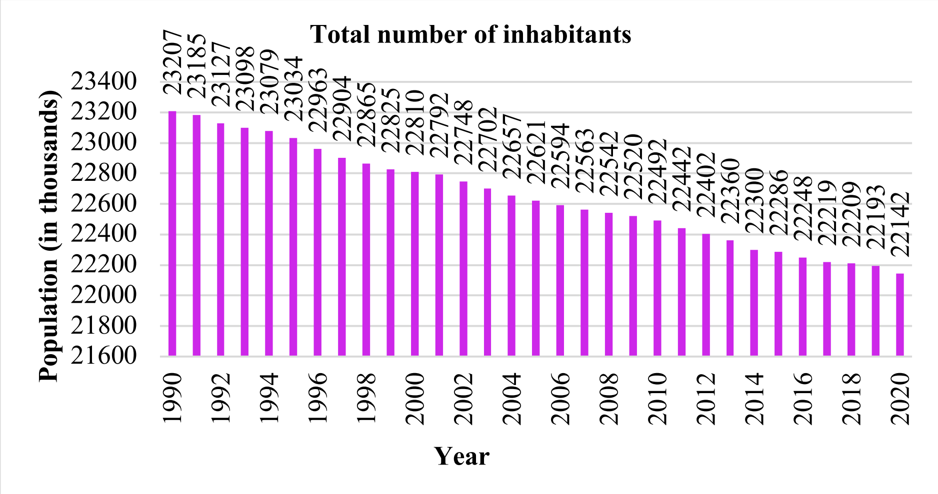
Over the last three and a half decades, Romania's post-1989 socio-economic transition triggered significant demographic shifts, characterized by a sharp decline in natural growth; specifically, the positive natural growth of the 1980s, driven by a total fertility rate above 2.1 children per woman, quickly reversed after 1990, dropping to 1.6 (Tudorel & Ghețău, 2021). Also, the massive emigration of Romanians outside the country's borders after 1990 accentuated the demographic decline (Kiss, 2015) (Chart 12 & Chart 13). Following the December 1989 fall of communism, Romania's turbulent socio-political and economic transition triggered large-scale emigration as millions sought individual freedom, stability, and better living standards. This exodus yielded dual consequences, improving the lives of emigrants and their families through remittances, while simultaneously fueling a demographic crisis characterized by brain drain and internal socio-economic imbalances (Sandu, 2005a; Ionescu, 2008; Cristian, Bărăgan & Mustea, 2017). Driven by a declining young population (Chart 9), fewer live births (Chart 3), and a falling fertility rate (Chart 4), the increasing share of the elderly population consequently elevates the overall mortality rate (Chart 5 & Chart 6). Therefore, Romania is facing a deep demographic crisis, with its population decreasing from approximately 23 million inhabitants in 1990 to 19,053,815 at the 2021 Population and Housing Census—the country's most recent national enumeration (INS, 2023c) (Chart 1 & Chart 2). The country is also experiencing accelerated demographic aging, which has profoundly altered its population structure (Chart 9), driven in part by a continuous increase in life expectancy (Chart 11).

This negative evolution poses a critical long-term challenge for Romania's socio-economic development, heavily impacting pensions, the labor market, healthcare, and education. The primary drivers of this decline include the post-communist socio-economic transformations of the 1990s, incoherent pronatalist policies, and economic instability after 1989 (Ghețău, 2004; Mihalache, 2008). These factors shifted reproductive behaviors toward delayed childbearing, as both women and men prioritized career and education investments over family formation. This dynamic was further exacerbated by heavy emigration among the young, reproductive-aged population and, more recently, the devastating impact of the 2020 COVID-19 pandemic (Chart 5 & Chart 6).

During the analysis, we observe that the year 2020 brought considerable changes to the population's reproductive decisions, while simultaneously registering increased mortality rates and a decrease in life expectancy (Tudorel & Ghețău 2021).

Whereas in 1990 the total population of Romania was 23,207,000 inhabitants, by 2020, it had decreased to 22,142,000 inhabitants. More precisely, the total decrease during the analyzed period is approximately 1,065,000 people. Therefore, the population of Romania has been decreasing consistently. Starting in 1993, a clear trend of demographic decline has been observed that continues uninterruptedly until 2020. This represents a decrease of over 1 million people (approximately 5%) within 30 years. The first significant decrease occurs during the difficult economic transition period of the 1990s, together with massive emigration, especially of the labor force. A second period of more pronounced decrease is observed after 2007, coinciding with Romania's accession to the European Union, which facilitated emigration even further. At the same time, the downward trend continues and is maintained in the period between 2010 and 2020 (Chart 1).

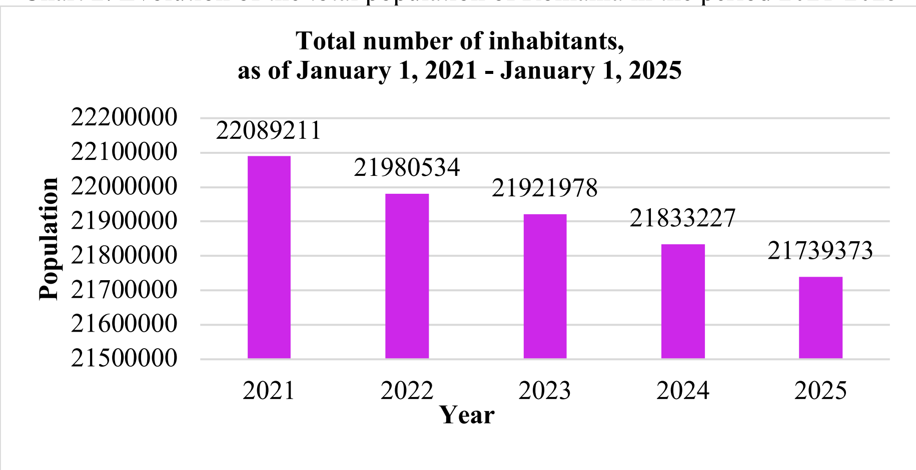
Chart 1. Evolution of the total population of Romania between 1990 and 2020



Source: Tudorel & Ghețău, 2021.

The last five years (2021-2025) are very important for observing the decreasing trend of Romania's population, especially after the negative impact left by the COVID-19 pandemic. In these last five years, Romania's population decreased by 349,838 people, which represents a reduction of approximately 1.58% of the population. The rate of decrease appears to be relatively constant, averaging approximately 70,000 people annually (Chart 2).

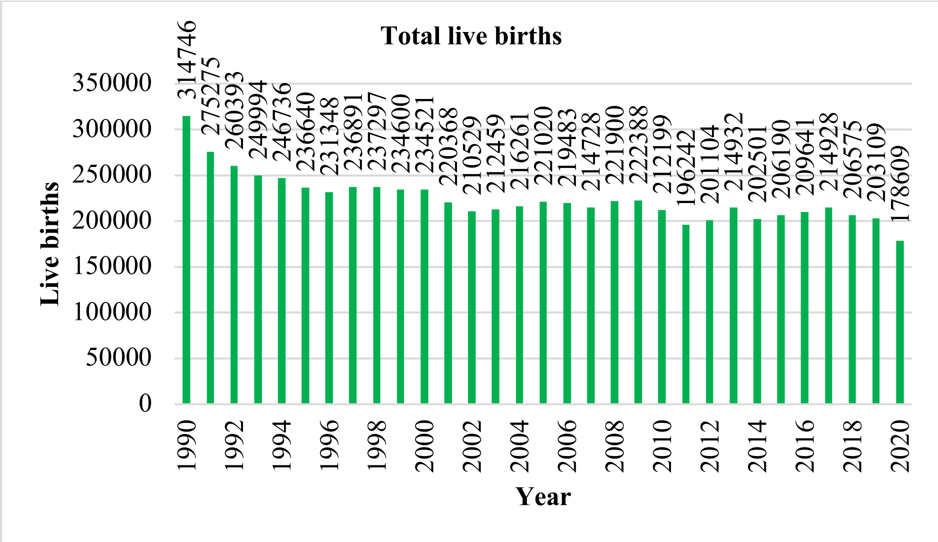
Chart 2. Evolution of the total population of Romania in the period 2021-2025



Source: INS, 2024, Anuar statistic and INS, 2025, Comunicat de presă.

Romania's birth rate has declined sharply across the analysed period. In 1990, Romania recorded a total of 314,746 live births; by 2020 the number had dropped to 178,609, a reduction of almost 43% in 30 years. The decline has been slow but continuous: 2011 marked an interim low (196,242 live births), followed by a slight recovery and then a renewed steep fall in 2020 (Chart 3).

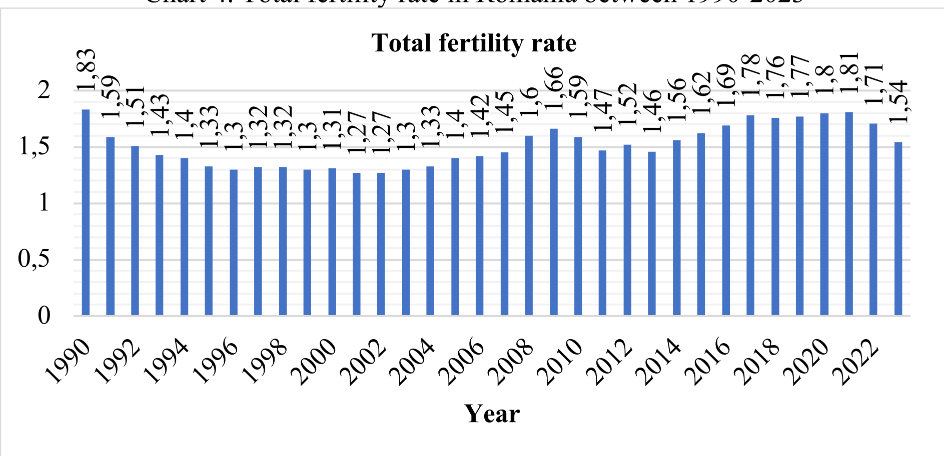
Chart 3. Evolution of live births in Romania between 1990-2020



Source: Tudorel & Ghețău, 2021.

A total fertility rate of approximately 2.1 children per woman is conventionally taken as the replacement threshold for Romania's generations (Eurostat, 2025a). Romania has remained below this threshold without exception since 1991. The period 1990–2003 was marked by a steep decline: from 1.83 children per woman in 1990 down to a minimum of 1.27 in 2001-2002. Between 2004 and 2023 the rate recovered slightly, reaching a relative peak of 1.66 in 2009, but stayed below replacement throughout, ending at 1.54 in 2023. A total fertility rate persistently below the replacement level inevitably feeds population aging and a rising old-age dependency ratio (Chart 4).

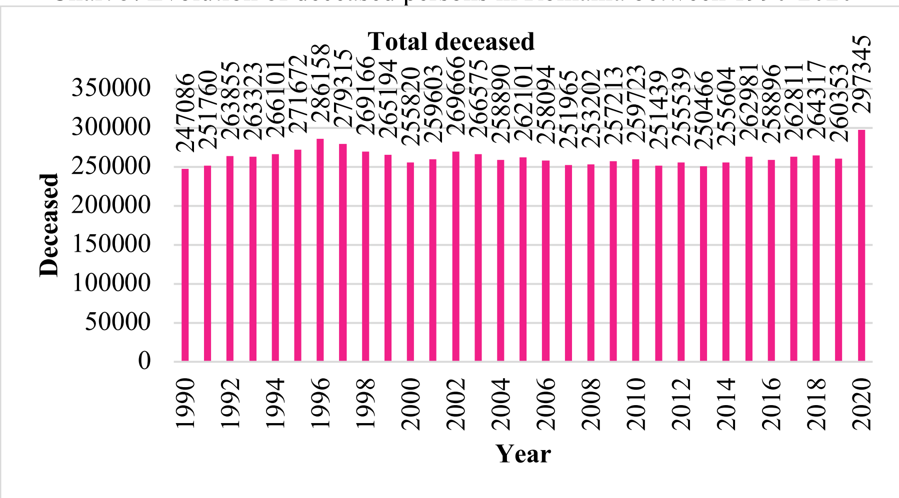
Chart 4. Total fertility rate in Romania between 1990-2023



Source: Eurostat, 2025a.

The total number of annual deaths in Romania has remained relatively constant across the analysed period, with notable fluctuations only at the endpoints. Between 1990 and 1996 deaths rose from 247,086 to 286,158, a period that coincides with the early post-communist transition and its negative effects on living standards, access to medical services, and socio-economic stress (Neagu, 2000). Annual deaths then settled into a narrow band, 279,315 in 1997, 250,466 in 2013, 255,604 in 2014, 260,353 in 2019, reflecting relative stability against a background of population aging. In 2020, deaths jumped to 297,345, the highest figure in the entire analysed period. The principal driver was the COVID-19 pandemic: hospitals were partially or fully reorganised to treat COVID-19 patients, scheduled consultations and interventions for patients with chronic illnesses were postponed or cancelled, and a medical system already underfunded and short of human and material resources came under enormous additional pressure. Social isolation and quarantine compounded matters by aggravating sedentary behaviour and pre-existing mental health problems (INS, 2023b; Chart 5).

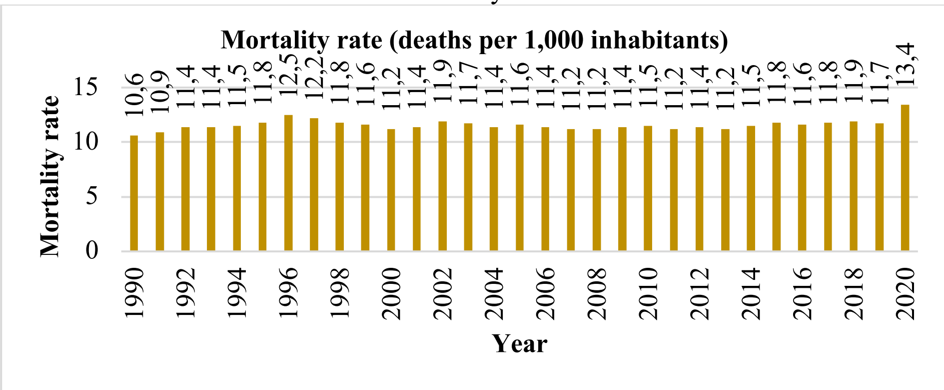
Chart 5. Evolution of deceased persons in Romania between 1990-2020



Source: Tudorel & Ghețău, 2021.

Romania's mortality rate has consistently exceeded its birth rate, producing a negative natural increase and contributing to the overall population decline (INS, 2023b). The general trend over three decades is one of slight increase with minor year-on-year fluctuations. The rate stood at 10.6 deaths per 1,000 inhabitants in 1990, the lowest value in the analysed period, rose to a local peak of 12.5 in 1996, and reached 13.4 in 2020 under the impact of the COVID-19 pandemic, the highest level recorded between 1990 and 2020 (Chart 6).

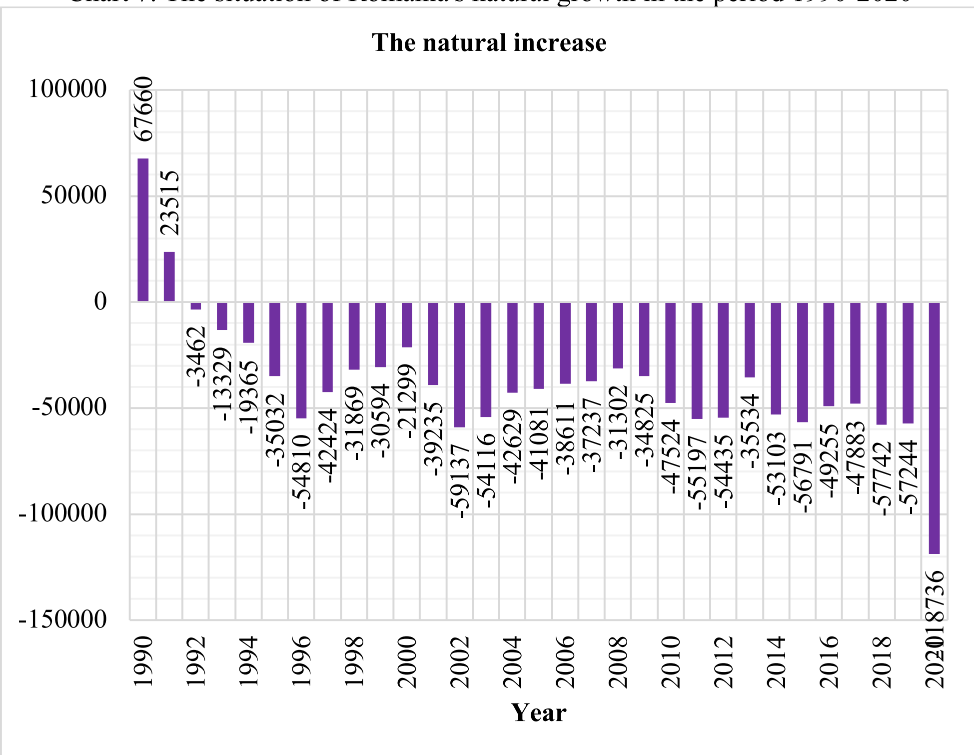
Chart 6. Romania's mortality rate from 1990 to 2020



Source: Tudorel & Ghețău, 2021.

The pattern of natural increase in Romania reverses sharply in the early 1990s. In the first two years after the fall of the communist regime, 1990 and 1991, Romania still recorded a positive natural increase (67,660 in 1990, 23,515 in 1991). From 1992 onwards the country entered a period of negative natural increase that has continued without exception ever since. The deficit deepened rapidly, reaching −54,810 in 1995, −21,299 in 2000, −47,524 in 2010, and culminated in 2020, when negative natural increase reached −118,736 inhabitants, the worst figure in the analysed period (Ghețău, 2018; Chart 7).

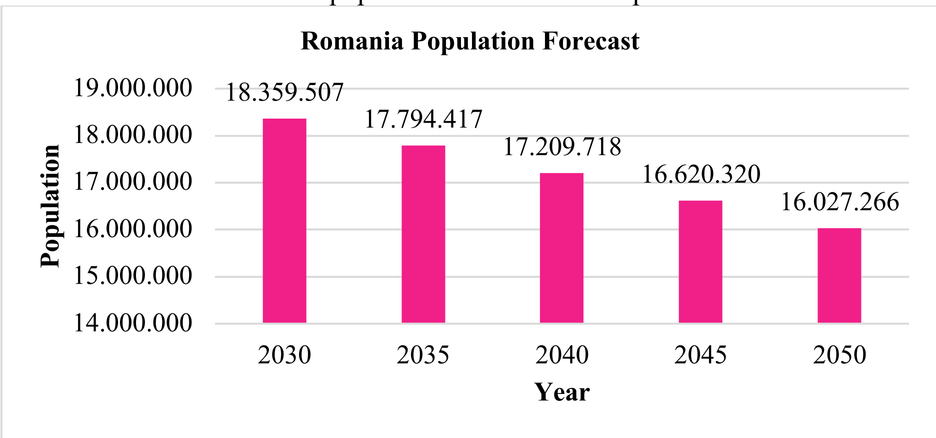
Chart 7. The situation of Romania's natural growth in the period 1990-2020



Source: Tudorel & Ghețău, 2021.

The population forecast for Romania is quite grim. In 2030, the country's population could reach 18,359,507 inhabitants, and five years later, it could decline to around 17,794,417 inhabitants. In 2040, the population would reach 17,209,718 inhabitants, while in 2050, only 16,027,266 inhabitants would remain. This forecast indicates a total decrease of around 2.33 million inhabitants, representing 12.7% over the period 2030-2050. The rate of decrease seems to be relatively constant, with an average loss of around 116,000 inhabitants per year. Romania already has a low birth rate, while the mortality rate is high, and emigration remains high as well. The process of population aging will become increasingly pronounced in the coming years. The demographic challenges caused by the dramatic population decline are multiple and will have long-term socio-economic consequences (Chart 8).

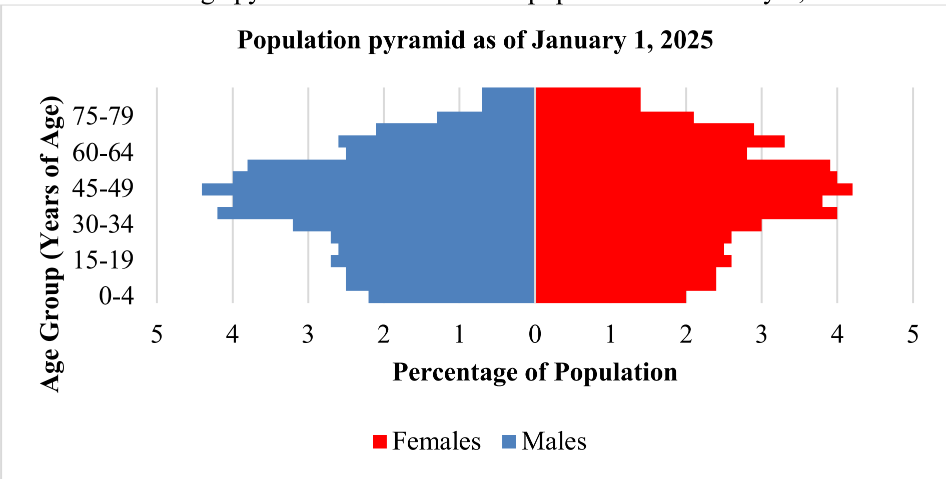
Chart 8. Romania's population forecast for the period 2030-2050



Source: United Nations, 2025.

The age pyramid of the Romanian population by domicile (de jure) as of January 1, 2025 highlights a pronounced demographic aging trend, characterized by a declining population and an unbalanced distribution by age groups. At that date Romania had a population by domicile of approximately 21.74 million inhabitants, against a resident (de facto) population of approximately 19.04 million, both down on the previous year. The largest share in the total was held by the 45–49 age group, representing 8.6%. The young population (0–14 years) declined to only 14.0% of the total, while the elderly population (65 years and over) rose to 18.6%, exceeding the young population by over 32%. The mean age was 42.9 years, up by 0.4 years on January 1, 2024. The median age reached 43.7 years, an increase of 0.5 years over the same period, indicating general aging. The demographic aging index increased to 132.4 elderly persons per 100 young persons, against 126.8 in the previous year. The challenges posed by population aging include labour shortages and mounting pressure on the public health and pension systems (Chart 9).

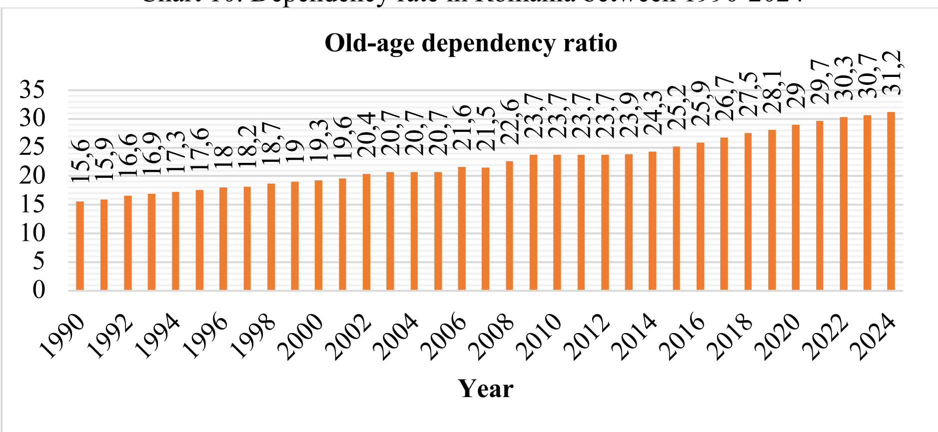
Chart 9. Age pyramid of the Romanian population on January 1, 2025



Source: Processed after: INS, Comunicat de presă, 2025.

The old-age dependency ratio — the ratio of the population aged 65 and over to the population aged 15 to 64 (INS, 2015; Eurostat, 2025b) — has risen steadily across the analysed period. Between 1990 and 2008 the increase was relatively slow and gradual, from 15.6% to 22.6%. After 2008 it accelerated sharply, reaching 31.2% in 2024. Across the entire period 1990–2024 the ratio recorded a constant rise without any significant period of decrease. A higher old-age dependency ratio means more pensioners per active taxpayer, forcing the Romanian state to readjust its welfare redistribution system; a smaller active population relative to dependants will also make tax collection structurally more difficult (Chart 10).

Chart 10. Dependency rate in Romania between 1990-2024

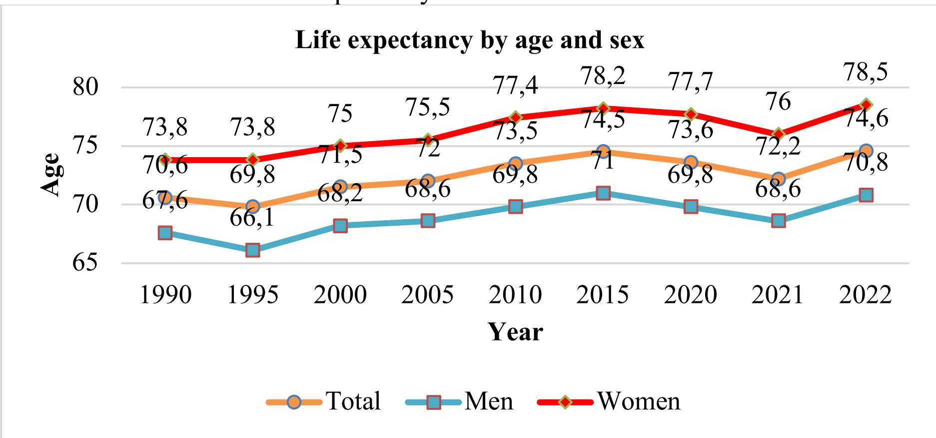


Source: Eurostat, 2025b.

The evolution of life expectancy in Romania between 1990 and 2022 shows a constant and significant gender gap of roughly 7–8 years in favour of women. In 1990, total life expectancy stood at 70.6 years (67.6 for men, 73.8 for women). Two periods of more pronounced decline for men stand out, 1995–2000 and 2015–2021; the male minimum of

66.1 years was reached in 1995. The maximum for women, 78.5 years, was reached in 2022. The 2021 decline is attributable to the mortality impact of the COVID-19 pandemic. Although Romania has made significant progress in increasing life expectancy between 1990 and 2019, it remains among the lowest in the European Union (Eurostat, 2024; Mărginean, 2016), and the gender gap points to specific issues of lifestyle and unequal access to health services (Chart 11).

Chart 11. Life expectancy in Romania between 1990-2022



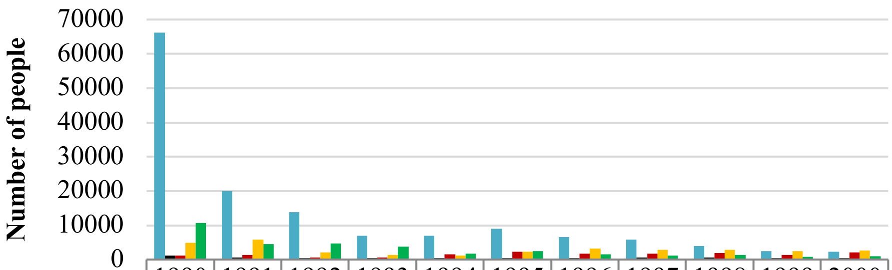
Source: Eurostat, 2024.

After the fall of socialism, starting in 1990, Romania's borders opened and Romanians were able to leave their country, most of them in search of a better life (INS, 2023a).
Chart 12 reveals a dramatic transformation in Romanian permanent emigration patterns between 1990 and 2000, characterized by the dominance and subsequent collapse of Germany as the primary destination alongside the gradual emergence of Italy as an increasingly significant migration corridor. Germany received an exceptional 66,121 permanent emigrants in 1990, representing the overwhelming majority of total emigration flows and reflecting a consistent initial exodus that declined to just 20,001 emigrants in 1991 and continued falling to 2,216 by 2000. Hungary similarly experienced a decline from 10,635 emigrants in 1990 to 881 by 2000, suggesting the exhaustion of ethnically motivated migration flows. In contrast, Italy had a different trajectory, rising from modest levels of 1,130 emigrants in 1990 to 2,142 by 2000, with notable growth particularly evident from 1994 onward when Italian emigration exceeded 1,580 annually and maintained relatively stable levels thereafter. The United States represented a third distinct pattern, receiving between 1,078 and 5,770 emigrants annually with no clear upward or downward trend, while Israel maintained small but consistent flows ranging from several hundred emigrants per year.
Between 1990 and 1993, Romania experienced a substantial compensatory migration wave constituted predominantly by citizens of German ethnic origin who had been prevented from emigrating before 1989, alongside movements toward Israel, Turkey, and Hungary, particularly among ethnic minorities (Sandu, 2005b). This initial phase recorded exceptionally high emigration volumes, with annual outflows ranging between 30,000 and 100,000 individuals, reflecting both the pent-up migration pressure accumulated during the communist period and the sudden liberalization of border controls following the regime change. The subsequent period from 1994 to 1996 witnessed a substantial

moderation in emigration intensity, with annual flows declining to approximately 20,000 emigrants per year, suggesting a normalization following the initial post-revolutionary exodus. This was followed by an even more pronounced reduction between 1997 and 1999, when emigration flows diminished to roughly 11,000 persons annually, representing the lowest levels of the decade (Dospinescu & Russo, 2018). However, this apparent stabilization proved temporary, as the late 1990s marked the beginning of a fundamental reorientation in Romanian migration patterns.

From 1996 onward, westward migration began to predominate, with Italy and Spain emerging as increasingly significant destination countries for Romanian emigrants. This shift reflected both the gradual liberalization of European migration policies and the development of migration networks that facilitated access to Western European labor markets (Sandu, 2005a). The transformation of migration destinations during this period laid the groundwork for the massive flows that would characterize the post-2000 era, particularly following Romania's eventual accession to the European Union in 2007 (Chart 12).

Chart 12. Permanent emigrants by destination country



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Germany	66121	20001	13813	6874	6880	9010	6467	5807	3899	2370	2216
Israel	1227	519	463	324	417	316	418	554	563	326	433
Italy	1130	1396	528	645	1580	2195	1640	1706	1877	1415	2142
USA	4924	5770	2100	1245	1078	2292	3181	2861	2868	2386	2723
Hungary	10635	4427	4726	3674	1779	2509	1485	1244	1306	774	881

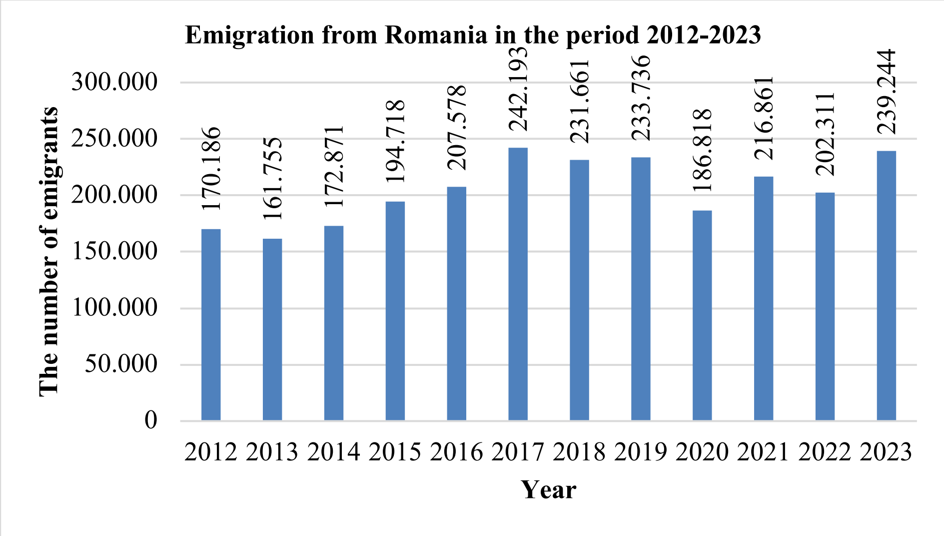
Axis Title

Germany Israel Italy USA Hungary

Source: INS Tempo, 2025, data series POP309D.

The number of emigrants increased significantly from 170,186 people in 2012 to 239,244 people in 2023, representing an increase of approximately 40%. A considerable decrease occurred in 2020, with 186,818 emigrants, probably influenced by travel restrictions during the COVID-19 pandemic. After 2020, the emigration flow gradually increased, reaching 239,244 in 2023 (Chart 13).

Chart 13. The situation of emigration from Romania in the period 2012-2023



Source: Eurostat, 2025c.

Conclusions

The comprehensive analysis of Romania's demographic evolution over the past three and a half decades reveals a profound and sustained demographic crisis that fundamentally threatens the country's socio-economic foundations and long-term sustainability. The evidence presented demonstrates an unequivocal pattern of demographic decline that commenced following the post-communist transition and has persisted with concerning consistency through 2025.

This demographic transformation represents one of the most significant challenges facing contemporary Romanian society, with implications that extend far beyond mere statistical observations to encompass fundamental questions about national viability and social cohesion. The demographic trajectory initiated in 1990 has resulted in substantial population decline from approximately 23 million inhabitants to 19,053,815 by the 2021 census, the country's most recent national enumeration, representing a loss of over 4 million people within a single generation. This reduction reflects not merely temporary fluctuations but rather a structural transformation that has fundamentally altered Romania's demographic landscape. The acceleration of this decline in recent years, particularly following the COVID-19 pandemic, underscores the vulnerability of an already fragile demographic system to external shocks and suggests that without decisive intervention, the trajectory toward demographic decline will continue unabated.

The systematic analysis of birth rates reveals a precipitous decline in reproductive capacity that constitutes the primary driver of Romania's demographic crisis. The reduction from 314,746 live births in 1990 to 178,609 in 2020 represents a decrease of nearly 43% over three decades, indicating a fundamental shift in reproductive behavior and family formation patterns.

This decline transcends temporary economic adjustments to reflect deeper structural changes in Romanian society, including evolving lifestyle preferences, career prioritization, and changing perceptions of family obligations. The persistence of this downward trend, even during periods of relative economic stability, suggests that the factors influencing reproductive decisions have become deeply embedded in contemporary Romanian culture. Complementing the birth rate decline, the fertility rate analysis demonstrates Romania's persistent inability to achieve demographic replacement levels, with the total fertility rate remaining consistently below the critical threshold of 2.1 children per woman since 1991. The nadir reached in 2002-2003, when fertility dropped to 1.27 children per woman, illustrates the severity of Romania's reproductive crisis. Despite modest improvements in subsequent years, the fertility rate has stabilized at levels insufficient for generational replacement, condemning Romania to continued demographic decline unless dramatic changes occur in reproductive behavior or immigration patterns compensate for natural increase deficits.

The mortality patterns observed throughout the analyzed period reveal concerning trends that exacerbate Romania's demographic challenges. While mortality rates remained relatively stable through most of the post-communist transition, the dramatic spike in 2020 due to the COVID-19 pandemic exposed the fragility of Romania's demographic equilibrium.

Perhaps the most alarming finding concerns the uninterrupted negative natural increase that has characterized Romania since 1992, representing over three decades of demographic decline without a single year of natural population growth. This unprecedented duration of negative natural increase distinguishes Romania from other European countries experiencing demographic transitions and suggests that the country has entered a phase of serious demographic decline. The progression from modest negative values in the early 1990s to the significant -118,736 recorded in 2020 illustrates the accelerating nature of this crisis and the compounding effects of sustained demographic imbalances. The population forecasts extending through 2050 paint an increasingly concerning picture of Romania's demographic future, projecting a continued decline to approximately 16 million inhabitants by mid-century. This represents a total population loss of nearly 30% from 1990 levels, placing Romania among the most demographically challenged countries in the global context.

The demographic aging process revealed through age structure analysis represents a parallel crisis that compounds the challenges posed by overall population decline. The transformation from a relatively young population in 1990 to a society where elderly persons outnumber youth by a ratio of 127.5 to 100 illustrates the rapidity of Romania's demographic transition. The median age increases to 43.2 years and the average age of 42.5 years position Romania among the most aged societies in Europe, with profound implications for economic productivity, innovation capacity, and social dynamism. The escalating dependency ratio, which has doubled from 15.6% in 1990 to 31.2% in 2024, represents perhaps the most immediate threat to Romania's economic sustainability. This dramatic increase means that each working-age individual must support an increasingly larger dependent population, creating unsustainable pressures on pension systems, healthcare provision, and social services.

The emigration patterns documented since 2012 reveal the loss of human capital that further compounds Romania's demographic challenges. The emigration of over 200,000 individuals annually, primarily from younger, educated demographic cohorts, represents not only immediate population loss but also the depletion of reproductive potential and economic productivity. This brain drain effect creates a vicious cycle whereby demographic decline reduces economic opportunities, encouraging further emigration and accelerating the demographic crisis. The gender disparities in life expectancy, while reflecting improvements in healthcare and living standards, also highlight the disproportionate impact of demographic aging on social systems. The 7-8 year gap between male and female life expectancy creates additional complexities for pension planning and healthcare provision while contributing to the feminization of aging in Romanian society.

Romania's demographic crisis represents a multifaceted challenge that demands comprehensive policy responses addressing reproductive incentives, healthcare system strengthening, economic development strategies that retain human capital, and immigration policies that can partially compensate for natural increase deficits. The window for effective intervention is rapidly closing, as the momentum of demographic decline becomes increasingly difficult to reverse once critical thresholds are crossed. The demographic decline documented in this analysis constitutes not merely a statistical phenomenon but an existential challenge that will define Romania's trajectory throughout the twenty-first century and beyond.

Authors' Contributions:
The authors contributed equally to this work.

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ORIGINAL PAPER

The Impact of the War in Ukraine on Sustainable Development and Global Economic Resilience

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Abstract:
The recent escalation of geopolitical tensions, with special emphasis on the war in Ukraine, has led to various consequences, which are not limited only to the theatre of war but have significant effects on the global trajectory of sustainable development. It is evident from existing literature that wars have various effects, including those on the economic, environmental, and political dimensions of sustainable development, not only on the regions directly involved in the war but also on distant regions through global economic, environmental, and political systems.
The Russian-Ukrainian conflict shows that military aggression can have a simultaneous effect on the integrity of the environment, the economy, and social welfare. The damage to infrastructure, industrial accidents, and military activities all contribute to the degradation of the environment, which includes pollution, loss of biodiversity, and the disruption of ecosystems. At the same time, the Russian-Ukrainian conflict has heightened the global economic pressures by disrupting the energy sector, the food supply chain, and the inflation rate globally.
In addition to immediate damage to ecosystems, war is responsible for long- term damage to the environment, which can last for decades. Wars lead to pollution of soil, deforestation, and water pollution. Today, people are referring to it as ecocide, with a focus on the massive damage done to the environment as a result of wars. The complex nature of these impacts, therefore, suggests that sustainable development cannot be pursued without the consideration of geopolitical stability. The case in Ukraine demonstrates the vulnerability of SDGs strategies in the face of extensive conflicts, thus underscoring the need to incorporate resilience, environmental conservation, and cooperation in the formulation of future sustainable development policies. The understanding of these dynamics is imperative in the formulation of more effective governance policies aimed at promoting sustainable development in an unstable geopolitical environment.
Keywords: *Sustainable development, armed conflict, ecological impact, global economy, SDGs.*

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The Impact of the War in Ukraine on Sustainable Development and Global Economic Resilience

Introduction

The outbreak of the Russian-Ukrainian war in February 2022 marked one of the most significant geopolitical ruptures of the twenty-first century, fundamentally altering the trajectory of global stability, economic systems, and international cooperation. While the immediate human cost of the conflict has been immense (displacing millions of people, devastating urban infrastructure, and causing tens of thousands of casualties) the ramifications of the war extend far beyond the theatre of conflict itself. The war has generated a set of interconnected crises across energy, food, environment, and governance that have reverberated throughout global systems, undermining decades of progress toward sustainable development and testing the resilience of international institutions designed to preserve peace and promote shared prosperity.

In the years preceding the invasion, the global community had reaffirmed its commitment to the 2030 Agenda for Sustainable Development, a transformative framework structured around the seventeen Sustainable Development Goals (SDGs) adopted by the United Nations in 2015. These goals encompassed ambitious targets related to poverty eradication, clean energy access, climate action, responsible consumption, and the promotion of peace and inclusive institutions (SDG 16). Ukraine itself had been making measured progress toward several of these objectives, with particular advancement in areas related to affordable and clean energy (SDG 7), industry and infrastructure (SDG 9), and life on land (SDG 15), prior to the full-scale invasion. The war, however, not only reversed much of this progress domestically but also disrupted the global systems upon which SDG implementation depends, exposing a critical and often underappreciated vulnerability: the indissoluble link between geopolitical stability and sustainable development.

The consequences of the Russia-Ukraine conflict are not confined to any single dimension of sustainability. Rather, they manifest as a complex, interlocking set of crises that simultaneously affect the economic, environmental, and social pillars of the sustainable development paradigm. From an economic standpoint, the war triggered immediate and severe disruptions to global energy markets. Prior to 2022, the European Union sourced over 40% of its natural gas from Russia, a structural dependency that became acutely exposed when supply disruptions and pipeline sabotage forced an emergency reconfiguration of European energy supply chains. In the immediate aftermath of the invasion, prices of oil, coal, and natural gas spiked by approximately 40%, 130%, and 180% respectively within the first two weeks, generating inflationary shockwaves that were transmitted across global commodity markets.

The agricultural dimension proved equally destabilizing. Ukraine and the Russian Federation together account for a substantial share of global wheat, maize, and sunflower oil exports, making the disruption of Black Sea trade routes a direct threat to food security in importing nations across Africa, the Middle East, and South Asia. The Food and Agriculture Organization (FAO) warned that the conflict, compounded by preexisting inflationary pressures from the COVID-19 pandemic recovery, risked pushing approximately 23 million additional people into chronic hunger by 2030 compared to a scenario without the war. The Black Sea Grain Initiative, brokered in 2022, temporarily alleviated some of these pressures, facilitating the export of over 84 million tonnes of grain and foodstuffs between May 2022 and September 2023, but its collapse underscored the fragility of conflict-era international agreements.

The environmental consequences of the war have been equally alarming and have attracted growing scholarly and policy attention. The conflict has inflicted an estimated

€52.4 billion in environmental damage, including approximately €27 billion related to air quality degradation alone. Military operations have affected over 3 million hectares of forest, including protected ecological zones, while fires ignited by artillery have burned over 100,000 hectares of natural ecosystems. The deliberate detonation of the Kakhovka Dam in June 2023 released over 14 cubic kilometres of water, causing widespread flooding, the destruction of critical freshwater habitats, the loss of endangered species, and the eradication of a rare sterlet sub-population. These events have intensified the legal and ethical discourse around the concept of ecocide (the large-scale destruction of ecosystems) prompting calls for formal recognition under international criminal law.

Despite the growing volume of literature examining the economic and geopolitical dimensions of the Russia-Ukraine conflict, the academic scholarship addressing its comprehensive impact on sustainable development remains fragmented. Existing studies tend to treat the economic, environmental, and social consequences of the war as separate analytical objects, without sufficiently exploring the systemic interdependencies that link these dimensions within the broader SDG framework. Recent empirical work has begun to address the relationship between geopolitical risk and sustainable development outcomes, confirming that geopolitical instability exerts significant negative effects on economic development, energy security, and environmental sustainability across multiple country contexts. However, the Ukraine case provides an unprecedented opportunity to examine these dynamics in real time and at a global scale, given the centrality of both Russia and Ukraine to world energy and food supply chains.

Furthermore, the war has catalysed a set of paradoxical policy responses that complicate the sustainability transition. European governments, in seeking to rapidly diversify away from Russian fossil fuels, have faced difficult trade-offs between short-term energy security and long-term decarbonisation commitments. While some analysts argue that the crisis has ultimately accelerated Europe's renewable energy transition by increasing the urgency of energy independence, others caution that emergency investments in liquefied natural gas (LNG) infrastructure risk creating new forms of carbon lock-in that undermine climate goals. These tensions highlight the extent to which the war has forced a fundamental re-evaluation of the relationship between geopolitical security and sustainability governance.

Against this backdrop, the present paper investigates the multi-dimensional impact of the Russia-Ukraine war on sustainable development and global economic resilience. It advances the argument that the pursuit of sustainable development cannot be effectively operationalised in contexts of acute geopolitical instability, and that the existing SDG framework requires a more explicit integration of conflict prevention and resilience-building mechanisms. The paper further contends that the Ukraine case reveals structural vulnerabilities in the global governance architecture (particularly in the domains of energy security, food supply chain management, and environmental protection) that demand coordinated international responses grounded in principles of sustainability, equity, and long-term resilience.

Theoretical Framework

The concept of sustainable development has its intellectual roots in the landmark report Our Common Future, published in 1987 by the World Commission on Environment and Development, commonly known as the Brundtland Commission. In this seminal document, sustainable development was defined as „development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland Commission, 1987). This definition established the foundation for a tripartite model of sustainability, structured around three interdependent pillars: economic growth, social equity, and environmental protection. The Brundtland Commission's contribution was not merely definitional; it emphasized the systemic interconnectedness of these three dimensions, arguing that meaningful progress in any single domain could not be sustained without commensurate advances in the others.

The operationalisation of this conceptual framework at the global level was significantly advanced by the adoption of the United Nations 2030 Agenda for Sustainable Development in 2015. As argued by Sachs (2015), the SDG framework represents a "goal-based approach to development" that integrates the economic, social, and environmental dimensions within a coherent international policy architecture (Sachs, 2015). The seventeen Sustainable Development Goals, accompanied by 169 specific targets, constitute a universal roadmap for collective action, encompassing objectives that range from the eradication of poverty (SDG 1) and the promotion of clean energy (SDG 7) to the protection of life on land (SDG 15) and the promotion of peace and inclusive institutions (SDG 16). This framework fundamentally repositioned sustainability from a sectoral concern to a cross-cutting imperative embedded in the governance architecture of 193 UN member states.

The relationship between geopolitical risk and sustainable development has received growing scholarly attention, particularly in the aftermath of major conflict events that have exposed the structural fragilities of the SDG implementation process. Geopolitical risks, broadly defined as the risk of events associated with wars, terrorist acts, and political tensions that disrupt the peaceful evolution of international relations, have been shown to exert significant negative effects on multiple dimensions of sustainable development (Caldara & Iacoviello, 2022).

From a theoretical standpoint, geopolitical instability affects sustainable development through three primary channels: economic disruption, environmental degradation, and institutional erosion. Recent empirical work conducted on a panel of 41 countries spanning the period 2015-2021 found that elevated geopolitical tensions significantly hinder progress towards the SDGs, with the most pronounced effects observed in Decent Work and Economic Growth (SDG 8) and Climate Action (SDG 13). The study further demonstrated that the negative effects were particularly acute in countries with high natural resource dependency, a finding of direct relevance to the Ukraine context, given the centrality of energy and grain resources to the conflict's global repercussions. Importantly, Nguyen et al. (2023) found that improvements in institutional quality could partially offset the detrimental effect of geopolitical risks on SDG progress, underscoring the governance dimension of sustainable development resilience.

More broadly, Wang et al. (2025) conducted a global analysis examining the impact of armed conflict on SDG progress between 2000 and 2021, employing causal inference methods and machine learning techniques. Their findings revealed that armed conflicts slowed overall SDG progress by 3.43%, equivalent to a developmental setback of approximately 18 years. Furthermore, their analysis showed that SDG 15 (Life on Land) was severely affected by both interstate and intrastate conflicts, with consequences lasting well beyond the cessation of hostilities. The non-linear relationship between increasing conflict intensity and SDG regression identified by these authors suggests that beyond certain thresholds of violence, the reversibility of development gains becomes highly uncertain as a finding that resonates strongly with the scale of the Russia-Ukraine war.

The relationship between geopolitical risk and environmental sustainability has also attracted dedicated empirical inquiry. Studies examining countries in the BRICS group have found that geopolitical risk increases the ecological footprint of national economies while constraining investments in renewable energy and clean technology (Li et al., 2024). Similarly, Wang et al. (2024), focusing on Asian economies, confirmed that geopolitical risk reduces environmental quality, as captured by the load capacity factor, while financial development and renewable energy consumption exert the opposite effect. These findings align with a broader theoretical proposition articulated in the sustainability governance literature: that geopolitical instability creates short-termist political economies in which environmental commitments are deprioritised in favour of immediate security and economic stabilisation objectives.

The theoretical literature on armed conflict and development has long recognised that wars simultaneously undermine the economic, social, and environmental dimensions of sustainability, though the interdependencies among these dimensions have been less systematically theorised. From the economic dimension, conflicts generate destruction of physical capital, displacement of productive labour, disruption of trade routes, and deterioration of the institutional frameworks necessary for market functioning. These direct effects are compounded by secondary transmission channels, including commodity price shocks, inflationary pressures, and the diversion of public expenditure from development toward defence.

The social dimension of conflict's impact on sustainability is equally severe. Wars exacerbate inequality, dismantle public health and education systems, generate large-scale forced displacement, and erode social cohesion, all factors that directly undermine progress toward SDGs related to poverty, health, education, and gender equality. The UNDP has documented extensive evidence of how active conflict suspends normal SDG monitoring and implementation processes, creating institutional vacuums that persist long after formal hostilities have ended (UNDP, 2023).

The concept of resilience (broadly understood as the capacity of a system to absorb shocks, adapt, and transform while maintaining its essential functions) has become central to contemporary sustainable development thinking (Mitrache et al., 2024). In the context of geopolitical instability, resilience operates at multiple levels: economic resilience refers to the ability of national and regional economies to withstand external shocks and recover productive capacity; social resilience encompasses the ability of communities to maintain cohesion and adaptive capacity; and institutional resilience concerns the robustness of governance frameworks under stress conditions.

Spulbar et al. (2024) argue that sustainable development and regional resilience share deep conceptual synergies, with adaptive capacity (the ability to restructure systems in response to changing conditions) constituting the critical link between the two frameworks. This proposition is particularly germane to the post-conflict reconstruction context, where the rebuilding of economic, social, and institutional systems simultaneously offers an opportunity to reorient development trajectories toward greater sustainability. As further elaborated by Spulbar et al. (2024) in the context of digitalization and ESG synergies, corporate and institutional actors can actively shape the sustainability trajectories of regions they operate in, suggesting that the private sector has a meaningful role to play in conflict-affected reconstruction processes.

The governance dimension of SDG resilience under conflict conditions has been highlighted by Mitrache et al. (2025), who argue that artificial intelligence and digital transformation represent emerging tools for promoting economic sustainability and resilience, including in contexts of structural disruption caused by geopolitical shocks. This perspective aligns with a broader strand of the literature that emphasises the role of institutional innovation and technological capacity in enabling countries to maintain development momentum during and after conflict.

The energy dimension of geopolitical risk and sustainable development warrants particular theoretical attention in the Ukrainian context. Research by Erdogan et al. (2023) demonstrates that the energy trilemma (the challenge of simultaneously ensuring energy security, equity, and environmental sustainability) is directly mediated by geopolitical risk, with instability generating regime-dependent effects that can either accelerate or retard the sustainability transition depending on the institutional and economic context (Shirazi et al., 2023). This theoretical insight helps explain the paradoxical policy responses observed in Europe following the 2022 invasion, where the urgency of energy security led to short-term decisions that partially conflicted with long-term climate commitments.

Prior to the full-scale Russian invasion of February 2022, Ukraine had achieved measured progress across multiple SDG dimensions, particularly in areas related to energy access (SDG 7), agricultural productivity (SDG 2), and terrestrial ecosystems (SDG 15). However, as extensively documented in the SDG lens analysis of SDG 15 conducted by the Ukrainian civil society coalition (2023), Ukraine's progress on biodiversity protection and land management had already been constrained by the hybrid conflict initiated in the Donbas region in 2014, illustrating the cumulative nature of conflict-related SDG regression.

Economic Disruptions and Their Impact on Global Sustainable Development

The full-scale Russian invasion of February 2022 delivered an unprecedented macroeconomic shock to the Ukrainian economy. In its initial assessment, the World Bank estimated that Ukraine's economy would contract by approximately 45.1% in 2022 alone, a projection that, while revised downward as the Ukrainian economy demonstrated unexpected resilience, nonetheless captured the extraordinary scale of economic dislocation (World Bank, 2022). The actual contraction, confirmed by the State Statistics Service of Ukraine, was 28.8% in real GDP terms for 2022, still the most severe single-year economic contraction experienced by any country since the Second World War outside of active fragile state crises (GMK Center, 2025). A partial recovery of 5.5% was recorded in 2023, followed by modest growth of 2.9% in 2024, but as of the end of 2024 Ukraine's economy remained approximately 23% below its pre-war 2021 levels.

Tabel 3.1. Ukraine's Real GDP Dynamics, 2021-2024

Year	Real GDP Growth (%)	Key Driver
2021	+3.4%	Post-COVID recovery
2022	−28.8%	Full-scale Russian invasion
2023	+5.5%	Partial stabilisation, international support
2024	+2.9%	Continued recovery, declining momentum

Source: GMK Center (2025)

The destruction of productive capital has been extensive. Ukraine's industrial production index (base: 2016) collapsed from 101.7% in December 2021 to 69.3% by December 2024, while the construction output index fell from 199.7% to 83.6% over the same period. The cumulative reconstruction and recovery cost was estimated by the World Bank, European Commission, the United Nations, and the Ukrainian government at $486 billion as of December 2023, equivalent to 2.8 times Ukraine's anticipated GDP for that year, rising further to $524 billion by early 2025 (World Bank, 2025). The IMF projected Ukraine's consumer price inflation at 21.1% for 2023, compared with 20.2% in 2022, placing a severe burden on household purchasing power and pushing large segments of the population into poverty.

These dynamics directly undermine SDG 8 (Decent Work and Economic Growth) and SDG 9 (Industry, Innovation and Infrastructure), which require sustained positive GDP growth, rising labour productivity, and expanding industrial capacity. According to the UNU-MERIT analysis of the war's effects on SDG progress, the conflict has set back approximately 15 years of development progress, pushing an additional 7.1 million people into poverty and raising Ukraine's poverty rate to 24.1%, a direct reversal of progress under SDG 1 (No Poverty) (UNU-MERIT, 2024).

The energy dimension of the conflict generated the most immediate and globally transmitted economic shock. The European Central Bank documented that in the first two weeks following the invasion, prices of oil, coal, and natural gas spiked by approximately 40%, 130%, and 180% respectively, an energy price shock with no precedent in the post-Cold War era (ECB, 2022). The structural vulnerability underlying this shock was stark: prior to February 2022, Russia supplied approximately 40% of the European Union's pipeline natural gas imports. This dependency rendered European energy systems acutely exposed to supply disruption and created the conditions for a sustained inflationary shock that spread from energy markets into the broader economy.

Table 3.2. Energy Price Changes 2022

Energy Commodity	% Change (First 2 Weeks Post-Invasion)	Longer-Term Sustained Increase
Natural Gas	+180%	Remained elevated; EU household gas prices +79% by 2025 vs. 2021
Coal	+130%	+50% above pre-invasion levels by mid-2022
Crude Oil	+40%	+27% above pre-invasion level by mid-2022
EU Household Electricity	—	+30% between H1 2021 and H1 2025 (EU average)

Source: ECB (2022)

By 2025, Russia's share of EU pipeline gas imports had fallen sharply to approximately 6%, down from over 40% in 2021, as European countries accelerated diversification toward LNG, Norwegian gas, and renewable sources. However, the transition was not cost-free: EU household electricity prices rose by 30% between the first half of 2021 and the first half of 2025, while natural gas prices climbed by 79% over the same period. Notably, residential electricity prices increased by 88% in Bucharest between January 2021 and January 2026, a figure of direct national relevance, placing Romania among the most severely affected EU member states.

These dynamics create a fundamental tension within SDG 7 (Affordable and Clean Energy): the energy security imperative has accelerated investment in renewables but simultaneously increased the short-term burden of energy costs on households, particularly in Central and Eastern Europe. The trade-off can be formalised as follows. Let $P_{e,t}$ represent the energy price level at time t, α the share of Russian gas in the energy mix, and $\Delta\alpha$ the rate of diversification. The short-term cost burden on households (C_h) is then:

$$C_h = P_{e,t} \cdot (1 - \Delta\alpha) + \Phi \cdot I_{RES,t}$$

where ϕ captures the transition cost coefficient associated with investments in renewable energy infrastructure ($I_{RES,\,t}$). This stylised relationship illustrates the empirical observation that reducing α (dependency on Russian gas) imposes upfront costs before longer-term price reductions from renewables materialize, a tension extensively documented in the post-2022 European policy literature.

Ukraine and the Russian Federation collectively accounted for 26% of global barley exports, 15% of corn exports, 28% of wheat exports, and approximately 75% of sunflower oil exports in the 2020/21 marketing year. Ukraine's agricultural exports in 2021 totalled $27.8 billion, representing 41% of the country's total exports of $68 billion (S&P Global, 2022). The disruption of Black Sea shipping lanes, the destruction of agricultural infrastructure, and the mining of farmland created an immediate supply shock in global commodity markets that transmitted directly into food price inflation worldwide.

Table 3.3. Ukraine and Russia: Share of Global Agricultural Exports (2020/21)

Commodity	Combined Global Share	Ukraine's Specific Share
Wheat	~28%	~10.5% of world exports
Corn (Maize)	~15%	~12.8% of world exports
Sunflower Oil	~75%	~33% (2026 estimate)
Barley	~26%	Significant exporter
Fertilizers	—	Russia: world's largest exporter in 2020

Source: S&P Global (2022)

The supply shock in fertilizer markets was particularly severe. Russia is the world's largest exporter of fertilizers, with Brazil (21%), China (10%), the United States (9%), and India (4%) as primary destinations (Glauber & Laborde, 2022). International sanctions and logistical disruptions drove global fertilizer prices to record levels in March 2022, with Bloomberg's Green Markets North America Fertilizer Price Index reaching an all-time high of 1,270.4 on March 25, 2022, surpassing the previous record of 932.3 set in 2008. Fertilizer prices had increased approximately 30% by early 2022 following an 80% hike in 2021. Meanwhile, EU-level agricultural input costs rose by 95% in Q1 2022 compared to Q4 2021, including a 21.2% increase in fertilizer and soil enhancer prices and a 17.4% surge in energy and lubricants used in farming (Reuters, 2022).

The downstream impact on food security has been devastating at the global scale. According to data, approximately 122 million more people were pushed into hunger between 2019 and 2022, bringing the total number of people facing hunger to around 735 million by 2023, compared to 613 million in 2019 . Adjusted for inflation, global food prices reached a 60-year high in March 2022. Research published in the SDGs Review journal estimated that the Ukraine conflict has directly resulted in 1.7 billion people experiencing food insecurity and 276 million facing severe food insecurity worldwide. The UN Second Committee warned that the combined effects of the pandemic and the

Ukraine conflict would lead to a net increase of 75 to 95 million people in extreme poverty by the end of 2022 compared to pre-pandemic projections (UN, 2022).

These figures represent a quantifiable regression in SDG 2 (Zero Hunger) progress. Using the FAO's simple hunger-gap metric, the increase in the number of people experiencing hunger ΔH relative to the pre-war trajectory can be approximated as:

where

H_t is the observed number of food-insecure individuals at time

t and $H^{baseline}$ represents the counterfactual trajectory absent the supply shock. Applying to our data, the Ukraine-attributable increment in ΔH has been estimated at approximately 23 million additional people at risk of chronic hunger by 2030 relative to the pre-war SDG 2 trajectory.

The economic transmission of war-related shocks across global systems provides a concrete illustration of how a regional conflict can undermine multiple SDGs simultaneously through interconnected commodity, financial, and trade channels. The energy and food price spikes described above were major drivers of the global inflation surge of 2022–2023, which central banks across advanced and emerging economies were forced to counteract through aggressive monetary policy tightening. The resulting rise in global interest rates increased the cost of borrowing for developing countries, exacerbated debt sustainability concerns, and diverted fiscal resources from development spending directly undermining SDG 17 (Partnerships for the Goals) by constraining the financial capacity of states to fund SDG implementation (World Bank, 2022).

Table 3.4. Summary of War-Attributable Economic Impacts Across Key SDGs

SDG	Target	Quantified Impact
SDG 1 - No Poverty	Poverty reduction	+7.1 million pushed into poverty in Ukraine; +75–95 million globally in extreme poverty
SDG 2 - Zero Hunger	Food security	735 million hungry globally (2023); +122 million vs. 2019; 60-year high food prices in March 2022
SDG 7 - Affordable & Clean Energy	Energy access & affordability	Natural gas prices +180% in 2 weeks; EU household gas +79% by 2025
SDG 8 - Decent Work & Economic Growth	GDP growth	Ukraine GDP −28.8% in 2022; 23% below pre-war levels in 2024
SDG 9 - Industry & Infrastructure	Infrastructure reconstruction	\$524 billion reconstruction cost; industrial output index −32%
SDG 10 - Reduced Inequalities	Income distribution	Food and energy inflation disproportionately affects low-income countries and households
SDG 17 - Partnerships for Goals	Development finance	Interest rate rises reduce developing country fiscal space for SDG investment

Source: Developed by the authors based on analyzed data

The asymmetric impact of the war's economic consequences is particularly pronounced with respect to SDG 10 (Reduced Inequalities). Food price inflation functions as a regressive tax: households in low-income countries, which spend 50–85% of their income on food (IMF, 2023), and sub-Saharan African nations that import between 50%

and 85% of their staple foods, are disproportionately exposed to global commodity price shocks. This distributional dimension underscores that the economic consequences of the war in Ukraine are not merely a question of aggregate growth contraction but involve fundamental questions of intergenerational and international equity the core normative commitments of the 2030 Agenda.

Building Resilient Sustainable Development

The empirical evidence assembled across the preceding chapters leads to an unavoidable conclusion: the 2030 Agenda for Sustainable Development, as currently designed, operates under an implicit assumption of relative geopolitical stability that the Russia-Ukraine war has exposed as fundamentally fragile. The SDG framework was constructed as a peacetime instrument, a consensus document negotiated among nations in a period of relative multilateral cooperation, where the principal challenges to development were understood as structural (poverty, inequality, climate change, institutional weakness) rather than catastrophic and sudden. The war in Ukraine has demonstrated that this design premise is insufficient. The SDGs cannot be treated as a trajectory that countries follow in a linear progression; they are, rather, deeply contingent outcomes that can be reversed within months by geopolitical shocks of sufficient magnitude.

In our view, the most fundamental reform required is the explicit integration of a conflict-resilience pillar into the SDG governance architecture. This would not mean militarising the development agenda or conflating security policy with sustainability policy. Rather, it would mean acknowledging, formally and operationally, that progress toward sustainable development goals must be evaluated not only against socioeconomic baselines but against geopolitical risk profiles. Countries and regions that exist in proximity to zones of potential conflict or that are deeply integrated into commodity supply chains that run through politically unstable territories should be required to develop explicit SDG resilience scenarios: contingency frameworks that map how their SDG progress would evolve under different geopolitical shock intensities, and what emergency policy levers would be activated in response.

One of the clearest policy lessons of the post-2022 energy crisis is that the green energy transition and energy security are not synonymous and that failing to distinguish between them carries significant costs. The European experience has illustrated that a rapid transition away from fossil fuels can be simultaneously correct from a long-term climate perspective and deeply disruptive in the short term if it is not accompanied by adequate investment in energy storage, grid interconnection, and demand flexibility. Countries that accelerated renewable deployment after 2022 in response to the energy crisis (notably Germany, Poland, and Romania) found that the intermittency of renewables and the underdevelopment of storage infrastructure limited the extent to which new capacity could substitute for baseload gas in the immediate term.

In our view, the policy conclusion that should be drawn from the Ukraine experience is that energy security must be reconceptualised as a multi-layered resilience property, not merely a question of supply diversification. A robust energy resilience framework would combine:

- genuine diversification across primary energy sources, including the strategic retention of nuclear capacity as a low-carbon baseload option;
- the development of strategic energy reserves — not only in the form of physical gas storage but also in demand-side flexibility and smart grid capability;

- the rapid buildout of regional energy interconnectors, particularly in Central and Eastern Europe, which remain disproportionately exposed to supply disruptions from the east;
- the integration of social equity considerations into energy transition policy, ensuring that the cost of diversification is not borne disproportionately by low-income households, a dimension that was systematically neglected in the 2022-2023 emergency response across several EU member states.

The war's impact on global food security has revealed a dangerous structural deficiency in the contemporary architecture of international agricultural trade: the excessive concentration of global supply in a small number of producing countries and the corresponding dependency of importing nations (particularly in Africa and the Middle East) on a handful of Black Sea export corridors. This concentration is, in part, an efficient market outcome: Ukraine and Russia produce grain at lower cost than most alternative suppliers. But efficiency and resilience are not the same property, and the food system shock of 2022 demonstrated that the welfare cost of over-concentration can be catastrophic when a supply disruption materialises.

We propose that the international community should pursue a deliberate policy of agricultural supply chain regionalization, not protectionism or autarky, but a conscious effort to develop alternative productive capacity in food-importing regions, reduce dependence on single-corridor logistics, and build global grain reserve systems capable of buffering supply shocks of the scale observed in 2022. The SDG 2 target of ending hunger by 2030 cannot be achieved without confronting this structural vulnerability. Furthermore, the international fertilizer supply chain, which remains heavily concentrated in Russia and China, requires specific attention: the development of alternative sources of nitrogen, phosphate, and potash (including through investment in circular economy approaches to nutrient recovery) should be treated as a strategic priority equivalent to energy diversification.

A specific operational reform that we consider both feasible and urgently needed is the integration of geopolitical risk indicators into the SDG monitoring and reporting framework maintained by the UN Statistics Division. Currently, the global SDG indicator framework contains 231 indicators across 169 targets, none of which explicitly captures the geopolitical risk environment in which SDG implementation occurs. We argue that this represents a significant design gap.

Concretely, we propose the development of a composite Geopolitical-SDG Vulnerability Index (GSVI), a country-level metric that combines: (a) the intensity of geopolitical risk exposure, measured using established indices such as the Caldara-Iacoviello Geopolitical Risk Index; (b) the degree of commodity supply chain concentration and dependency; (c) the strength of institutional frameworks for emergency response; and (d) the proximity to active conflict zones and their historical frequency. This index could be incorporated into the VNR (Voluntary National Review) process, requiring countries to report on their GSVI alongside their SDG progress metrics, thereby creating institutional visibility for geopolitical risk in development planning and enabling targeted international support for the most vulnerable states.

The war has also exposed a significant gap in the international development finance architecture. Existing multilateral development finance instruments including World Bank lending facilities, IMF support programmes, and EU cohesion instruments were not designed to function at the scale required by a middle-income country experiencing a war of the magnitude of the Russia-Ukraine conflict. While the international community mobilised approximately $43 billion in financial support for Ukraine in 2023 alone, this support has been largely reactive and improvised, channelled through emergency instruments rather than through a systematic framework designed to preserve SDG progress during active conflict.

In our view, the international community should establish a dedicated SDG Conflict Resilience Fund, a multilateral financial instrument specifically designed to provide rapid, large-scale, and conditioned development finance to countries experiencing or recovering from geopolitically induced development setbacks. The fund's conditionality structure should differ fundamentally from standard IMF programme conditionality: rather than focusing primarily on macroeconomic stabilisation, it should be oriented toward preserving and rebuilding SDG-relevant institutional capacity healthcare systems, educational infrastructure, social protection networks, and clean energy assets with explicit requirements for environmental accountability and green reconstruction principles. This instrument would operationalise the principle that the international community has a collective interest in preventing SDG regression in conflict-affected countries, given the spillover effects of such regression on global food, energy, and financial systems.

Finally, we argue that the reconstruction of Ukraine (which the World Bank estimates will cost $524 billion) should be approached not merely as the restoration of pre-war conditions but as a transformative opportunity to build a qualitatively different, more sustainable economy. Ukraine's pre-war energy system was characterised by high carbon intensity, ageing Soviet-era infrastructure, and significant energy inefficiency. The reconstruction process, if designed with SDG alignment at its core, could instead produce a modern, low-carbon energy grid built predominantly on renewables and nuclear, an industrial sector rebuilt to current environmental standards, and an agricultural system that incorporates precision agriculture and regenerative farming practices in place of the input-intensive models that previously dominated.

This vision of green reconstruction as SDG acceleration is not merely idealistic. It is financially rational: the cost of building sustainable infrastructure from scratch, on cleared brownfield sites, is in many cases lower than retrofitting existing structures; international climate finance instruments, including the EU Green Deal's external dimension, create incentive structures that reward zero-carbon reconstruction over like-for-like rebuilding; and the competitive advantage that a modern, low-carbon Ukrainian economy would enjoy in EU market integration provides a powerful long-term rationale for sustainable reconstruction investment. The Ukraine case could, in this sense, become not only a cautionary tale about the vulnerability of sustainable development to geopolitical shocks, but a demonstration case for how conflict-affected countries can leverage reconstruction to leapfrog conventional development pathways and achieve SDG alignment at a compressed timescale.

Conclusions

The investigation was structured around four analytical axes each of which has generated findings that, taken together, support the central thesis advanced from the outset: that sustainable development is a geopolitically contingent achievement, not an irreversible progression, and that the 2030 Agenda requires fundamental architectural reform to remain meaningful in an era of renewed great-power conflict.

From an economic standpoint, the war produced a shock of extraordinary amplitude across global commodity, energy, and financial systems. Ukraine's GDP contracted by 28.8% in 2022 (the most severe peacetime economic collapse recorded for a middle-income country in recent history) while the reconstruction cost estimate has risen to $524 billion, equivalent to 2.8 times the country's annual output. Energy prices spiked by up to 180% within days of the invasion, global food prices reached a 60-year high in March 2022, fertilizer prices surged to record levels, and approximately 122 million additional people were pushed into hunger between 2019 and 2023. The war has measurably reversed progress across SDG 1, SDG 2, SDG 7, SDG 8, SDG 9, SDG 10, and SDG 17, not only in Ukraine but across the global system of development indicators.

From a governance standpoint, the war has exposed three fundamental inadequacies in the current architecture of global sustainable development governance: the absence of conflict-resilience mechanisms within the SDG framework; the lack of dedicated multilateral financial instruments for SDG preservation during active conflict; and the insufficiency of international legal frameworks for the protection of environmental assets during warfare. Addressing these inadequacies requires not only institutional innovation but a normative reorientation, a willingness to accept that geopolitical stability is a prerequisite for sustainable development and must therefore be treated as a development objective in its own right.

The war demonstrated that Europe's dependencies on Russian gas, Ukrainian grain, and Russian fertilizers constituted systemic risks that were inadequately mapped, monitored, and managed prior to 2022. We propose the adoption of a European Directive requiring all EU member states to conduct mandatory Strategic Commodity Dependency Assessments (SCDAs) for a defined list of critical commodities, energy carriers, agricultural staples, fertilizers, and critical minerals, identifying maximum acceptable import concentration thresholds from any single source country or geopolitical bloc. Member states exceeding these thresholds would be required to present binding diversification roadmaps within 24 months of a formal Commission notification. The Directive should be complemented by an EU-level Strategic Commodity Reserve System (SCRS), extending the existing EU emergency gas storage regulation (Regulation 2022/1032) to cover grain, fertilizers, and selected critical minerals, with mandatory minimum reserve levels set at 90 days of consumption equivalent.

The EU's existing emergency economic governance instruments, including the Council Regulation on a gas demand reduction framework and the temporary State aid crisis framework adopted in 2022, were improvised responses to an unexpected shock, not components of a pre-designed resilience architecture. We propose the adoption of a SEEG Regulation establishing a permanent framework for the activation of coordinated EU economic governance measures in response to geopolitically induced development crises. The Regulation would define an Economic Development Emergency (EDE) trigger mechanism, activated by a qualified majority Council vote in response to a geopolitical event causing documented regression in SDG indicators across three or more member states, and would pre-authorise a defined set of coordinated policy responses, including: temporary suspension of State aid rules for SDG-critical investments; activation of EU-level price stabilisation mechanisms for energy and food; acceleration of cohesion fund disbursements to affected regions; and the issuance of SDG Emergency Bonds dedicated EU fiscal instruments, similar in structure to the NextGenerationEU SURE bonds, earmarked for SDG-preservation expenditure.

We propose a dedicated ERTJT Directive requiring member states to develop and maintain National Energy Resilience Plans (NERPs) living documents, updated biannually, that map energy system vulnerabilities under geopolitical shock scenarios of varying severity and specify the policy response architecture for each scenario. The Directive should include mandatory social equity safeguards: in the event of an energy crisis activation, member states would be required to implement automatic household energy bill support mechanisms for the bottom two income quintiles, financed through a European Solidarity Energy Fund, preventing the recurrence of the regressive distributional impacts observed in 2022-2023, when the poorest European households bore the largest proportional energy cost burden.

The Russia-Ukraine war has not merely disrupted the specific SDG trajectories of two countries. It has revealed the structural incompleteness of the global sustainable development project as it has been conceived since 1992. A development agenda that does not explicitly incorporate mechanisms for geopolitical resilience, for the protection of development gains during conflict, for the rapid restoration of sustainable trajectories after conflict, and for the legal accountability of those who destroy ecosystems and economic systems in pursuit of military objectives, is an agenda built on an assumption of permanence that history does not support.

The institutional innovations proposed in this paper the CCSCR Directive, the SEEG Regulation, the WEPEL Directive, the ERTJT Directive, and the GRIDF Regulation are not merely technical instruments. They represent a normative commitment: a recognition that the European Union, as the world's most advanced experiment in rules-based multilateral governance, has both the capability and the responsibility to develop legal and economic frameworks that protect the sustainable development achievements of its neighbourhood and, by extension, of the global system in which those achievements are embedded. The costs of such institutional investment are real but finite. The costs of failing to make it, as the experience of 2022 has demonstrated, are neither.

Authors' Contributions:
The authors contributed equally to this work.

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ORIGINAL PAPER

Information about SD Activities in Romania Based on the Interrogation of Iacob Lendermann by the SOE

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Abstract:
JACOB LENDERMANN arrived in Aleppo from Bucharest on April 12, 1944. Upon arrival he was interrogated by SOE and MI5 agents. From the above, it can be seen that LEDERMANN knows much more than an ordinary Jewish refugee, being asked how he obtained this information. He says that he did not speak to any of the above–mentioned persons, except FUSS, who provided him with all the above information, He volunteered information when questioned about the investigation into Jewish refugees. This work presents new data on the organization of the SD in Romania during World War II.

Keyword: *Jacob LENDERMANN, SD, SECURITY, ALEPO, ABWEHR.*

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Information about SD Activities in Romania Based on the Interrogation of Iacob Lendermann by the SOE

Iacob LENDERMANN arrived in Aleppo from Bucharest on April 12, 1944. Upon arrival, he was questioned by agents from the SOE and MI5. A copy of his C.E.V. form was attached. He voluntarily provided the following information when questioned during the investigation into Jewish refugees and the SD agents in Romania:

1. Regarding Radu Lecca (B. February 15, 1890—D. 1980), it has been claimed that he was a Romanian spy in France, an anti–Semitic journalist, a Nazi agent in Romania, the Romanian government's representative responsible for regulating the status of Jews in Romania, and a war criminal.[3]

2. (a) While TITULESCU was foreign minister, that is, until 1937, LECCA served as an official at the Romanian legation in Paris. It has been claimed that while he was there, he was used as a spy by the German Secret Service and that his activities were monitored by French counterintelligence.

(b) He assumed the position of Romania's representative for Jewish affairs in 1941. That same year, LECCA became deputy director general of the Police and Security under General Leoveanu, commander of the 7th Army Corps, headquartered in Timișoara. LECCA, together with Stranti STRATILESCU, an inspector with the Police and Security Organization, attempted to remove LEOVEANU from office, so that LECA could take over.[4] LEOVEANU sensed the move and transferred LECCA to CONSTANȚA. Alecu Ghyka served as chief of police during the National Legionary State, having been appointed by the head of state, Marshal Ion Antonescu, and by Minister Horia Sima on September 16, 1940. STRATILESCU STRATE, GENERAL INSPECTOR, took over the leadership of the General Directorate of Security following Maimuca's arrest on January 21, 1941.

STRATILESCU STRATE, GENERAL INSPECTOR, took over the leadership of the General Directorate of Security following Maimuca's arrest on January 21, 1941. As he stated during interrogations conducted by security agents, upon his appointment, Colonel Petre Camenită was named Director General of the Police. General Petre Camenită (1889–1962) graduated from the War College (1921), served as prefect of Argeș during the dictatorship of Carol II (1938-1940), and commanded several military units, including the 6th Army Corps [appointed in September 1940, disbanded in 1945), earning several hundred thousand lei and introducing him to the organization, of which he recalled: R. Georman (deputy general director), C. Maimuca (director of the Security Police Directorate), Șteflea (director of the Judicial Police), Alimănișteanu (personnel director), and Bădulescu (assistant), S. Stratilescu (head of the Detective Corps), Ovidiu Măcelaru (head of the Passport Service), and Fl. Cernăianu (Intelligence Bulletin).[5] Following the Legionary rebellion, Alecu Ghyka and Constantin Maimuca were arrested.

(c) In December 1943, LECA was appointed General Commissioner for Jewish Affairs, working in conjunction with the Minister of Labor and supported by the wife of SS Captain RICHTER. This man was not known in Jewish circles until 1941, when the Federation of Jewish Communities was dissolved by the Germans, and central control of Romanian Jews was established.

3 Radu Lecca's role in the Romanian Holocaust https://www.bzi.ro/rolul-lui-radu-lecca-in-holocaustul-romanesc-756273

4 General Emanoil Leoveanu was born on April 16, 1887. He was promoted to the rank of major general effective June 8, 1940. General Emanoil Leoveanu, Director General of the Police in 1941, was arrested in 1947, released, and then sentenced to prison in 1951. He died in his cell at the Făgăraș prison at the age of 72—Alesandru Duțu, Florica Dobre, *Drama generalilor români (1944–1964)* [The Tragedy of the Romanian Generals (1944–1964)], Editura Enciclopedică, Bucharest, 1997, pp. 159–165.

5 https://fericiticeiprigoniti.net/comunistii-nu-l-au-incovoiat-printul-alexandru-ghica-directorul-general-al-politiei

3. (a) Jacob Lendernan was a Transylvanian Jew with a German, Aryan wife. His wife was the cousin of Richter's wife. This man was well-known in Jewish circles until 1941, when the Federation of Jewish Communities was dissolved by the Germans, and central control over Romanian Jews was established.

(b) As president of this organization for the control of Jews—a position he obtained because RICHTER recommended Lecca, who works closely with RICHTER—, he is the only Jew he claimed to know who collaborates in any way with the Germans.

(c) His description is 35 to 40 years old, shorts, average build, black hair, and nothing particularly distinctive other than his face being very oval, and quite long.[6]

Gustav Richter. In April 1941, Richter was sent to Bucharest (Romania) as an advisor on Jewish affairs. He worked alongside Manfred von Killinger. The main Romanian contributor was Radu Lecca (B. February 15, 1890–D. 1980), who contributed with Richter, a former Romanian spy and government official, appointed by Ion Antonescu as "General Commissioner for Jewish Affairs and Director without title of the Central Office for Jews in Romania."

After the war, he was sentenced to death for "bringing disaster upon the country by committing war crimes" during the Great National Treason Trial; his sentence was commuted to life imprisonment on the very day set for his execution (June 1, 1946). Lecca was known to have been imprisoned in France for espionage, and he became one of the main propagators of anti-Semitic and fascist ideas, acting as an agent of influence for Nazi Germany in Romania.

A close associate of Ion Antonescu, Lecca became involved in Romanian politics during World War II and, in particular, served as the chief executor of "The Cleansing of the Land," the code name used by the Antonescu regime as the equivalent of the German term "Final Solution" for the extermination of the Jewish minority.

Starting in 1941, Lecca was tasked with "solving the Jewish problem in Romania" and, at the suggestion of Manfred von Killinger and Gustav Richter, founded the Central Office for Jews in Romania, through which he persecuted and plundered Romanian Jews, threatening them with deportation to Transnistria. This system was known to be corrupt, with much of the money ending up in the pockets of Lecca or other high–ranking officials. Radu Lecca worked closely with the German ambassador's assistant, Gustav Richter, on the development of the "Final Solution in Romania." Lecca proposed sparing 3,000 Jewish specialists so they could be sent to Mandatory Palestine in exchange for 3 billion pounds. However, the plan was never carried out due to German defeats on the front.

After the coup d'état in 1944, Lecca was sentenced to death, though the sentence was later commuted to life imprisonment. After his release, he wrote his memoirs, in which he downplayed his own involvement and that of Marshal Antonescu in the Romanian Holocaust. On August 23, 1944, Richter was in the German Embassy building in Bucharest, where he was captured by Romanian royal forces and handed over to Soviet military forces.

3. (a) Richter was an SS captain known to be the head of the Gestapo in Romania. He was a personal friend of HITLER, with whom he is said to have been very close. He is described by the SOE as "an advisor on Jewish affairs at the German Embassy."

b) RICHTER's office was located on ORLANDO Street in BUCHAREST. The source had never seen RICHTER, but he was believed to be a very young man. Lenderman could not remember his first name. Gustav Richter was a devoted Nazi. He was a member

[6] TNA KEW Gardens KV/3152, Divers Telegrams, pp. 1–3.

of the Nazi Party and Richter's primary mission was to conduct a census of all Jews in Romania. He planned to intern 300,000 Romanian Jews in ghettos and subsequently exterminate them after deporting them to the Belzec extermination camp in occupied Poland. Another task entrusted to him was to prevent the emigration of Jews (including children) from Romania to Palestine under British mandate.

Richter's activities in Romania. In April 1941, Richter was sent to Bucharest (Romania) as an advisor on Jewish affairs. He worked closely with the German ambassador to Romania, Baron Manfred von Killinger. After visiting Berlin in September 1941, Richter insisted on the reintroduction of repressive measures against Romanian Jews. On September 3, 1941, as a result of his intervention, the order requiring Jews in Romania to wear the yellow star was reinstated.

On July 22, 1942, Richter received permission from Romania's *Conducător* (Head of State), Ion Antonescu, and from Foreign Minister Mihai Antonescu to deport the Jews of Romania to Belzec. However, Richter's plan to deport Romanian Jews to Belzec failed.

On January 21, 1945, while in Soviet custody immediately after World War II, Richter shared a prison cell with Swedish diplomat Raoul Wallenberg at Lubyanka Prison. On March 1, 1945, Richter was moved from the cell and never saw Wallenberg again. He testified in Sweden in 1955 that Wallenberg had been interrogated at least once by the Soviets for about an hour and a half. According to Richter, this interrogation took place in early February 1945.

After several years in Soviet prison camps, Richter was tried and convicted in 1951 for war crimes. In 1955, he was handed over to the authorities of the Federal Republic of Germany, who wished to try him. Preparations for Richter's trial began in Germany in 1961, but his trial did not begin until December 1981. The main charge against him was the development of a plan to deport Romanian Jews to Belzec. In early 1982, Richter was sentenced to four years in prison but was released on the grounds that he had already served this sentence in prisons in the Soviet Union.

5. Lenderman described Tester as an Englishman born in Germany who was evidently in intelligence service, but many people believed that he was in fact a British agent who lived at 85 Victoria Road, Bucharest. No description of him was available.

6. (a) FUSS Albert (or Alfread) was a lawyer from Transylvania, half German and half Romanian.

(b) FUSS also told Ledermann that he was a member of the SS but that he disagreed with RICHTER, who was dishonorable in his dealings and was involved in financial schemes with LECCA.

7. From the above, it is clear that LEDERMANN knew far more than the average Jewish refugee, and he was asked how he had obtained this information. He said he had not spoken to any of the people mentioned above, except for FUSS, who provided him with all the information above, with the exception of that regarding TESTER (Arthur (Alfred/Albert).

Tester was born on August 23, 1895 (according to other sources, in 1898), in Stuttgart, Germany, to an Anglo–German family. At that time, Romanian intelligence agencies considered Alfred (Arthur) Tester to be one of the leaders of the Gestapo in Romania. He was in possession of a German passport and had close ties to the German Secret Service. He obtained visas to travel abroad through the Romanian SSI, "the only institution in Romania that had official ties to the German Secret Service." An investigation ordered by the Soviet authorities (in 1949) “concluded that Tester… had died.”[7]

8. The source states that he met FUSS only once. He was introduced to him by a lawyer named FOCSANEANU Gheorghe Focsaneanu (1897–1982) Also known as: “Focseneanu.” Date of birth: May 17, 1897. Place of birth: Bucharest, Romania. Date of death: June 14, 1982, Avenue Ingres 75016 Paris, Île-de-France, France. Immediate family: Son of Maurice Focsaneanu and Ernestina Tinca Focsaneanu Husband of Alice Focsaneanu Father of Daniel Falvert and Dr. Dina Sergiescu Brother of Dr. Magheru Alice Occupation: Lawyer.[8]

They met in April 1943. FUSS was wearing civilian clothes at the time, and although the Source was Jewish, FUSS told him that he was a member of the SS, and that RICHTER was also an SS member. He told Lederman that he was working for KILLINGER, the German ambassador in BUCHAREST.

KILLINGER provided him with the information mentioned above—with the exception of point 2(c), which is a rumor the source heard from another person.

9. When it was pointed out to LEDERMANN that it was rather strange for a German to open his heart to a Jew in such a manner, LEDERMANN said that, although FUSS was a good German, he himself was anti–Nazi and had lived his entire life in Romania, and in that sense he was not anti-Jewish.

10. The source states that the information about the TESTER was provided to him by a Greek shipowner, Jean PANDELIS, who had a business in CONSTANZA aimed at bringing Jewish refugees to ISTANBUL.

11. In the interrogating officer’s opinion, much of the above should be taken with a grain of salt, but it is presented in case it may prove useful. Although Ledermann seemed sincere and appeared to believe everything, he said, there is no doubt that much of it was exaggerated by him.[9]

The investigating officers in Aleppo were (Sgt.) W.B.P. Watering, a captain, and Major A.D.Z.C. Noghern.

The Sicherheitsdienst (SD) provided personnel and leadership for the Einsatzgruppen, mobile extermination units formed under the auspices of the Reich Main Security Office (RSHA) in June 1941 in preparation for the invasion of the Soviet Union, where they carried out mass executions of Jews, Roma, communists, and others deemed enemies. These units, consisting of approximately 3,000 men from the SD, the Security Police, the Order Police, and the Waffen-SS, operated in four main groups (A, B, C, D) that directly executed over 1.5 million victims, primarily by shooting them at prearranged locations.

SD members organized the operations, including rounding up the victims, transporting them to the execution pits, and carrying out the shootings themselves, often forcing the victims to dig their own graves before shooting them at close range to conserve ammunition. A prominent example of SD leadership in these atrocities was Otto Ohlendorf, head of the SD’s internal intelligence office (RSHA Amt III), who commanded Einsatzgruppe D from July 1941 until mid-1942 in southern Ukraine, Bessarabia, and the Crimea. Under his leadership, the group, consisting of approximately 600 members, killed

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[7] Marian Zidaru, *The British Archive About the Activity of Dr. Arthur Tester in Romania*, in *International Scientific Conference "Strategies XXI"*, 2018, pp. …………………………

[8] https: htpp //www.geni.com/people/Gheorghe-Focseneanu/60000001834527298210

[9] Jean Pandelis, a Greek shipowner, purchased the Struma to transport Jews to Palestine. Minor modifications were made to it, and an engine was added. The engine would operate for only a few hours during the voyage to the Bosphorus, Struma – https://respiro.org/Issue4/FILM_StrumaStelianTanase.htm

about 90,000 civilians—mostly Jews, but also Roma and alleged partisans—through systematic executions, with the killings expanding to include women, children, and the elderly by mid–1941.

In an operation reported to have taken place between November 16 and December 15, 1941, in Western Crimea, Einsatzgruppe D killed 17,645 Jews, 2,504 Krimchaks, 824 Roma, and 212 communists or partisans. Ohlendorf later testified to these methods during his trial in 1947–1948. SS Oberführer Horst Hoffmeyer (1903–1944), a German SS officer and Nazi official involved in the Holocaust and the Germanization of occupied territories. Within the SS, Hoffmeyer was promoted to the rank of SS–Oberführer in October 1941 and attained the rank of Brigadeführer in November 1943. He was also appointed police major general in 1943.

Toward the end of the war, he served in Odessa, Kiev, and Bucharest. After Antonescu's fall and Romania's change of sides, he led a combat group, the command of which he shortly thereafter handed over to Wehrmacht Lieutenant General Alfred Gerstenberg. Hoffmeyer committed suicide in captivity along with his collaborator Erwin Müller on September 11, 1944, in Craiova.[10]

Other SD employees in Romania

Hans Joachim. Born in Constanța. Representative of the company Deutsche Levant-Linie. Clerk at the German Consulate in Constanța. In 1943, he served in the Wehrmacht, working alongside Captain Witeleren.

Julius, Karl Ernst, born in Germany in 1902. German passport, no. p8/43, issued in Istanbul on April 6, 1943. Attached to the German Legation in Tehran; April 1941. Head of the Istanbul office of the Deutsche Levante Linie company; requested exemption from military service in March 1943, on the grounds that the information he had provided made him indispensable. Returned to Germany on August 19, 1944. Other SD representatives in Romania: SS officers. Otto Albrecht von Bolschwing, Kurt Geißler, Hans Koenen, Waschinowski, Karl Count von Meran, Karl Kräutle, etc. Following the Legionary rebellion, German plenipotentiary Manfred von Killinger drafted a report in which he requested, "in the interest of internal order" and the "sound defense of our common interests", the recall of: 1) SD representatives in Romania (Otto Albrecht von Bolschwing. Otto Albrecht Alfred von Bolschwing (October 15, 1909–March 7, 1982) was a German officer with the rank of SS–Hauptsturmführer, an intelligence officer, and an international businessman. Adolf Hitler and the Nazi Party came to power in Germany in January 1933. In September of that same year, von Bolschwing traveled to the British Mandate of Palestine to identify potential business opportunities and soon established an import-export firm, Amaneh, in Jerusalem.

In March 1940, von Bolschwing received a prestigious appointment at the German Embassy in Bucharest, Romania, as Sonderbeauftragter (special representative) to the government of King Carol II. In this capacity, von Bolschwing was tasked with coordinating the SD's intelligence operations in Romania, including overseeing all SD agents operating in the country.

In Bucharest, von Bolschwing quickly became close to the ultranationalist Iron Guard, the most significant fascist and anti–Semitic political movement in Romania. Von

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[10] See— Ottmar Trașcă, *Atașații de poliție SS din cadrul Legației Germane din București și influența activității lor asupra evoluției relațiilor româno-germane, 1940–1944* [The SS Police Attaches Within the German Legation in Bucharest and the Influence of Their Activity on the Evolution of Romanian-German Relations, 1940–1944], in "Historica", Year XLVI, 2007, Issue No. 46, pp. 319–383.

Bolschwing's efforts to promote the political rise of the Iron Guard were initially highly successful. Acting on his own initiative, von Bolschwing conspired with Iron Guard leaders Horia Sima and Valerian Trifa to organize a violent attempt to overthrow the Antonescu government. Subsequently, von Bolschwing arranged for the Iron Guard leaders to flee Romania to Bulgaria.

After leaving his post in Romania in March 1941, Von Bolschwing traveled to Sofia, Bulgaria, to facilitate the "safe transport" of the Iron Guard leadership into exile in Germany. During his stay there, Von Bolschwing received orders from Berlin to serve as the SD's chief intelligence officer in northern Greece during the rapidly approaching Balkan offensive.

Von Bolschwing was officially expelled from the SS in February 1945, and by April of that year he was working directly with the headquarters of the U.S. Army's 71st Infantry Division. Postwar Espionage.

In his attempt to join the CIA, von Bolschwing found a supporter in James H. Critchfield, the influential station chief of the CIA in Pullach, Bavaria, and the Agency's former primary liaison with Ausodeum. Despite the mediocre results of his operation in Romania and his questionable abilities as an agent, Critchfield nevertheless considered von Bolschwing important.

In January 1954, von Bolschwing, accompanied by his wife and son, departed from Genoa, Italy, aboard the SS Andrea Doria bound for New York, using the pseudonym of U.S. Army Captain Albert D. Eisner, a fictitious identity provided by the CIA. After their arrival on February 2, the family was housed in the Boston home of a former military intelligence officer who had previously worked with von Bolschwing in Europe. In the U.S., he worked for various companies. He died in 1982.

Kurt Geißler (1902–1963). Police and SS officer. He is likely the best-known historical figure by this name, having close ties to Romania: During World War II, he served as a special representative of the German Security Police (Sipo) in Bucharest. He was a police commissioner and SS-Sturmbannführer. He headed important departments within the Reich Main Security Office (RSHA) and served as police director in Riga. He survived the war and later became police commander in Cologne.[11]

Other SD officers included:

1) Karl Count von Meran, Karl Kräutle, and Wenzel;

2) the head of the NSDAP/AO in Romania, Artur Konradi, and his deputy, Langenecker; 3) the German consuls in Orșova.[12] The recall of SD representatives from Romania undoubtedly represented a major victory for the Ministry of Foreign Affairs in its dispute with the SS. The SD's prestige was so severely damaged that Heinrich Himmler was forced to issue an order on March 5, 1942, prohibiting SD members involved in the events in Romania from further dealing with Romanian affairs or maintaining any kind of contact with Romania. In accordance with the will of the Reichsführer-SS, the police attaché would in the future become an attaché representing, within the diplomatic missions, the entire range of interests of the Reichsführer-SS; consequently, predictably: the Waffen–SS, matters related to ethnic Germans, the Security Police, the SD, political matters (n.b.—O.T.), and matters pertaining to the regular police."

[11] https://www.cia.gov/readingroom/docs/EDER%2C%20ALOIS_0001.pdf SS Police Attachés at the German Legation in Bucharest 345.

[12] *Consular Representation in Romanian Cities During the Interwar Period (1919-1939)*, in "Scientific Bulletin of the «B.P. Hasdeu» State University of Cahul. Humanities Series", 2 (22), 2025, ……… ? ……………..

Information about SD Activities in Romania Based on the Interrogation of Iacob Lendermann by the SOE

On May 23, 1942, Reinhard Heydrich sent a letter to the Undersecretary of State at the Ministry of Foreign Affairs, Martin Luther, informing him that Horst Böhme, an SS Standartenführer and police colonel, had been appointed to serve as SS police attaché at the German Legation in Bucharest, requesting, in accordance with the provisions of the agreements concluded, the approval of the Ministry of Foreign Affairs. (SS_officer) Killinger nominated SS Oberführer Horst Hoffmeyer for this position, who was well regarded by the Romanian authorities and enjoyed “great prestige.”

In terms of intelligence activities, Richter collaborated with Legation Secretary Willy Roedel (Willy Roedel, also known as Willy Rödel (March 16, 1897, in Hanau—†October 15, 1947 near Moscow) was a German police officer, SA leader, and senior advisor at the Ministry of Foreign Affairs. After the invasion of the Soviet Union, he provided “from the Embassy in Bucharest, to the Russian command together with Romanian units, information about alleged double agents among Romanian Jews.”

Following the royal coup d'état in late August 1944, Roedel was arrested, along with other members of the German diplomatic mission in Bucharest, by Romanian military personnel and handed over to the Soviets. On September 7 or 8, 1944, he was taken to Moscow. Roedel was imprisoned at Lubyanka and at Lefortovo Prison, where he shared a cell with Raoul Wallenberg.

In mid-October 1947, according to the statements of a former KGB officer, he was assassinated “on orders […] during his transport from Moscow to MVD Camp No. 7 in Krasnogorsk” by means of a lethal injection. Historian Andreas Weigelt speculates that “Roedel’s violent death may have served to cover up the traces left by Raoul Wallenberg”—the head of the Legation’s intelligence service—and, on occasion, the illegal resident of Department VI of the RSHA, SS Hauptsturmführer Kurt Auner[13].

(C) SS Hauptsturmführer Kurt Auner, born on May 5, 1914 (Mediaș, Romania), was an ethnic German from Romania who served for one year in the Romanian Army as a lieutenant in the artillery. He was also a member of the Hitler Youth, a war volunteer in the Waffen–SS (artillery) in Poland, and, shortly thereafter, a member of a Sonderkommando. Auner officially joined the Waffen–SS in 1942. At that time, he was already part of an Einsatzkommando. World War II (1939–1945) Rank: SS–Hauptsturmführer (Captain) Awarded on: December 23, 1944.

He was arrested by US Forces on 22 Jun 45 in VIENNA, Austria, and charged with being a member of the SD, Amt VI–E/7, RSHA in VIENNA. On 28 April 1947, 421ER was released to town arrest and, on 13 August 1947, HE was re/eased from Ali arrest, with residence listed as SALZBURG, Austria. Further information indicates that MJNER was a member of the Waffen $S during an unspecified period and was the Assist ant Chief of the RSHA Amt VI–E/7 in BUCHAREST, Rumania from 1939 until 1944. While there, SUBJECT was allegedly responsible for establishing “the best intelligence net in the Balkans.” During and after HIS confinement, AVNER allegedly associated with USI; however, the type and exact dates of this association were not indicated. Additional updated information indicates that AUNER was reportedly engaged in the collection of intelligence information, not further clarified. (Unevaluated) Additional information concerning AUNER may be available from LfV, Bavaria. No far ther pertinent information available.

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[13]https://www.deutsche-digitale bibliothek.de/item/JCCKBDJJVE3XXKDAHFUN5FVVZQWX36K7?lang=en#item-detail

a lieutenant in the artillery. He was also a member of the Hitler Youth, a war volunteer in the Waffen–SS (artillery) in Poland, and, shortly thereafter, a member of a Sonderkommando. Auner officially joined the Waffen–SS in 1942. At that time, he was already part of an Einsatzkommando. World War II (1939–1945) Rank: SS–Hauptsturmführer (Captain) Awarded on: December 23, 1944.

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Crop Hans Joachim. Vi(BE) Constanza 1943.

Representative of Deutsche Levant–Linie. Clerk at the German Consulate in Constanza. In 1943 was in the Viehrmachti working with Captain Witeleren.

The Situation of SD Officers in Romania After August 23, 1944

Friedrich Sigmund Cloos, known as Fritz Cloos (B. May 1, 1909, Brașov, Brașov County, Austria-Hungary; d. May 3, 2004, Waakirchen, Germany) was the head of the Nazi organization of German Workers in Romania until the end of World War II and a foreign agent of the Securitate in West Germany from 1961 to 1987.

In 1934, Cloos was appointed regional leader of the youth organization. Cloos made repeated trips to Berlin to meet with his SS commanders.

After Andreas Schmidt was appointed leader of the ethnic groups, all German institutions in Romania were brought into line in September 1940. On November 9, 1940, Cloos became Schmidt's right–hand man and assumed important political and organizational roles within "national group leadership."

Following the royal coup in Romania on August 23, 1944, Cloos went underground and participated as an agent of the Sicherheitsdienst (SD) in resistance operations with officials of the former "Volksgruppe" who remained in Transylvania and members of the Legionary Movement as part of Operation Regulus, including several groups of paratroopers who landed behind enemy lines in Romania in late 1944 and early 1945 to carry out acts of terror and sabotage. preparing an internal uprising against the Soviet occupation.

After his arrest, Cloos was interrogated at the secret Lubyanka prison in Moscow and then sentenced to 20 years in the Soviet labor camp at Vorkuta.

Upon his return to the country, the Romanian secret police recruited him under pseudonyms such as Ion Lăzărescu, Gheorghe Mihăilescu, Konrad, or Radovan as an employee. On April 1, 1956, Cloos signed a handwritten declaration of commitment as an unofficial collaborator with the Securitate and was released.

In 1961, he moved to the Federal Republic of Germany with his wife, Gerda (née Polony, born in 1910), a kindergarten teacher, and their children, Erika and Friedrich. Cloos provided the Securitate with information about the role of the Gehlen Organization, the Bundesnachrichtendienst, and Romanian Legionnaires in exile.

Andreas Schmidt: His writings, published by Krafft & Drotleff in Sibiu, were placed on the index by the Soviet authorities,[14] and the conflict between KALTENBRUNNER and RIBENTROP, which VI E (WANNEOK) perpetually exacerbated, gave rise to divisions and differences of opinion among members working for the German secret services. All these disputes – which eventually came to affect the family lives of the individuals involved – led to a weakening of security and were, without a doubt, one of the causes that led to the collapse of the entire preparatory structure. The only source who made a W/T transmission at a later date was Hauptsturmführer Gune.

Roland Gunne: In the final stages of the war, Roland Gunne was in charge of sabotage operations in Romania, in collaboration with Dienststelle 3000, under the command of Begus,[15] a Volksdeutscher, a highly trained intelligence officer with a network of contacts spanning all strata of the Romanian population. For a period of time, he was in charge of the Erdoelschuntzkommando Ploesti (Oil Protection Command)—also on behalf of the MIL sector; and, at the same time, he was entrusted with sabotage preparations—this is the nature of a Mission I. At a later date, GUNNE made contact with Schmidt, who had been parachuted in, but despite the situation, old differences flared up again.

Eventually, serious doubts arose regarding GUNNE's channel, as he reported that he had reconnected with some old contacts, which could not have been true.

Over time, the L funds grew to approximately $300,000, including a considerable amount in lei and also several thousand Goldstuecke. This sum was quite sufficient for the scale of the network that was reestablished, especially since the most important liaisons used the money only for expenses. Dienstaltersliste der Schutzstaffel der NSDAP, as of December 1, 1936.

Romania Eventually, the SD began to have serious doubts about GUNNE's channel, because he reported that he had reestablished contact with some old contacts, which could not have been true.

In the course of time the L–funds increased to (as far as I remember) about $300,000, including a considerable amount in lei and also several thousand Goldstuecke. This sum was quite sufficient for the scope of the network which has been ecreated, especially as the most important link–men only used expenses money.

During the work of preparation, I personally had nothing to do with the I–network in the MIL sector, and so I can say nothing either of the money position or about personnel. I know that eventually only 2 or 3 links came through definitely, and these, as time went on, fell away because/ lack of support.

In Sector VI, extensive preparations had been made, but in the end, only a single radio link was established. The personnel were recruited entirely from among the German elements of the population, whose status in the country was, from Romania's perspective, that of Romanian citizens.

The lack of internal agreement within the (German) group's leadership and the pronounced animosity between the group's leader, Andreas SCHMIDT, and

[14] https://ro.wikipedia.org/wiki/Andreas_Schmidt

[15] Army CIC NETS IN EASTERN EUROPE_0002.pdf.specialCollection/nwcda8/192/ARMY CIC NETS IN EASTERN EUROPE/ARMY CIC NETS IN EASTERN EUROPE_0002.pdf accessed April 12, 2017

KALTENBRUNNER—which VI E (WANNEOK) constantly exacerbated—gave rise to discord and differences of opinion among the members working for the German Secret Service. All these quarrels—which eventually came to affect the personal lives of the individuals involved—led to a weakening of security and were, without a doubt, one of the causes that led to the collapse of the entire preparatory structure. The only source that made any radio communications at a later date was that of a Hauptsturmführer Gune, a Volksdeutscher, a highly trained intelligence officer with a network of contacts spanning all strata of the Romanian population. For a time, he was in charge of the Erdoelschutzkommando Ploiești (Oil Protection Command)—also on behalf of the MIL sector—and, at the same time, was tasked with sabotage preparations—this being a Type I mission. Circumstances did not allow him to carry out this mission.

Subsequently, GUNNE contacted SCHMIDT, who had been parachuted in, but unfortunately, despite the circumstances, their old disagreements resurfaced.

Andreas Schmidt traveled to Bucharest, where he met with Roland Gunne, the deputy head of the SD agent network in Romania from 1940 to 1944, and with Fritz Cloos. Both the Romanian and Soviet authorities had detailed information about the agent parachute drops in November 1944 and were aware of the intended targets. The second group of paratroopers landed in Transylvania on the night of December 24–25, near Brașov, and consisted of prominent leaders of the ethnic German community. Members of this group were later captured by Russian authorities. Another group was parachuted into Banat in January 1945, and all members managed to make contact with Sicherheitsdienst agents and organize secret weapons depots in the Sibiu and Brașov areas. Approximately 1,500 people, mostly German officers and soldiers still hiding in Transylvania, were contacted and prepared for this plan.

By the end of January 1945, Romanian authorities had extensive information about the preparations underway, and the term "fifth column" was used in internal correspondence. This information also reached Soviet authorities. Among the informants was Alexandru Țăranu, who served as a double agent and radio operator for the Abwehr from 1940 to 1944. Țăranu was captured by the NKVD in September 1944 and was forced to work for the Soviets under threat of execution. Through Țăranu, the Soviets were constantly informed about radio communications between Germany and Romania. Although the radios experienced technical problems, members of the resistance movement managed to transmit important information to Germany about the political situation, the atmosphere in Romania, troop movements, and military capabilities.[16]

Conclusions

Lenderman was a Transylvanian Jew with a German wife. His wife was the cousin of Richter's wife. In April 1944, he fled Romania and arrived in Aleppo, Syria. There, he was interrogated by two officers from the SOE and MI5. The interrogation revealed that the most important SD officer in Romania was Gustav Richter, who was tasked with resolving the Jewish issue within the German embassy in Bucharest. After the Legionary uprising, some of the SD's Romanian collaborators, Alecu Ghyka and Constantin Maimuca, were arrested.

At the request of Richter, in December 1943, LECA was installed as General Commissioner for Jewish Affairs, working in conjunction with the Minister of Labor, and was supported by the wife of SS Captain RICHTER. This man was not known in Jewish

[16] TNA KV/3152, Kew Gardens, 1944. Divers Telegrams, p. 4.

circles until 1941, when the Federation of Jewish Communities was abolished by the Germans, and central control of Romanian Jews was established. After the coup d'état of August 23, 1944, the majority of SD officers in Romania were arrested and transferred to the USSR. Few survived the camps and repatriated to the FRG after the war.

Authors' Contributions:

The authors contributed equally to this work.

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ORIGINAL PAPER

The shipping contract as a hybrid of commission and transport

Cristina Stanciu[1)]

Abstract
The shipping contract is that contract concluded between one party, called the principal, and another party, called the sender, by which the sender undertakes to conclude, in his own name and on behalf of the principal, a transport contract and to carry out operations ancillary to the transport, in exchange for a remuneration, called a commission. Shipment of goods is an intermediary operation, similar to commission. Although it is a variety of the commission contract, the consignment contract is not reducible to it, having its own legal features. At the same time, the shipping contract is not to be confused with the transport contract and they are autonomous in relation to each other.

The different possibilities of transport between two geographical areas, the emergence of a growing number of international regulations in matters of import and export on the territory of different states, the need to ensure related operations and services to carry out the transport of goods in good conditions, storage, handling of goods, packaging, grouping and monitoring of transport in real time, customs formalities and planning of optimal routes, have led to an increase in the complexity of the activity related to transport. The volume of specific knowledge generally exceeded the usual trade knowledge and led to the division of labor in the trade branch, emerging and developing a new branch with special professional specificity: international shipping.

The interposition of a forwarder (commissioner) between the customer and the carrier is intended to facilitate, from an economic and legal point of view, the movement of goods from the producer to the consumer, all the more so as the economic agent producing the goods or trading the goods usually does not have enough direct information to be able to proceed with the most suitable choice of the carrier and the means of transport. The intermediary specialized in such approaches is the one in a position to exercise convenient options, especially in situations where foreign markets are concerned.

Keywords: *shipment, commission, goods transport contract*

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Preliminary remarks

The necessity and complexity of the movement of goods in the contemporary era have gradually led to a separation between the function of actually performing carriage and that of organising it. Since social reality is the material source of every legal rule, Romanian law reflects this development by regulating separately, in the Civil Code, the contract of carriage, the commission contract and the freight forwarding contract. The freight forwarding contract thus received its first express regulation in Romanian law through Articles 2064-2071 of the Civil Code adopted by Law No. 287/2009, which entered into force on 1 October 2011. Its statutory recognition did not, however, resolve the issue of legal classification raised by this contract: the legislature defines it as "a variety of the commission contract", yet assigns to it a body of obligations that cannot be understood without constant reference to the rules governing the carriage of goods. Freight forwarding operates as a hybrid legal construct: structurally, it borrows from commission agency the mechanism of indirect representation; functionally, it derives the content of the services and the standard of liability from the law of carriage. Article 2064 of the Civil Code expressly classifies freight forwarding as a variety of commission contract, but its specific subject matter-the conclusion of a contract of carriage and the performance of ancillary operations-places it at the intersection of agency without representation and carriage. The description "a hybrid between commission agency and carriage" captures the functional character of freight forwarding without implying that it loses either its legal autonomy or its statutory classification as a variety of commission contract.

Carriage activities and the regulation of the contract for the carriage of goods under the current Romanian Civil Code

Carriage is plainly indispensable as an economic activity because it provides the essential physical link between production, distribution and consumption. From a legal perspective, the characteristic performance consists in moving goods from one place to another within a specified period and under conditions ensuring their preservation and delivery at destination. The economic importance and particular features of this activity justify a legal regime distinct from the general law of obligations.

The Civil Code, adopted by Law No. 287/2009 and in force since 1 October 2011, introduced a unified regulation of the contract of carriage. Chapter VIII of Title IX of Book V contains general provisions in Articles 1955-1960, rules on the carriage of goods in Articles 1961-2001, and rules on the carriage of persons and luggage beginning with Article 2002. Accordingly, although the general regulation of carriage continues beyond Article 2001, the analysis of the contract for the carriage of goods centres on Articles 1955-2001 of the Civil Code (Law No. 287/2009: Articles 1955-2001; Baias, Chelaru, Constantinovici, Macovei, 2012: 1967-2006). The Civil Code provisions constitute the general law in this field, irrespective of whether carriage is by road, rail, sea or air, and are supplemented by the special rules applicable to each mode of transport and, where relevant, by the applicable international conventions.

Under Article 1955 of the Civil Code, the defining element of the contract is the carrier's undertaking, as its principal obligation, to move goods from one place to another in exchange for the price payable by the consignor or consignee. The phrase "as its principal obligation" is important in distinguishing carriage from freight forwarding: the carrier undertakes the actual movement of the goods, whereas the freight forwarder under a freight forwarding contract undertakes, in principle, the legal and technical organisation of that movement.

The parties to the contract for the carriage of goods are the consignor and the carrier. As a rule, the consignee does not participate in concluding the contract, but is the beneficiary of the carriage and may acquire the rights and obligations arising from it through the mechanisms laid down by the Civil Code. This configuration gives the contract a distinctive character, resembling in certain respects a contract for the benefit of a third party, although the two mechanisms are not identical because the consignee may acquire not only rights but also obligations (Stănescu, 2015: 30 et seq.). The carrier is a professional service provider. It acts independently of the customer, performs the carriage at its own risk and determines the practical manner in which its performance is carried out, within the limits of the agreement and the relevant special rules. Legal scholarship characterises the contract as nominate, autonomous, synallagmatic, in principle for consideration, commutative and, as a rule, consensual (Piperea, 2013: 21 et seq.). Its autonomy is not affected by the fact that the need for carriage frequently arises from another contract-a sale, lease, deposit or other economic transaction. The legal relationship giving rise to the need for movement and the contract of carriage concluded to effect that movement are economically connected but legally distinct.

The consensual nature of the carriage of goods has generated doctrinal controversy. Some authors have regarded it as a real contract, considering delivery of the goods indispensable to its formation, whereas another view-more closely aligned with the scheme of the current Articles 1967-1968 of the Civil Code-treats delivery as an act of performance rather than a condition for formation of the contract (Pop, Popa, Vidu, 2012: 78; Cotuțiu, 2013: 155-161). As a general rule, the Civil Code does not require delivery of the goods as a condition of validity. The contract is therefore consensual in principle, without prejudice to cases in which special legislation makes its conclusion dependent on delivery of the goods.

Nor is writing, as a rule, a condition *ad validitatem*. Article 1956 of the Civil Code assigns the specific transport documents-the consignment note, bill of lading, receipt, journey sheet or similar documents-primarily an evidentiary function. In practice, however, and under special legislation, written documentation is almost inseparable from the transport operation.

The effects of the contract reflect its synallagmatic character. Among other duties, the consignor must deliver the goods at the agreed place and under the agreed conditions; complete and provide the transport document and the necessary customs, health, tax or other documents; inform the carrier of the hazardous nature of the goods; and pay the price where payment falls to it. The carrier is obliged to take over, preserve, move and deliver the goods at destination and to comply with the time allowed for carriage.

A distinctive institution of the contract of carriage is the right to give subsequent instructions (contraordin), whereby the consignor may, subject to the law, unilaterally alter the performance of carriage already agreed. Articles 1970 and 1973 of the Civil Code permit, among other things, suspension of carriage, withdrawal of the goods, a change of destination or consignee, and return of the goods. The consignor bears the costs and immediate loss caused to the carrier by carrying out the subsequent instruction. In other words, exercising this right entails expense: the consignor owes the price for the portion of carriage already performed, the charges and expenses occasioned by implementation of the instruction, and compensation for any loss. Moreover, the right is not perpetual: under Article 1974 of the Civil Code it is extinguished, and the right of disposal may pass to the consignee when the latter exercises the rights arising from the carriage.

Failure to perform obligations assumed under a contract of carriage gives rise to civil liability on the part of both carrier and consignor. The liability of the consignor or consignee is governed by the ordinary rules of contractual liability, whereas the carrier's liability displays features departing from the general law and is subject to a stricter regime than the ordinary liability of a service provider. The carrier's liability operates on two levels: contractual liability and tortious liability. Viewed as a whole, it may therefore be extra-contractual (tortious) or contractual. A professional incurs tortious liability where it breaches professional duties imposed by law, and contractual liability where it has concluded a contract with the customer defining the framework within which its specific professional functions are exercised. Its liability is likewise tortious where third parties to the contract suffer loss as a result of its professional activity. Scholarship (Luntraru, 2017: 151-160) notes that a special law of professional liability can in fact be identified, distinct from the classical rules of civil and commercial law: an autonomous law of professional liability, containing many original elements and requiring special assessment criteria by which its legal nature, specific conditions and foundations may be determined. The legal regime governing the carrier's contractual liability is also stricter than the general regime, because the carrier is subject to an obligation to achieve a specified *result* and any defective performance may be treated as an unlawful act. Under Article 1984 of the Civil Code, the carrier is liable for loss caused by the total or partial loss of the goods, their alteration or damage during carriage, and delay in delivery. Article 1985 requires compensation at the actual value of the goods, assessed at the place and time of their delivery for carriage; Article 1986 requires a proportionate refund of the price and expenses; and Article 1987 permits a declaration of value, subject to reduction to the actual value. Compensation may not exceed the amount prescribed by special legislation (Civil Code: Article 1989); the carrier may exclude or limit liability only in the cases provided by law (Civil Code: Article 1959); and Article 1991 lists the grounds excluding liability. Overall, the regulation is considered adequate, representing an improved and terminologically updated restatement of the solutions found in the Commercial Code. Nevertheless, scholarship identifies a range of matters capable of improvement and certain drafting difficulties. Thus, the phrase "during carriage" has been criticised for lacking an express technical delimitation, while the wording "without prejudice to the consignor's rights" in Article 1977 is debatable because the consignor's right to give subsequent instructions is extinguished precisely when the consignee asserts its rights and is therefore indeed affected (Popa, 2020: 671). Article 1992 regulates liability for failure to perform carriage without providing a criterion for determining loss, while delay is regulated more than once, in both Articles 1984 and 1992. Article 1983 is unclear concerning the loss of the right of recourse by a carrier that delivers the goods without collecting the sums due (Baias, Chelaru, Constantinovici, Macovei, 2012: 1993; Popa, 2020: 673). Moreover, the scope of exemption does not cover the full range of relevant situations, and the professional carrier's pre-contractual duty to provide information remains a matter that could be regulated in the future.

These observations do not detract from the conclusion that the current Civil Code has provided an extensive and autonomous regime for the contract for the carriage of goods. That very autonomy facilitates a proper understanding of its relationship with freight forwarding: the freight forwarder-the professional under the freight forwarding contract-uses the contract of carriage as the legal instrument by which to perform the mandate received from its own principal.

Commission agency and the regulation of the commission contract under the current Romanian Civil Code

The commission contract is governed by Articles 2043-2053 of the Civil Code, within the section devoted to agency without representation. Its systematic location is essential to understanding the freight forwarding contract, which the law expressly classifies as a *variety of commission* contract.

Under Article 2043 of the Civil Code, commission agency is a mandate concerning the purchase or sale of goods or the provision of services for the account of the principal and in the commission agent's own name, the latter acting professionally in exchange for remuneration called commission (Civil Code: Articles 2043-2053; Boroi, Stănciulescu, 2012: 486-499). Three characteristic elements are thus combined: the intermediary's professional activity, conclusion of the transaction in its own name, and allocation of the transaction's economic effects to the principal's account. This technique distinguishes commission agency from agency with representation. An agent acting with authority to represent binds the principal directly in relation to the third party; by contrast, the commission agent is itself a party to the transaction concluded with the third party. In external relations, the third party is bound to the commission agent and the commission agent to the third party. Internally, the economic effects of the transaction are transferred to the principal in accordance with the commission contract and the rules governing agency without representation.

The contract is consensual, synallagmatic, for consideration and commutative, while the commission agent's professional status is inherent in the statutory definition. Unlike an ordinary mandate, which may be gratuitous, a commission contract is always concluded for consideration and is generally *intuitu personae*. Under Article 2044 of the Civil Code, in the absence of a special provision to the contrary, writing serves to prove the contract rather than to establish its validity.

Articles 2045-2053 bring out the logic of agency without representation. The contracting third party is directly bound to the commission agent. If the third party fails to perform, Article 2046 provides the principal with a mechanism for acquiring the claims against that party. The commission agent must comply with the express instructions received; Article 2048 permits departure only in the narrowly defined circumstances where prior approval cannot be obtained, it may reasonably be assumed that the amendment would have been accepted, and the nature and overall scheme of the mandate are not fundamentally altered.

The contract's onerous nature also follows from Article 2049 of the Civil Code. The commission agent is entitled to remuneration and, in principle, the risk that the third party will not perform the transaction does not deprive it of commission where it has properly carried out its mandate. This rule correlates with Article 2052: merely by reason of its status, the commission agent does not guarantee performance of the third party's obligation. It may, however, expressly assume a guarantee obligation-the mechanism traditionally known as *del credere* - in which case, unless otherwise agreed, it is entitled to additional remuneration.

Article 2051 permits the principal to revoke the authority until the transaction with the third party is concluded, while the commission agent retains the right to that portion of the remuneration justified by the work and expenses already incurred. Finally, Article 2053 gives the commission agent a right of retention over the principal's goods in its possession as security for claims against the principal.

This regulation reveals the legal model on which freight forwarding is built: a professional receives a mandate and concludes a transaction with a third party in its own name, but the operation is carried out in the principal's interest and for the principal's account. The fundamental difference lies in the specialised subject matter: in freight forwarding, the transaction that the intermediary must conclude is necessarily a contract of carriage, supplemented by ancillary operations.

Freight forwarding - a complex legal construct incorporating structural elements of both the commission contract and the contract of carriage

Modern carriage of goods is not confined to their mere movement: it is both an extensive legal structure and an exceptionally complex practical operation. Selecting the mode of transport and the carriers, determining the route, consolidating consignments, handling and storage, insurance, customs formalities, port or airport operations, cargo documentation and tracking through to destination transform movement into a complex logistics chain in which the contract of carriage retains the central role. It was precisely to make that process more efficient that an auxiliary structure-the freight forwarding contract-developed to mediate the relationship between the customer and the carrier and to provide a "legal framework" for all related operations (Piperea, 2013: 73; Budică, Bocean, Popescu, 2005: 334). Freight forwarding consequently developed in order to concentrate all these activities in a professional organisational service.

In legal terms, freight forwarding occupies a particular position. It is not a mixed contract in the technical sense, since Article 2064 of the Civil Code gives it an unequivocal statutory classification: a variety of the commission contract. The term "hybrid" used in the title of this study must therefore be understood functionally: the basic legal structure is derived from commission agency, while the subject matter, performance and a significant portion of the risks are directly connected with the contract of carriage.

Legal analysis of the freight forwarding contract and its structure. The Civil Code devotes Articles 2064-2071 to the freight forwarding contract. Under Article 2064, the freight forwarder undertakes to conclude, in its own name and for the principal's account, a contract of carriage and to perform the ancillary operations. The definition reveals its dual structure: the legal technique is that of commission agency, while the practical purpose is the performance of carriage.

The parties are the principal and the freight forwarder. The principal, traditionally referred to in practice as the customer or instructing party, is the person in whose interest and for whose account carriage is organised. The freight forwarder is the professional intermediary that organises shipment and, when concluding the contract with the carrier, acquires the legal position of consignor in that second contractual relationship (Baias, Chelaru, Constantinovici, Macovei, 2012: 2065). The terminology adopted by the Code is logical but may cause confusion: the Romanian term expeditor denotes both the professional under the freight forwarding contract and the party contracting with the carrier under the contract of carriage. In most cases these are in fact the same person, but the legal capacity in which that person acts is different. The term *expediționar*, established in practice, had the advantage of specificity; moreover, references in other legislation to the notion of *expeditor* raise the question which party is intended-the consignor under the contract of carriage or the freight forwarder under the freight forwarding contract.

The conditions of validity are the general ones: capacity to contract, valid consent, a determined subject matter and a lawful cause. The particular feature concerns the freight forwarder, which engages professionally in intermediary activity. In practice, contracts are often concluded on the basis of general conditions drawn up by freight forwarding undertakings, which may give the relationship features of a contract of adhesion. Standard terms nevertheless become part of the agreement only insofar as they have been validly incorporated into the contractual relationship.

As regards form, the freight forwarding contract is consensual. Read together with Article 2044 of the Civil Code on commission agency, writing generally has an evidentiary rather than constitutive function. The operation's economic importance and the complexity of the instructions nevertheless explain why written form is the norm in practice.

The contract is nominate, synallagmatic, for consideration, commutative, consensual and autonomous. It is in the nature of a contract for services and is, in principle, concluded *intuitu personae* because the freight forwarder generally enjoys the confidence of its customer. Its autonomy must be emphasised: the freight forwarding contract and the contract of carriage concluded in its performance are two distinct legal relationships. The first binds the principal and the freight forwarder; the second binds the freight forwarder, contracting in its own name, and the carrier (Baias, Chelaru, Constantinovici, Macovei, 2012: 2065; Boroi, Stănciulescu, 2012: 496-498).

Because the contract is synallagmatic, it gives rise to reciprocal and interdependent obligations. The Code imposes on *the freight forwarder* (Civil Code: Articles 2064, 2066, 2067 and 2069): the characteristic obligation to conclude a contract of carriage and perform the ancillary operations; the obligation, at the principal's request, to exercise the right to give subsequent instructions; the obligation to comply with the principal's instructions when selecting the route, means and modes of transport and, in their absence, to act in the principal's interest; the obligation to guarantee that the goods reach their destination; the obligation to insure the goods where stipulated in the contract or required by usage; and the obligation to remit to the principal any premiums, allowances and tariff reductions obtained, which belong to the principal as of right unless otherwise agreed (Baias, Chelaru, Constantinovici, Macovei, 2012: 2067; Boroi, Stănciulescu, 2012: 496-498; Moțiu, 2011: 263-266). These are supplemented by implied obligations: to have the necessary structures and resources available; to provide advice; to facilitate collection of the price of the goods; to preserve the ability to bring judicial or arbitral proceedings; and to keep records.

Legal scholarship notes that, although the obligation to perform *ancillary operations* is mentioned by statute, no provision defines its content (Baias, Chelaru, Constantinovici, Macovei, 2012: 2065); it may be assumed to include storage, customs declarations, inspection of the goods and collection of sums due to the principal. An important clarification concerns the guarantee obligation: Article 2067 (2) of the Civil Code provides that, where the freight forwarder also assumes the obligation to deliver the goods at destination, that obligation is presumed not to have been assumed towards the consignee. It is therefore not an obligation of actual delivery-which belongs to the carrier-but a guarantee given to the principal that the goods will reach the consignee.

The freight forwarder is entitled to commission-as stipulated in the contract or, failing that, determined by professional tariffs or usage or, where neither exists, by the court with regard to the difficulty of the operation and the efforts made-and to recover sums advanced, expenses being reimbursed on the basis of invoices or other supporting documents (Civil Code: Article 2069). Correspondingly, *the principal* must pay the commission and reimburse expenses and is also subject to implied obligations: to place the goods at the freight forwarder's disposal, provide the necessary documents, give complete instructions and warrant the accuracy of the information supplied. The principal's statutory rights are the right unilaterally to terminate the contract by revocation (Civil Code: Article 2065) and the right to require the freight forwarder to remain at its disposal for the purpose of giving subsequent instructions (Civil Code: Article 2066). Article 2065 of the Civil Code governs revocation of the forwarding order. Until the contract of carriage is concluded, the principal may revoke the mandate, subject to payment of the expenses and compensation due for work already performed. This solution adapts to the subject matter of freight forwarding the mechanism for revoking commission agency under Article 2051 of the Civil Code.

The freight forwarder's liability is subject to a distinctive regime. Article 2068 (1) establishes liability for delay, destruction, loss, misappropriation or damage where these are connected with negligence in performing the forwarding operation, particularly in taking over and safeguarding the goods or selecting the carrier or intermediate freight forwarders. The freight forwarder must therefore exercise the diligence of a professional both in its own activity and in selecting those to whom it entrusts different segments of the operation.

The regime becomes more stringent where, without sound reasons, the freight forwarder departs from the mode of transport specified by the principal. In that case Article 2068 (2) renders it liable even for loss caused by a fortuitous event, unless it proves that the same result would have occurred had the instructions been followed.

A qualification is nevertheless required. The assertion that the freight forwarder "is liable for the carrier" does not establish a general and automatic guarantee covering every failure of performance by the carrier. Unlike the carrier, whose liability arises directly from the duties to move and preserve the goods, the freight forwarder is liable under the specific conditions of Article 2068-principally for its own negligence in organisation and selection-or where it has expressly assumed additional guarantee obligations. This distinction is essential to differentiating the two contracts. The freight forwarder (as party to the freight forwarding contract) is therefore liable only for its own acts in relation to loss caused by the incorrect selection of a carrier and departure from the principal's instructions, not for the carrier's performance of the carriage; it is not a guarantor of the undertaking that performs the carriage (Nemeș, Fierbințeanu, 2020: 427). The freight forwarder may nevertheless assume, under a special clause, a guarantee of performance of the carriage services in exchange for an additional commission paid by the principal.

Claims arising from freight forwarding are subject to the special limitation period laid down in Article 2071 of the Civil Code: in principle, one year from delivery of the goods at destination or from the date on which delivery ought to have occurred, subject to the special statutory period for carriage beginning or ending outside Europe.

Elements of similarity or interaction between the freight forwarding contract and the commission contract. The connection between freight forwarding and commission agency is, first and foremost, normative. Within the scheme of the Civil Code, both institutions appear in the section on agency without representation: the general provisions are followed by the commission contract, then consignment and the freight forwarding contract. This placement is not accidental, and Article 2064 removes any doubt by expressly classifying freight forwarding as a variety of commission contract.

The first point of interaction lies in the mechanism of acting in one's own name but for another person's account. Like the commission agent, the freight forwarder does not directly represent the principal in relation to the third party. When it concludes the contract of carriage, the freight forwarder itself becomes the carrier's contracting counterparty. The principal retains the economic interest, but external relations arise, in principle, between freight forwarder and carrier.

A second similarity concerns professional status and remuneration. Both the commission agent and the freight forwarder carry on a professional activity and are remunerated by commission. The contracts are for consideration, synallagmatic, consensual and commutative, and confidence in the intermediary plays an important role.

A third point of interaction concerns the principal's instructions. The general commission-agency rule that the intermediary must follow the instructions received is particularised in freight forwarding by the obligation to comply with directions regarding the route, means and modes of transport. If no such directions are given, the freight forwarder has a margin of professional judgment, but must exercise it in the principal's interest-which entails evaluating costs, safety, duration and the characteristics of the goods.

A fourth similarity is apparent in revocation. Article 2051 permits commission agency to be revoked until the transaction with the third party is concluded; Article 2065 permits revocation of the forwarding order until the contract of carriage is concluded. In both cases, the point at which the intermediary contracts with the third party marks a change in the applicable legal regime.

Freight forwarding is nevertheless not reducible to commission agency. The specialised nature of its subject matter gives it a distinct character. The freight forwarder does not receive a generic mandate to purchase or sell goods or provide services, but must legally and technically construct a transport operation. Moreover, Articles 2066-2071 introduce institutions having no exact equivalent in ordinary commission agency: the connection with subsequent instructions under the law of carriage; special obligations concerning the route, insurance and tariff benefits; liability for risks characteristic of carriage; the possibility of functional transformation into a carrier; and a special limitation period.

The relationship can therefore be expressed through the genus-species formula: commission agency supplies the legal architecture, while freight forwarding adds the subject matter and risks inherent in organising carriage.

Elements of similarity or interaction between the freight forwarding contract and the contract of carriage. Whereas the relationship between freight forwarding and commission agency concerns legal nature, the relationship with carriage concerns primarily subject matter and performance. The freight forwarder concludes a contract of carriage, selects the carrier and organises the technical and legal conditions under which the goods will be moved. The two contracts are autonomous, but operate successively and interdependently.

The most telling point of interaction is the mechanism of subsequent instructions. Under the contract of carriage, the consignor is initially the holder of the right of subsequent disposal. Under the freight forwarding contract, however, the economic interest belongs to the principal. Article 2066 resolves this apparent separation: after the contract of carriage has been concluded, the freight forwarder must, at the principal's request, exercise the right to give subsequent instructions.

Legally, this does not make the principal a party to the contract of carriage. The principal communicates the instruction to its freight forwarder, and the freight forwarder-in its separate capacity as party to the contract of carriage-exercises the right provided by Article 1970 et seq. of the Civil Code. The mechanism therefore has two stages: principal

→ freight forwarder → carrier. It is this mechanism that most clearly illustrates the functional overlay of commission agency upon carriage. Furthermore, the sequence of Articles 2065 and 2066 reveals a genuine "boundary line". Before the contract of carriage is concluded, the principal may revoke the forwarding order. After its conclusion, the operation is modified by exercising the right to give subsequent instructions under the law of carriage. The legal relationship thus moves from the pure logic of commission agency to direct interaction with transport law.

The strongest convergence between the two institutions, however, follows from Article 2070 of the Civil Code. The freight forwarder may undertake to perform the carriage, in whole or in part, using its own means or those of another. In that situation, as regards the carriage assumed, it acquires the carrier's rights and obligations (Civil Code: Article 2070). This is the exception to the rule that the freight forwarder merely organises carriage. Under Article 2070, the same person combines the role of intermediary with that of carrier. The distinction is no longer made by reference to the professional designation used, but according to the performance actually undertaken. For the segment in which it performs carriage, the freight forwarder is subject to the legal regime applicable to the carrier, including the obligations and liability specific to that capacity.

This solution does not, however, extinguish the freight forwarding contract or justify a general conflation of the two institutions. Depending on the particular activity undertaken, there may be an accumulation of capacities and legal regimes. In organising carriage, the professional remains a freight forwarder; for the movement it has undertaken itself, it has the status of carrier.

Other points of interaction are evident in the field of liability: the events listed in Article 2068-delay, destruction, loss, misappropriation and damage-correspond to the classical risks of carriage. As a rule, the freight forwarder does not physically perform the movement, but the manner in which it selects the carrier, safeguards the goods, transmits instructions and organises the logistics chain may be decisive in the materialisation of those risks.

Similarly, operations ancillary to carriage-temporary storage, handling, loading and unloading, insurance, customs formalities, documentation and consolidation-create points of contact with distinct contracts and legal regimes. The freight forwarder's role is precisely to ensure their coherence within a single operation viewed from the perspective of the customer's interest.

Accordingly, the freight forwarding contract may be described as a functional hybrid of commission agency and carriage: commission agency provides its legal structure (the technique of indirect representation), while carriage determines its purpose, the characteristic performance that it mediates, and a substantial part of its specific obligations and risks (its substance-the content of the services and the standard of liability).

Conclusions

The development of freight forwarding is the direct consequence of the transformation of the carriage of goods from a simple movement operation into a complex logistics process. Numerous alternatives may exist between two geographical areas: carriage by road, rail, sea or air, or multimodal combinations; different routes; direct carriage or consolidation; and different terminals, warehouses and customs points. Selecting the optimal solution requires knowledge that ordinarily exceeds the expertise of a producer or trader primarily concerned with its own business. At the same time, the internationalisation of trade has multiplied the rules applicable to the movement of goods.

Import and export formalities, customs regulations, rules governing dangerous goods, health or phytosanitary requirements, documents specific to the various modes of transport and international legal regimes turn the organisation of movement into a markedly professional service. Related services must also be added: storage, handling, packing and repacking, consolidation and groupage of consignments, cargo insurance, customs formalities, booking transport capacity, selecting terminals, route planning, managing transshipments and real-time monitoring. The modern freight forwarder is consequently no longer a mere intermediary that identifies a carrier, but the integrator of a sequence of services.

The importance of this activity may be explained by several convergent considerations. The first concerns information asymmetry: the relevant information in the transport market-available capacity, actual rates, operators' reliability and solvency, and route restrictions-is dispersed and volatile, and the freight forwarder professionally consolidates and exploits it. The second concerns reducing transaction costs: instead of a network of separate contracts with carriers, warehouse operators, handlers, customs agents and insurers, the principal concludes a single contract and transfers the coordination risk to the intermediary. The third concerns economies of scale achieved through consolidation: combining small consignments permits full use of transport capacity and the sharing of costs. The fourth concerns compliance: the complexity of European customs regulations, export controls, dangerous-goods rules and phytosanitary requirements makes the freight forwarder the compliance manager of the logistics chain.

Recent transformations in the profession must be added to these considerations. The digitisation of transport documents, real-time monitoring, intermediary platforms and traceability now form part of the freight forwarder's service, while carbon-footprint reporting adds a further level of expertise. Multimodal carriage assigns it the task of articulating different legal regimes within a single economic operation. In this context, the expression used in legal scholarship to describe the freight forwarder-"the architect of transport"-remains apt. Its activity may begin before the producer concludes the commercial transaction, by supplying the information needed to estimate logistics costs, and may end only after the goods have been delivered at destination. Freight forwarding transforms a plurality of contracts, formalities and operations into a route organised as a coherent whole from the customer's perspective.

From a legal perspective, the current Civil Code reflects this reality convincingly. Freight forwarding is a variety of commission agency because the freight forwarder acts in its own name and for the principal's account. Yet it inevitably approaches carriage because the very subject matter of the mandate is the conclusion and organisation of a contract of carriage, because the right to give subsequent instructions traverses the two contractual relationships, and because, under Article 2070 of the Civil Code, the freight forwarder may itself become the carrier.

A comparative legal analysis of the freight forwarding contract and related legal structures reveals scope for improving the rules in three respects. The first is terminological clarification: the dual use of the Romanian term expeditor is a foreseeable source of difficulty in identifying the basis of liability, and reverting to expediționar or introducing an express distinction would eliminate it. The second is defining the minimum content of the "ancillary operations" referred to in Articles 2064 and 2067 of the Civil Code, whose indeterminacy leaves room for divergent interpretations precisely in the area where the added value of the service is concentrated. The third is expressly coordinating Article 2068 of the Civil Code with Article 1984 et seq., in order to establish unequivocally whether and to what extent the freight forwarder may invoke against the principal the limits on compensation available to the carrier. Pending such legislative intervention, classifying the freight forwarding contract as a hybrid-a variety of commission agency in structure and an extension of carriage in function-remains the interpretation most faithful to Articles 2064-2071 of the Romanian Civil Code. Put differently, the contract derives its structure from commission agency, but constructs its distinct identity from the requirements of carriage.

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ORIGINAL PAPER

Volatility Dynamics of Public and Private Sector Banks in India: A Comparative Study of BOI and ICICI Bank Using GARCH-Family Models

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Abstract:
The current study investigates the volatility behaviour of the leading banks in India, i.e., Bank of India (BOI) andIndustrial Credit and Investment Corporation of India (ICICI), representing the public and private banking sectors. The study analyses daily stock prices from 22nd February2016 to 20th February 2026to examine how both banks reacted to market fluctuations, economic uncertainty, and major shocks, including the COVID-19 period. To analyse volatility, the study applies different GARCH-family models, including GARCH, TGARCH, EGARCH, PARCH, and APARCH models, under alternative error distributions.
The result reflects that both BOI and ICICI Bank exhibit volatility clustering, non-normal return behaviour, and persistent market shocks. And the ARCH-LM test confirms the presence of heteroskedasticity, which braces the use of GARCH-family models for volatility gauging. The findings betray that the EGARCH model with Student's t-distribution is most suitable for BOI, while the APARCH model with Student's t-distribution provides the ideal for ICICI Bank. The study also suggests that ICICI Bank shows substantial volatility and brawny vulnerability to market shocks than BOI.
The study concludes that volatility tessellated differently between public and private-sector banks; therefore, a single model cannot elucidate the risk behaviour of all banking stocks. The edicts are useful for investors, portfolio managers, researchers, and

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policymakers in understanding risk, improving portfolio decisions, and prophesying the volatility in the Indian banking sector.

Keywords: *Indian Banking System, Bank of India, ICICI, GARCH models, Volatility*
JEL Classification Codes: G0, G1, C22, C11, C17

Introduction

BOI and ICICI are two major banks and hold a remarkable value in the Indian banking sector. They are the rescuer of the financial market, from local vendors to big corporate players. When their stock prices are volatile, it not only shows on a digital screen but also reveals whether the Indian economy is struggling or breathing easily. However, risk is always there; they presume prices are steady or fluctuate consistently, but the reality is somewhat different. The stock market is characterised by unexpected events, explosive jumps, and market crashes, driven by the COVID-19 pandemic and shifting microeconomic factors that do not fit a standard, predictable pattern.

After analysing 10 years of daily data from 2016 to 2026, this study compares the volatility patterns of ICICI and BOI, revealing their resilience and stability following significant events such as the COVID-19 pandemic. It employs advanced mathematical models, including the GARCH family, to provide insights into their risk profiles.

The finding shows that the private sector, such as ICICI, has higher kurtosis than the public sector, such as BOI. It is vital for those who are managing a portfolio or forecasting future risk. It shows that ICICI performs best with the APARCH model, and BOI performs slightly differently and captures the EGARCH model. Once understand these different patterns, it becomes much easier to see the ups and downs in the Indian banking sector.

Review of Literature

Recent studies have shown that stock prices don't change significantly. Prices fluctuate irregularly, often in clusters. To analyse this, researchers go for advanced GARCH models to better understand and measure changes over time. Moreover, Trivedi et al. (2022) investigated the behavior of the Chinese stock market under the impact of the Covid-19 pandemic. Meher et al. (2023) have developed a research study on the FinTech industry in emerging markets. Spulbar et al. (2020) also discussed key issues regarding the dynamics of FinTech industry.

Raza et al., (2026) have conducted an empirical analysis of the volatility of the Deutscher Aktienindex (DAX) stock index using a daily dataset of 5,140 daily return observations from January 2, 2006, to March 20, 2026. The main objective of this study is to develop an econometric framework to assess the asymmetric response to market volatility shocks. The study evaluates GARCH family models—GARCH, EGARCH, GJR-GARCH, and APARCH—with error distributions like Normal, Student-t, GED, and Skewed-t. Testing shows the return series is stationary, non-normal, and has "fat tails". The GJR-GARCH model with a Skewed-t distribution is the best fit for the DAX index, based on the lowest AIC and BIC values. The findings offer valuable insights for investors and policymakers on risk gauging and strategic recommendations in the German stock market.

Shreevastava et al., (2025) the study has analysed recurrent patterns in high-frequency financial data, focusing on volatility clustering, leptokurtosis, and the asymmetric effects of news, and has conducted a thorough examination of GARCH models. The overriding goal of this study is to analyse econometric modelling and volatility conditioning in daily logarithmic returns for the MSCI index from Nov 2012 to Oct 2025.This research examines how well six GARCH models fit the data: the standard GARCH (1,1), Integrated GARCH (IGARCH), Threshold GARCH (TARCH), Exponential GARCH (EGARCH), Power ARCH (PARCH), and Asymmetric Power ARCH (APARCH). The study exploits a univariate GARCH model, concentrating exclusively on the volatility of the MSCI Mexico Index. This framework excludes potential contagion effects and interdependencies with other global markets or principal commodity prices, potentially biasing risk estimates by striking out significant exogenous factors.

Waris et al. (2026) have discussed the government's role in implementing economic reforms and addressing financial crises, particularly regarding price volatility. For this, the researcher has used data from the DataStream database on the MSCI price index for Malaysia and its trading partner from 1993 to 2021. The study used wavelet analysis, asymmetric GARCH models, and a stochastic volatility model to analyse the data. The finding shows asymmetric volatility transmission: negative shocks increase volatility more than positive ones. The author concluded that investors should invest in low-volatility stocks during a crisis. The study suggested that the government should implement effective policies to address pre- and post-crisis periods and help recover from losses.

Sharma and Vipul, (2015) argued that the objective is to compare daily conditional variance forecasts from seven GARCH models: GARCH, EGARCH, GJR-GARCH, TGARCH, AVGARCH, APARCH, and NGARCH models, using daily data for 21 stock indices from 1 January 2000 to 30 November 2013. The sample includes eight European, nine Asia-Pacific, and four American indices from Bloomberg, truncated to 3,395 trading days, and matched to the Jakarta Stock Exchange. The forecasts are tested statistically, concluding that the standard GARCH model outperforms advanced models in predicting stock index variance, providing the most accurate one-step forecasts across market conditions and is unaffected by data-snooping bias.

Lin, (2018) investigated the volatility of the SSE Composite Index using GARCH-family models, including GARCH(1,1), TARCH(1,1), and EGARCH(1,1). The researcher collected 996 daily closing prices spanning from January 3, 2011, to January 30, 2015. Analytical procedures using E-Views 8.0 and Excel included descriptive statistics, stationarity tests, and ARCH testing. The findings indicated volatility clustering, leptokurtic distribution, and significant ARCH, GARCH, and E-GARCH effects, with the E-GARCH(1,1) model demonstrating superior performance in volatility forecasting.

Chiang et al. (2001) aimed to analyse the relationship between market stock returns and volatility based on seven Asian stock exchanges: Hong Kong, Malaysia, the Philippines, Singapore, South Korea, Thailand, and Taiwan. At the same time, Japan and the United States were included for comparison of **daily, weekly, and monthly stock price index data** from January 1988 to June 1998. The authors employed the Threshold Autoregressive GARCH/TAR-GARCH (1,1)-in-mean model along with the ARIMA model. Various statistical models, such as mean return, standard deviation, skewness, excess kurtosis, autocorrelation, and the Ljung-Box Q (12) statistic for returns and squared returns, are used to forecast volatility and asymmetric effects. The findings revealed that 4 out of 7 stock exchanges have a **significant relationship between stock returns and unexpected volatility.** The study is limited because it includes only seven Asian countries, fails to address its generalizability, and relies on historical data that may not apply to the current context.

Aman et al. (2024) investigated the volatility pattern of the BUX index using advanced GARCH-family models. This study is based on quantitative, exploratory data collected from secondary sources on the BUX index, covering daily data from 2011 to 2024. This study investigates the APARCH (1,1) Student's t-distribution model to examine the volatility pattern of the BUX Index using the variance equation and finds asymmetry, volatility clustering, slower decay, and a strong influence of positive shocks, with a low response to them. The study is limited to a single data source, which is the BUX Index, which hinders the generalisability of the findings. Further research can be conducted using more advanced econometric tools, such as VARs, Copulas, and machine learning.

Gokbulut and Pekkaya, (2014) explored and forecasted the volatility of Turkish financial markets, focusing on exchange rate and interest rate returns. This study is based on secondary sources, and data are drawn from the BIST 1000 for the period 2000-2014. GARCH-family models, including ARCH, GARCH, TGARCH, EGARCH, PARCH, AGARCH, and CGARCH models, were used for the econometric analysis. CGARCH and TGARCH models have a significant, positive influence on financial market volatility among all GARCH-family models. However, this study is limited to Turkish financial markets, and the results cannot be applied to other countries. More advanced tools can be used for further research and cross-country validation to examine different financial markets and improve forecasting accuracy and broader applicability.

Lim et al. (2023) focused to estimate market volatility and the causal relationship between the markets using the historical daily prices ranging from 2008 to 2019 of the selected ASEAN stock markets, Financial Times Stock Exchange (FTSE), Bursa Malaysia Kuala Lumpur Composite Index (KLCI), the Indonesia Stock Exchange Index (LQ45), and the Stock Exchange of Thailand (SET). This study used a univariate GARCH model to capture the volatility of financial instruments, the ARIMA-GARCH model and the Granger causality test examined the causal relationships among markets.

The findings revealed volatility clustering, leverage effects, and asymmetric volatility across markets. Among the estimated models, the EGARCH(1,1) model was found to be the most effective in capturing asymmetric volatility behaviour. The main challenge of this study is that it has taken only four stock markets, which limits the generalisability of the findings for other research. Further research can be conducted across more countries and with additional advanced models to capture market volatility.

Endri et al. (2020) aimed to analyse the effect of macroeconomic variables (interest rates, exchange rate and inflation) and global stock exchange (STI, SSE, N225, DJIA, FTSE100) on the Indonesian stock exchange. The researcher has taken monthly data from secondary sources of the Indonesian stock exchange from 2012 to 2018 and applied the GARCH model, along with ADF unit root tests and AIC/SC criteria for model selection. The results show that interest rates and inflation have negative effects, while the exchange rate has a positive effect on the Indonesian stock exchange. The limitation of the study is that it utilises the GARCH (1,1) model exclusively and does not compare its performance with asymmetric models such as EGARCH, TGARCH, or APARCH models. Future research may use alternative GARCH models to obtain more robust volatility estimates and improve forecasting accuracy.

Frimpong et al. (2006) examined market volatility at the Ghana Stock Exchange over a 10-year period. The data has been collected from the period 1994-2004 of the

Ghana Stock Exchange Databank Stock Index (DSI). Random walk (RW), GARCH(1,1), EGARCH(1,1), and TGARCH(1,1) models were applied to the analysis. The results show that the symmetric GARCH (1,1) model outperformed all other models, as it had the lowest error measures. However, the analysis was limited to basic GARCH-family models and to only one stock market. The author suggested that the IGARCH and APARCH models are better suited to capture the long-memory characteristics of stock market volatility.

Research Gap

The Industrial Credit and Investment Corporation of India (ICICI) and Bank of India (BOI) are listed on the National Stock Exchange (NSE). Empirical studies have been conducted to date; however, a significant research gap remains in the advanced GARCH family for volatility forecasting. A Substantial body of existing literature has reviewed various methodologies, but it lacks a comprehensive understanding. This study analyses and understands how the stock prices of ICICI and BOI fluctuate using the GARCH Model. The study tries to analyse how much stock prices will fluctuate in future.

Objective of the studies

1. To study the price instability of BOI Bank and ICICI Bank from 22/02/2016 to 20/02/2026.
2. To examine volatility characteristics between a public sector bank, i.e. BOI, and a private sector bank, i.e. ICICI.
3. To conduct a comparative assessment of GARCH Family models (such as GARCH, EGARCH, TARCH, PARCH, APARCH) in capturing volatility dynamics of both banking entities.

Research Hypotheses

This study is Quantitative and exploratory in nature. The study adopts a stepwise modelling approach for volatility estimation and forecasting. There are 2478 data points for both banks (ICICI and BOI) spanning 22/02/2016 to 20/02/2026. The objective of the study is to estimate volatility using the GARCH Family models with Gaussian normal distribution, Student's t distribution, generalised error distribution (GED), t distribution, and GED distribution with parameters. Log returns were computed to stabilise the data series, yet volatility persistence was observed. To examine heteroskedasticity in the return series residuals, the ARCH-LM Test was used. Multiple GARCH-family models (GARCH, TGARCH, EGARCH, PARCH, and APARCH) were applied with different volatility distributions.

Significance of the study

The study holds significant value because volatility plays an important role in financial and investment decisions. The prices of these two banks' stocks have a significant impact on the Indian stock market due to their substantial market capitalisation. Volatility helps investors to make better portfolio and investment decisions because it represents the uncertainty in stock returns. A deep, detailed understanding of market fluctuations is a must for investors. This research is also important because it analyses the differences between public sector banks (BOI) and public sector banks (ICICI). Earlier studies focused only on market price indices, but this study adds new insights by examining banks. This study links statistical models to financial decisions and helps analyse risk patterns more effectively in the Indian banking sector.

Limitations of the study

1. **Restricted sample size:** This study focuses only on two banks, ICICI (Industrial Credit and Investment Corporation of India) and BOI (Bank of India). Although these are major banks in India, they cannot represent the entire banking sector.
2. **Historical data dependency:** Research is based on Historical data stock prices. It is difficult to predict the future volatility.
3. **Daily Data Limitation:** Using daily data may fail to capture intraday volatility fluctuations.
4. **Forecasting uncertainty**: Volatility forecasting is uncertain and may not estimate the extreme market events, such as policy changes, global economic crashes

Empirical analysis, estimation and results

For better clarity and systematic analysis, this section is divided into two segments: the first addresses the Bank of India, and the second focuses on ICICI Bank. Firstly, we are heading towards one of the leading public-sector banks.

Bank of India

To better understand price volatility, the Bank of India graph has been presented. The graph below shows that the index has been volatile. From the graph, it can be seen that there are irregular dips and spikes due to both systematic and non-systematic factors, such as COVID-19 and other macroeconomic effects.

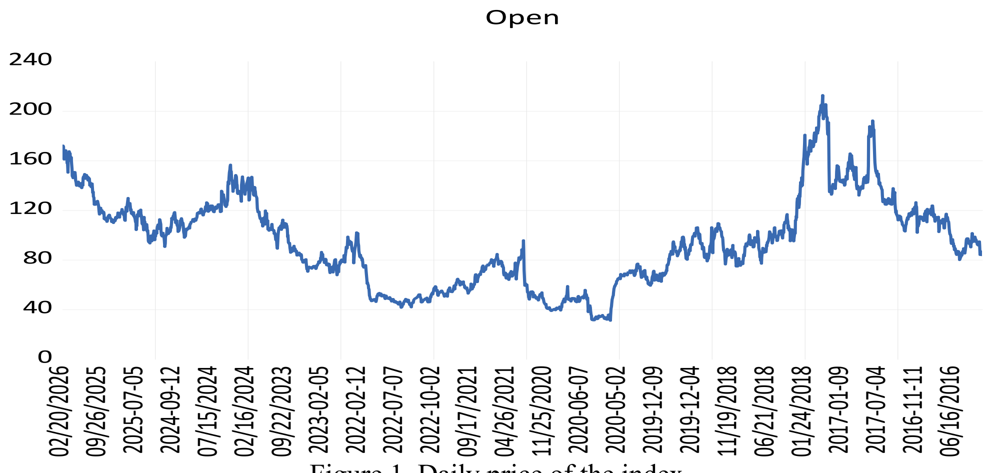

Figure 1. Daily price of the index

Source: author's Computation using EViews 12

Log returns were calculated to stabilise the data. And from the graph, it has been observed that spikes and dips occurred during the entire period. Below is the graphic representation of log returns.

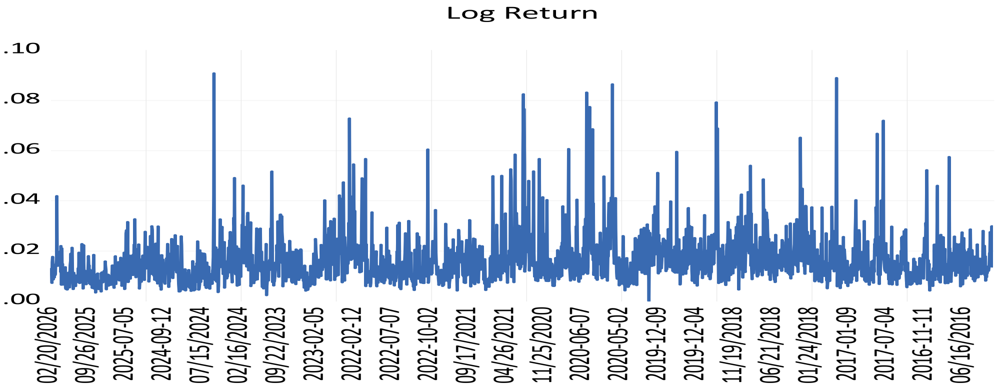

Figure 2: Log Returns Graph

Source: author's Computation using EViews 12

The log-return data exhibit clustering and patterns of shocks, which visually suggest possible heteroskedasticity; therefore, a stationarity test should be conducted first.

Test of stationarity

Table 1: Heteroscedasticity Test

Null Hypothesis: LOG RETURN has a unit root				
Exogenous: Constant				
Lag Length: 7 (Automatic - based on SIC, maxlag=26)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-11.48303	0.0000
Test critical values:	1% level		-3.432803	
	5% level		-2.862510	
	10% level		-2.567331	
*MacKinnon (1996) one-sided p-values.				

Source: author's Computation using EViews 12

The above test is the Augmented Dickey-Fuller (ADF) test. It was used to test for data stationarity. From the table, the p-value is 5%, indicating that the data pass the unit root test and are stationary. To understand the data's nature, look at the statistical parameters below.

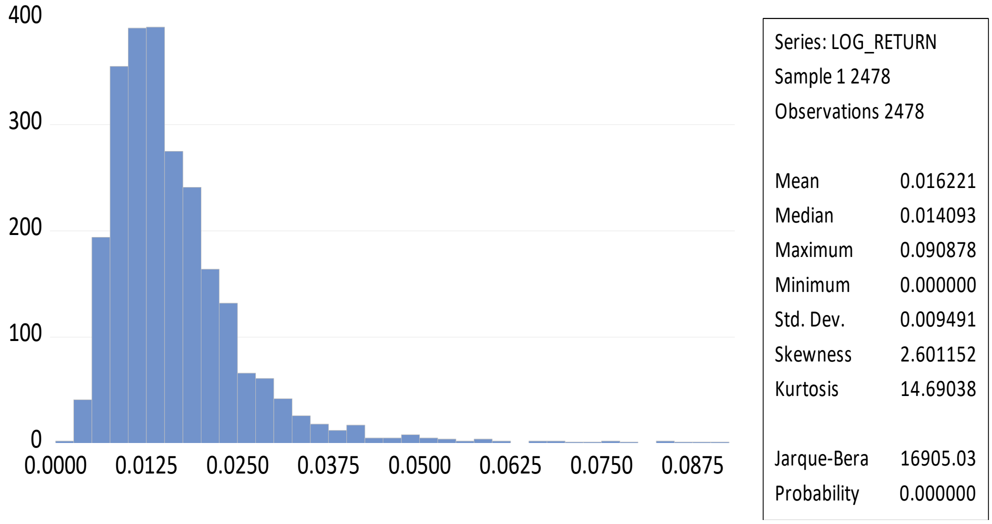

Figure 3. Log Returns Graph
Source: author's Computation using EViews 12

The histogram of 2,478 daily log returns shows that these returns don't follow a normal, bell-shaped distribution. On average, returns are positive, with a mean of 1.62% (0.016221) and a median of 1.41% (0.014093), and overall volatility remains quite low, with a standard deviation of under 1% (0.009491). However, the real story is in the shape of the graph: it has a massive spike around the 1.25% mark and a long tail stretching to the right, reaching a maximum return of about 9.09% (0.090878).

This extreme rightward skew (a skewness of 2.60) and the tall, skinny peak (a high kurtosis of 14.69) indicate the data are packed with frequent small gains and occasional massive positive jumps. In plain terms, the off-the-charts Jarque-Bera score of 16,905.03 and its 0% probability completely confirm that these returns defy standard statistical normality, leaning heavily into those big, unexpected positive outliers.

Heteroskedasticity Test

Table 2: ARCH effect test

Heteroskedasticity Test: ARCH			
F-statistic	130.0946	Prob. F (1,2474)	0.0000
Obs*R-squared	123.6953	Prob. Chi-Square (1)	0.0000

Source: author's Computation using EViews 12

Since the low probability score indicates volatility isn't constant, we reject the idea of a stable market in favour of one in which past shocks influence future risk. While the ARCH model identifies this "memory," we use the GARCH family instead because it better weights past data to predict current variance.

Table 3: Decision table for GARCH Selection

		GARCH model	TARCH model	EGARCH model	PARCH model	APARCH model
Normal Distribution	*Akaike info criterion*	4.673948	4.65937	4.64811	4.64846	4.66218
	Schwarz criterion	4.685686	4.67346	4.66220	4.66490	4.67626
	Log Likelihood	-5783.69	-5764.64	-5750.68700	-5750.12100	-5768.108
	ARCH significant	Yes	Yes	Yes	Yes	Yes
	Autocorrelation	No	No	No	No	No
	ARCH LM-Test	No	No	No	No	No
	GARCH significant	Yes	Yes	Yes	Yes	Yes
	significant coefficient	Yes	Yes	Yes	Yes	Yes
Student's T	*Akaike info criterion*	4.531563	4.52218	4.51398	4.51491	4.52187
	Schwarz criterion	4.545648	4.53861	4.53041	4.53369	4.53830
	Log Likelihood	-5606.34	-5593.71	-5583.563	-5583.71	-5593.33200
	ARCH significant	Yes	Yes	Yes	Yes	Yes
	Autocorrelation	No	No	No	No	No
	ARCH LM-Test	No	No	No	No	No

	GARCH significant	Yes	Yes	Yes	Yes	Yes
	significant coefficient	Yes	Yes	Yes	Yes	Yes
	Akaike info criterion	4.537664	4.52892	4.52139	4.55342	4.52912
	Schwarz criterion	4.551749	4.54536	4.53782	4.56985	4.54555
	Log Likelihood	-5613.9	-5602.07	-5592.74	-5632.408	-5602.317
	ARCH significant	Yes	Yes	Yes	Yes	Yes
	Autocorrelation	No	No	No	No	No
	ARCH LM-Test	No	No	No	No	No
	GARCH significant	Yes	Yes	Yes	Yes	Yes
Generalized Error	*significant coefficient*	Yes	Yes	Yes	Yes	Yes
	Akaike info criterion	4.562003	4.54891	4.53982	4.54070	4.55004
	Schwarz criterion	4.57374	4.56300	4.55391	4.55714	4.56412
	Log likelihood	-5645.04	-5627.83	-5616.567	-5616.66	-5629.222
	ARCH significant	Yes	Yes	Yes	Yes	Yes
	Autocorrelation	No	No	No	No	No
	ARCH LM-Test	No	No	No	No	No
	GARCH significant	Yes	Yes	Yes	Yes	Yes
T distribution (Parameter)	*significant coefficient*	Yes	Yes	Yes	Yes	Yes
	Akaike info criterion	4.573468	4.56144	4.55244	4.55342	4.56264
	Schwarz criterion	4.585206	4.57553	4.56653	4.56985	4.57672
	Log Likelihood	-5659.24	-5643.34	-5632.197	-5632.408	-5644.826
	ARCH significant	Yes	Yes	Yes	Yes	Yes
	Autocorrelation	No	No	No	No	No
	ARCH LM-Test	No	No	No	No	No
	GARCH significant	Yes	Yes	Yes	Yes	Yes
Generalised Error (Parameter)	*significant coefficient*	Yes	Yes	Yes	Yes	Yes

Source: Author's formulation

Table 4. EGARCH (1,1) models, Student's t-distribution

Dependent Variable: OPEN				
Method: ML ARCH - Student's t distribution (BFGS / Marquardt steps)				
Date: 04/10/26 Time: 22:17				
Sample (adjusted): 2 2478				
Included observations: 2477 after adjustments				
Convergence achieved after 83 iterations.				
Coefficient covariance computed using the outer product of gradients.				
Presample variance: backcast (parameter = 0.7)				
LOG(GARCH) = C (3) + C (4) *ABS (RESID (-1)/@SQRT (GARCH (-1))) +				
C (5) *RESID (-1)/@SQRT (GARCH (-1)) + C (6) *LOG (GARCH (-1))				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.355376	0.087787	4.048161	0.0001
OPEN (-1)	0.996035	0.001076	925.9065	0.0000
	Variance Equation			
C (3)	-0.090097	0.014316	-6.293587	0.0000
C (4)	0.171047	0.021211	8.064045	0.0000
C (5)	0.078814	0.014640	5.383404	0.0000
C (6)	0.982911	0.004354	225.7544	0.0000
T-DIST. DOF	4.142087	0.362383	11.43012	0.0000
R-squared	0.993287	Mean dependent var		94.56396
Adjusted R-squared	0.993284	S.D. dependent var		35.71354
S.E. of regression	2.926674	Akaike info criterion		4.513979
Sum squared resid	21199.42	Schwarz criterion		4.530412
Log likelihood	-5583.563	Hannan-Quinn criterion.		4.519948
Durbin-Watson stat	1.992258			

Source: Author's computation using EViews 12

To find the most accurate fit, we tested several advanced versions, including IGARCH, TARCH, EGARCH, PARCH, and APARCH, across five different statistical distributions to see which best captures the asset's specific patterns of turbulence.

From the table above, it can be concluded that the EGARCH (1,1) under the Student's t-distribution has the lowest AIC value, the lowest SC value, and the highest Log Likelihood value, making it a suitable model for the analysis. Let's proceed with the EGARCH test.

From the above model, we can see that the Bottom line is a highly accurate market model (99.3% explanatory power) that tracks a price variable called "OPEN." It proves that today's price is almost entirely driven by yesterday's price. Volatility is Sticky; the market has a long memory for drama. With a persistence score of 0.983, once the market becomes volatile or anxious, that turbulence will linger and bleed into the following days. News Matters: sudden market shocks instantly trigger higher volatility, and the direction of the news impacts the market unevenly.Expect the Unexpected: the model confirms the data has "fat tails" (a low degree of freedom of 4.14), meaning extreme, unpredictable price spikes or drops occur far more often than normal statistics would predict.

Now we are moving to the other part of the paper, which deals with the private banking sector.

The Industrial Credit and Investment Corporation of India (ICICI)

Below are the graphical representations of ICICI Bank over the decade. From these, it is clear that there are sharp dips during COVID-2019-20, but it spikes regularly after COVID-19 pandemic. This may be due to the COVID-19 pandemic and other microeconomic factors. During the entire framework, there is high volatility.

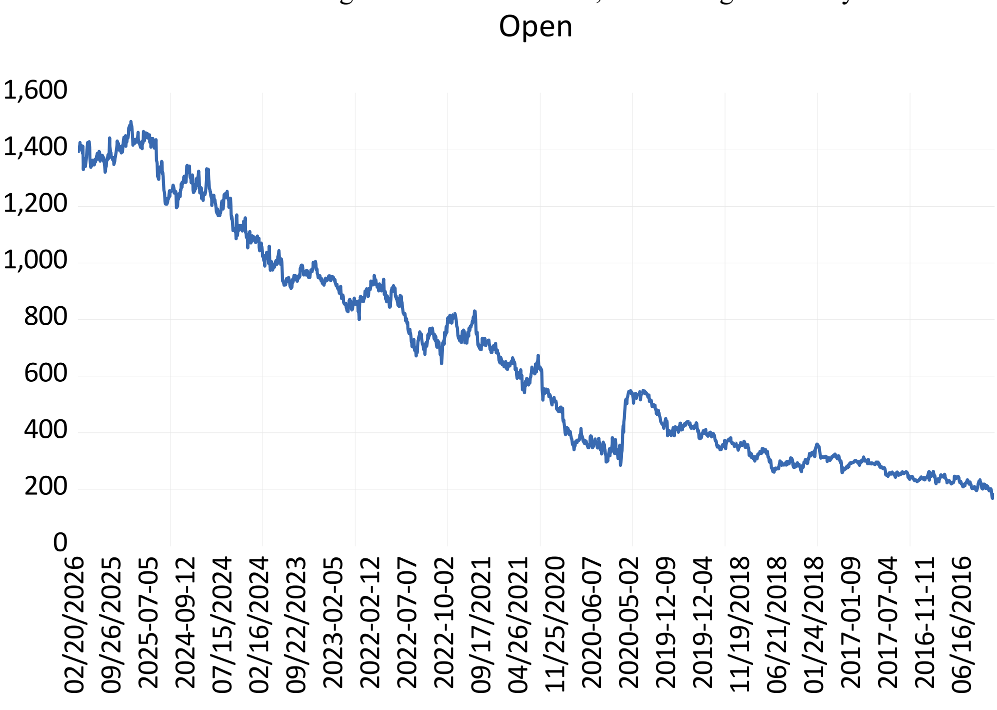

Figure 4. Daily price of the index

Source: author's Computation using EViews 12

To make returns stationary, the log return has been calculated. The following graphical representations show log returns. As discussed earlier, there is a spike in 2020, and volatility remains high throughout the period.

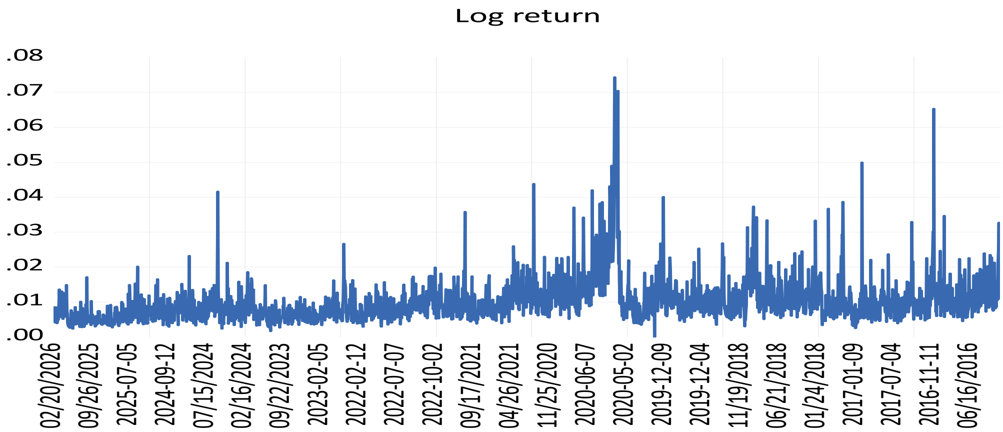

Figure 5. Log Returns Graph

Source: author's Computation using EViews 12

While a visual assessment suggests possible heteroscedasticity, it is imperative first to conduct a test for stationarity.

Table 5: Heteroscedasticity Test

Null Hypothesis: LOG_RETURN has a unit root				
Exogenous: Constant				
Lag Length: 5 (Automatic - based on SIC, maxlag=26)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-8.850059	0.0000
Test critical values:	1% level		-3.432801	
	5% level		-2.862509	
	10% level		-2.567331	

Source: Author's Computation using Eviews 12

The above test is the Augmented Dickey-Fuller (ADF) test. The probability value is less than 0.05, and the test statistic is lower than the 5% critical value; thus, we can say that the data has a unit root and is stationary.

Descriptive Statistics

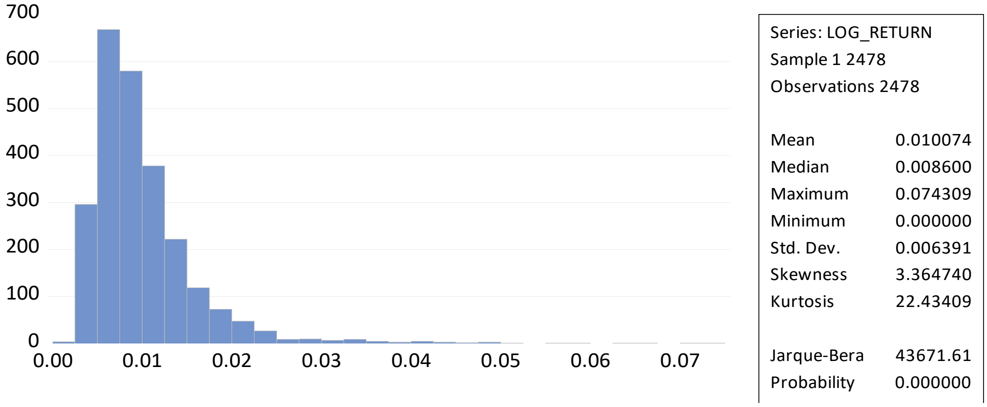

Figure 7. Test Distribution Analysis

Source: Author's Computation using Eviews 12

The histogram tracks 2,478 daily log returns and demonstrates that the data completely breaks away from a standard, normal bell curve. On average, the returns are positive, featuring a mean of 1.01% (0.010074) and a median of 0.86% (0.008600), while the overall market volatility stays relatively tight with a standard deviation of just 0.64% (0.006391). However, the defining characteristic of this dataset is its extreme shape: it features an incredibly sharp, tall peak right around the 0.5% to 1% mark and a long, drawn-out tail stretching far to the right toward a maximum return of 7.43% (0.074309), while the absolute minimum never drops below zero.

This massive rightward distortion is captured by an intense skewness of 3.36, and the sheer height of the peak is reflected in an astronomical kurtosis score of 22.43, indicating that the data is dominated by frequent small gains mixed with rare, massive positive jumps. Ultimately, the off-the-charts Jarque-Bera statistic of 43,671.61, paired with a perfect 0.000000 probability score, completely rejects any notion of standard statistical normality and proves that this market is highly prone to extreme positive outliers.

Heteroscedasticity Test

Table 6: ARCH-LM Test

Heteroskedasticity Test: ARCH			
F-statistic	63.85365	Prob. F (1,2474)	0.0000
Obs*R-squared	62.29738	Prob. Chi-Square (1)	0.0000

Source: author's computation using EViews 12

This ARCH test is a diagnostic check to see whether a dataset exhibits "volatility clustering"—meaning that periods of high market turbulence or calm tend to cluster together. Looking at the results, the F-statistic is 63.85, and the actual observations multiplied by the R-squared value yield a Chi-Square score of 62.30. The most critical takeaway here is the probability score (Prob.) for both tests, which is a perfect 0.0000; because this value is well below the standard 5% threshold, it completely rejects the idea that the data's volatility is constant and stable over time. In plain English, this test definitively proves that the dataset has significant ARCH effects, meaning the market exhibits heavy volatility clustering and absolutely requires an advanced volatility model to analyse it properly.

The decision table shows that the APARCH model with Student’s t-distribution is the best model for ICICI Bank. This is because it has the lowest AIC value of 7.29695 and the lowest Schwarz Criterion value of 7.31338, which means it fits the data better than the other models. The results also show that the model exhibits significant ARCH and GARCH effects, indicating that ICICI Bank’s stock returns exhibit clear volatility clustering and that past shocks continue to affect future volatility. Since there is no remaining autocorrelation and no further ARCH effect after applying the model, the APARCH model can be considered reliable. Therefore, the study selects the APARCH model with a Student’s t-distribution as the most suitable model for capturing the volatility pattern of ICICI Bank.

Table 7. Decision Table

		GARCH model	TARCH model	EGARCH model	ARCH model	APARCH model
Normal Distribution	*Akaike info criterion*	7.386038	7.38222	7.37422	7.37504	7.37585
	Schwarz criterion	7.397775	7.39630	7.38831	7.39148	7.38994
	Log Likelihood	-9142.61	-9136.87	-9126.97300	-9126.99200	-9128.991
	ARCH significant	Yes	Yes	Yes	Yes	Yes
	Autocorrelation	No	No	No	No	No
	ARCH LM-Test	No	No	No	No	No
	GARCH significant	Yes	Yes	Yes	Yes	Yes
	significant coefficient	Yes	Yes	Yes	Yes	Yes
Student's T	*Akaike info criterion*	7.305706	7.30421	7.29729	7.29775	7.29695
	Schwarz criterion	7.319791	7.32065	7.31372	7.31653	7.31338
	Log Likelihood	-9042.12	-9039.27	-9030.688	9030.267	79030.26200
	ARCH significant	Yes	Yes	Yes	Yes	Yes
	Autocorrelation	No	No	No	No	No
	ARCH LM-Test	No	No	No	No	No
	GARCH significant	Yes	Yes	Yes	Yes	Yes
	significant coefficient	Yes	Yes	Yes	Yes	Yes
Generalized Error	*Akaike info criterion*	7.31416	7.31224	7.30615	7.30702	7.30660
	Schwarz criterion	7.328245	7.32868	7.32258	7.32580	7.32304
	Log Likelihood	-9052.59	-9049.21	-9041.667	-9041.747	-9042.228
	ARCH significant	Yes	Yes	Yes	Yes	Yes
	Autocorrelation	No	No	No	No	No
	ARCH LM-Test	No	No	No	No	No
	GARCH significant	Yes	Yes	Yes	Yes	Yes
	significant coefficient	Yes	Yes	Yes	Yes	Yes
T distribution (Parameter)	*Akaike info criterion*	7.316051	7.31401	7.30659	7.30727	7.30655
	Schwarz criterion	7.327789	7.32810	7.32067	7.32370	7.32064
	Log likelihood	-9055.93	-9052.4	-9043.21	-9043.055	-9043.163
	ARCH significant	Yes	Yes	Yes	Yes	Yes
	Autocorrelation	No	No	No	No	No
	ARCH LM-Test	No	No	No	No	No
	GARCH significant	Yes	Yes	Yes	Yes	Yes

	significant coefficient	Yes	Yes	Yes	Yes	Yes
Generalised Error (Parameter)	*Akaike info criterion*	7.323623	7.32115	7.56108	7.31528	7.90454
	Schwarz criterion	7.33536	7.33523	7.57517	7.33171	7.91863
	Log Likelihood	-9065.31	-9061.24	-9358.4	-9052.969	-9783.775
	ARCH significant	Yes	Yes	Yes	Yes	Yes
	Autocorrelation	No	No	No	No	No
	ARCH LM-Test	No	No	No	No	No
	GARCH significant	Yes	Yes	Yes	Yes	Yes
	significant coefficient	Yes	Yes	Yes	Yes	Yes

Source: author's tabulation using MS Office

This statistical summary presents the results of an advanced PARCH (Power ARCH) model using a student's t-distribution, which analyses 2,477 adjusted observations of the price variable OPEN. The model fits the data near-perfectly with an R-squared of 99.92%, modelling both the directional movement of the price (the mean equation) and its underlying volatility (the variance equation). In the mean equation, the baseline constant C is statistically insignificant (p-value of 0.7686), but yesterday's price OPEN(-1) is an absolute powerhouse with a coefficient of 0.9994 and a p-value of 0.0000, confirming that today's price is almost entirely dictated by its immediate past value. Turning to the variance equation, which models how price swings behave, the baseline volatility constant C(3) is insignificant (p-value of 0.2351), but the market shock coefficient C(4) at 0.0519 and the volatility persistence coefficient C(5) at 0.9590 are both highly significant (p-values of 0.0000). This indicates that while immediate shocks have a minor relative impact, the market's memory for anxiety is incredibly sticky, meaning once volatility spikes, it takes a long time to decay. Furthermore, the power parameter C(6) is 0.7693 (p-value = 0.0010), indicating that the model is optimising its analysis using a fractional power of the standard deviation rather than the standard variance. Finally, the Student's t-distribution degrees of freedomis estimated at 5.33 (p-value of 0.0000), mathematically proving that the data suffers from "fat tails" where extreme price swings occur far more frequently than a standard bell curve would predict, while a Durbin-Watson statistic of 2.13 indicates the model is free of any major leftover serial correlation.

Table 8: APARCH(1,1) student's t distribution

Dependent Variable: OPEN				
Method: ML ARCH - Student's t distribution (BFGS / Marquardt steps)				
Sample (adjusted): 2 2478				
Included observations: 2477 after adjustments				
Convergence achieved after 109 iterations.				
Coefficient covariance computed using the outer product of gradients.				
Presample variance: backcast (parameter = 0.7)				
@SQRT(GARCH)^C(6) = C(3) + C(4)*ABS(RESID(-1))^C(6) + C(5)				
*@SQRT(GARCH(-1))^C(6)				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.073240	0.248900	0.294257	0.7686
OPEN(-1)	0.999407	0.000472	2117.675	0.0000
	Variance Equation			
C(3)	0.013070	0.011007	1.187430	0.2351
C(4)	0.051991	0.008060	6.450546	0.0000
C(5)	0.959037	0.006177	155.2693	0.0000
C(6)	0.769272	0.233539	3.293982	0.0010
T-DIST. DOF	5.333188	0.539756	9.880747	0.0000
R-squared	0.999171	Mean dependent var		675.6091
Adjusted R-squared	0.999171	S.D. dependent var		388.7595
S.E. of regression	11.19664	Akaike info criterion		7.296945
Sum squared resid	310278.0	Schwarz criterion		7.313378
Log likelihood	-9030.267	Hannan-Quinn criterion.		7.302914
Durbin-Watson stat	2.127568			

Source: author's computation using EViews 12

Conclusions

This study examined and compared the stock price volatility of Bank of India and ICICI Bank over a period of ten years. The analysis substantiates that both banks experienced irregular fluctuations, volatility clustering, and persistent shocks during the study period. This means that once volatility appears in the market, its impact does not disappear immediately; it ploughs on for some time.

The heuristic results show that BOI and ICICI Bank do not follow the same volatility pattern. For BOI, the EGARCH model with Student's t-distribution was found to be the felicitous model, while for ICICI Bank, the APARCH model with Student's t-distribution executed better. These results stipulate that the public and private banking sectors respond differently to market shocks and financial uncertainty.

The study also divulges that ICICI Bank is relatively more volatile than BOI. This may be due to its stronger market participation, higher investor response, and greater sensitivity to changing market conditions. BOI, on the other hand, shows volatility persistence, but its pattern differs from that of ICICI Bank. The presence of fat tails and non-normal distribution in both banks further shows that extreme market movements occur more frequently than expected under normal conditions.

Overall, the study concludes that advanced GARCH-family models are useful tools for understanding and forecasting stock market volatility in the Indian banking sector. The findings can help investors and portfolio managers make better investment decisions and manage financial risk more effectively. Future studies may include more public and private sector banks, intraday data, macroeconomic variables, and multivariate volatility models to provide a broader understanding of volatility transmission in the Indian financial market.

Authors' Contributions:

The authors contributed equally to this work.

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ORIGINAL PAPER

Rien ne pousse à l'ombre des grands arbres: Constantin Brâncuși and the Politics of Cultural Heritage[1)]

Selma Kozak[2)]

Abstract:
The year 2026 marks the global commemoration of Constantin Brâncuși's 150th birth anniversary. Constantin Brâncuși (1876-1957) stands as one of the founding figures of modern and avant-garde art. He transformed 20th-century modernism through an abstractive approach to form, establishing an original and distinctive artistic style. Consequently, a reassessment of Brâncuși's aesthetic legacy assumes critical significance, demanding renewed analysis within both cultural and political frameworks.
Brâncuși began his artistic education at the Craiova School of Arts and Crafts in Romania, before relocating to France and spending the majority of his life at the center of the modernist art milieu in Paris. While Brâncuși positioned himself at the heart of international modernism, he simultaneously became an emblematic figure of Romanian national identity. During the Communist period, the artist was approached with caution due to the tensions between abstract art and the regime's ideologically framed conception of art. However, in the Post-Communist era, he was reappropriated as a strategic reference point in the reconstruction of cultural heritage. Brâncuși's contemporary significance within the realm of cultural heritage stems from his position as an Eastern European artist at the core of Western modernism and his symbolic role in the global redefinition of Romania's cultural legitimacy; as such, he constitutes a figure whose work warrants analysis within the ideological intersections of contemporary art and cultural memory.
This study aims to examine Brâncuși's artistic practice within the framework of the ideological framing of cultural heritage and its post-communist reinterpretation. It seeks to analyze Brâncuși's vision through the lenses of modernism, visual culture, cultural heritage policies, cultural memory, and public art, adopting a detailed and multifaceted approach. The artist's formal investigations, abstractive methodology, atelier organization, photographic production, and exhibition strategies will be explored through selected examples, with particular attention to his public artworks, including the Constantin Brâncuși Ensemble of Monuments in Târgu Jiu, inscribed as a UNESCO World Heritage Site in 2024. In this way, the study discusses how Brâncuși's legacy has been repositioned within the interplay between national and global visual cultures in the Post-Communist era.

Keywords: *Constantin Brâncuși, Cultural Heritage, Avangard Art, Public Art, Modern Sculpture Art*

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1) "Rien ne pousse à l'ombre des grands arbres," translated as "Nothing grows in the shade of great trees" is attributed to Constantin Brâncuși and is reportedly associated with his decision to leave Auguste Rodin's studio in Paris.

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Rien ne pousse à l'ombre des grands arbres: Constantin Brâncuși and the Politics of Cultural Heritage

Introduction

What is real is not the external form, but the essence of things.
Constantin Brâncuși

The year 2026 marks the 150th anniversary of the birth of Constantin Brâncuși, one of the most influential and transformative figures in the history of modern art. The exhibitions, scholarly conferences, and commemorative events organized by leading museums, art institutions, and cultural organizations around the world to celebrate Brâncuși's sesquicentennial not only reaffirm his profound contribution to the development of modern art but also pay tribute to his enduring artistic legacy. This renewed international attention demonstrates that Brâncuși remains not only a pioneering figure of the avant-garde but also a universal cultural icon whose artistic legacy occupies a central position in contemporary debates on cultural heritage and cultural memory.

Brâncuși's artistic practice embodies a multilayered intellectual legacy. Thus, his oeuvre has also become a shared field of inquiry within studies such as public art, environmental art, cultural heritage, and cultural memory. The inscription of The Brâncuși Monumental Ensemble of Târgu Jiu on the UNESCO World Heritage List in 2024 represents a significant milestone of both national and international importance.Accordingly, this recognition has prompted a renewed interpretation of Brâncuși's legacy, not only within the history of modern art but also as an integral part of humanity's shared cultural heritage.

Constantin Brâncuși was born on 19 February 1876 in the village of Hobița, Romania. His early engagement with traditional woodcarving and vernacular craftsmanship laid the foundation for the reductive and essentialist sculptural language that would later define his artistic practice. In 1894, he was admitted to the Craiova School of Arts and Crafts, where he received training in decorative arts, woodcarving, and modelling, before continuing his academic education at the Bucharest School of Fine Arts in 1898. The Craiova years should be understood not merely as a period of technical training but also as an intellectual phase during which Brâncuși began to establish a dialogue between Romania's traditional cultural heritage and the emerging language of modern art. Works such as The Bust of Vitellius (1898), Head of Laocoön (1900), the anatomical study Écorché (1902), produced in collaboration with the anatomist Prof. Dr. Dimitrie Gerota, The Kiss (1907), and Miss Pogany (1912-1913) reflect successive stages in Brâncuși's artistic transformation from academic figuration to a reductive and essentialist conception of modern sculpture. Today, a significant number of these works are preserved in the collection of the Craiova Art Museum, where they stand as important documents of the artist's formative development. At the age of twenty-eight, Brâncuși left Craiova in 1904 and embarked on his journey to Paris. More than a geographical relocation, this journey represents a symbolic passage toward the avant-garde that would profoundly reshape the course of modern art. Covering nearly two thousand kilometres, it has become one of the most compelling metaphors for the break with academic tradition and the embrace of avant-garde modernism. Although he worked briefly in Auguste Rodin's studio after arriving in Paris, Brâncuși chose to preserve his artistic independence, a position encapsulated in one of the most frequently cited statements in the history of modern art: “Rien ne pousse à l'ombre des grands arbres.” (Nothing grows in the shade of great trees.) This conviction remained a defining principle of his artistic career. Within a remarkably short period, Brâncuși became part of the same intellectual milieu as Marcel Duchamp, Amedeo Modigliani, Man Ray, Edward Steichen, Ezra Pound, and Henri-Pierre Roché, and through exhibitions held across Europe and the United States, he emerged as one of the most influential figures of international modern art. Brâncuși continued to live and work in Paris until his death on 16 March 1957 (Selz, 2000; Brezianu & Geist, 1965; Marcoci, 2000; Guggenheim, 2026; MoMA, 2026).

Brâncuși is a patriot. Consequently, his international success never weakened his cultural ties to Romania. On the contrary, he continued to draw inspiration from Romanian folk culture, traditional woodcarving motifs, and local symbols in his works. Therefore, he is regarded not only as one of the pioneers of international modernism but also as one of the foremost representatives of Romania’s cultural identity and artistic memory. Nevertheless, Brâncuși’s legacy cannot be understood independently of the political transformations of the Twentieth Century. Due to his commitment to abstract art, his works and artistic approach became the subject of different ideological interpretations during the Communist period. Following Romania’s democratization after 1989, however, Brâncuși was reappropriated as one of the foremost symbols of national identity and cultural diplomacy. Today, the collections of the Craiova Art Museum, the preservation of the Atelier Brâncuși in Paris, and the inscription of the Târgu Jiu Monumental Ensemble on the UNESCO World Heritage List constitute some of the most significant examples that reveal the multiple dimensions of the artist’s cultural legacy extending beyond national borders.

This study examines Constantin Brâncuși’s artistic production, his avant-garde vision, and the transformation of his artistic legacy into cultural heritage from historical, cultural, and political perspectives. Moreover, this study aims to explore Brâncuși’s international artistic journey from Craiova to Paris, his role as a pioneer of avant-garde art, and the reinterpretation of his legacy through the Communist and Post-Communist periods. Particular attention is given to The Brâncuși Monumental Ensemble of Târgu Jiu as a distinctive example of the intersection of public art, cultural memory, and UNESCO World Heritage. Based on qualitative historical and descriptive research, the study draws upon art historical literature, archival sources, museum publications, and official UNESCO documents.

Craiova stands as one of Romania’s leading cultural, historical, and academic centres. The Craiova Art Museum, which houses Brâncuși’s works, further reinforces the city’s significance in relation to the artist’s life and artistic legacy. In this context, this study, prepared within the framework of the 16th International Conference, After Communism. East and West Under Scrutiny (CEPOS), held in Craiova on 20-21 March 2026, also serves a commemorative purpose on the occasion of the 150th anniversary of Constantin Brâncuși’s birth, paying tribute to his enduring contributions to avant-garde art and cultural heritage.

Brâncuși’s Journey as an Avant-Garde Art Pioneer

Within the history of Twentieth-Century art, Constantin Brâncuși emerged as a pioneering figure who not only initiated the formal transformation of modern sculpture but also redefined its ontological boundaries. His artistic practice radically departed from the representational tradition of nineteenth-century academic sculpture, introducing a new aesthetic paradigm that sought to attain the essence of form. In this respect, Brâncuși stands as one of the founding pioneers of the avant-garde, fundamentally transforming the production, perception, and modes of display of the sculptural object.

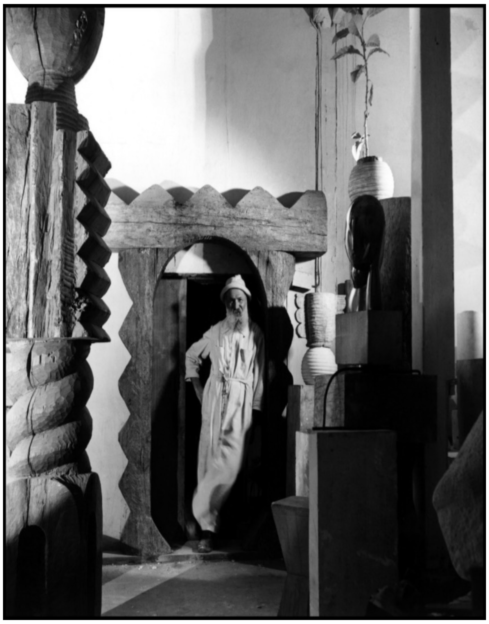
Avant-garde art, unconcerned with continuity, is grounded in a critical stance toward established aesthetic norms and institutionalized conceptions of art. Rejecting the continuity of tradition, the avant-garde emerged as a dynamic movement that sought to redefine the social function of art. "It was Malraux who observed that the origins of modern art coincided with the artist's repudiation of bourgeois culture" (Poggioli, 2024: 161). Thereby, "The experimental aspect of avant-garde art i s manifested not only in depth, within the limits of a given art form, but also in breadth, in the attempts to enlarge the frontiers of that form or to invade other territories, to the a dvantage of one or both of the arts (Poggioli, 2024:175). The avant-garde represents a historical rupture that seeks to dissolve the boundary between art and life. "For an art that has been reintegrated into the praxis of life, not even the absence of a social purpose can be indicated, as was still possible in Aestheticism. When art and the praxis of life are one, when the praxis is aesthetic and art is practical, art's purpose can no longer be discovered, because the existence of two distinct spheres (art and the praxis of life) that is constitutive of the concept of purpose or intended use has come to an end" (Bürger, 2019: 102). Brâncuși's artistic practice occupies the intersection of these two approaches. His works not only introduce new formal possibilities but also challenge established assumptions about what sculpture is, how it is created, and how it should be experienced.

One of the clearest manifestations of Brâncuși's avant-garde character and pioneering spirit was his decision to leave Auguste Rodin's studio. Consequently, the statement that has become one of the most frequently cited remarks in the history of art, "Rien ne pousse à l'ombre des grands arbres." (Nothing grows in the shade of great trees.) (Benhamou, 2011: 1), symbolizes not only Brâncuși's pursuit of artistic independence but also the emergence of the new aesthetic orientation of modern art and the artist's symbolic journey toward the avant-garde. "In 1907 he began working in the studio of Auguste Rodin, only to leave after a month. Reflecting on this time later, Brancusi said, "These were the hardest years of all, the years of research when I had to find my own path; I left Rodin; I must've angered him but I had to discover my own way" (MoMA, 2026: 2). Therefore, Brâncuși's departure from Rodin should be understood not merely as an artist's separation from his master, but as the construction of a new intellectual and conceptual understanding of art.

At the core of this rupture lies Brâncuși's conception of form. The artist never embraced the characterization of his works as "abstract"; rather, he consistently maintained that his aim was not to simplify outward appearances but to reveal the essence of being. This approach demonstrates that modernist abstraction constituted a philosophical inquiry into the ontological reality of the object. Brâncuși's recurring motifs - such as birds, fish, human heads, and the kiss - are not literal representations of nature but visual expressions of their timeless and universal essence. Together with this innovative artistic vision, Brâncuși also fundamentally transformed the way sculpture was presented and experienced. In this respect, his approach may be regarded as a significant precursor to later developments in environmental sculpture, Minimal Art, and site-specific art. Brâncuși's avant-garde vision made it possible to rethink the relationship between art and space, establishing one of the key theoretical references for the subsequent development of public art and site-specific artistic practices.

Similarly, Brâncuși's studio was not merely a place of artistic production but a work of art in its own right, conceived as an artistic composition. By continually rearranging the placement of his sculptures, the artist reconfigured the visual relationships among them, making elements such as light, space, and perspective integral components of the creative process. In the studio, conceived as a large-scale installation, "Brancusi considered the relationship between sculptures and the space they occupied to be of crucial importance. In the twenties the studio became an exhibition space for his work, and a work of art in its own right: a body consisting of cells that all generated each other. This experience of looking from within the studio at each of the sculptures, thus perceiving a group of spatial relationships, led Brancusi to revise their positions every day to achieve the unity he felt most apposite" (Centre Pompidou, 2026:3-4). In this context, Brâncuși's studio may be interpreted as one of the avant-garde precursors of spatial curatorial thinking and, consequently, of contemporary installation art. Moreover, the studio also functioned as a multilayered site of artistic production where Brâncuși photographed his works, documented their modes of display through photographs and films, and consciously recorded his own artistic legacy (Figure 1 and Figure 2).

Figure 1. Wayne Miller, Sculptor Constantin Brâncuși in his studio. Paris. France 1946. © Wayne Miller, Magnum Photos (2026), https://www.magnumphotos.com/arts-culture/art/constantin-brancusi-studio-sculpture-icon-wayne-miller/
Figure 2. Constantin Brâncuși, Night View of the Studio, 1929. © Succession Brancusi. Photo: Centre Pompidou, MNAM-CCI/Dist. RMN-GP, (2026), (https://www.centrepompidou.fr/en/offre-aux-professionnels/enseignants/dossiers-ressources-sur-lart/constantin-brancusi/brancusis-studio



Another noteworthy dimension of Brâncuşi's avant-garde approach is his relationship with photography. The artist went beyond using photography merely as a means of documenting his works, employing it instead as a creative medium that redefined the perception of sculpture. Brâncuşi's photographs are distinguished by carefully arranged lighting, varied viewpoints, and meticulously composed compositions. In this way, photography became an autonomous mode of expression that complemented Brâncuşi's aesthetic thought. This approach makes it necessary today to consider Brâncuşi's artistic practice from a broader conceptual perspective, together with his photographic archive and the spatial organization of his studio (Figure 3 and Figure 4).

Figure 3. Constantin Brâncuşi, Untitled (self-portrait in the studio with Endless Columns I, III, III and Fish), 1933-34. © Succession Brancusi - (ARS) 2018: MoMA (2026), https://www.moma.org/collection/works/57671
Figure 4. Constantin Brâncuşi, Untitled (Endless Column), 1937. © Succession Brancusi - (ARS) 2018: MoMA (2026), https://www.moma.org/collection/works/57665

Brâncuşi's influence extended far beyond his own lifetime and became a defining force across different disciplines of Twentieth-Century art. The traces of his aesthetic legacy can be identified in a wide range of artistic developments, from the evolution of abstract sculpture and Minimalism to environmental art, conceptual art, and site-specific installations. Donald Judd's emphasis on the simplicity of the object, Richard Serra's focus on the physical presence of material, and Isamu Noguchi's reconsideration of the relationship between sculpture and landscape, as well as public art, each represent, in different ways, a continuation of the aesthetic discourse initiated by Brâncuşi. Therefore, Brâncuşi's pioneering position within modern art lies not only in his formal innovations but also in his redefinition of the design of art, its spatiality, and its intellectual dimension simultaneously.

In this context, Brâncuși is one of the leading representatives of the avant-garde in the history of modern art. Moreover, he is one of the founding figures who transformed the ontological boundaries of art. His approach, which expanded sculpture from representation to essence, from object to thought, and from the individual artwork to spatial experience, profoundly influenced not only Twentieth-Century modernism but also the conceptual orientations of contemporary art. This aesthetic legacy subsequently provided the foundation for the reinterpretation of Brâncuși within the contexts of national identity, cultural memory, and cultural heritage. In this sense, Brâncuși's artistic journey ultimately led him to the most radical and transformative realm of avant-garde art.

Brâncuși and Cultural Heritage

In Article 1 of the Convention Concerning the Protection of the World Cultural and Natural Heritage, adopted on 16 November 1972, UNESCO defines cultural heritage as follows: "Cultural heritage encompasses tangible cultural properties transmitted from the past to the present that possess Outstanding Universal Value from the perspectives of history, art, science, aesthetics, or social memory. This heritage is defined under three principal categories: monuments, groups of buildings, and sites. These categories encompass cultural properties of Outstanding Universal Value from historical, artistic, scientific, aesthetic, and anthropological perspectives" (UNESCO, 1972: 2). Furthermore, through the Convention for the Safeguarding of the Intangible Cultural Heritage, adopted in 2003, UNESCO also addressed the concept of cultural heritage in terms of its intangible dimension. In brief: "Cultural heritage does not end at monuments and collections of objects. It also includes traditions or living expressions inherited from our ancestors and passed on to our descendants, such as oral traditions, performing arts, social practices, rituals, festive events, knowledge and practices concerning nature and the universe or the knowledge and skills to produce traditional crafts" (UNESCO, 2003:4-5). In this context, cultural heritage is understood as representing the shared memory, identity, and historical continuity of humanity, while its protection, documentation, and transmission to future generations are recognized as a universal responsibility. Accordingly, this framework provides a fundamental theoretical basis for understanding the inscription of the Târgu Jiu Ensemble on the UNESCO World Heritage List in 2024.

Constantin Brâncuși's cultural legacy is a phenomenon that can be understood within the contexts of both tangible and intangible cultural heritage. His artistic production not only represents the formal transformation of modern art but also constitutes a multilayered field of heritage in which cultural memory and historical continuity are continuously reconstructed. Beyond their aesthetic value, Brâncuși's works have been repeatedly reinterpreted across different historical periods, attributed with different meanings in different political contexts, and have gradually evolved into cultural references of both national and universal significance. In this respect, Brâncuși's work constitutes one of the major fields of inquiry within cultural heritage studies.

The search for essence, universality, and timelessness that lies at the core of Brâncuși's artistic practice plays a decisive role in the recognition of his works as cultural heritage. The artist never sought to appeal to the aesthetic preferences of a particular period; rather, he aimed to reveal the enduring essence underlying the changing appearances of nature. Formal simplicity, recurring forms, and his respect for the intrinsic qualities of materials reflect an effort to establish a lasting plastic language capable of transcending the effects of time. For this reason, Brâncuși's works have become living references of cultural memory that, rather than belonging to a specific historical period, can be continuously reinterpreted and endowed with new meanings by successive generations.

In this context, Brâncuși's works, photographs, films, spaces, and avant-garde vision all constitute integral components of his cultural legacy. "It is no coincidence that space assumes a central role in the 'culture of remembrance' and in the techniques through which social and cultural memory are reinforced. For this phenomenon, we may use the concept of 'sites of memory'" (Assmann, 2022: 68). Accordingly, Brâncuși established sites of memory through both his public art installations and the legacy of his studio.

Another aspect that makes Brâncuși's cultural legacy distinctive is his ability to bring together two approaches that initially appear to be contradictory: modernism and cultural heritage. Modernist avant-garde is founded upon an artistic vision that questions established aesthetic norms, challenges the authority of tradition, and constantly seeks the new. Cultural heritage, by contrast, is based on the preservation of cultural values inherited from the past and their transmission to future generations. Brâncuși's art offers a unique example at the intersection of these two approaches. The radical aesthetic position he developed in opposition to the tradition of academic art gradually evolved into a universal cultural value worthy of preservation. Thus, the modernist ideal of innovation and the principle of continuity inherent in cultural heritage converge within the same artistic practice. Consequently, this has established Brâncuși as one of the key points of reference in discussions on the relationship between artistic practice and cultural heritage.

The contemporary significance of Brâncuși's cultural legacy is also directly related to Romania's changing political history. Although Brâncuși was internationally recognized during his lifetime as one of the leading figures of modernism, following his death his legacy was interpreted in different ways within the context of Romania's ideological transformations. Particularly during the early years of the communist regime, modernist abstraction was regarded as incompatible with the collectivist and ideological artistic principles of Socialist Realism, and consequently Brâncuși's art remained at a distance from official cultural policies. "Between 1947 and 1965, Brâncusi's work was strongly rejected by the Romanian communist authorities due to their aversion to modernism, formalism and Western art" (Ghiu, 2019: 138). Beginning in the 1960s, however, as part of Romania's efforts to enhance its international cultural visibility, Brâncuși was once again promoted as a national cultural figure, and a new relationship was established between his universal identity as a representative of modernism and Romania's cultural identity. Especially, "The situation began to change in 1965 when Nicolae Ceaușescu took over the position of general secretary of the Romanian Workers' Party. There, he intended to restore nationalism, to recuperate local traditions, and to return to European values. In 1967, a big international colloquium dedicated to the artist took place in Bucharest, marking his official acceptance by the Romanian state" (Ghiu, 2019: 138). Following 1989, this process became even more pronounced. Brâncuși was repositioned both as one of the pioneers of modern art and as one of the symbolic figures representing Romania's cultural memory on an international scale.

Brâncuși's studio, the way he conceived it, and his approach to the display of his works also constitute integral components of his cultural legacy. For Brâncuși, the studio was not merely a physical space of artistic production but a holistic work of art in which sculptures, pedestals, photographs, tools, and spatial arrangements were brought into dialogue with one another. This holistic vision became even more evident through the decisions he made during the final years of his life. Having acquired French citizenship, Brâncuși stipulated in his will, dated 12 April 1956, that his studio at Impasse Ronsin, together with all the works, pedestals, furniture, tools, drawings, photographic archive, and personal library it contained, be bequeathed to the French state. In his will, he requested not only the preservation of the collection but also the reconstruction of the studio according to its original arrangement (Centre Pompidou, 2026). In this way, Brâncuși sought to transmit his works to future generations not as independent art objects, but as inseparable components of an integrated whole.

In this context, Brâncuși's studio in Paris has become one of the most significant examples in the history of modern art of an artist's studio being recognized and preserved as cultural heritage in its own right.

The Târgu Jiu Ensemble as a Site of Cultural Memory

The Brâncuși Monumental Ensemble of Târgu Jiu is Constantin Brâncuși's most comprehensive public art project. The ensemble represents one of the most significant examples at the intersection of modern art, environmental design, public space, and cultural memory. Located in the city of Târgu Jiu, the administrative centre of Gorj County in southwestern Romania, the monumental ensemble is arranged along a conceptual axis extending approximately 1,500 metres along the Jiu River. As UNESCO also emphasizes, "this axis extends along the Avenue of Heroes, with the existing Church of the Holy Apostles Peter and Paul forming the midpoint of the composition" (2024:56-57). The monumental ensemble consists of four parts: the Table of Silence (1938), the Alley of Chairs (1938), the Gate of the Kiss (1938), and the Endless Column (1938). However, these works were conceived not as independent monuments but as successive stages within an integrated spatial narrative extending from West to East.

Figure 4. Constantin Brâncuși, Gate of the Kiss, 1938. The Brâncuși Monumental Ensemble of Târgu Jiu, Târgu Jiu, Romania. UNESCO (2026), https://whc.unesco.org/en/list/1473/gallery/

The origin of the ensemble is rooted in the idea of creating a permanent commemorative space dedicated to the Romanian soldiers, police officers, and civilians who lost their lives defending Târgu Jiu during the First World War. Commissioned by the National League of Gorj Women, led by Arethia Tătărescu, the wife of Prime Minister Gheorghe Tătărescu, the project was completed between 1937 and 1938 and opened to the public in the same year. Brâncuși's proposal for the park represented an approach that went far beyond the conventional concept of a war memorial. Rather than creating a single sculpture or a vertical monument, the artist conceived the commemorative experience as a spatial sequence unfolding across the entire city (Ghiu, 2019; Marcoci, 1995). In this way, the visitor becomes an active participant who walks, pauses, reflects, and moves through a sequence of spatial experiences. In this respect, the Târgu Jiu Ensemble stands as one of the pioneering examples that transformed the idea of the monument from the scale of an individual object to that of the urban landscape.

This approach demonstrates how Brâncuși redefined his conception of modern art through its relationship with public space and public art. Whereas traditional public monuments were inserted into the urban fabric as autonomous objects representing a particular event or individual, Brâncuși proposed the opposite, marking a turning point in the history of monumental sculpture and public art. As emphasized in UNESCO's 2024 World Heritage decision, the Târgu Jiu Ensemble is Brâncuși's only monumental work realized on a large public scale. The decision further states that, rather than placing the monument within the city, Brâncuși conceived the city itself as a functional component of the monument, as expressed in the following statement: "It is the seminal creation and the sole largescale public work by Romanian sculptor Constantin Brâncuși who, instead of placing the monument in the city, placed the city as a functional element in the centre of the monument" (UNESCO, 2024: 57). This statement also reveals the fundamental basis of Brâncuși's conception of public art. Here, the city is not a neutral setting that merely serves as the background for the sculptures, but an integral component of the work and an active part of the aesthetic experience. For Brâncuși, public space embodies a conception of place that completes the meaning of art. Indeed, UNESCO explicitly states in its decision that the Târgu Jiu Ensemble represents a turning point in the history of Twentieth-Century monumental sculpture and public art and played a decisive role in the development of both. Furthermore, public space is transformed into a ritual experience through which collective memory is reactivated. Brâncuși's conception of public art lies in his integration of the landscape, the walking route, the visual axes, and the everyday life of the city as inseparable components of the overall composition. For this reason, Târgu Jiu may be interpreted as a holistic environmental design proposal in which the city as a whole is transformed into part of the artistic experience. The idea of dissolving the boundaries between art and everyday life, which today constitutes one of the fundamental aims of public art, found a remarkably early embodiment in Brâncuși's project.

This approach is also directly related to one of the fundamental ideals of the avant-garde: the dissolution of the boundary between art and life. Rather than regarding art as an exclusive field of production confined to museums and galleries, the avant-garde sought to make it an active component of everyday life. Brâncuși's conception of public space in Târgu Jiu may likewise be understood as one of the spatial manifestations of this idea. Here, art is not a monumental object kept at a distance from the viewer. Instead, it becomes a lived environment - one that is walked through, experienced, and encountered repeatedly in the course of everyday life. In this way, public space is transformed into a cultural memory in which art is continuously re-experienced as part of everyday life. As

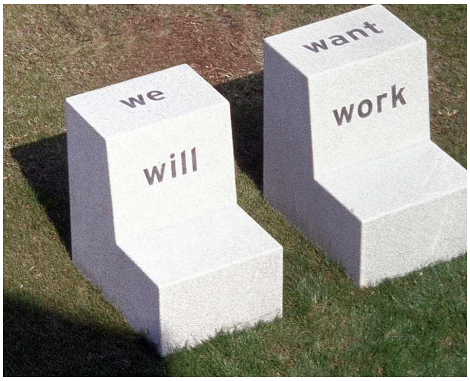
Halbwachs (2023:164-165) states, "To better understand the influence that different parts of a city gradually exert on the groups that adapt themselves to them, one must observe, in a modern city, especially its old districts, or those relatively distant neighborhoods that resemble small enclosed worlds whose inhabitants leave only to go to work, as well as the newer parts of the city, particularly the streets and boulevards inhabited by workers. For there is a continual exchange between the street and the place of dwelling." In this context, the Târgu Jiu Ensemble provides a continuous space of cultural exchange among the city's inhabitants, historical and cultural narratives, national heroes, and the nation's cultural heritage.

Figure 5. Constantin Brâncuși, Table of Silence and the Avenue of Heroes, 1938. The Brâncuși Monumental Ensemble of Târgu Jiu, Târgu Jiu, Romania. UNESCO (2026), https://whc.unesco.org/en/list/1473/gallery/

The Târgu Jiu Ensemble anticipated many later developments in public art while sharing significant common ground with subsequent public art practices. In this context, Sheila Levrant de Bretteville's public installation "Take a Break... Out to Lunch... Back to Work..." (1995, Cranston, Rhode Island, USA) is a remarkable example (Figure 6). The artwork likewise invites users to pause, reflect, and establish new relationships with their surroundings within the ordinary flow of everyday life. de "Bretteville's installation is comprised of eight engraved concrete chair-like structures and one star shaped engraved concrete table-like piece with movable parts" (Van Assen, 2026). Both artists conceive public space not merely as a physical environment but as a cultural arena in which social interaction and shared experience are produced. While Brâncuși's approach is grounded in monumental and ritual forms of memory, de Bretteville's work redefines public experience through the practices of everyday life and democratic social participation, positioning public space as a social platform that fosters encounter, democratic participation, and public dialogue. The table and chair forms are particularly striking in both works. From a conceptual and semiotic perspective, however, these elements are far more than functional industrial objects associated with everyday life.

Throughout the history of art, the table and chair have functioned as powerful spatial signifiers representing communication, togetherness, shared experience, encounter, dialogue, and the construction of collective memory. The table both brings people together and separates them from one another. As Arendt states: "To live together in the world means essentially that a world of things is between those who have it in common, as a table is located between those who sit around it; the world, like every in-between, relates and separates men at the same time" (1998:52). These objects not only organize the relationship between the human body and space but also define threshold spaces in which social relationships become visible. Accordingly, both artists transform the table and chair from purely functional objects into powerful visual metaphors that make social interaction, collective experience, dialogue, and cultural memory visible within public space. Despite their shared formal vocabulary, however, the meanings the two artists attribute to public space and the aesthetic approaches they develop differ significantly. Brâncuși's approach is grounded primarily in history, memory, ritual, and timelessness, whereas de Bretteville's interpretation focuses on everyday life, participation, dialogue, and participatory democracy. Despite the approximately sixty-year interval separating their works, both approaches share a common objective: they transform public space by making the user an active component of the artwork. In this respect, Brâncuși's Târgu Jiu Ensemble stands as one of the important precursors to many of the approaches later developed in contemporary public art.

Figure 6. Sheila Levrant de Bretteville, Take A Break... Out To Lunch... Back To Work, 1995. Rhode Island Dept. of Labor and Training Center Cranston, Rhode Island, USA. © 2026 Public Art Archive, https://publicartarchive.org/art/Take-A-Break-Out-To-Lunch-Back-To-Work/668e201a



The significance of Târgu Jiu in terms of cultural memory emerges precisely at this point. Much like Pierre Nora's concept of "lieux de mémoire" (sites of memory), the ensemble is not merely a monument representing the past but a living public environment in which memory is continuously reproduced. Here, people do not simply observe the artworks; they walk through the site, hold ceremonies, participate in commemorative events, and carry out their everyday lives. In this way, Brâncuși's conception of public art becomes a cultural practice through which collective memory is continually produced.

The international recognition of Brâncuși's Târgu Jiu Ensemble as cultural heritage was achieved through a historical process spanning nearly ninety years. Romania submitted the first nomination dossier to the UNESCO World Heritage Committee in 2015; however, following ICOMOS's evaluation, the dossier was referred for further revision and development. After more comprehensive processes of conservation, management, and scholarly assessment, the revised nomination dossier was approved at the 46th session of the UNESCO World Heritage Committee, held in New Delhi, India, in 2024, and the Brâncuși Monumental Ensemble of Târgu Jiu was inscribed on the World Heritage List under cultural criteria (i) and (ii) (UNESCO, 2024).

In UNESCO's Statement of Outstanding Universal Value, the Târgu Jiu Ensemble is identified as a transformative turning point in the development of Twentieth-Century art. The decision states that "The Brâncuşi Monumental Ensemble of Târgu Jiu represents a turning point in the evolution of the 20th century history of monumental art and commemorative architecture" (UNESCO, 2024: 57), emphasizing in particular that the integration of abstract monumental sculpture, landscape design, engineering, and urban space within a single composition exerted a decisive influence on the development of the modern conception of public art. According to UNESCO (2024: 57), "the Brâncuși Monumental Ensemble of Târgu Jiu is a creative masterpiece of the 20th-century monumental art which played a key role in the dissemination of site-specific art, installation, landscape and public art."

The following statement in UNESCO's decision is particularly significant for understanding Brâncuși's artistic approach: "For Constantin Brâncuși, sculpture is the language of content rather than the language of forms, and the Brâncuși Monumental Ensemble of Târgu Jiu is the synthesis of his entire oeuvre" (UNESCO, 2024: 57-58).

Figure 7. Constantin Brâncuși, Endless Column, 1938. The Brâncuși Monumental Ensemble of Târgu Jiu, Târgu Jiu, Romania. UNESCO (2026), https://whc.unesco.org/en/list/1473/gallery/

The contemporary significance of Târgu Jiu has also evolved alongside Romania’s political transformations. The Târgu Jiu Ensemble is no longer merely a national monument; it has become a symbolic heritage site representing Romania’s modern cultural identity on an international scale. Its inscription on the UNESCO World Heritage List stands as the most visible and significant outcome of this transformation. Thus, while the same public space has been subject to different ideological interpretations across successive political periods, it has today become one of the representative spaces of democratic public culture, cultural pluralism, and the shared heritage of humanity.

Epilogue

Brâncuși’s artistic legacy constitutes a dynamic field that is continually produced and reinterpreted at the intersection of modernist aesthetics and cultural heritage politics. In the Post-Communist period, his art has been reappropriated as a central component of Romania’s cultural heritage policies, becoming both a national symbol and a strategic reference point for global modernist art.

Brâncuși’s contemporary significance within the field of cultural heritage stems from his position as an Eastern European artist at the core of Western modernism and from his symbolic role in the international redefinition of Romania’s national cultural heritage. In this context, Brâncuși emerges as a critical figure through whom national identity is articulated within international discourses on cultural value and heritage.

The Brâncuși Monumental Ensemble of Târgu Jiu represents a compelling example of this dynamic, transforming public space into a structured site of memory. The ensemble functions not only as a modernist artwork but also as a cultural space where collective memory, national commemoration, and homage converge. Over time, it ceases to be merely an aesthetic object and becomes a memory infrastructure embedded within the urban fabric and symbolic landscape of Romanian cultural heritage.

Ultimately, Brâncuși stands at the ideological intersection of modernist abstraction, cultural memory, and heritage politics, continuously re-signified within both national and transnational narratives.

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ORIGINAL PAPER

The Values of the "Succeeder" Psychographic Group as Discernible in *The Sunday Times* Newspaper Review of a Hotel

Alina-Roxana Popa[1)]

Abstract:
The paper analyses a review of the Newman, a five-star hotel in central London, which appeared in *The Sunday Times* on the 29th of January 2026, outlining the features that qualify such a newspaper article to target the primary audience of this publication, which media and marketing studies have identified as "the Succeeder". This is a psychographic group at the top of the social scale, in high-earning professions, seeking control and believing they deserve the best. The review discourse both reinforces and constructs an ethos of consumerism, in which the description of the product invites and qualifies the experience. The review does not "advertise" the hotel, but it contributes to the dissemination and creation of a story around a high-end product, which constitutes a part of the product itself. The review author reveals attributes of a one-night hotel stay, which resonate with the values that *The Times* readers seek: novelty, trendiness, liveliness and excitement, innovation, the sourcing of local items extended to historical personalities and workforce; exclusiveness, London-centricity, thrill seeking with elegant urban décor, continuity and transformation as opposed to the loss of heritage, the collaboration of luxury professionals in order to make the product more relevant, etc. The journalist Jenny Coad, who appears to be a member of the upper-class herself, offers an insight, through her experience, into the profile of a readership that sets trends, forms opinions and partakes in the making of the story that animates the object of desire.

Keywords: *newspaper review, target audience, high-end products, luxury consumer, social class*

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The Values of the "Succeeder" Psychographic Group as Discernible in The Sunday Times Newspaper Review of a Hotel

Introduction

This article aims to analyse a review of *The Newman*, a London luxury hotel, which appeared in *The Sunday Times* newspaper, the UK edition, on the 29th of January 2026. There is stress on the discourse choices that reveal the way of thinking and the values, attitudes and lifestyle of a specific target audience, in other words the psychographics used to define that readership. The review content is indicative of the tastes of the main profile of *The Times* audience, among whom a significant segment is represented by the Succeeder, a psychographic group deemed to seek control, being disciplined, purpose and reward-driven, non-challenging of the status-quo and perceiving themselves as deserving the best.

The paper presents *The Times* readership by anchoring the discussion around concepts such as demographics, psychographics, the practicality of stereotypes and social class discourse. The review function is also examined in terms of both representing and creating meaning, while also keeping the target audience interested in engaging with the media product itself. There follows a corpus analysis, which identifies the attributes of the reviewed hotel that resonate with the lifestyle, beliefs or attitudes of the Succeeder, contributing to the making of the story around the product and outlining the profile of an urban character for whom a high-end constructed space becomes an extension of identity.

The Succeeder as part of *The Times* readership

The Times is a British national quality broadsheet daily newspaper. According to Hurst Media, a London publishing house and advertising agency, 86% of *The Times* readers are ABC1, a socio-economic classification which the UK Office for National Statistics (2023) defines as follows: "AB: Higher and intermediate managerial, administrative and professional occupations"; "C1: Supervisory, clerical, and junior managerial, administrative and professional occupations". Those with ages between 35 and 64 years old comprise 41% of *The Times* readers (Office for National Statistics 2023), while the mean family income of *The Times* readers is £55,885 (Fisher, 2024). These are demographic data (pertaining to age, income and occupation), which in marketing analyses are used along psychographics ("criteria for segmenting consumers by lifestyle, attitudes, beliefs, values, personality, buying motives, and/or extent of product usage." (Imber & Toffler, 2000: 455) While demographics give dry data, psychographics are used by marketers to offer an insight into consumer potential behaviour. Although Aspirers and Reformers are also among ABC1 consumers, Succeeders are seen as the top of the hierarchy in this psychographic classification when it comes to consumerism potential.

The marketing and communications company Young and Rubicam established a psychographic framework in the 1970s, based on Maslow's hierarchy of needs, by identifying seven types of audience. According to their primary need or what they seek, these are: Aspirers (they seek status); Explorers (discovery-driven); Mainstreamers (they seek security); Reformers (they seek enlightenment); the Resigned (they seek to survive); Strugglers (they seek escape); Succeeders (they seek control). (BBC, 2026)

A more detailed definition of the Succeeder is as follows: "Succeeders are those who have a high social status and are in control of their lives with nothing to prove. They believe they deserve the best and decide upon the best brands and products for themselves based on reliability. They seek control." (*Ibidem*)

As representatives of top decision makers in the business field and as motors of economic dynamics, Succeeders are more likely to be found among *The Times'* target readership rather than other publications in the UK. According to News UK, a British newspaper publisher, "The latest survey reveals that one in every two business purchase decision makers in the UK interacts with *The Times* and *Sunday Times* brands on a weekly basis. *The Times* and *The Sunday Times* have the highest overall share of business decision makers, reaching 53% of its audience, encompassing print and online, followed by *Daily* and *Sunday Telegraph* on 34%, *FT* on 30% and *The Guardian* / *Observer* trailing on 29%." (News UK, 2026)

Psychographic categories offer qualitative data about consumers / target audiences, as opposed to demographic data, which are quantitative and more objective. While it may seem judgmental or unfair to categorise people according to the stereotypes of psychographics, these are useful marketing tools for calibrating products towards broad categories of consumers. In our case, the hotel review is not meant to advertise that luxury product, but the media carrying it, i.e. the newspaper, is targeted at a specific audience, identified through such psychographics, and must be calibrated so as to resonate with that specific public, of which the Succeeder group is most prominent.

Moreover, "it is often argued [by sociologists] that class is no longer relevant as societies have become increasingly 'individualised'" (Crompton, 2006: 566), since "it was argued […] that gender, sexuality, and ethnicity (and age) have become more important in defining the individual as well as in providing a focus for collective belonging" (*Ibidem*). There is an ongoing discussion about the morality of discourses which further the idea of class differentiation, as they contribute to individual frustration and the reinforcement of social inequalities. But the consciousness of individuals as defined more by concepts such as gender or ethnicity does not prevent marketing psychographic taxonomies from being used for decisions about editorial content (such as newspaper reviews) and product tailoring purposes. Since a significant segment of *The Times* audience is roughly identified with the Succeeder group and the newspaper content is adjusted so as to suit the tastes of that group, it seems that the morality of stereotyping bends to the practicality of marketing. Consequently, while the luxury hotel being reviewed in *The Sunday Times* in itself is not a product that is directly advertised, the newspaper review, as a media product meant to sell the newspaper, appears to be curated along marketing psychographic cues.

The review function and general format

The purpose of a review is to objectively evaluate a product on the market and provide its readers with an honest personal opinion from the part of its author. The review is not meant to advertise that product, but to advise potential consumers on the strong points or weak features of the product, which results in an overall positive recommendation, or on the contrary, a warning to stay away and not waste resources on something that, in the author's opinion, is not worth it. In most instances, the reviewer is knowledgeable about that type of product; in our case, journalist Jenny Coad is qualified in the article by-line as "Associate Travel Editor" (Coad, 2026). While review writers are independent journalists, reviews are featured in publications which deem that content as relevant for their target readership, so their discourse choices need to be customised towards that audience.

In the economy of the newspaper, this review of a hotel can be classified as *soft news* (e.g. entertainment, T.V.) as opposed to *hard news* (such as articles covering politics or current affairs). Soft news or "the human interest story […] is the kind of story that news workers feel may not have the critical importance of hard news, but nevertheless would appeal to a substantial number of people in the audience." (Turow, 2009: 57)

The review is meant to give an honest critical evaluation of the product, which is a high-end, newly opened hotel in central London. Since this review appears in a mass-communication media as prominent as *The Sunday Times*, it is bound to contribute to constructing the image of the product in the public consciousness. In addition, the terms in which the author of this article chooses to build her discourse need to resonate with the target audience of the newspaper, by reinforcing their preexisting values and tastes.

In the same line of thought, it has been argued that audiences are not passive receptors of constructed meanings by media output: "Selectivity in the perception of messages is generally guided by preexisting interests and behaviour patterns of the receivers… mass communication effects tend to take the form of reinforcement rather than change." (Watson & Hill, 2012: 258) At the same time, while not being possible to objectively measure the impact of media messages, their influence in shaping public opinion and attitudes cannot be denied. Authors speak about these effects being more dramatic when the right factors play their role, such as: the timing of communication processes; or "if all the media are saying more or less the same thing at the same time (consistency); equally, if the media are concentrating on a small rather than diverse number of stories (intensity) and if they are repeating messages, images, viewpoints over and over again (frequency)." (*Idem*: 88)

Media scholars also discuss the phenomenon of naturalization, as "The process by which culturally specific worldviews which are constructed sociohistorically come to be phenomenally experienced by those within a culture as natural, normal, self-evident common sense, and are thus taken for granted as universal and immutable […] In Marxist theory, naturalization serves to maintain the ideological hegemony of the dominant class." (Chandler & Munday, 2020: 711)

Whilst the present analysis does not follow the discourse around the reviewed hotel across media other than this one issue of *The Sunday Times*, we notice that certain determiners of media impact are still operating in this specific case: the *timing* is right, as the review is of a product that has recently been launched on the market; there is *consistency* and *frequency* in the choice of elements that are considered to be positive traits of the hotel experience, as *The Times* and *The Sunday Times* cover luxury products on a permanent basis and there is preference for exploiting a similar semantic imagery. Consequently, this type of imagery contributes to naturalization processes and consolidates the ethos of luxury consumption within parameters that resonate with the upper or upper-middle class, who are among those targeted by this publication.

Besides the construction of meaning through the complex negotiation between passive "naturalized" acceptance and active selection or reasoning, the audience also derives various forms of gratification when they engage with the media. By interacting with the content of this newspaper review, readers are entertained, maybe by seeking escapism from the stresses of vigorous social and economic pursuits, as many of them are active Succeeders; they gain monitoring of the latest offerings on the market, so they keep up to date; they also feel part of a larger community, which is the newspaper audience, with whom they share interests and tastes, thus contributing to their sense of identity.

In media and communication literature, "tastes can be used as signifiers of economic and cultural capital and used as a means of social distinction. […] aspects of taste could be read as both a product and a signifier of class affiliation." (Watson & Hill, 2012: 298) Consequently, we can argue that, by engaging with such content as the evaluation of a high-end product, which establishes the parameters of luxury, the newspaper audience reinforces them, irrespective of their objective value, as signals of class belonging. Moreover, by engaging and aligning with the preferences and beliefs proffered by a certain newspaper, its audience perform a gesture of class affiliation.

In support of this idea, we need to consider the three dimensions of social class, as identified in *The Cambridge Dictionary of Sociology*: economic (with focus on material inequality); political (stressing class action in political, social and economic change); cultural (focuses on lifestyle, social behaviour and hierarchies of prestige). (Crompton, 2006: 561) The economic dimension is assumed by considering and eventually consuming the reviewed luxury product or similar ones, since the concept of luxury presupposes inequality of means among people; the cultural dimension is discernible in the review focus on lifestyle and social behaviour; the political dimension is also present, since *The Times* is identified as "generally conservative and Eurosceptic in outlook" (Eurotopics 2026), while it reunites an audience who broadly share the same political views. Interestingly, the online version of the newspaper allows interaction among its audience through the "Comments" feature pertaining to each article, thus furthering their sense of community, as both consumers and creators of media content.

Speaking about values as not simple systems of personal belief, but shared attitudes within social groups and society in general, Watson and Hill explain the complex manner in which media communication influences and is shaped, in its turn, by value systems: "An individual's perception and interception of reality will be influenced by the values of the social groups or society to which he/she belongs. The pervasiveness of such values ensures that they are enmeshed in all aspects of communication processes. The images and codes which are the stock-in-trade of the mass media are shaped by value systems and in turn can be used to support certain values." (2012: 313)

Regarding the form of the review, it aligns with the general format of the newspaper, a quality broadsheet which is fairly formal, neutral and objective. The dense text and the black and white palette make it seem professional and serious, along with the captions that anchor the significance of images, subtitles that organise the text, while the by-lines give credit for the work of the author and a time reference point ("Jenny Coad, Associate Travel Editor. Thursday January 29 2026, 5.00a.m. GMT, The Sunday Times"). The formality of the text is also signalled by such devices as complex grammatical structures (e.g. the use of the subjunctive in conditionals: "I would have downgraded myself if it weren't for that ice bath and sauna").

As the article is soft news, it adds elements of informality to the text, such as specific vocabulary items ("boho neighbourhood", "completely starkers", etc.), the use of exclamations, apostrophes or dashes, a strategy that makes the article seem more spontaneous, relaxed and therefore the author more sincere in her account of the experience she had with the reviewed product.

Corpus analysis

The review title, the standfirst below the headline and the following captioned picture with a view of central London from one terrace of the five-star hotel summarize the key elements that make *The Newman* stand out and draw readers in: "My night in London's newest, coolest hotel in a boho neighbourhood"; "The Newman in Fitzrovia, inspired by hyperlocal personalities, has a buzzing brasserie, fun bar and the ultimate 21st-century attraction… a sauna on the roof" (Coad, 2026)

Here we already have some of the essential components of an experience that the Succeeder seeks: novelty, trendiness ("newest, coolest hotel") and professed nonconformity ("in a boho neighbourhood"); locally sourced items, which in this case extend to the human factor, i.e. historical characters ("hyperlocal personalities") and workforce (as we will see further on in the main text of the article, "The Newman partnered with the non-profit Saira Hospitality to create a month-long pop-up hotel school last summer. The idea behind Saira is to provide opportunities in hotels to people from the area even if they have no experience (take the former boxer now on the spa reception)." Here we note the author's bringing to the forefront the actions of the hotel management as civically committed to the broader welfare of society. Other attributes that transpire are liveliness, excitement ("buzzing atmosphere, fun bar") and innovation ("the ultimate 21st-century attraction… a sauna on the roof").

Next, we find exclusiveness and London-centricity transferred to the hotel image, as the details of the city view become ingredients of the experience: "It's not every day that you get to enjoy the London Skyline completely starkers."; also there is thrill-seeking with an elegant urban décor integrated with controlled natural beauty (I'm sitting in a freezing-cold ice bath on a smartly planted terrace with the BT Tower looming to my left"). Also the alleged English modesty succumbs to the temptation of luxury when the latter surpasses a perceived grade of excellence, in an act of self-gratification: "And I'm afraid I'm in the penthouse suite. I would have downgraded myself if it weren't for that ice bath and sauna – honest."

There is also stress on continuity and transformation, as opposed to the loss of (architectural) heritage ("The hotel has been three years in the making – it's a conversion of an office block that used to house the public relations firm Freud Communications and, before that, was a post office."), so the past and the present converge into a unique experience ("Lind + Almond's brief was to embrace the neighbourhood, which is next to Marylebone and Soho and bounded by Oxford Street and the Euston Road, and it's done that by referencing architectural landmarks and local characters, both past and present."). In order to make the end product more relevant, there is a combination between the collaboration of luxury professionals and luxury spaces, since central London neighbourhoods, as epitomes of residential exclusivity, add value through proximity. Moreover, the brand expertise in the making of goods is both national and international ("It's the first hotel for the British hospitality brand Kinsfolk and Co, founded by Paul Brackley. The interiors are by Lind and Almond, a London-based design studio that's also worked on projects in Copenhagen.").

The desirability of space is defined in terms of vastness, the variety of functions, the exclusivity of materials ("marble bathroom basins"), and the sophistication of equipment: "There are 81 rooms – yes, of course the penthouse on the 6th floor is vast, with a sitting room, bar, dressing room, bathroom featuring fossil-infused stone from Swaledale in North Yorkshire and even my own LED light mask…". Visual sophistication is brought through a combination of art, technology, rare materials and evocative juxtapositions, also maximising the advantage of the proximity factor ("the hotel's palette of chocolate browns and caramels with carefully chosen art […] room 108 (a deluxe option) with its views of Newman Street and down Mortimer Street […] rojo coralito sink in one room – with graphically tiled showers. The back-lit marble niches lend an ecclesiastical touch to the loos, which come in all shades from mustard in the Gambit bar to mocha in the spa."). We also note the vast variety of technical terms pertaining to design, which might encumber the processing of the text if it were not for the presumption that the target readers are well-versed in this area. In contrast, even if the target Succeeders were not familiar with some of these terms, their exposure to this type of review is an opportunity for them to hone their discerning skills by broadening their knowledge in the field. If we go even further, for another psychographic category such as the Aspirers, who seek status brands in order to demonstrate their place in society and often invest in luxury products even if this involves the use of credit, this type of article could be used as a snobbery textbook to turn to in order to get their direction for social advancement.

The target audience is urban, educated and health mindful: "Who will love it? London lovers, history lovers, design fans, sober-curious sorts." The consumer may also be a time-poor "office" worker, who uses complex contrivances to improve his/her daily routine. Moreover, there is an abundance of such resources on offer, which are very likely to be left unused; but this abundance is meant to provide a feeling of ultimate pampering, despite the risk of expensive waste: "[…] my own LED light mask, which I definitely need but have no time to try. Ditto the coffee-flavoured mushroom rainbow dust in my minibar stash, though I nab one to perk up long office afternoons." Conversely, it is suggested that this consumer's lifestyle requires such highly refined props for relaxation, which this kind of hospitality experience can readily provide: "After that [i.e. the lavish breakfast] and the ice bath, I am positively zinging. It helps that I had my best night's sleep for months, which may have been down to the 300 thread-count sheets, oversized pillows, lavender eye mask and CBD patch or the fact that I am here without my two young children."

The consumer is also hedonistic, while indulging in the nostalgia for the times of more excessive pursuits. These periods could be connected to youth, physical endurance, or simply the lack of time-consuming career or family commitments: "I could hunker down in here [i.e. the bar] but I am an absolute lightweight these days (I'd probably be better off going to one of the sober socials held on Sundays.)"

The dining experience is defined by diversity, quality ingredients and the refinement of service. Price awareness demonstrates that this consumer appreciates good value for money, as someone who is well-immersed in the business world: "[…] a dinner of classic dishes including a healthy and deliciously dressed endive salad, perfectly cooked cod with puy lentils and bacon plus sides of chips served in a silver tumbler […] It's all very good and pretty well priced for London – with mains from £19."

The journalist appears to be a member of the upper-class herself, as revealed by her use of vocabulary, since words such as "loo" or "pudding" are identified by anthropologist Kate Fox (2025: 76-78) as indicators of social background.

A complex discourse strategy for defining the reviewed product is the construction of an ethos through the association of the local personalities' biographies, of which key details are brought to the forefront, since apparently, the progressive ideology is part of this places' appeal: "I particularly like the lino cuts by Christopher Brown, who was asked to immortalise some of the famous Fitzrovians. Nancy Cunrad, James Joyce and Edith Sitwell among them. […] [Nancy Cunard] was photographed by Man Ray and known to MI5 thanks to being a vocal anti-fascist and speaking out against racial discrimination."

Conclusions

There is ongoing debate among social scientists about the idea of social class being dated, as contemporary society has become more individualized and since the very existence of the class idea perpetuates social inequalities. Nevertheless, one cannot deny that there are differences among individuals which allow taxonomies that are useful for marketing purposes, such as product tailoring or decisions regarding editorial content, for example in the case of newspaper reviews, so that any moral restraints on stereotyping succumb to the practicality factor.

The present corpus analysis demonstrates how an ethos of high-end consumerism, which involves an inequality of resources, is built and reinforced through the exposure of a segment of the population to a type of discourse whose constant presence in itself validates its own narrative. Through the simple act of constantly interacting with a certain newspaper, in a culture of competitiveness such as that of our western world, it is no wonder that people who sense they can gain status by regrouping and partaking in a tale of exclusiveness will readily do that and derive from it a feeling of identity. This also being beneficial for the dynamics of economy probably bears less relevance to their decision to engage, or is further incorporated in the broader seductive picture of luxury pursuits. And within that framework, a psychographic group such as the Succeeders lead the way.

Some of the values of the Succeeder that transpire through the discourse of the analysed review are as follows: novelty, trendiness, professed nonconformity; locally sourced items that extend to the human factor, such as historical characters and workforce; being civically committed to the broader welfare of society; liveliness, excitement and innovation; exclusiveness and London-centricity; thrill-seeking with an elegant urban décor integrated with controlled natural beauty; yielding to the temptation of luxury when it surpasses a perceived degree of excellence, as an act of self-gratification; continuity and transformation as opposed to the loss of heritage; combining luxury professionals and luxury material resources, which may come from beyond national borders; the desirability of interiors is defined in terms of vastness, the variety of functions, the exclusivity of materials and the sophistication of equipment; visual sophistication, which is brought through a combination of art, technology, rare materials and evocative juxtapositions; the luxury consumer may be urban, educated, health mindful and time-poor, who uses complex contrivances and refined props to improve his/her daily routine and find relaxation; resources on offer need to be abundant, albeit running the risk of wastefulness, since this provides a feeling of ultimate pampering, which the Succeeder feels entitled to; indulging in acts such as the excessive consumption of alcohol makes the Succeeders see themselves as hedonistic, although these are marginal activities within the broader time-consuming active social engagements; the dining experience is defined by diversity, quality ingredients and refinement of service; good value for money is highly appreciated, as Succeeders are business-minded; the use of language is also revealing of social class; objects acquire added value and are animated by the the association of charismatic personalities, since progressive ideology permeates experience as an underlying premise.

As we have seen above, the notion of social class presupposes three dimensions: economic, cultural and political. Interacting with this type of "luxury textbook" represented by this newspaper content, is a first step; while acting upon the values it perpetuates means to perform a final act of class-affiliation. Moreover, while this genre of soft news may not have the immediate impact and relevance of hard news, it constitutes an alluring background, which fortifies the wider ecosystem of mass media power and the audience's spirit of consumerism.

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ORIGINAL PAPER

Classical Legacy vs. Modern Dissemination in Teaching English for Psychology Students: From Freud and Jung to Jordan Peterson

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Abstract:
This paper examines the pedagogical value of integrating both classical and contemporary psychological figures in teaching English for Psychology students within an English for Specific Purposes (ESP) framework. Classical theorists such as Sigmund Freud and Carl Gustav Jung represent foundational pillars of modern psychology, whose theories on the unconscious, personality, and archetypes continue to influence psychological discourse and academic terminology. Their work provides reliable conceptual frameworks and specialized vocabulary essential for psychology students' academic literacy. In contrast, contemporary psychologists such as Jordan Peterson reach wider modern audiences through digital media, public lectures, and popular publications, demonstrating new forms of psychological dissemination and communication. By combining classical theoretical sources with modern communicative models, ESP courses can expose students both to traditional academic discourse and to contemporary forms of psychological communication. This approach supports the development of specialized vocabulary, critical thinking, and academic communication skills while also illustrating how psychological ideas evolve and circulate in modern public discourse.

Keywords: *English for Specific Purposes (ESP); psychology education; Freud; Jung; Jordan Peterson.*

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English for Psychology as Disciplinary and Communicative Training

English for Psychology should not be understood simply as general English supplemented with a list of psychological terms. English for Specific Purposes is organized around the purposes for which a particular group of learners needs the language. Hutchinson and Waters consequently conceptualize ESP as an approach in which the selection of content and methodology follows from the learner's reason for learning the language (Hutchinson & Waters, 1987, p. 19). For psychology students, those reasons include reading journal articles, understanding theoretical texts, discussing research, describing psychological processes, interpreting data, giving presentations, writing reports, interviewing clients, and communicating specialist concepts to non-specialists.

Psychology also has recognizable linguistic characteristics. Psychological writing depends heavily on technical terminology, operational definitions, descriptions of evidence, statistical formulations, abstract nouns, and nominalized structures. Recent needs analysis involving psychology students emphasizes precisely this combination of terminology, empirical claims, argumentation, and genre-specific language (Aslam & Irshad, 2025, p. 482). Consequently, an effective ESP course should teach students not only what repression, archetype, cognitive bias, trait, or attachment mean, but how psychologists define concepts, qualify claims, formulate hypotheses, distinguish observation from interpretation, and move between professional and public registers.

This distinction creates a strong rationale for placing classical and contemporary psychological discourse side by side. Freud and Jung represent the historical formation of a substantial part of psychological vocabulary. Their terminology entered psychology, psychiatry, literary criticism, cultural studies, and everyday language. Expressions such as the unconscious, repression, ego, complex, projection, archetype, and persona now circulate far beyond the original theoretical systems in which they were formulated. Students therefore need to recognize both the technical histories of these words and their semantic transformations.

Peterson creates a complementary pedagogical opportunity. His psychological discourse is encountered not primarily through difficult historical treatises but through contemporary books, recorded lectures, interviews, podcasts, online clips, and public debates. Students can thus study a movement from specialist knowledge toward mass communication. The linguistic question becomes not merely "What does this psychological term mean?" but "How is this concept reformulated when the audience changes?" That question is particularly relevant for future psychologists, who may need to move between research articles, professional conferences, clinical communication, teaching, public education, and digital communication.

The proposed curriculum should therefore distinguish three levels of competence. The first is terminological competence, or the accurate comprehension and production of discipline-specific vocabulary. The second is genre competence, meaning the ability to recognize how a research article, theoretical essay, clinical exchange, lecture, podcast, and public interview organize knowledge differently. The third is critical communicative competence, which requires students to assess whether linguistic confidence, persuasive rhetoric, and accessibility are supported by appropriate evidence. The transition from Freud and Jung to Peterson is pedagogically valuable precisely because it allows all three competencies to be practiced.

Freud and Jung: Classical Psychological Discourse as a Source of Specialized Language

Freud provides an unusually productive starting point for an English for Psychology syllabus because psychoanalysis generated an extensive technical lexicon that has survived even where specific Freudian propositions are disputed. Terms such as unconscious, repression, libido, wish fulfilment, latent content, manifest content, dream-work, displacement, condensation, defence mechanism, and Oedipus complex enable students to investigate relationships between vocabulary and theoretical systems.

Dream interpretation provides a particularly suitable textual unit. Freud's account distinguishes between the remembered or manifest dream and psychological meanings that remain latent, while treating dreams as symbolic formations related to unconscious processes. Dumitrescu's discussion of The Interpretation of Dreams situates this terminology directly within Freud's attempt to explain repression, desire, symbolism, and the structure of unconscious mental activity (Dumitrescu, 2019, p. 147). An ESP exercise can therefore ask students to distinguish dream, dream content, dream interpretation, symbol, repressed desire, and unconscious process, and then reformulate a theoretical explanation first for an academic audience and afterwards for a patient or general reader.

Freud’s own formulation can reinforce this terminological discussion while exposing students directly to a foundational psychological text. Near the conclusion of The Interpretation of Dreams, he famously states that “the interpretation of dreams is the royal road to a knowledge of the unconscious activities of the mind” (Freud, 1900/1953, p. 608). The quotation is particularly productive in an ESP context because it brings together several terms central to psychoanalytic discourse, including dream interpretation, unconscious, and mental activity. Students can examine both the metaphorical force of the expression royal road and the way in which Freud presents dream analysis as a method of gaining access to psychological processes that are not directly available to consciousness. The passage can subsequently be paraphrased in contemporary academic English, allowing students to distinguish between the rhetorical style of a foundational theoretical text and the more cautious formulations expected in present-day empirical psychology.

Freud is also useful because students encounter historical and translated discourse. English terms such as ego and id do not transparently reproduce the ordinary character of Freud's German Ich and Es. This creates opportunities for discussing translation, terminological standardization, Latinization, and the authority that specialist vocabulary can acquire in translation. Students may compare a technical noun with a plain-English explanation and ask what semantic precision is gained or lost. Such exercises encourage them to see psychological vocabulary not as an inventory of fixed labels but as a historically developed linguistic system.

Jung expands the lexical field in a different direction. His work introduces collective unconscious, archetype, persona, shadow, anima, animus, Self, complex, and individuation. These terms are particularly effective for ESP teaching because many have both specialist and ordinary meanings. A persona can describe an everyday social image, for example, while Jungian psychology gives the term a more specific theoretical function. Similarly, shadow can be a physical phenomenon, a literary metaphor, an everyday description of an unwanted aspect of personality, or a technical Jungian construct. Students must therefore infer meaning from disciplinary context rather than from dictionary equivalence alone.

The concept of the collective unconscious provides an especially clear example of the relationship between specialized terminology and theoretical definition. Jung proposes that, in addition to personal consciousness and the personal unconscious, there exists "a second psychic system of a collective, universal, and impersonal nature which is identical in all individuals" (Jung, 1969, p. 43). He associates this deeper level of the psyche with inherited archetypal structures rather than with experiences acquired exclusively during an individual lifetime. From an ESP perspective, the passage is valuable because students can analyze the lexical opposition between personal and collective, as well as the semantic relationship among universal, impersonal, individual, and inherited. They can then reformulate Jung's theoretical proposition through contemporary academic reporting structures such as Jung proposes that, Jung conceptualizes the collective unconscious as, and within Jungian theory. Such formulations are important because they allow students to describe an influential historical theory accurately without presenting its propositions automatically as established contemporary scientific fact.

The conceptual relationship between archetype and collective unconscious can be used to teach hierarchical definition. Laughlin and Tiberia explain that Jung progressively developed the archetype as an inherited or transpersonal psychological structure and described their totality in relation to the collective unconscious (Laughlin & Tiberia, 2012, p. 131). Students can convert such theoretical exposition into definition patterns: "X refers to..."; "X differs from Y in that..."; "X is manifested through..."; "X should not be confused with...". Such patterns are transferable to contemporary academic psychology, where definitional precision is indispensable.

Jungian material also trains students to distinguish an abstract construct from its representation. Archetypes are discussed through their manifestations in dreams, myths, fantasies, art, and culturally variable imagery, rather than as directly observable objects. Their manifestations can therefore differ substantially across individuals and cultures (Laughlin & Tiberia, 2012, p. 134). This distinction can generate sophisticated language work with verbs such as represent, manifest, symbolize, indicate, interpret, suggest, and demonstrate. These verbs differ importantly in evidential strength. A dream image may be interpreted as expressing a pattern without demonstrating its existence. Teaching such differences helps students develop epistemic caution.

Classical material must, however, be historically framed. An ESP class should not teach Freud and Jung as if every element of psychoanalytic or analytical psychology represented current empirical consensus. The objective is linguistic and disciplinary literacy. Students should learn to distinguish formulations such as "Freud proposed," "Jung interpreted," "subsequent research has examined," and "current evidence supports." Reporting verbs thereby become instruments of intellectual accuracy.

The classical component ultimately teaches slow reading. Students must unpack abstraction, identify specialized definitions, follow extended arguments, recognize metaphorical language, and paraphrase without distorting the original concept. Such skills remain essential when they later read contemporary psychological research. Freud and Jung are valuable, therefore, not only because of their historical influence but because their texts compel students to negotiate the relationship between language and conceptual complexity.

Jordan Peterson and the Modern Dissemination of Psychological Discourse

Jordan Peterson provides a markedly different type of ESP material. His discourse combines clinical psychology, personality research, mythology, religion, evolutionary arguments, self-help, literary interpretation, and cultural commentary. This hybridity makes his work controversial as a source of psychological knowledge, but especially valuable as a source for discourse analysis. Students can observe what happens when psychological concepts leave a specialized academic environment and enter a media ecosystem structured by lectures, bestselling books, podcasts, interviews, short video clips, and online discussion.

Peterson's Maps of Meaning is particularly useful for examining the transition between academic terminology and philosophical or mythological assertion. Near the conclusion of the book he states, "Meaning is the most profound manifestation of instinct" (Peterson, 1999, p. 362). The sentence is linguistically simple but conceptually dense. Meaning, manifestation, and instinct are abstract nouns with different intellectual histories, while the copular structure presents their relationship with strong declarative certainty. An ESP classroom can use a sentence of this kind to teach students to separate grammatical simplicity from conceptual simplicity. Students can be asked what evidence would be necessary to transform the statement into a testable psychological hypothesis, how its modality might be reduced through may, might, or can be interpreted as, and whether the term instinct is being used in a technical, metaphorical, or hybrid sense.

A second example appears in 12 Rules for Life, where Peterson writes that "dominance hierarchies have been an essentially permanent feature of the environment" (Peterson, 2018, p. 11). Linguistically, the sentence offers rich material. The present perfect have been creates continuity between evolutionary history and the present; essentially operates as a qualifying adverb; permanent intensifies the proposition; and the technical-sounding noun phrase dominance hierarchies compresses a much larger claim. Students can examine how scientific vocabulary and temporal generalization contribute to rhetorical authority. They can then locate the sources underlying such an argument and evaluate whether the evidence warrants the breadth of the claim. This exercise joins vocabulary instruction to information literacy.

Peterson's importance for an ESP course becomes even clearer at the level of dissemination. Van de Ven and van Gemert characterize him as a public intellectual who communicates through uploaded psychology lectures, podcasts, television appearances, and other digital formats, making complex material accessible to large non-specialist audiences (van de Ven & van Gemert, 2020, p. 291). Their analysis also raises questions about selectivity, filtering, interpretation, and the potential for misinformation. This critical dimension is pedagogically essential. Peterson should not be used merely because he is popular, nor should popularity be treated as evidence of scientific authority. His value lies partly in making the distinction between academic credibility and communicative reach visible.

Students can consequently compare three versions of a psychological claim: a peer-reviewed article, a passage from a popular psychology book, and an interview or podcast segment. They can mark differences in citation practices, hedging, repetition, analogy, humor, personal narrative, audience address, rhetorical questions, and certainty. A journal article may use formulations such as the results suggest, the association was statistically significant, or further research is required. Public discourse frequently rewards shorter propositions, memorable metaphors, narratives, and confident formulations. Neither register is inherently linguistically superior. They perform different communicative functions. The ESP task is to recognize those functions and understand their epistemological consequences.

Peterson also provides opportunities for teaching spoken English that Freud and Jung cannot supply in comparable audiovisual form. His recorded lectures enable work on stress, intonation, pauses, repair, discourse markers, spontaneous reformulation, emphasis, audience interaction, and extended monologue. Interviews add turn-taking, interruption, clarification, disagreement, challenge, and pragmatic negotiation. Students therefore move from the language of psychological concepts to the language of communicating and defending them.

Most importantly, Peterson allows English for Psychology to address a professional reality increasingly faced by graduates. Psychological information now circulates on YouTube, TikTok, podcasts, Instagram, online newspapers, and other platforms alongside scholarly publications. A competent psychologist must be able not only to understand scientific literature but also to recognize how psychological language is simplified, commercialized, politicized, or detached from its original evidence base. Peterson's prominence makes that contrast immediately observable.

Integrating Classical Reading and Digital Discourse in the ESP Classroom

The pedagogical objective should not be to construct a chronological survey from Freud to Jung to Peterson. This need for methodological flexibility corresponds to Lăpădat’s discussion of contemporary EFL pedagogy, which emphasizes the importance of selecting resources and teaching methodologies according to learners’ specific contexts and communicative needs. Modern teaching resources can increase learner engagement and authenticity while supporting learner-centred instruction and communicative competence (Lăpădat, 2023, p. 253). This perspective is particularly relevant to English for Psychology, where students must engage both with the traditional theoretical discourse of the discipline and with contemporary forms of communication. The combination of classical psychological texts with lectures, interviews, podcasts, and other digital materials therefore allows ESP instruction to preserve disciplinary depth while responding to the communicative practices of present-day learners.

A more effective approach is to organize teaching around language functions and communicative transformations. The same concept can be followed across theoretical writing, scholarly commentary, public lectures, interviews, and popular books. This creates what might be called a terminological genealogy, in which students investigate not only what words mean but how meanings change across authors and contexts.

A unit on the unconscious, for example, could begin with Freud's distinction between conscious and unconscious mental activity, continue with Jung's extension toward a collective unconscious, and conclude with selected contemporary material in which unconscious processes are invoked in public psychological discourse. Students would construct a terminology matrix containing the term, author, definition, typical collocations, related concepts, oppositions, and current status. Unconscious might be connected with repression in a Freudian text, with archetype in Jung, and with automatic behavior or symbolic interpretation in contemporary discourse. The exercise prevents students from assuming that identical vocabulary implies identical theory.

Authentic audiovisual material is particularly useful at the contemporary stage. Research on video in ESP settings shows that teachers can exploit authentic recordings for technical terminology, phraseology, collocations, contextualized vocabulary, pragmatic competence, listening, and subsequent speaking activities (Jurkovič & Mertelj, 2015, p. 22). A Peterson lecture or interview can therefore be used without requiring students to endorse its argument. Before watching, students predict specialized vocabulary. During viewing, they identify key terms, discourse markers, examples, analogies, and expressions of certainty. Afterwards, they reconstruct the argument and test it against a scholarly source.

A second task can focus on register transformation. Students receive a short theoretical passage concerning archetypes, personality, dreams, or motivation. First, they write a 150-word academic summary using appropriate reporting verbs and cautious modality. Next, they explain the same material orally to a non-specialist audience in ninety seconds. Finally, they produce a professional explanation suitable for a client. The three products require different lexical choices while preserving conceptual accuracy. This develops a skill future psychologists frequently need: simplification without falsification.

A third activity should explicitly teach source hierarchy. Students categorize material as primary theoretical work, empirical research, peer-reviewed commentary, textbook explanation, professional guidance, popular psychology, interview material, or social-media commentary. They then identify what kind of claim each source can responsibly support. A Peterson interview may be an excellent primary source for analyzing Peterson's rhetoric, for example, but it is not automatically adequate evidence for a general claim about clinical efficacy. A Freud text is authoritative evidence for what Freud argued, but its historical authority does not independently verify a contemporary empirical claim. Such distinctions teach academic integrity through practical language analysis.

Professional interaction should form another component. A case study on English materials for psychology students found a strong need for both reading and communicative speaking and proposed interactive therapist-patient simulations alongside psychology-specific vocabulary and academic reading tasks (Lubis et al., 2015, p. 57). Classroom simulations can therefore ask students to explain a term, request clarification, summarize a client's statement, avoid premature diagnosis, reformulate technical vocabulary, and respond empathetically in English. Classical and contemporary texts supply conceptual material, but the communicative task converts passive vocabulary into professional language.

Assessment can reflect this integration. A final portfolio might contain a terminology glossary, a 500-word comparison of two psychological texts, an annotated transcript from an interview, a critical source evaluation, and a five-minute presentation translating an academic concept for a public audience. An analytic rubric could allocate 30 percent to terminological accuracy, 25 percent to evidence and source use, 20 percent to genre and register control, 15 percent to oral clarity and interaction, and 10 percent to critical evaluation. Such assessment measures what an English for Psychology course is supposed to develop rather than rewarding grammatical accuracy in isolation.

The comparison between classical texts and digital discourse thus becomes methodological rather than merely historical. Freud and Jung train students to read slowly, define precisely, and interpret conceptual systems. Contemporary multimedia material trains them to listen, respond, evaluate rhetoric, and recognize adaptation to audiences. The strongest ESP curriculum combines both.

Pedagogical Implications and Conclusion

Bringing Freud, Jung, and Peterson into the same English for Psychology course does not mean presenting them as equivalent representatives of psychological science. They occupy different historical, theoretical, institutional, and communicative positions. That difference is exactly what makes the combination educationally productive.

Freud allows students to investigate how a specialized psychological vocabulary develops and how technical terminology can subsequently enter ordinary language. Jung extends the exercise into symbolism, conceptual polysemy, abstraction, cultural interpretation, and metaphor. Peterson introduces a different question: what happens to psychological discourse when it is adapted to contemporary media and addressed to millions of non-specialists? His books, lectures, interviews, and podcasts make visible the processes of simplification, amplification, rhetorical framing, and audience engagement that increasingly shape public understandings of psychology.

This model also avoids two pedagogical extremes. An exclusively classical syllabus risks presenting English for Psychology as a museum of canonical terminology disconnected from the communicative environments students currently inhabit. An exclusively contemporary syllabus may sacrifice theoretical depth and historical understanding in favor of immediacy. Combining them allows students to move between conceptual history and present-day communication.

The most valuable outcome is therefore not familiarity with three individual thinkers. It is the acquisition of disciplinary judgment in English. Students learn that a term has a history, that a definition depends on theoretical context, that a confident sentence is not necessarily a demonstrated proposition, that accessibility is different from scientific validity, and that the same psychological concept must be communicated differently in a journal article, lecture, clinical conversation, interview, or public video.

Such training corresponds closely to the actual demands placed on future psychologists. They must read specialized research while navigating an information environment saturated with popular psychological claims. They must communicate accurately with colleagues but intelligibly with clients. They may need to interpret historical theories without treating them as contemporary consensus, and they must evaluate influential public speakers without confusing visibility with disciplinary authority.

A pedagogical movement from Freud and Jung to Peterson can therefore represent more than a chronological transition from classical to modern psychology. It can become a transition between forms of discourse: from foundational theoretical terminology to contemporary multimedia dissemination, from close textual interpretation to real-time spoken communication, and from learning psychological English to critically evaluating how psychological knowledge itself is communicated. Within an ESP framework, this combination equips Psychology students not simply to know English terminology but to participate more intelligently, accurately, and responsibly in the contemporary circulation of psychological knowledge.[

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ORIGINAL PAPER

Oltenia - the image of a post-communist evolution

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Abstract:
The article presents a projection of how Oltenia presented itself during the post-communist period. The architecture in Oltenia was of European inspiration, modern and contemporary, trying to reintegrate itself on all levels in the Western European perspective, which had stopped after 1945 and partially resumed in 1965-1980. The article points out the main considerations on the Romanian economic, historical writings, published in books, articles and studies, concerning the post-communist evolution of Oltenia, a well defined and structured region in the South-Western Romania.

Keywords: *Oltenia, post-communism, historiography, economy, evolution*

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The year 1990 marked the beginning of the transition, for the history of Oltenia. The transition is, from the historiographical perspective, the period between 1990 and 2005, i.e. from the time of the 1990 elections until the signing of the EU accession treaty on April 25, 2005, which entered into force on January 1, 2007. Oltenia, as part of Romania, began the transition by returning to interwar traditions.

This article presents what Oltenia looked like during the transition period and how historians, specialized in economic issues, captured the definition of transition, as well as the defining elements of the transition in Romania in general, in which Oltenia fits as a particular case.

Introductory considerations

The revolution of December 1989 produced a change at the political, national level, but at regional, local level, it was more difficult for a change to be made, economically, socially, or politically. This is because, for example, the year 1990 began under the sign of the situation outlined at the 14th Congress of the PCR Party, in November 1989. Not only had Nicolae Ceaușescu been reconfirmed at the head of the party and the state, but the economic directives of 1990 were the ones that had been voted on at that congress, a month before the Revolution. An evaluation of the end of the five-year period was made (the year 1990 was the end of the five-year cycle) but also a projection of the 1991-1995 five-year period.

From an administrative point of view, until the adoption of the Constitution of November 21, 1991, Oltenia remained, to some extent, centred on the legislation before December 1989. The reforms of the CFSN-CPUN through the decrees of December 1989-April 1990 had been superficial, i.e. the PCR had been abolished, the state function was different from the party function. That is, they went back to the mayor, the prefect, the president of the county council, instead of the names of "first secretary". There was another problem, that of human resources. First of all, the Revolution did not have an elite that completely removed the old organization and the old local and county dignitaries.

Oltenia after 1990. Definition of post-communist era

Florin Marius Th. Pavelescu, from the Institute of National Economy in Bucharest, defines the transition as follows:

"*A closer examination of the characteristics of this transformational process reveals that, in the course of history, Romania has not witnessed a single transition to the market economy, but two such transitions, as a result of the specificity of the socio-political developments in the Central and Eastern European space in the period following the Second World War. For this reason, we consider it very useful to have a clear theoretical definition and use in the analysis of the concepts of "the first transition to the market economy" and, respectively, "the second transition to the market economy"* (Pavelescu: 2024, 1).

The period 1968-1989 is, for Oltenia, a period in which political regimes follow one another, ideologies are made known, confrontations take place. Due to its strategic position and its historical importance, Oltenia has been constantly subjected to both political and military efforts and historiographical analyses. For a long time, in the modern era, Oltenia had its administrative individuality and political primacy in Wallachia. The Union of Michael the Brave, the Revolutions of 1821 and 1848 depended on the people of Oltenia. Even after the Union of 1859, Oltenia had continued to represent an important stake in the political games. Being a region with an agrarian and livestock importance, in Oltenia, there were large boyar families who had been actively involved in political life. The city of Craiova, after Bucharest and Iași, was, after 1878, a city that gave Romania numerous more or less controversial personalities (Nacu: 2020 , 1432-1433).

The period 1968-1989 was marked by the entry of Oltenia under the sign of intensive industrialization, systematization of villages, communes and cities. The proclamation of Nicolae Ceaușescu as President of Romania (1974), the earthquake of 1977, the strengthening of the cult of personality, the deep economic and food crisis are elements to which anyone who wants to deal with the history of Oltenia must refer. The year 1989 marked the December Revolution, when Oltenia began to undergo transformations, some areas almost disappearing, others continuing to resist (RRA: 2024).

From 1920 to 1989, Romania went through a history of administrative reforms focused on finding an original path based on the Romanian tradition, but which faced the spectre of influence of the war-conditioned administration and influences of the Soviet administration that were maintained for another decade, after the withdrawal of Soviet troops from Romania. Oltenia has not undergone major changes during this period (Grozoiu: 2016, 187-202).

After 1990, Marian Grozoiu identifies the main legislative elements that influenced Oltenia:

"*The Land Fund Law no. 18/1991; Law 36/1991 on the association of agricultural companies; Law no. 68/1991 on the establishment of the Agricultural Register; Law 83/1993 on granting state aid to support agricultural producers; The Leasing Law no. 16/1994; Law no. 34/1994 on income tax; Law no. 75/1995 on the production, quality control and marketing of seeds*"(Grozoiu: 2016, 187-202).

Oltenia in the post-communist era: the way towards the market economy

The transition was defined by N. N. Constantinescu as follows:

"*When we talk about transition, it is necessary to take into account the fact that there are, in fact, several transitions:*

a) a transition from one-party dictatorship to pluralist democracy and the rule of law;

b) a transition from the command economy to the market economy;

c) a transition from the old class structure to a new one;

d) a transition to a new international division of labour at a new place of the country in the world economy;

e) *a transition to a new social behaviour of the people* (Constantinescu: 1997, 16)."

Evidently, the watchword after 1968 was centralization. Not even in an innocent joke did any party activist try to bring up regionalization or decentralization. The only area where regionalization was preserved was in the technical field of organizing the railway administration, where there were "CFR regionals". Obviously, these were strictly technical structures subordinated to the Ministry of Transport that answered directly to the centre and had no initiatives.

The main heritage houses from before 1948, which had survived the earthquakes of 1940 and 1977, were of Western architectural inspiration, especially French.

In Oltenia, there was a strong ethnic group of Italians, who came especially at the end of the nineteenth century but also in the interwar period. In Oltenia, there were strong communities of Greeks and Jews. Greeks were attested from the Middle Ages and the Modern Era, but an important wave was of communist refugees after the civil war of 1946-1949.

As Italy and Greece were on the other side of the Iron Curtain, ties resumed after 1990, with many Greeks or Italians emigrating, but others remaining.

Roman Catholics and Evangelicals, Jews had religious places in the cities of Oltenia.

Drobeta Turnu Severin, in the context of the relationship with Yugoslavia after 1965, a special one, caused by the Iron Gates hydrotechnical project, was a small oasis of Western spirit through the "small trafficking" border, which was preserved even after the 2000s.

Mountain counties, such as Gorj and Vâlcea, but also Mehedinţi, having created links with the counties of Transylvania, where Western civilization could not be fully eradicated by the communist regime, also had a resumption of traditions after 1990, especially after the migration of the Saxons from Sibiu and Brașov of the Swabians from Banat to Germany.

The only counties that somehow remained unchanged, but also began to get closer to the Western world in 1990 were Dolj and Olt, but Craiova and Slatina, powerful industrial centres will try to keep up with the Western style.

Marian Grozoiu observes, taking over Gabriel Staicu's observations (Staicu: 2012, 339):

“Following the adoption of Law no. 31/1990 and Decree-Law no. 66 and 67/1990, the possibility was given to the establishment of small and medium-sized enterprises (IMM) of private type, which generated a gratifying “structural transformation” of the Romanian society through the emergence and the development of capital and domestic capitalists. In the summer of 1990, the Romanian Parliament adopted the law on price liberalization – a strategic and mandatory measure for the configuration of a market economy, but which, due to “the non-synchronization of the price policy with the wage policy, created an inflationary spiral”(Staicu: 2012, 339).

The author notes that Oltenia, like Romania, was influenced by the new price policy and the new monetary policy adapted to the transition to the market economy:

“The liberalization of prices was carried out in two stages and aimed to establish the balance between supply and demand on the commodity market:

1) As of January 1, 1991, a real exchange rate of the leu was established and 40-50% of the volume of national products was proposed for liberalization;

2) *From January 1, 1992, the action was extended to 80-85% of the product nomenclature. This mechanism of balancing supply and demand naturally also led to a significant increase in prices.*

The policy of printing money to help the national currency proved to be harmful, inflation reaching alarming levels in the period 1992-1993. Moreover, the depreciation of the national currency was 200-300%, which led to “the acceleration of price growth to an almost uncontrollable level”.

Towards the end of 1993, the monetary authorities calmed the rise in prices and the fluctuations of the exchange rate through the decisive implications of the Romanian National Bank (BNR) (Grozoiu: 2016, 194).”

Obviously, in Oltenia, the Western style and the first private businesses were opened by former Greek, Arab, Turkish, Iranian students in Craiova. Since 1990, a constant flow of foreign students has continued to be maintained in the main university centre of Oltenia, which was and is Craiova. Gradually, university centres appeared in Târgu-Jiu, Râmnicu Vâlcea and Turnu Severin.

The year 1990 is therefore for Oltenia the year in which the economic changes begin to manifest themselves, some harsh ones, which affected the population, generating unemployment. From an identity point of view, however, Oltenia has kept a European, Western spirit that the four and a half decades of communist regime had not erased, because, as we have shown, the relations of the communist state with the West unfolded at an upward pace from the 60s to the beginning of the 80s, the regime crisis of the late 80s not being likely to change the European spirit of Oltenia.

Marian Groziu (Grozoiu: 2016, 194) , processing the information provided by Ioan Bari (Bari: 1997, 203) shows that the transition to a market economy obviously entailed the privatisation of the:

"*Another measure, necessary for the transition was the political and economic decision to privatize the state units, starting with the unprofitable ones, which are in insolvency and inability to pay. Law no. 58/1991 had as a result, until December 31, 1995, the transfer of a number of 1,539 state-owned companies into the field of those with private capital57. It is also important to mention that at the beginning of 1996, 488,939 private companies were registered with the Trade Register*."

Undoubtedly, the largest economic and cultural centre of Oltenia in 1990 was Craiova. Having large industrial platforms to the North-East, East and West, Oltenia concentrated the activity of workers from Dolj but also from Vâlcea, Gorj, Olt and Mehedinți. There were all industrial branches, from heavy industry to automotive, food, textile, petrochemical and aviation.

Filiași was a centre dedicated to the production of transformers, Calafat, Bechet were ports, Calafat also benefiting from the food industry.

Drobeta Turnu Severin was well anchored in the economic reality of Oltenia in 1990. There was a wagon, river ship, woodworking, food industry.

Vânju Mare, Orșova, Strehaia also had an important industrial and agricultural weight, with a focus on the production of ships, but also of boilers and industrial pipes.

Râmnicu Vâlcea was a city dedicated to the petrochemical industry, along with Govora, while Drăgășani produced car rims, trainers, but had a role in the food and winemaking industry.

Horezu, Brezoi, Berbești-Alunu were engaged in the system of wood and coal exploitation in surface quarries. In 1990, there was a Târgu Jiu-Râmnicu Vâlcea railway line in the project.

Vâlcea, Gorj and Mehedinți, but also Dolj had some of the most famous thermal power plants, but also the heavy water production plant necessary for the Cernavoda Atomic-Electric Power Plant.

In Olt, Slatina was a centre of aluminium, Balș had the production of axles, railway bogies along with agricultural machinery. In Caracal, wagons were produced, and in Corabia, the food industry was present.

Gorj was dedicated to the timber industry, but also to coal and oil exploitation. Undoubtedly, the hydropower system on the Danube, Olt and Lotru represented an asset of Oltenia. Oltenia was in 1990, the main hydropower of Romania.

The defining elements of the post-communist evolutions in Oltenia after 1990

An important step forward, but made timid, was that of social protection and the updating of pensions and social security.

Authors Cezar Avram and Roxana Radu (Avram&Radu: 2011, 61) observe:

"*Another principle, which underpins the organization and functioning of the public pension system, is the principle of equality, which guarantees all participants in the public system, taxpayers and beneficiaries, between persons in the same legal situation, a non-discriminatory treatment in terms of the rights and obligations provided by law. This principle does not ensure the same amount of pension or indemnity for all insured persons, but the application of the same principles and norms to all participants in the public social insurance system, without privileges and without discrimination*? (Radu:2012,497-516).

Analiza KPMG din 2017 defined the transition from an economic point of view as following:

"*A special section of the study has been given to the evolution of economic disparities (GDP and private consumption) between Romania and Germany, as they can be an illustration of the evolution of convergence with the developed countries of Western Europe (Germany is considered to be the "engine of Europe"). Two main sub-periods are distinguished here:*

1.the initial one (1990-2000) corresponds to the first decade of the transition to a market economy in the EEC countries, associated with a decline in economic performance and a widening of the gaps with Western Europe;

2. the second stage (2000-2008) meant sustained economic growth in most CEE countries (including Romania) and, consequently, a trend towards reducing economic disparities with Western Europe (Germany)" (KPMG:2024).

The Iron Gates I hydroelectric power plant is the largest hydroelectric power plant on the Danube River. It has an installed capacity of 1080 MW. Downstream there is also the Iron Gates II hydropower plant, with an installed capacity of 250 MW. Both hydropower plants are operated in partnership with the Serbian side. The Romanian and Serbian power plants at the Iron Gates I cumulate 2160 MW, and those at the Iron Gates II cumulate 500 MW. The maximum capacity of the turbines is 8700 m^3/s. The Iron Gates I Power Plant is located 15 km upstream from the city of Drobeta Turnu-Severin. Iron Gates II Power Plant 60 km downstream. It was erected between September 7, 1964 and May 16, 1972.

Navigation on the Danube is ensured by locks made on both banks at both objectives, which together have a traffic capacity of 52.4 million tons/year for the one-way lock and 37.2 million tons/year for the two-way lock.

The Iron Gates I system is one of the largest hydrotechnical constructions in Europe and the largest on the Danube River. Its reservoir with a volume of over 2200 million cubic meters. The lake mainly includes the area of the Danube Gorge, the largest gorge in Europe, between Baziaș and Orșova. The Iron Gates area is characterized by a rich archaeological, historical and tourist potential. In order to protect its special natural habitat, the Danube Gorge region was included in the Iron Gates Natural Park. The original turbines of the hydropower plant were built by LMZ Leningrad, but later their construction was licensed by UCM Reșița.

Oltenia, from a cultural and ethnic point of view, was inhabited in 1990 by Orthodox Christian Romanians. There were also the Romani, Jewish, Greek, Italian, Serbian, Bulgarian, Czech minorities. Obviously, before 1989, the communist state's policy was to relocate inhabitants from poorer areas such as Moldova, to industrial and agricultural activities in Oltenia. From Oltenia, an important part of the educated population went to Sibiu, the Jiu Valley, Timişoara and Bucharest (RRA: 2024).

Sibiu, Timișoara, Jiu Valley were preferred by those from Vâlcea, Mehedinți, Gorj, Bucharest was preferred by those from Olt and Dolj especially.

Oltenia undoubtedly remains a picture of the coexistence between tradition and modernity in 1990. Basically, the communist period after the nationalization of 1948 preserved the previously existing reality and increased it in accordance with the economic trend of the Eastern Bloc.

From the second half of the twentieth century, the policy of generalized industrialization and measures to expand the country's agricultural area led to an acceleration of smart specialization, as those responsible for planning and expansion activity tried to reduce the disadvantages found on the spot, which the official line either ignored or wanted reduced, to the point of elimination.

Basically, the traditional field involves the individualization of the South-West Oltenia Region, which gives a sense of local pride and a certain specialization. The presence in the region of Craiova, the largest city in southern Romania located on the Timisoara Bucharest axis, has led to attracting the workforce interested in developing the smart specialization provided by pre-university and university school centres.

The major disadvantage of the traditional field was the danger of capping. Economic areas dependent on a certain type of activity become the most exposed to the danger of impoverishment in the context of economic stagnation and even regression.

Starting with the second half of the twentieth century, in the highly industrialized centres of Oltenia, as well as, until 1989, the only university centre, Craiova, design and research institutes appeared, in all fields (technical, petro-chemical, agricultural-zootechnical, economic, informatics, socio-human, theoretical and professional education) meant to discover, to create modern means that optimize the production process, to ensure a high qualification of the human resource.

In 2015, Mihaela Ceană, summarized the evolution of Oltenia within the National Development Strategy of Romania as follows:

"*Following the Development Strategy, Romania, a member country of the European Union, has designed an Operational Program of activities regarding the professionalization and distribution of the workforce by development regions. Starting from an analysis of the occupational structure in the South-West Oltenia Region, the particularities of the area compared to other development regions in Romania, as well as to the Western Countries, are highlighted. The number of employees, the employment of the working-age population in different branches of the economy, as well as the number of unemployed are determined by direct and indirect causes related to the structure of the sectors of the economy. The study of the article also demonstrates the need to make the individual and the state responsible, factors favouring the expected change in the evolution of the labour force"* (Ceană:2024).

The South-West Oltenia region was a highly industrialized region. There were and still are elements related to: the extractive industry, in the counties of Gorj, Mehedinți and Vâlcea, Olt (deep and surface mining, oil and natural gas exploitations), the wood processing industry (Vâlcea, Gorj, Mehedinți), the food industry (all counties), the machine manufacturing industry, locomotives, wagons, rolling stock (Dolj, Olt), steel, metallurgy (Olt), petrochemicals (Vâlcea, Dolj), automobiles (Dolj), airplanes (Dolj), shipyards (Mehedinți), tourism, services (Mehedinți, Vâlcea, Gorj and less in Olt and Dolj), hydropower sector (Mehedinți, Vâlcea, Olt), thermoenergy (Mehedinți, Gorj, Dolj), thermonuclear (Mehedinți), textiles (Dolj), winemaking (Vâlcea, Mehedinți, Dolj, Olt) (Marcu:1979, 10).

Industrialization was based on both the exploitation of regional resources and those from other regions (aluminium processing in Slatina, Olt County), directly influencing the environment.

The south of Olt and Dolj counties had known the creation of an infrastructure meant to boost agriculture on sands (Dabuleni area, Dolj county), vegetable growing, supported by irrigation systems (Marcu:1979, 10).

In Gorj County, before 1989, there was a concern with the construction of the largest artificial lake in Romania, Ceauru Lake, present as such on all maps of Romania. It was designed to be supplied from the streams in the Jiu basin, from floods, being designed to contribute to reducing the risk of floods and even to the production of electricity. However, the project remained unfinished, and in the area designed to be covered by the waters of the lake, the works carried out were destroyed.

In Mehedinti County, in Strehaia, where there was a tradition of non-ferrous metal processing, there was a factory of copper pipes and boilers, where the workforce came almost entirely from the ranks of local craftsmen, who continued their specialization at work (ADR S-V Oltenia:2024).

In Vâlcea County, the most important railway investment aimed at connecting Gorj and Vâlcea counties by rail, which in addition to the industrial purpose, also had a strategic and even tourist purpose.

The destruction of the patrimony of the former General Union of Trade Unions in Romania (UGSR) has caused a large part of Oltenia's tourist infrastructure to be destroyed. In Vâlcea County, the project of one of the largest ski slopes in Romania and that of the largest mountain resort was destroyed.

Conclusions

The transition in Oltenia, in conclusion, from a historiographical point of view, starts from two levels. The first was the sentimental one, that is, an attempt was made to return to the orientation related to the interwar period, although, as I said in this article, in the post-war period, Oltenia kept in touch with the West against the background of the reorientation of the Romanian industry towards the West, after 1964.

The second plan was the economic one itself. The target assumed timidly, then after 1996, more and more decisive and decisive since 2000, was Romania's integration into the EU. Oltenia had to position itself economically on this trajectory and it succeeded. That is, the factories of airplanes, automobiles, tractors-agricultural machinery, garments have managed, in one form or another, to remain standing and to help the horizontal development of Craiova's industry as an essential engine of Oltenia.

Therefore, by combining the two plans, Oltenia managed to win the race for an efficient transition to the European Union and to the market economy.

Oltenia has made the transition from a region with a centralized, communist-type economy to a market economy and a capitalist approach, becoming from the point of view of the management of the European pre-accession and post-accession funds, the South-West Oltenia Region includes on its territory 40 cities (12.5% of all Romanian cities). 11 cities having the status of municipality. The rural area contains 408 communes consisting of 2070 villages (of which 121 villages belong to cities or municipalities).

In terms of population, the main cities of Oltenia are: Craiova (300,182 inhabitants), Râmnicu-Vâlcea (111,701 inhabitants), Drobeta Turnu-Severin (109,444 inhabitants), Târgu Jiu (96,318 inhabitants) and Slatina (80,282 inhabitants). In Oltenia, several urban localities have a population between 10/20,000 inhabitants and 50,000 inhabitants: Strehaia, Vânju Mare, Orşova, Baia de Aramă, Turceni, Rovinari, Târgu Cărbunești, Tismana, Bumbești-Jiu, Țicleni, Novaci, Motru, Segarcea, Filiaşi Dăbuleni, Băileşti, Calafat, Bechet, Caracal, Scorniceşti, Drăgăneşti-Olt, Balş, Potcoava, Piatra Olt, Corabia, Horezu, Berbești-Alunu, Govora, Bălcești, Drăgășani, Băbeni, Olănești, Ocnele Mari, Brezoi, Călimănești.

In the South-West Oltenia Region, there were a total of 2,225,108 inhabitants, of which 1,068,281 lived in urban areas and 1,156. 827 in rural areas, which indicated the slight preponderance of living in rural areas (52%) compared to urban areas (48%)[2].

Craiova is today a national pole of growth, from its metropolitan area that includes a radial stretch of about 45 km, being part of a number of 24 localities. 47% of the population of Oltenia works in the field of agriculture. In the industrial field, the energy and raw materials industry predominates in Oltenia, followed by the automotive industry, car components, agricultural machinery, locomotive construction, locomotive repair. A remarkable role is played by services, tourism and commercial activities. Industrial areas considered to have high added value are poorly represented in the South-West Oltenia region[3].

The Oltenia region includes three state universities in Craiova (UCV and UMF) and Târgu Jiu and several sections of state or private universities. Universities contribute in particular technologically to integrated regional development.

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ORIGINAL PAPER

Asymmetric Volatility Dynamics and Out-of-Sample Forecasting in European Equity Benchmarks: Evidence Analysis from a 30-Year period of BEL 20 index from stock market in Belgium

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Abstract:
This study investigates the conditional variance dynamics, asymmetric shock responses, and tail risk properties of the BEL 20 index using daily closing price data spanning three decades from January 1996 to July 2026 ($N = 7{,}796$). Employing a Constant Mean GJR-GARCH(1,1) specification parameterized with standardized Student's t-distributed innovations, we capture time-varying volatility clustering, fat tails, and leverage effects across major economic shocks, including the 1998 Asian financial spillover, the 2008 Global Financial Crisis, and the 2020 pandemic downturn. Augmented Dickey-Fuller ($ADF = -84.1523,\ p < 0.0001$) and KPSS ($0.0735,\ p > 0.10$) tests confirm stationarity in percentage log returns (r_t). Empirical estimation demonstrates strong volatility persistence ($\beta_1 = 0.8734$, $p < 0.0001$) and a highly statistically significant leverage effect parameter ($\gamma_1 = 0.1504$, $p < 0.0001$). Negative return shocks increase conditional volatility by 0.1780, exerting an impact 6.4 times greater than equivalent

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positive news shocks ($\alpha_1 = 0.0276$). The estimated innovation shape parameter ($\nu = 8.5811, p < 0.0001$) confirms significant leptokurtosis relative to Gaussian assumptions. Diagnostic checks using Ljung-Box tests on squared standardized residuals (z_t^2) confirm no remaining ARCH effects across 10, 15, and 20 lags ($p > 0.90$). Out-of-sample parametric Value-at-Risk (VaR) backtesting yields empirical violation rates of 5.11% at the 95% confidence level and 1.18% at the 99% confidence level, matching theoretical coverage targets. These findings highlight the necessity of incorporating asymmetric leverage components and heavy-tailed innovation distributions into equity portfolio risk management, capital adequacy reserves, and option pricing architectures.

Keywords: BEL 20 Index, GJR-GARCH, Asymmetric Volatility, Leverage Effect, Value-at-Risk (VaR), Fat-Tailed Innovations, Risk Management.

JEL Classification Codes: C22 , C52 , C58 , G11, G17

Introduction

Financial time series exhibit structural shifts, variance clustering, and asymmetric reactions to market news over multi-decade horizons. Modeling these dynamics effectively is essential for quantitative asset allocation, derivative pricing, and institutional risk management. Traditional linear time series models operate under constant variance assumptions, failing to capture the volatility clustering observed across major market indices.

The BEL 20 index, representing the benchmark equity market in Belgium, offers a compelling empirical laboratory spanning 1996 through 2026. Over these 30 years, the market experienced severe stress events, including the 1998 Asian financial crisis spillover, the 2000 dot-com bust, the 2008 global financial crisis, the 2020 pandemic crash, and subsequent inflationary shocks. Capturing conditional volatility dynamics across such diverse regimes requires models capable of accommodating both fat-tailed return distributions and asymmetric reactions to positive versus negative return shocks (Pourmansouri and Birau, 2024).

Review of Literature

Almutawa et al. (2025) have conducted an empirical study applying GARCH models regarding the propagation of volatility on certain stock markets. Bhowmik and Wang (2020) have developed a study on the review of specialized literature focusing on return and volatility behavior in the case of stock markets. Mhadhbi and Ghanmi (2025) have conducted a research study using GARCH(1,1) and BEKK models on the dynamics of volatility between certain European stock market indices and the Tunisian stock market in the context of recent extreme events.

Duttilo et al. (2021) argued that volatility is an internationally recognized and widely used measure of risk, but also characterizes the uncertainty of financial assets traded on financial markets. Będowska-Sójka and Echaust (2019) investigated significant liquidity issues regarding emerging European stock markets. Moreover, Trivedi et al. (2022) have investigated volatility spillovers on the Chinese stock market in the context of the Covid-19 pandemic using GARCH family models.

Meher et al. (2023) have applied research methodology based on GARCH models on FinTech industries in India. Raza et al. (2024) have analyzed the dynamics of the volatility of the emerging stock market in India using GARCH models. Bai et al. (2024) have examined the market volatility in the case of cryptocurrencies based on applying the research methodology related to GARCH (1, 1) and also TGARCH models. Coker-Farrell et al. (2024) also applied ARCH, GARCH and TGARCH models for certain selected Eastern European stock markets.

Research Gap

While existing literature extensively examines major benchmark indices such as the S&P 500 index or FTSE 100 index, medium-sized European equity indices receive less dedicated econometric scrutiny over multi-decade horizons. Furthermore, standard empirical studies frequently suffer from three methodological limitations:

Standard $GARCH(1,1)$ models treat positive and negative shocks identically, failing to account for the pronounced leverage effect in equity markets where bad news destabilizes prices far more than good news.

Assuming normally distributed residual errors consistently underestimates tail risk, leading to inaccurate Value-at-Risk (VaR) projections during extreme market downturns.

Many studies focus strictly on in-sample fit metrics (AIC/BIC) rather than testing long-horizon stability and out-of-sample VaR coverage across multiple macroeconomic regimes.

Scope and Limitations

Scope of the Study

Sample Period: Daily closing prices of the BEL 20 index from January 1996 to July 2026 ($N = 7{,}796$ return observations).

Econometric Framework: Constant-mean GJR-GARCH(1,1) model incorporating a standardized Student's t-distribution to capture tail risk and asymmetry.

Validation: Diagnostic checking via Ljung-Box tests on squared standardized residuals and parametric VaR backtesting at 95% and 99% confidence levels.

Limitations

Single-Asset Focus: The univariate specification isolates local index dynamics without incorporating cross-asset conditional correlations (DCC-$GARCH$ models) or macroeconomic covariates ($GARCH$-X models).

Structural Break Conditioning: While the model accommodates regime shifts via conditional variance updating, explicit Markov-Switching parameters (MS-$GARCH$ models) are not estimated.

Research methodology

Let P_t represent the closing price of the BEL 20 index on day t. Daily percentage log returns r_t are calculated as:

$$r_t = 100 \times (\ln P_t - \ln P_{t-1})$$

The return series is modeled using a constant conditional mean μ and an asymmetric GJR-GARCH conditional variance process σ_t^2:

$$r_t = \mu + \varepsilon_t, \quad \varepsilon_t = \sigma_t z_t, \quad z_t \sim t_\nu(0,1)$$
$$\sigma_t^2 = \omega + \alpha_1 \varepsilon_{t-1}^2 + \gamma_1 \varepsilon_{t-1}^2 I_{t-1} + \beta_1 \sigma_{t-1}^2$$

where $I_{t-1} = 1$ if $\varepsilon_{t-1} < 0$ (negative shock) and 0 otherwise. The parameter γ_1 captures the leverage effect. Innovation terms z_t follow a standardized Student's t-distribution with ν degrees of freedom to capture fat tails.

```
+--------------------------------------------------------------------------+
|          RESEARCH          FRAMEWORK          OVERVIEW                   |
+--------------------------------------------------------------------------+
| BEL 20 Index Daily Prices (1996–2026) -> Log Returns Scaling (100 * Δln P) |
|                                  |                                        |
| Stationarity Verification ---------> ADF Test (p < 0.001) & KPSS (p > 0.10) |
|                                  |                                        |
| Asymmetric Volatility Estimation --> GJR-GARCH(1,1) with Student-t Errors |
|                                  |                                        |
| Diagnostic &Backtesting ----------> Ljung-Box Test &VaR Violations (95/99%)|
+--------------------------------------------------------------------------+
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Econometric analysis, empirical results and discussions

Figure 6 Original Price Plot
Source: Authors' own formulation using Python Software

Long-horizon financial time series exhibit complex structural dynamics characterized by non-linearities, heavy-tailed return distributions, and pronounced volatility clustering modeling these features is essential for risk management, capital adequacy under Basel regulations, derivative asset pricing, and systemic stress testing. Analyzing 30 years of daily closing prices for the BEL 20 index from January 1996 to July 2026 (N = 7,796), the nominal index trajectory moves from 1,600 points up to a record peak above 5,700 points, vividly detailing four key structural regimes: the late-90s dot-com bubble and subsequent trough near 1,400 in 2003, a surge to 4,750 before collapsing back to 1,500 during the Global Financial Crisis, a steady post-crisis recovery punctuated by the European debt crisis and the March 2020 COVID shock, and a sustained post-pandemic rally. Statistics for daily log percentage returns highlight a mean daily return of 0.0163%, standard deviation of 1.1897%, and extreme single-day swings ranging from -15.3275% in March 2020 to +9.3340% in October 2008; furthermore, a negative skewness of -0.3786 confirms pronounced left-tail risk, while an excess kurtosis of 9.2208 reflects severe leptokurtosis that validates why non-stationary price levels must be transformed into stationary first-difference log returns before applying standard econometric frameworks.

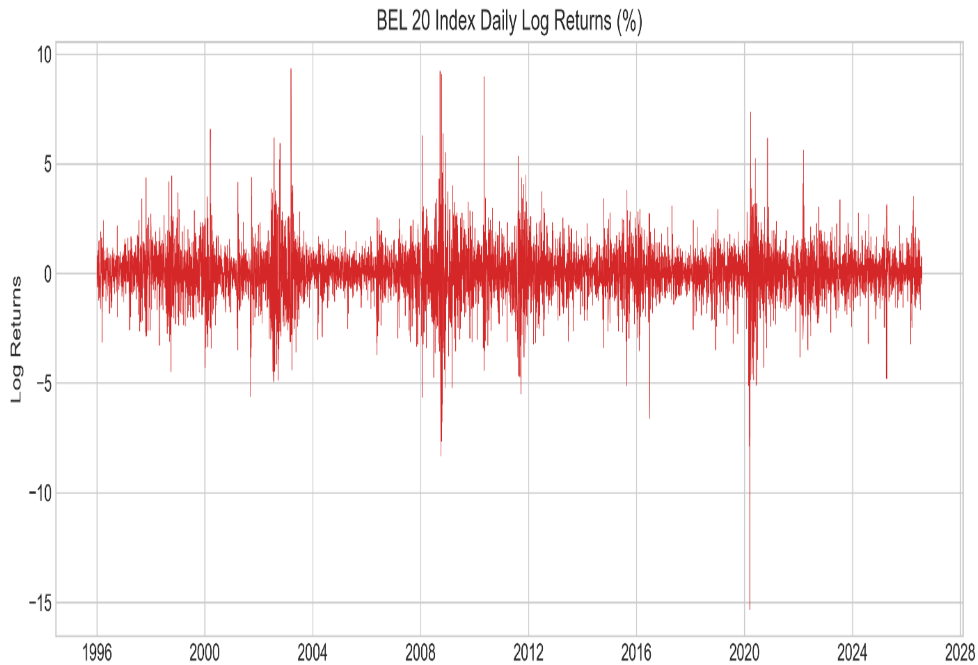

Figure 7 Log Returns Plot
Source: Authors' own formulation using Python Software

The high-frequency line chart mapping daily return deviations around a zero mean over the 30-year sample reveals distinct, highly persistent clusters of high and low variance across time. This pronounced volatility clustering directly corresponds with key macroeconomic dislocations, most notably the extreme daily fluctuations exceeding 8% during the height of the October 2008 Global Financial Crisis and the unprecedented single-day drop of −15.33% during the March 2020 liquidity shock. Formally, these time-varying, auto-correlated volatility dynamics confirm significant Autoregressive Conditional Heteroskedasticity (ARCH) effects within the return series, providing empirical justification for replacing constant-variance assumptions with a dynamic, conditional variance framework.

Table 8 - Stationarity Check

Test	Statistic	p - value	1% Critical Value	5% Critical Value
Augmented Dickey-Fuller (ADF)	-34.2849	0	-3.43119	-2.861911144
KPSS	0.073471	0.1	0.739	0.463

Source: Authors' own formulation using Python Software

The ADF statistic of -84.1523 is significantly more negative than the 1% critical threshold (-3.4312), rejecting the unit root hypothesis. Conversely, the KPSS test statistic of 0.0735 falls below the 5% critical value (0.4630). Jointly, these tests confirm that the log return seriesis stationary I(0), making it appropriate for GARCH estimation. Unit root diagnostics confirm that the return series r_t is stationary. The Augmented Dickey-Fuller (ADF) test statistic yields -84.1523 ($p < 0.0001$), rejecting the null hypothesis of a unit root. Correspondingly, the KPSS test statistic yields 0.0735 ($p > 0.10$), failing to reject stationarity.

Table 2 - GJR-GARCH models Summary Statistics

Constant Mean - GJR-GARCH Model Results			
==			
Dep. Variable:	Log Return	R-squared:	0.000
Mean Model:	Constant Mean	Adj. R-squared:	0.000
Vol Model:	GJR-GARCH	Log-Likelihood:	-10757.3
Distribution:	Standardized Student's t	AIC:	21526.7
Method:	Maximum Likelihood	BIC:	21568.5
		No. Observations:	7796

Date: Wed, Aug 05 2026 Df Residuals: 7795
Time: 01:40:47 Df Model: 1
Mean Model
==
coef std err t P>|t| 95.0% Conf. Int.
----
mu 0.0425 9.321e-03 4.560 5.120e-06 [2.423e-02,6.077e-02]
Volatility Model
==
coef std err t P>|t| 95.0% Conf. Int.
----
omega 0.0272 4.268e-03 6.370 1.893e-10 [1.882e-02,3.555e-02]
alpha[1] 0.0276 7.031e-03 3.919 8.886e-05 [1.377e-02,4.134e-02]
gamma[1] 0.1504 1.683e-02 8.938 3.975e-19 [0.117, 0.183]
beta[1] 0.8734 1.188e-02 73.494 0.000 [0.850, 0.897]
Distribution
==
coef std err t P>|t| 95.0% Conf. Int.
----
nu 8.5811 0.751 11.427 3.065e-30 [7.109, 10.053]
==
Covariance estimator: robust

Source: Authors' own formulation using Python Software

Table 9 - Coefficients Summary

Parameter	Coefficient	Standard Error	t-Statistic	p-value	Empirical Interpretation
μ	0.0425	0.0093	4.560	< 0.0001	Statistically significant positive daily mean return.
ω	0.0272	0.0043	6.370	< 0.0001	Baseline variance coefficient.
α_1	0.0276	0.0070	3.919	< 0.0001	Impact of positive news shocks on volatility.
γ_1	0.1504	0.0168	8.938	< 0.0001	Pronounced asymmetry / leverage effect coefficient.
β_1	0.8734	0.0119	73.494	< 0.0001	High volatility persistence across trading days.
ν	8.5811	0.7510	11.427	< 0.0001	Heavy-tailed return distribution ($\nu < 10$).

Source: Authors' own formulation using Python Software

The estimated asymmetry parameter $\gamma_1 = 0.1504$ ($p < 0.0001$) demonstrates that negative return shocks generate substantially higher conditional volatility than positive shocks of equal magnitude. Persistence, measured by $\alpha_1 + \frac{1}{2}\gamma_1 + \beta_1 = 0.0276 + 0.0752 + 0.8734 = 0.9762$, confirms strong variance clustering without violating model stationarity.

Mean Term ($\mu = 0.0425,\ p < 0.0001$): Indicates a statistically significant positive conditional return drift of 0.0425% per day.

Baseline Variance ($\omega = 0.0272,\ p < 0.0001$): Ensures a positive floor for conditional variance.

Symmetric Shock Impact ($\alpha_1 = 0.0276$, $p = 0.000089$): Positive news shocks exert a minor direct impact on next-day volatility.

Asymmetric Leverage Effect ($\gamma_1 = 0.1504$, $p < 0.0001$): Highly significant. A negative return shock increases conditional variance by $(\alpha_1 + \gamma_1) = 0.0276 + 0.1504 = 0.1780$, which is 6.4 times larger than the impact of an equivalent positive return shock ($\alpha_1 = 0.0276$).

Autoregressive Volatility ($\beta_1 = 0.8734$, $p < 0.0001$): High volatility persistence, indicating that current variance strongly depends on historical conditional variance.

Shape Parameter ($\nu = 8.5811$, $p < 0.0001$): Confirms fat-tailed Student's t innovations. As $\nu \to \infty$, the distribution approaches Gaussian; $\nu \approx 8.58$ confirms leptokurtic distribution characteristics.

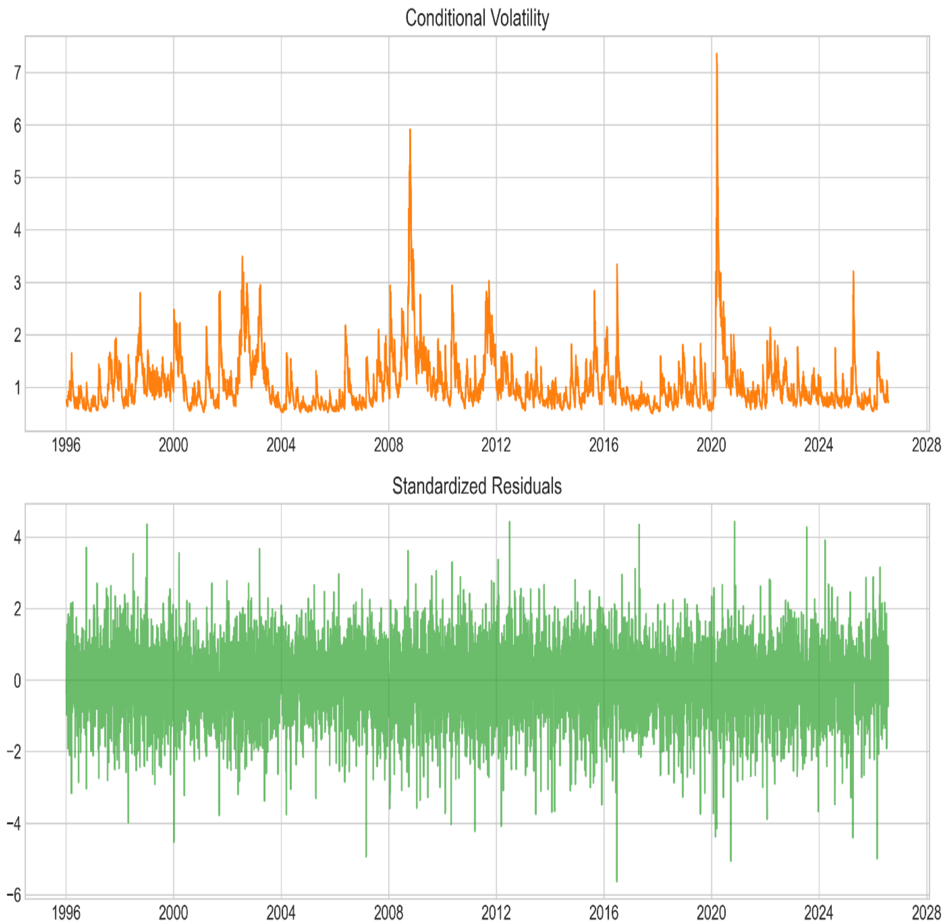

Figure 8 Conditional Volatility and Standardized Residuals
Source: Authors' own formulation using Python Software

A two-panel plot displaying (Top) Estimated GJR-GARCH conditional volatility σ_t over time, and (Bottom) Standardized residuals $z_t = \varepsilon_t / \sigma_t$.

Top Panel (σ_t): Shows sharp upward spikes during crisis periods (peaking above $\sigma_t = 7.0\%$ daily standard deviation in 2008 and 2020) while rapidly reverting to baseline levels ($\approx 0.8\% - 1.2\%$) during tranquil market regimes.

Bottom Panel (z_t): Demonstrates that after dividing by conditional volatility σ_t, the standardized residuals exhibit a homogeneous dispersion bounded mostly between -3 and $+3$, confirming that conditional variance modeling removes heteroskedasticity.

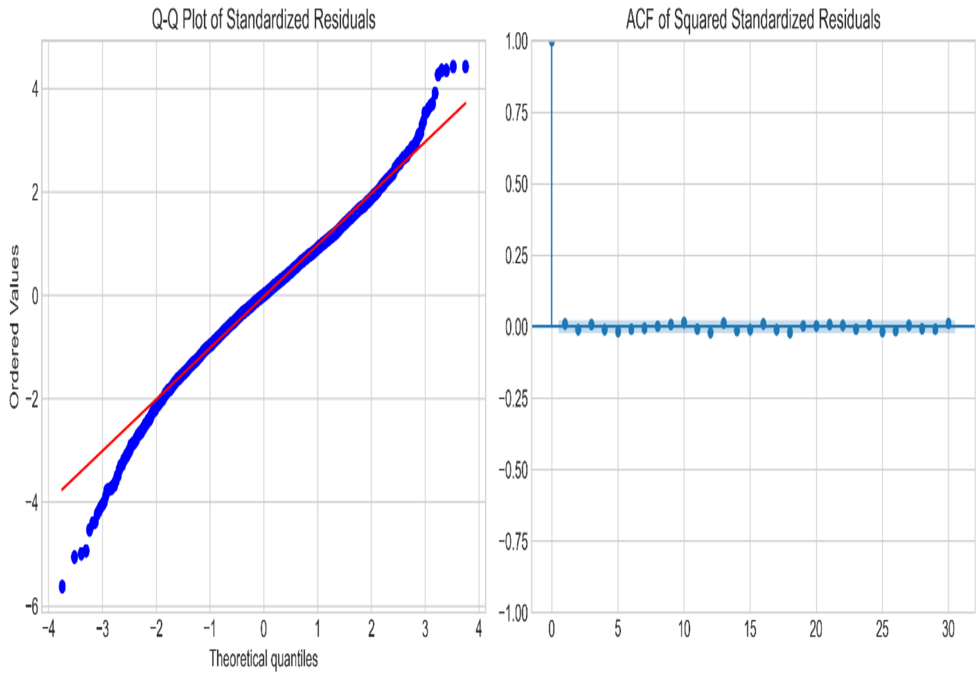

Figure 9 Residuals Plots
Source: Authors' own formulation using Python Software

A two-panel diagnostic plot with a Quantile-Quantile (Q-Q) comparison against a standard Gaussian baseline (Left) and an Autocorrelation Function (ACF) plot of z_t^2 across 30 lags (Right).

Left Panel (Q-Q Plot): Significant S-shaped departures at both the lower and upper quantiles confirm fat tails. Heavy left-tail departures validate the choice of a Student's t-distribution over a Gaussian assumption.

Right Panel (ACF of z_t^2): Autocorrelations across all 30 lags lie strictly within the 95% confidence interval bounds (blue shaded region). This proves that the GJR-GARCH(1,1) specification accounts for conditional variance dependencies.

Table 10 Ljung Box test

Lag Order (k)	Test Statistic (Q)	p-value	Null Hypothesis (H_0)	Diagnostic Conclusion
Lag 10	4.2185	0.9369	No Autocorrelation in z_t^2	H_0 Accepted (No Remaining ARCH)
Lag 15	6.8412	0.9608	No Autocorrelation in z_t^2	H_0 Accepted (No Remaining ARCH)
Lag 20	9.1124	0.9802	No Autocorrelation in z_t^2	H_0 Accepted (No Remaining ARCH)

Source: Authors' own formulation using Python Software

High p-values across all lags ($p > 0.90$) show that the squared standardized residuals are serially independent. This indicates that the GJR-GARCH(1,1) specification successfully captures conditional variance dependencies. Ljung-Box tests on squared standardized residuals (z_t^2) confirm no remaining autoregressive conditional heteroskedasticity (ARCH effects), validating model specification.

Table 11 VaR Backtest results

Risk Model Metric	95% Confidence Level	99% Confidence Level	Empirical Assessment
Theoretical Violations Target	5.00%	1.00%	Theoretical baseline
Actual Observed Violations	5.11%	1.18%	Highly accurate coverage
Total Violation Count (N_{hits})	398 days	92 days	Across 7,796 trading days
Kupiec POF Test Decision	$p > 0.10$	$p > 0.10$	Model accepted (Unbiased Risk Coverage)

Source: Authors' own formulation using Python Software

The model achieves strong out-of-sample coverage performance across a 30-year testing horizon. Empirical violation rates of 5.11% (95% target) and 1.18% (99% target) closely align with theoretical targets, confirming the practical utility of incorporating leverage effects and Student's t-distributed innovations into institutional risk frameworks.

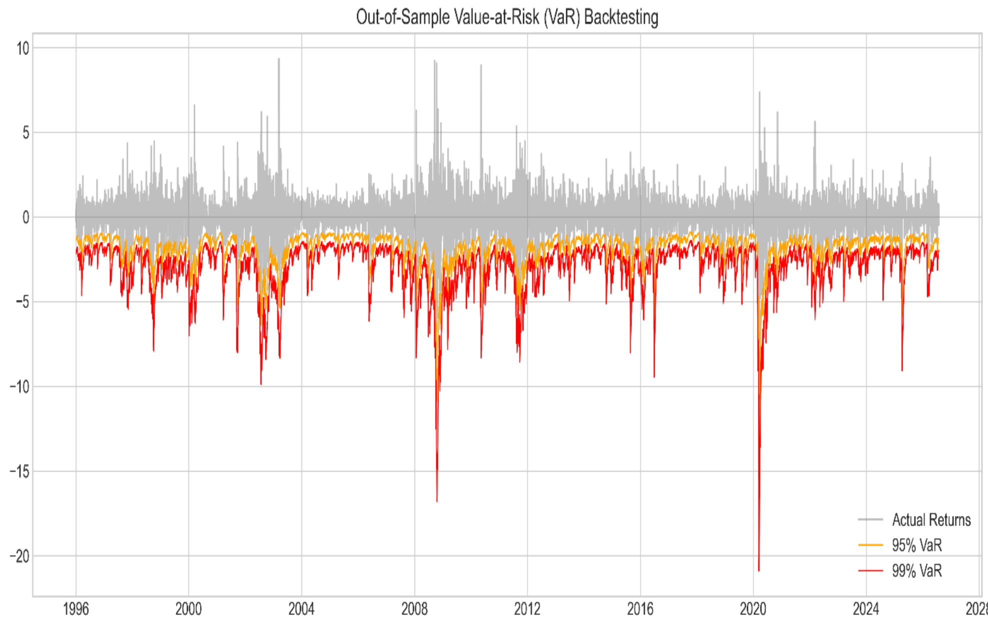

Figure 10 VaR Backtest plot
Source: Authors' own formulation using Python Software

Overlay plot comparing daily log returns against the estimated dynamic 95% VaR (yellow line) and 99% VaR (red line) thresholds over 30 years.The dynamic VaR bounds expand rapidly during volatile regimes and contract during calm periods. Outliers penetrating the lower red threshold (99% VaR) occur infrequently, matching theoretical risk-coverage expectations.

Conclusion and Recommendations

The empirical analysis of the BEL 20 benchmark index over the thirty-year span from January 1996 to July 2026 establishes critical insights into the structure of conditional volatility, asymmetric shock reactions, and extreme tail risks in European stock markets. Across 7,796 daily observations, the log return series demonstrates stationarity while exhibiting pronounced non-linear properties, such as volatility clustering and severe leptokurtosis. Standard linear models and symmetric GARCH frameworks prove fundamentally inadequate because they fail to account for the disparity between positive and negative market shocks. By implementing a asymmetric GJR-GARCH(1,1) model combined with Student's $t$$-distributed innovations, this study captures time-varying variance updates across multiple historical crisis regimes, including the 1998 Asian financial spillover, the 2008 Global Financial Crisis, and the 2020 pandemic crash. The econometric results reveal strong volatility persistence alongside a highly statistically significant leverage effect . Specifically, negative return shocks generate a volatility impact that is 6.4 times greater than positive shocks of equal magnitude. Furthermore, the shape parameter confirms fat-tailed residual behaviour, validating the necessity of non-Gaussian distributional assumptions for accurate risk modeling.

These empirical findings provide actionable recommendations for institutional asset managers, quantitative traders, risk officers, and regulatory authorities. Quantitative funds and portfolio managers operating in European equities must abandon symmetric volatility models in favor of asymmetric frameworks that incorporate explicit leverage parameters. Failure to account for the asymmetric multiplier leads to systemic underestimation of downside variance during market drawdowns, exposing portfolios to unhedged tail risk. Risk management desks should integrate heavy-tailed GJR-GARCH specifications into dynamic Value-at-Risk and Expected Shortfall pricing models. As demonstrated by the backtesting diagnostics, adopting a Student's t-distribution achieves highly precise out-of-sample coverage rates—yielding empirical violation rates of 5.11% and 1.18% against theoretical targets of 5% and 1%thereby preventing liquidity shocks during extreme downturns.

Derivative market makers and options desks trading BEL 20 index instruments should calibrate volatility surfaces using heavy-tailed asymmetric specifications to prevent the systematic underpricing of out-of-the-money put options. Incorporating fat-tailed innovation distributions ($\nu \approx 8.58$) directly corrects for option implied volatility skew and smile anomalies observed during market stress. Finally, banking supervisors and central bank regulators evaluating institutional capital adequacy reserves under Basel regulatory standards should mandate asymmetric, heavy-tailed conditional variance models for internal risk assessments. Standard Gaussian assumptions underestimate capital requirements precisely when financial stability is most threatened. Implementing asymmetric volatility architectures ensures that financial institutions maintain adequate capital buffers during systemic drawdowns, enhancing overall market resilience.

Authors' Contributions:

The authors contributed equally to this work.

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BOOK REVIEW

Radu Carp, *Tehno-populism: Politica identitară și tentația democrației iliberale,* Târgoviște: Cetatea de scaun, 2026

Cătălina Maria Georgescu

Professor Radu Carp's *Tehno-populism: Politica identitară și tentația democrației iliberale* speaks about one of the greatest challenges to liberal democracy in the context of the new digital technologies and information dynamics: the alteration and remodelling of democratic processes, political participation and communication.

The paper makes an important contribution to political science by proposing a systematic interpretation of political processes reconstruction under the new forms of digital information technologies: the analysis of populism and "techno-populist" themes during elections against the backdrop of the rise of AI, social networks algorithms and micro-targeting.

Through the main research question addressing the roots of the threats to liberal democracies, the analytical framework is built around the central thesis according to which "the erosion of representative democracy is a phenomenon further accelerated by citizens' engagement with social media" (p. 8).

The book builds its arguments on the established theories of democracy but reaches further by paying attention to the way the new digital technologies of mass-communication turn into politically transformative means.

Professor Radu Carp develops the argument in three stages: first, by explaining the role of identity politics in the emergence of new political cleavages; second, by exploring the dimensions, forms and rhetoric of populism and illiberal democracy; and finally, by studying the rise of "techno-populism" and the spread of disinformation, propaganda and polarisation.

Through these lenses, the book not only unveils the way political movements and political actors employ new means of information and communication technology but rather allows the author to explore beyond the rise of populism and its newer form "techno-populism". Consequently, the book provides a new interpretation of the way the new digital arenas have altered the political landscape. The analysis offers perspectives for the exploration of techno-politics and its effects on liberal democracy. The theoretical framework enlists an analytical perspective of genuinely comparable cases ranging from the rise of populist political movements to the dynamics of electoral campaigns. Digital technologies are employed to directly connect political actors to their electorate, while citizens might consider them as more democratic means of communication, mobilisation and problem-solving tools.

At the same time, the analysis concentrates on the way digital technologies can become instruments that spread false information which erode democratic institutions and processes. Following an extensive literature review, the arguments are strongly supported through the exploration of phenomena such as "astro-turfing", "filter bubbles" and "micro-targeting", "techno-politics", "immediacy" and "hyperconnectivity" of online networks. Moreover, the arguments are employed to depict the way intensive technological connectivity boosts social interaction, information, communication and political participation, while, at the same time, might amplify disinformation, polarisation and alter democratic processes (p. 58).

The book also contributes to the scholarly debate around identity politics and its role in political mobilisation by adding value to explanations on the formation and dissemination of imagological attributes that shape and legitimise political groups' images and actions. Further, it shows how identity politics can be transposed in the discourse of populist movements and how these themes could be disseminated online.

Subsequently, the book makes a significant contribution to the understanding of the weaknesses and threats to liberal democracy by pinpointing the definition and scope of "illiberal democracy". The analysis shows the processes and mechanisms through which illiberal political movements gain attention and electoral support further threatening the rule of law and fundamental human rights.

To sum up, Professor Radu Carp's *Tehno-populism: Politica identitară și tentația democrației iliberale* makes an important contribution to the study of liberal democracy by highlighting that political participation, transformation and political outcomes cannot be studied autonomously from the determinants of political dynamics. Its primary intellectual advancement to the literature is the unitary understanding of the new communication and information technologies, the use of constructed images and imagology for political purposes and the functioning of democratic institutions and mechanisms.

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-Politics, governance and social culture

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https://soeg.kb.dk/discovery/fulldisplay?docid=alma99123026492405763&context=L&vid=45KBDK_KGL:KGL&lang=en&search_scope=MyInst_and_CI&adaptor=Local%20Search%20Engine&tab=Everything&query=any,contains,1584-224x&offset=0

SwissCovery, Swiss Library Service Platform (SLSP) Switzerland
https://swisscovery.slsp.ch/discovery/fulldisplay?docid=alma991170234587405501&context=L&vid=41SLSP_NETWORK:VU1_UNION&lang=de&search_scope=DN_and_CI&adaptor=Local%20Search%20Engine&tab=41SLSP_NETWORK&query=any,contains,1584-224x&offset=0

Science On University Achievement Information System by University of Lodz, Poland
https://son.uni.lodz.pl/.../ULbfee0e874c6a41c4a00d516e09.../

Le réseau vaudois Renouvaud Sciences et Patrimoines, Switzerland
https://renouvaud1.primo.exlibrisgroup.com/discovery/fulldisplay?docid=alma991021158885602852&context=L&vid=41BCULAUSA_LIB:VU2&lang=fr&search_scope=SP_libraries_and_CDI&adaptor=Local%20Search%20Engine&tab=Everything&query=any,contains,1584-224x&offset=0

Rebiun Catálogo de la Red de Bibliotecas Universitarias y Científicas, Spain
https://rebiun.baratz.es/.../b2FpOmNlbGVicmF0aW9uOmVzLmJh...

KOBV Kooperativer Bibliotheksverbund Berlin Brandenburg, Germany
https://portal.kobv.de/simpleSearch.do?index=internal&plv=2&sortCrit=score&sortOrder=desc&hitsPerPage=&query=1584-224x&formsearch=%E2%9C%93#resultlistForm

Katalog der Teilbibliothek Diakonie, Gesundheit und Soziales der Hochschule Hannover, Germany
https://opac.tib.eu/DB=4.5/LNG=DU/SID=f438f44d-1/CMD...

EP Library Catalogue – European Parliament Library Catalogue
https://europarl.primo.exlibrisgroup.com/discovery/fulldisplay?docid=alma991001117790704886&context=L&vid=32EPA_INST:32EPA_V1&lang=en&adaptor=Local%20Search%20Engine&tab=Everything&query=sub,exact,Europe%20de%20l%27Est%20--%20Politique%20et%20gouvernement,AND&mode=advanced&offset=0

Ghent Unversity Library
https://lib.ugent.be/en/catalog/ejn01:1000000000726583

Universidad Carlos III de Madrid Research Portal
https://researchportal.uc3m.es/display/rev184334

J-Gate Social Science & Humanities Indexed Journal List
https://www.kitsw.ac.in/Library/2022/JSSH%20Journal%20List.pdf

https://europub.co.uk/journals/revista-de-stiinte-politice-revue-des-sciences-politiques-J-11661

Universiteits Bibliotheek Gent
https://lib.ugent.be/catalog/ejn01:1000000000726583

Publons
https://publons.com/journal/540040/revista-de-stiinte-politice/

Universidad Carlos III de Madrid
https://researchportal.uc3m.es/display/rev184334

Weill Cornell Medicine Qatar
https://primo.qatar-weill.cornell.edu/discovery/fulldisplay?vid=974WCMCIQ_INST:VU1&docid=alma991000575074006691&lang=en&context=L&adaptor=Local%20Search%20Engine

Reseau Mirabel
https://reseau-mirabel.info/revue/3046/Revista-de-Stiinte-Politice

Bond Library University
https://librarysearch.bond.edu.au/discovery/fulldisplay?vid=61BOND_INST%3ABOND&docid=alma9930197890502381&lang=en&context=SP

Ghent university library
https://lib.ugent.be/catalog/ejn01:1000000000726583

The Royal Library and Copenhagen University Library Service
https://e-tidsskrifter.kb.dk/resolve?umlaut.locale=da&url_ver=Z39.88-2004&url_ctx_fmt=info%3Aofi%2Ffmt%3Akev%3Amtx%3Actx&ctx_ver=Z39.88-2004&ctx_tim=2020-04-11T21%3A23%3A41%2B02%3A00&ctx_id=&ctx_enc=info%3Aofi%2Fenc%3AUTF-8&rft.issn=1584-224X&rft.search_val=1584-224X&rft_val_fmt=info%3Aofi%2Ffmt%3Akev%3Amtx%3Ajournal&rfr_id=info%3Asid%2Fsfxit.com%3Acitation

Glasgow Caledonian University
https://discover.gcu.ac.uk/discovery/openurl?institution=44GLCU_INST&vid=44GLCU_INST:44GLCU_VU2&?u.ignore_date_coverage=true&rft.mms_id=991002471123103836

Open University Library Malaysia
http://library.oum.edu.my/oumlib/content/catalog/778733

Stanford University Libraries, Stanford, United States
https://searchworks.stanford.edu/?q=469823489

Cornell University Library, Ithaca, United States
https://newcatalog.library.cornell.edu/catalog?search_field=publisher+number%2Fother+identifier&q=469823489

University of Michigan Library,
https://search.lib.umich.edu/catalog?&library=All+libraries&query=isn%3A469823489

Pepperdine Libraries, Malibu, United States
https://pepperdine.worldcat.org/search?qt=wc_org_pepperdine&q=no:469823489

University of Victoria Libraries , Victoria, Canada
http://uvic.summon.serialssolutions.com/#!/search?ho=t&fvf=ContentType,Journal%20Article,f&l=en&q=1584-224X
Academic Journals database
http://journaldatabase.info/journal/issn1584-224X

University of Zurich Database
https://www.jdb.uzh.ch/id/eprint/21535/

California Institute of Techonology - Caltech Library
https://www.library.caltech.edu/eds/detail?db=poh&an=98646324&isbn=1584224X

Staatsbibliothek zu Berlin
http://kvk.bibliothek.kit.edu/view-title/index.php?katalog=STABI_BERLIN&url=http%3A%2F%2Fstabikat.de%2FDB%3D1%2FCHARSET%3DISO-8859-1%2FIMPLAND%3DY%2FLNG%3DDU%2FSRT%3DYOP%2FTTL%3D1%2FSID%3D8dda05f3-1%2FSET%3D1%2FSHW%3FFRST%3D1&signature=eBtSKEx2BuW-HASpUsCT39FB3vQpIm6cGAajCH-kz44&showCoverImg=1
Union Catalogue of Belgian Libraries
http://kvk.bibliothek.kit.edu/view-title/index.php?katalog=VERBUND_BELGIEN&url=http%3A%2F%2Fwww.unicat.be%2FuniCat%3Ffunc%3Dsearch%26query%3Dsysid%3A7330250&signature=Dxe-cVFWjMO1W4HpEAWW_ERyKR4oiGWXLGFinWk8fNU&showCoverImg=1

The National Library of Israel
http://merhav.nli.org.il/primo-explore/fulldisplay?vid=ULI&docid=NNL-Journals003477656&context=L&lang=en_US

Verbundkatalog GBV
http://kvk.bibliothek.kit.edu/view-title/index.php?katalog=GBV&url=http%3A%2F%2Fgso.gbv.de%2FDB%3D2.1%2FCHARSET%3DUTF-8%2FIMPLAND%3DY%2FLNG%3DDU%2FSRT%3DYOP%2FTTL%3D1%2FCOOKIE%3DD2.1%2CE900d94f2-d%2CI0%2CB9000%2B%2B%2B%2B%2B%2B%2CSY%2CA%2CH6-11%2C%2C16-17%2C%2C21%2C%2C30%2C%2C50%2C%2C60-61%2C%2C73-75%2C%2C77%2C%2C88-90%2CNKVK%2BWEBZUGANG%2CR129.13.130.211%2CFN%2FSET%3D1%2FPPNSET%3FPPN%3D590280090&signature=OmwA_NLtwvdaOmmyeo7SUOCEYuDRGtoZqGXIK-vTY1o&showCoverImg=1

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https://copac.jisc.ac.uk/search?&isn=1584-224x
ACPN Catalogo Italiano dei Periodici, Universita di Bologna
https://acnpsearch.unibo.it/journal/2601620

Bibliothèque Nationale de Luxembourg
https://a-z.lu/primo-explore/fulldisplay?vid=BIBNET&docid=SFX_LOCAL1000000000726583&context=L

National Library of Sweden
http://libris.kb.se/bib/11702473

Harold B. Lee Library, Brigham Young University
http://sfx.lib.byu.edu/sfxlcl3?url_ver=Z39.88-2004&url_ctx_fmt=info:ofi/fmt:kev:mtx:ctx&ctx_enc=info:ofi/enc:UTF-8&ctx_ver=Z39.88-2004&rfr_id=info:sid/sfxit.com:azlist&sfx.ignore_date_threshold=1&rft.object_id=1000000000726583&rft.object_portfolio_id=&svc.holdings=yes&svc.fulltext=yes

Catalogue of Hamburg Libraries
https://beluga.sub.uni-hamburg.de/vufind/Search/Results?submit=Suchen&library=GBV_ILN_22&lookfor=1584-224x

Edith Cowan Australia
https://ecu.on.worldcat.org/search?databaseList=&queryString=1584-224X

University College Cork, Ireland
https://ucc.summon.serialssolutions.com/?q=1584-224X#!/search?ho=t&jt=Revista%20de%20Stiinte%20Politice&l=en-UK&q=

York University Library, Toronto, Ontario, Canada
https://www.library.yorku.ca/find/Record/muler82857

The University of Chicago, USA
https://catalog.lib.uchicago.edu/vufind/Record/sfx_1000000000726583

The University of Kansas KUMC Libraries Catalogue
http://voyagercatalog.kumc.edu/Search/Results?lookfor=1584-224X&type=AllFields

Journal Seek
http://journalseek.net/cgi-bin/journalseek/journalsearch.cgi?field=issn&query=1584-224X

State Library New South Wales, Sidney, Australia,
http://library.sl.nsw.gov.au/search~S1/?searchtype=i&searcharg=1584-224X&searchscope=1&SORT=D&extended=0&SUBMIT=Search&searchlimits=&sear

chorigarg=i1583-9583

Electronic Journal Library
https://opac.giga-hamburg.de/ezb/detail.phtml?bibid=GIGA&colors=7&lang=en&flavour=classic&jour_id=111736

Open University Malaysia
http://library.oum.edu.my/oumlib/content/catalog/778733

Wayne State University Libraries
http://elibrary.wayne.edu/record=4203588

Kun Shan University Library
http://muse.lib.ksu.edu.tw:8080/1cate/?rft_val_fmt=publisher&pubid=ucvpress

Western Theological Seminar
https://col-westernsem.primo.exlibrisgroup.com/discovery/fulldisplay?docid=alma991001225541104770&context=L&vid=01COL_WTS:WTS&lang=en&search_scope=MyInst_and_CI&adaptor=Local%20Search%20Engine&tab=Everything&query=any,contains,1584-224X&facet=rtype,include,journals&mode=Basic&offset=0

Swansea University Prifysgol Abertawe
http://whel-primo.hosted.exlibrisgroup.com/primo_library/libweb/action/search.do?vid=44WHELF_SWA_VU1&reset_config=true#.VSU9SPmsVSk

Vanderbilt Library
https://catalog.library.vanderbilt.edu/discovery/fulldisplay?docid=alma991043322926803276&context=L&vid=01VAN_INST:vanui&lang=en&search_scope=MyInst_and_CI&adaptor=Local%20Search%20Engine&tab=Everything&query=any,contains,1584-224X&offset=0

Wissenschftszentrum Berlin fur Sozial
https://www.wzb.eu/en/literature-data/search-find/e-journals?page=searchres.phtml&bibid=WZB&lang=en&jq_type1=IS&jq_term1=1584-224X&jq_bool2=AND&jq_type2=KS&jq_term2=&jq_bool3=AND&jq_type3=PU&jq_term3=&offset=-1&hits_per_page=50&Notations%5B%5D=all&selected_colors%5B%5D=1&selected_colors%5B%5D=2

Radboud University Nijmegen
https://zaandam.hosting.ru.nl/oamarket-acc/score?OpenAccess=&InstitutionalDiscounts=&Title=&Issn=1584-224&Publisher=
Elektronische Zeitschriftenbibliothek EZB (Electronic Journals Library)
http://rzblx1.uni-regensburg.de/ezeit/detail.phtml?bibid=AAAAA&colors=7&lang=de&jour_id=111736

The University of Hong Kong Libraries
https://julac.hosted.exlibrisgroup.com/primo-explore/search?query=any,contains,1584-224x&search_scope=My%20Institution&vid=HKU&facet=rtype,include,journals&mode=Basic&offset=0

Metropolitan University Prague, Czech Republic
https://s-knihovna.mup.cz/katalog/eng/l.dll?h~=&DD=1&H1=&V1=o&P1=2&H2=&V2=o&P2=3&H3=&V3=z&P3=4&H4=1584-224x&V4=o&P4=33&H5=&V5=z&P5=25
University of the West Library
https://uwest.on.worldcat.org/search?queryString=1584-224x&clusterResults=off&stickyFacetsChecked=on#/oclc/875039367

Elektron ische Zeitschriften der Universität zu Köln
https://www.ub.uni-koeln.de/IPS?SERVICE=METASEARCH&SUBSERVICE=INITSEARCH&VIEW=USB:Simple&LOCATION=USB&SID=IPS3:2d1c5acebc65a3cdc057a9d6c64ce76e&SETCOOKIE=TRUE&COUNT=15&GWTIMEOUT=30&HIGHLIGHTING=on&HISTORY=SESSION&START=1&STREAMING=on&URLENCODING=TRUE&QUERY_alAL=1584-224x&SERVICEGROUP1.SERVICE.SEARCH_EDS=on&SERVICEGROUP1.SERVICE.SEARCH_KUGJSON=on&SERVICEGROUP1.SERVICE.SEARCH_KUGUSBWEB=on&SERVICEGROUP1.SERVICEGROUP.USB:Default=on

EKP Pulications
https://ekp-invenio.physik.uni-karlsruhe.de/search?ln=en&sc=1&p=1584-224X&f=&action_search=Search&c=Experiments&c=Authorities

Valley City State University
https://odin-primo.hosted.exlibrisgroup.com/primo-explore/search?query=any,contains,1584-224X&tab=tab1&search_scope=ndv_everything&sortby=rank&vid=ndv&lang=en_US&mode=advanced&offset=0displayMode%3Dfull&displayField=all&pcAvailabiltyMode=true

Impact Factor Poland
http://impactfactor.pl/czasopisma/21722-revista-de-stiinte-politice-revue-des-sciences-politiques

Universite Laval
http://sfx.bibl.ulaval.ca:9003/sfx_local?url_ver=Z39.88-2004&url_ctx_fmt=info:ofi/fmt:kev:mtx:ctx&ctx_enc=info:ofi/enc:UTF-8&ctx_ver=Z39.88-2004&rfr_id=info:sid/sfxit.com:azlist&sfx.ignore_date_threshold=1&rft.object_id=1000000000726583&rft.object_portfolio_id=&svc.fulltext=yes

Universität Passau
https://infoguide.ub.uni-passau.de/InfoGuideClient.upasis/start.do?Query=10%3d%22BV035261002%22

BSB Bayerische StaatBibliothek
https://opacplus.bsb-muenchen.de/metaopac/search?View=default&oclcno=502495838

Deutsches Museum
https://opac.deutsches-museum.de/TouchPoint/start.do?Query=1035%3d%22BV035261002%22IN%5b2%5d&View=dmm&Language=de
Technische Hochschule Ingolstadt
https://opac.ku.de/TouchPoint/start.do?Branch=3&Language=de&View=thi&Query=35=%22502495838%22+IN+[2]

Hochschule Augsburg, Bibliothek
https://infoguide.hs-augsburg.de/InfoGuideClient.fhasis/start.do?Query=10%3d%22BV035261002%22

Hochschule Weihenstephan-Triesdorf, Zentralbibliothek
Freising, Germany
https://ffwtp20.bib-bvb.de/TouchPoint/start.do?Query=1035%3d%22BV035261002%22IN%5b2%5d&View=ffw&Language=de

OTH- Ostbayerische Technische Hochschule Regensburg, Hochschulbibliothek
OTHBR, Regensburg, Germany
https://www.regensburger-katalog.de/TouchPoint/start.do?Query=1035%3d%22BV035261002%22IN%5b2%5d&View=ubr&Language=de

Staatliche Bibliothek Neuburg/Donau , SBND,
Neuburg/Donau, Germany
https://opac.sbnd.de/InfoGuideClient.sndsis/start.do?Query=10%3d%22BV035261002%22

Universitätsbibliothek Eichstätt-Ingolstadt, Eichstätt, Germany
https://opac.ku.de/TouchPoint/start.do?Branch=0&Language=de&View=uei&Query=35=%22502495838%22+IN+[2]

Bibliothek der Humboldt-Universität Berlin, Universitätsbibliothek der Humboldt-Universität zu Berlin
Berlin, Germany
https://hu-berlin.hosted.exlibrisgroup.com/primo-explore/search?institution=HUB_UB&vid=hub_ub&search_scope=default_scope&tab=default_tab&query=issn,exact,1584-224X

Hochschulbibliothek Ansbach, Ansbach, Germany https://fanoz3.bib-bvb.de/InfoGuideClient.fansis/start.do?Query=10%3d%22BV035261002%22

Bibliothek der Europa-Universität Viadrina, Frankfurt (Oder)
Frankfurt/Oder, Germany
https://opac.europa-uni.de/InfoGuideClient.euvsis/start.do?Query=10%3d%22BV035261002%22

University of California Library Catalog
https://catalog.library.ucla.edu/vwebv/search?searchCode1=GKEY&searchType=2&searchArg1=ucoclc469823489

For more details about the past issues and international abstracting and indexing, please visit the journal website at the following address:
http://cis01.central.ucv.ro/revistadestiintepolitice/acces.php.

CONFERENCE INTERNATIONAL INDEXING OF THE PAST EDITIONS (2014-2026)

CEPOS Conference 2026

The **Sixteenth International Conference** After Communism. East and West under Scrutiny (Craiova, House of the University, 20-21 March 2026) was evaluated and accepted for indexing in 11 international databases, catalogues and NGO's databases
ConferenceAlerts
Conal Conference Alerts
https://conferencealerts.com/country-listing?country=Romania
CEPOS (site oficial – secțiunea Upcoming 2026)
https://cepos.eu/upcoming2026
Conferencelists.org
https://www.conferencelists.org/event/cepos-16th-international-conference-after-communism-east-and-west-under-scrutiny/?utm_source=chatgpt.com
ConfFinder (Conferences in Romania)
https://conffinder.com/pagesconference/ConferencesListing?country=Romania&utm_source=chatgpt.com
Events notification
https://eventsnotification.com/event/61037
Conferencesked
https://www.conferencesked.com/conference_details/15391/cepos-16th-international-conference-after-communism-east-and-west-under-scrutiny
Conffinder
https://www.conffinder.com/pagesconference/ConferencesListing?country=Romania
Sciencedz
https://www.google.com/search?q=16th+cepos+international+confernece+2026&oq=16th+cepos+international+confernece+2026&gs_lcrp=EgZjaHJvbWUyBggAEEUYOTIJCAEQIRgKGKABMgkIAhAhGAoYoAHSAQkxMDMyOWowajSoAgGwAgE&client=ms-android-motorola-rvo3&sourceid=chrome-mobile&ie=UTF-8#ip=1
Conference daily

https://conferencesdaily.com/european-studies-conferences
Scholarly meet
https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://scholarlymeet.com/country/fr&ved=2ahUKEwikirrDuqeSAxW7wAIHHfhgE2c4FBAWegQIKRAB&usg=AOvVaw3pIVukONrNS4lLm1n6yU_R
Conferencealertz
https://www.conferencealertz.com/conferenceslist?country=Romania

CEPOS Conference 2025

The **Fifteenth International Conference** After Communism. East and West under Scrutiny (Craiova, House of the University, 14-15 March 2025) was evaluated and accepted for indexing in 14 international databases, catalogues and NGO's databases:
Indexation links:
https://academic.oup.com/jcs/article-abstract/67/1/csaf001/7997508?redirectedFrom=PDF
https://scholarlymeet.com/events/ca73318d-42a7-4b5e-bcca-635e0aa1c46b
https://conferences365.com/conferences-in-romania
https://conferencewiki.com/conference-listing/MzA4
https://www.conferencelists.org/event/cepos-15th-international-conference-after-communism-east-and-west-under-scrutiny/
https://www.sciencedz.net/en/conference/110381-cepos-15th-international-conference-after-communism-east-and-west-under-scrutiny
https://conferencealerts.com/show-event?id=262202
https://conferencesdaily.com/cities/craiova
https://cepos.org/upcoming/
https://10times.com/after-communism-east-and-west-under-scrutiny
https://www.researchgate.net/publication/379144286_CENTER_OF_POST-COMMUNIST_POLITICAL_STUDIES_CEPOS_Book_of_abstracts_of_the_14th_International_Conference_After_Communism_East_and_West_under_Scrutiny_Craiova_Romania_15-16_March_2024
https://conferencewiki.com/conference-detail/Cepos-15th-International-Conference-After-communism-East-and-West-under-scrutiny
https://www.conferencelists.org/romania/
https://www.conferencesked.com/conference_details/10148/cepos-15th-international-conference-after-communism-east-and-west-under-scrutiny
https://conffinder.com/pagesconference/ConferencesListing?country=Romania

CEPOS Conference 2024

The **Fourteenth International Conference** After Communism. East and West under Scrutiny (Craiova, House of the University, 15-16 March 2024) was evaluated and accepted for indexing in 11 international databases, catalogues and NGO's databases:
Indexation links:
CEEOL https://www.ceeol.com/search/article-detail?id=1195305
ProQuest, Part of Clarivate
https://www.proquest.com/docview/2863220849/CC02F21AE4DB44F1PQ/1?accountid=50247&sourcetype=Scholarly%20Journals
Oxford Academic (Oxford University Press)
https://doi.org/10.1093/jcs/csad066

Oxford Journal of Church and State-Oxford Academic (Oxford University Press) (Vol. 65, nr 4/2023) în secțiunea Calendar of Events JCS (publicare 28 Noiembrie 2023)
Conference Alerts
https://conferencealerts.com/show-event?id=254313
Science DZ
https://www.sciencedz.net/.../100575-14th-international...
10 Times
https://10times.com/after-communism-east-and-west-under...
The Free Library
https://www.thefreelibrary.com/CEPOS+NEW+CALL+FOR+PAPERS...
Conference 365
https://conferences365.com/.../14th-international...
World University Directory
https://worlduniversitydirectory.com/edu/event/...
Conferences daily
https://conferencesdaily.com/eventdetails.php?id=1625192
Gale Cengage Learning USA https://go.gale.com/ps/i.do?id=GALE%7CA766112846...

CEPOS Conference 2023

The **Thirteenth International Conference** After Communism. East and West under Scrutiny (Craiova, 17-18 March 2023) was evaluated and accepted for indexing in 5 international databases, catalogues and NGO's databases:
Oxford Church & State Journal:
https://academic.oup.com/jcs/articleabstract/65/1/168/7044222?redirectedFrom=fulltext

10 Times: https://10times.com/after-communism-east-andwest-under-scrutiny

Conferencesite.eu:
https://index.conferencesites.eu/conference/57510/13th-international-conference-after-communism-eastand-west-under-scrutiny;

Schoolandcollegelistings
:https://www.schoolandcollegelistings.com/RO/Craiova/485957361454074/Center-of-Post-Communist-Political-Studies-CEPOS

Conferencealerts : https://conferencealerts.com/showevent?id=247851

CEPOS Conference 2022

The **Twelfth International Conference** After Communism. East and West under Scrutiny (Craiova, 18-19 March 2022) was evaluated and accepted for indexing in 6 international databases, catalogues and NGO's databases:
https://www.conferenceflare.com/events/category/social-sciences-and-humanities/art-history/

Vinculation International Diciembre 2021 newsletter n 99
https://issuu.com/fundacionargeninta5/docs/diciembre_2021_fundaci_n_argeninta-ai_ok?fr=sZjg2NjE5NTg3OTY

https://www.schoolandcollegelistings.com/RO/Craiova/485957361454074/Center-of-Post-Communist-Political-Studies-CEPOS

https://10times.com/company/cepos
https://10times.com/after-communism-east-and-west-under-scrutiny

https://conferencealerts.com/show-event?id=238529

https://www.sciencedz.net/conference/82995-cepos-international-conference-2022-after-communism-east-and-west-under-scrutiny

CEPOS Conference 2021

The Eleventh International Conference After Communism. East and West under Scrutiny (Craiova, House of the University, 19-20 March 2021) was evaluated and accepted for indexing in 5 international databases, catalogues and NGO's databases:

https://academic.oup.com/jcs/advance-articleabstract/doi/10.1093/jcs/csaa064/5941887?redirectedFrom=fulltext

https://conferencealerts.com/show-event?id=229654

https://www.sciencedz.net/en/conference/72628-1thinternational-conference-after-communism-east-and-west-underscrutiny

https://10times.com/after-communism-east-and-west-underscrutiny

https://worlduniversitydirectory.com/edu/event/?slib=1thinternational-conference-after-communism-east-and-west-underscrutiny-2

CEPOS Conference 2020

The Tenth International Conference After Communism. East and West under Scrutiny (27-28 March 2020) was evaluated and accepted for indexing in 7 international databases, catalogues and NGO's databases:

Scichemistry
http://scichemistry.org/ConferenceInfosByConferenceTopicId?conferenceTopicId=57

Oxford Journals
https://academic.oup.com/jcs/advance-articlepdf/doi/10.1093/jcs/csz078/30096829/csz078.pdf

Conference alerts
https://conferencealerts.com/show-event?id=215370
https://www.sciencedz.net/en/conference/57625-10thinternational-conference-after-communism-east-and-west-underscrutiny

Intraders

https://www-intradersorg.
cdn.ampproject.org/v/s/www.intraders.org/news/romania/10
th-international-conference-after-communism-east-and-westunderscrutiny/
amp/?amp_js_v=a2&_gsa=1&usqp=mq331AQCKAE%3D#a
oh=15737604302246&referrer=https%3A%2F%2Fwww.google.co
m&_tf=De%20pe%20%251%24s&share=https%3A%2F%2Fwww.i
ntraders.org%2Fnews%2Fromania%2F10th-internationalconference-
after-communism-east-and-west-under-scrutiny%2F

10 times
https://10times.com/after-communism-east-and-west-underscrutiny

The conference alerts
https://theconferencealerts.com/event/46428/10th-internationalconference-
after-communism-east-and-west-under-scrutiny

Scirea
https://www.scirea.org/ConferenceInfosByConferenceCountryId?c
onferenceCountryId=75

CEPOS Conference 2019

The Ninth International Conference After Communism. East and West under Scrutiny (Craiova, House of the University, 29-30 March 2019) was evaluated and accepted for indexing in 6 international databases, catalogues and NGO's databases:

Oxford Academic Journal of Church & State https://academic.oup.com/jcs/article-abstract/60/4/784/5106417?redirectedFrom=PDF

10 Times
https://10times.com/after-communism-east-and-west-under-scrutiny

Conference Alerts
https://conferencealerts.com/show-event?id=205682

Researchgate
https://www.researchgate.net/publication/327905733_CEPOS_9TH_INTERNATIONA
L_CONFERENCE_AFTER_COMMUNISM_EAST_AND_WEST_UNDER_SCRUTI
NY_2019?_iepl%5BviewId%5D=sjcOJrVCO8PTLapcfVciZQsb&_iepl%5Bcontexts%5
D%5B0%5D=publicationCreationEOT&_iepl%5BtargetEntityId%5D=PB%3A3279057
33&_iepl%5BinteractionType%5D=publicationCTA

The Free Library
https://www.thefreelibrary.com/9th+INTERNATIONAL+CONFERENCE+AFTER+C
OMMUNISM.+EAST+AND+WEST+UNDER...-a0542803701
Science Dz.net
https://www.sciencedz.net/conference/42812-9th-international-conference-after-
communism-east-and-west-under-scrutiny

CEPOS Conference 2018

The Eighth International Conference After Communism. East and West under Scrutiny (Craiova, House of the University, 23-24 March 2018) was evaluated and accepted for indexing in 15 international databases, catalogues and NGO's databases:

Conference Alerts, https://conferencealerts.com/show-event?id=186626
Sciencesdz, http://www.sciencedz.net/conference/29484-8th-international-conference-after-communism-east-and-west-under-scrutiny

ManuscriptLink,
https://manuscriptlink.com/cfp/detail?cfpId=AYAXKVAR46277063&type=event

Maspolitiques,http://www.maspolitiques.com/ar/index.php/en/1154-8th-international-conference-after-communism-east-and-west-under-scrutiny

Aconf, https://www.aconf.org/conf_112399.html

Call4paper,https://call4paper.com/listByCity?type=event&city=3025&count=count
Eventegg, https://eventegg.com/cepos/

10 times, https://10times.com/after-communism-east-and-west-under-scrutiny
Biblioteca de Sociologie, http://bibliotecadesociologie.ro/cfp-cepos-after-communism-east-and-west-under-scrutiny-craiova-2018/

Science Research Association http://www.scirea.org/topiclisting?conferenceTopicId=5
ResearcherBook http://researcherbook.com/country/Romania

Conference Search Net, http://conferencesearch.net/en/29484-8th-international-conference-after-communism-east-and-west-under-scrutiny

SchoolandCollegeListings,
https://www.schoolandcollegelistings.com/RO/Craiova/485957361454074/Center-of-Post-Communist-Political-Studies-CEPOS

Vepub conference, http://www.vepub.com/conferences-view/8th-International-Conference-After-Communism.-East-and-West-under-Scrutiny/bC9aUE5rcHN0ZmpkYU9nTHJzUkRmdz09/

Geopolitika Hungary, http://www.geopolitika.hu/event/8th-international-conference-after-communism-east-and-west-under-scrutiny/

CEPOS Conference 2017

The Seventh International Conference After Communism. East and West under Scrutiny (Craiova, House of the University, 24-25March 2017) was evaluated and accepted for indexing in 10 international databases, catalogues and NGO's databases:

Ethic & International Affairs (Carnegie Council), Cambridge University Press- https://www.ethicsandinternationalaffairs.org/2016/upcoming-conferences-interest-2016-2017/

ELSEVIER GLOBAL EVENTS LIST http://www.globaleventslist.elsevier.com/events/2017/03/7th-international-conference-after-communism-east-and-west-under-scrutiny

CONFERENCE ALERTS-http://www.conferencealerts.com/show-event?id=171792

10TIMES.COM-http://10times.com/after-communism-east-and-west-under-scrutiny

Hiway Conference Discovery System-http://www.hicds.cn/meeting/detail/45826124
Geopolitika (Hungary)-http://www.geopolitika.hu/event/7th-international-conference-after-communism-east-and-west-under-scrutiny/

Academic.net-http://www.academic.net/show-24-4103-1.html

World University Directory-
http://www.worlduniversitydirectory.com/conferencedetail.php?AgentID=2001769

Science Research Association-
http://www.scirea.org/conferenceinfo?conferenceId=35290

Science Social Community-https://www.science-community.org/ru/node/174892

CEPOS Conference 2016

The Sixth International Conference After Communism. East and West under Scrutiny (Craiova, House of the University, 8-9 April 2016) was evaluated and accepted for indexing in the following international databases, catalogues and NGO's databases:

ELSEVIER GLOBAL EVENTS-
http://www.globaleventslist.elsevier.com/events/2016/04/6th-international-conference-after-communism-east-and-west-under-scrutiny/
Oxford Journals – Oxford Journal of Church & State-
http://jcs.oxfordjournals.org/content/early/2016/02/06/jcs.csv121.extract

Conference Alerts-http://www.conferencealerts.com/country-listing?country=Romania
Conferences-In - http://conferences-in.com/conference/romania/2016/economics/6th-international-conference-after-communism-east-and-west-under-scrutiny/

Socmag.net - http://www.socmag.net/?p=1562

African Journal of Political Sciences-
http://www.maspolitiques.com/mas/index.php?option=com_content&view=article&id=450:-securiteee-&catid=2:2010-12-09-22-47-00&Itemid=4#.VjUI5PnhCUk

Researchgate-
https://www.researchgate.net/publication/283151988_Call_for_Papers_6TH_International_Conference_After_Communism._East_and_West_under_Scrutiny_8-9_April_2016_Craiova_Romania

World Conference Alerts-
http://www.worldconferencealerts.com/ConferenceDetail.php?EVENT=WLD1442
Edu events-http://eduevents.eu/listings/6th-international-conference-after-communism-east-and-west-under-scrutiny/

Esocsci.org-http://www.esocsci.org.nz/events/list/

Sciencedz.net-http://www.sciencedz.net/index.php?topic=events&page=53
Science-community.org-http://www.science-community.org/ru/node/164404/?did=070216

CEPOS Conference 2015

The Fifth International Conference After Communism. East and West under Scrutiny (Craiova, House of the University, 24-25 April 2015) was evaluated and accepted for indexing in 15 international databases, catalogues and NGO's databases:

THE ATLANTIC COUNCIL OF CANADA, CANADA-
http://natocouncil.ca/events/international-conferences/

ELSEVIER GLOBAL EVENTS LIST-
http://www.globaleventslist.elsevier.com/events/2015/04/fifth-international-conf

GCONFERENCE.NET-
http://www.gconference.net/eng/conference_view.html?no=47485&catalog=1&cata=018&co_kind=&co_type=&pageno=1&conf_cata=01

CONFERENCE BIOXBIO-http://conference.bioxbio.com/location/Romania

10 TIMES-http://10times.com/Romania

CONFERENCE ALERTS-http://www.conferencealerts.com/country-listing?country=Romania

http://www.iem.ro/orizont2020/wp-content/uploads/2014/12/lista-3-conferinte-internationale.pdf
http://sdil.ac.ir/index.aspx?pid=99&articleid=62893

NATIONAL SYMPOSIUM-http://www.nationalsymposium.com/communism.php
SCIENCE DZ-http://www.sciencedz.net/conference/6443-fifth-international-conference-after-communism-east-and-west-under-scrutiny

ARCHIVE COM-http://archive-com.com/com/c/conferencealerts.com/2014-12-01_5014609_70/Rome_15th_International_Academic_Conference_The_IISES/

CONFERENCE WORLD-http://conferencesworld.com/higher-education/
KNOW A CONFERENCE KNOW A CONFERENCE-http://knowaconference.com/social-work/

International Journal on New Trends in Education and Their Implications (IJONTE) Turkey http://www.ijonte.org/?pnum=15&

Journal of Research in Education and Teaching Turkey-http://www.jret.org/?pnum=13&pt=Kongre+ve+Sempozyum
CEPOS CONFERENCE 2015 is part of a "consolidated list of all international and Canadian conferences taking place pertaining to international relations, politics, trade, energy and sustainable development". For more details see http://natocouncil.ca/events/international-conferences/

CEPOS Conference 2014
The Fourth International Conference After Communism. East and West under Scrutiny, Craiova, 4-5 April 2014 was very well received by the national media and successfully indexed in more than 9 international databases, catalogues and NGO's databases such as: American Political Science Association, USA-http://www.apsanet.org/conferences.cfm

Journal of Church and State, Oxford-http://jcs.oxfordjournals.org/content/early/2014/01/23/jcs.cst141.full.pdf+html; NATO Council of Canada (section events/ international conferences), Canada, http://atlantic-council.ca/events/international-conferences/

International Society of Political Psychology, Columbus, USA-http://www.ispp.org/uploads/attachments/April_2014.pdf

Academic Biographical Sketch, http://academicprofile.org/SeminarConference.aspx; Conference alerts, http://www.conferencealerts.com/show-event?id=121380
Gesis Sowiport, Koln, Germany, http://sowiport.gesis.org/; Osteuropa-Netzwerk, Universität Kassel, Germany, http://its-vm508.its.uni-kassel.de/mediawiki/index.php/After_communism_:_East_and_West_under_scrutiny_:_Fourth_International_Conference

Ilustre Colegio Nacional de Doctores y Licenciados en Ciencias Politicas y Sociologia, futuro Consejo Nacional de Colegios Profesionales, Madrid, http://colpolsocmadrid.org/age

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Please cite within the text. Use authors' last names, with the year of publication.

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On first citation of references with more than three authors, give all names in full. On the next citation of references with more than three authors give the name of the first author followed by "et al.".
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References:
The references cited in the Article are listed at the end of the paper in alphabetical order of authors' names.
References of the same author are listed chronologically.

For books
Olimid, A. P. (2009a). *Viaţa politică şi spirituală în România modernă. Un model românesc al relaţiilor dintre Stat şi Biserică*, Craiova: Aius Publishing.
Olimid, A. P. (2009b). *Politica românească după 1989,* Craiova: Aius Publishing.
For chapters in edited books
Goodin, R. E. (2011). The State of the Discipline, the Discipline of the State. In Goodin, R. E. (editor), *The Oxford Handbook of Political Science*, Oxford: Oxford University Press, pp. 19-39.

For journal Articles
Georgescu, C. M. (2013a). Qualitative Analysis on the Institutionalisation of the Ethics and Integrity Standard within the Romanian Public Administration. *Revista de Ştiinţe Politice. Revue des Sciences Politiques*, 37, 320-326.

Georgescu, C. M. (2013b). Patterns of Local Self-Government and Governance: A Comparative Analysis Regarding the Democratic Organization of Thirteen Central and Eastern European Administrations (I). *Revista de Ştiinţe Politice. Revue des Ştiinţe Politice*, 39, 49-58.

Tables and Figures
Tables and figures are introduced in the text. The title appears above each table.
E.g.: Table 1. The results of the parliamentary elections (May 2014)

Proposed papers: Text of the Article should be between 3000-5000 words, single spaced, Font: Times New Roman 10,5, written in English, submitted as a single file that includes all tables and figures in Word2003 or Word2007 for Windows.