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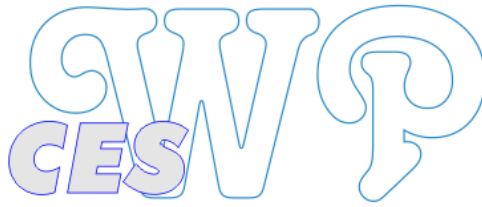
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## The potential effects of recent EU cybersecurity and resilience regulations on cloud adoption and EU cyber resilience

Guy WAIZEL\*

### Abstract

*This paper delves into the potential impacts of the recently published Network and Information Security Directive 2 (NIS2) and Digital Operational Resilience Act (DORA) on EU cybersecurity resilience and cloud adoption. Employing a mixed method of descriptive literature review, narrative review, and thematic synthesis, we explore challenges for implementation, drawing from past data privacy regulations, notably the GDPR, which served as a basis for our analysis and has already significantly affected many organizations. We emphasize the need for efficient software solutions to assist organizations in complying with the new regulations, building upon lessons learned from the GDPR. Cloud service providers and enterprise software vendors are identified as key players to address these challenges. This paper discusses the paradox of organizations' historical reluctance to migrate to the cloud due to data privacy concerns, and how the motivation to comply with recent regulations may now drive increased modern cloud adoption.*

*Keywords:* DORA, NIS2, data privacy, cybersecurity, resilience

### Introduction

This paper aims to identify the potential effect of NIS2 and DORA on modern cloud adoption among various organizations that will need to comply with the regulations, examine the effect on overall resilience in the EU, and serve as an initial wake-up call for organizations that will need to comply with these new regulations.

The NIS2 (Network and Information Systems) Directive (EU) 2022/2555 from December 2022 replaces and expands the original EU NIS Directive. It uses legal measures to improve cybersecurity throughout the EU by defining critical sectors based on size. The new directive places greater focus on cybersecurity efficiency and addressing supply chain threats, defining supervisory measures, developing better cooperation between member states regarding sanctions, and increasing threat and information-sharing opportunities. EU member states were requested to publish all measures required for organizations to comply with the NIS2 Directive by October 2024 (Directive (EU) 2022/2555, 2022; NIS 2 Directive, 2023).

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The Digital Operation Resilience Act (DORA) EU 2022/2554 is an EU regulation that will become applicable from January 2025, and will affect the entire financial sector and vendors' development roadmaps. Financial institutions must comply with new risk management rules for information and communication technology (ICT), such as incident reporting, resilience testing, and ICT third-party risk monitoring. Organizations will need to reassess their contractual relationships with vendors (Digital Operational Resilience Act (Regulation (EU) 2022/2554, 2022; DORA, 2023).

Many challenges are expected to arise when NIS2 and DORA roll into official laws in individual member states. Organizations are encouraged to use the time allocated wisely by checking the implications, improving their processes, and applying changes and adjustments accordingly.

To address the critical gap in understanding how the NIS2 and DORA regulations will impact cloud adoption and cybersecurity resilience in the EU, our research leverages insights gained from past data privacy regulations, particularly the GDPR. This approach provides clarity on the potential implications of these new directives, answering the central question of how these regulations and other future data privacy regulations will shape the landscape of modern cloud adoption and overall cyber resilience in the EU. Our meticulous descriptive literature review and narrative synthesis analysis of fifty-five articles allow us to identify common trends, themes, and key findings that elucidate both the positive and negative effects of NIS2 and DORA on cybersecurity and resilience in the EU in the coming years.

## **1. Literature review - the GDPR effect on organizations**

The General Data Protection Regulation (GDPR) (Regulation (EU) 2016/679, 2018) dramatically changed how business organizations treat and protect their data. In the context of cybersecurity and resilience, the GDPR served as a catalyst for organizations globally to reevaluate their data management practices and enhance their cyber resilience strategies. Organizations underwent a comprehensive overhaul of global business processes and workflows, with a keen focus on mapping risks within databases to address potential GDPR violations urgently and effectively.

Marketing campaign strategies, sales activities, and organizational processes underwent significant transformations to align with the new GDPR requirements. This shift included adapting product development to incorporate GDPR support, ensuring corporate websites met compliance standards. Johnson *et al.*, (2023) highlighted the immediate impact, noting a 15% overall decrease in the use of web technology vendors in the week following GDPR enforcement. Additionally, popular vendors experienced a 17% increase in market concentration, reflecting user preference for trusted, compliant vendors.

Despite these efforts, organizations encountered challenges, with some perceiving a slowdown in business growth and development due to GDPR compliance. Chazan (2017) discussed SAP's concerns about potential adverse effects on startups because of the stringent regulations. This literature emphasizes that the GDPR not only shaped data protection practices but also influenced broader organizational strategies, setting the stage for understanding the potential impact of subsequent regulations on cybersecurity and cloud adoption.

While many organizations endeavored to comply, some fell short, leading to breaches and fines. Ford *et al.* (2021) demonstrated that a company's market value could decrease following a publicly announced GDPR fine, highlighting the financial consequences of non-compliance.

## 2. Literature review - the GDPR effect on cloud service providers

Taylor (2011) predicted that cloud providers would incorporate more geographic location features to support data sovereignty in 2011, a forecast realized through Data Citizenship and Complaint Data Transfer using location tags. This anticipation of data sovereignty concerns aligns with the GDPR's emphasis on data protection, leading cloud service providers to implement features in 2018 supporting GDPR compliance. Cloud giants such as Google, Amazon, Oracle, and Microsoft, as detailed by Spasic *et al.* (2019), introduced solutions like AWS and Azure that not only adhered to GDPR requirements but also demonstrated the proactive steps taken by cloud providers to ensure data security and compliance (Figure 1). This underlines the interconnected relationship between data protection regulations, cloud service providers, and the broader cybersecurity landscape.

Google Cloud Platform (GCP) underlines its commitment to supporting GDPR (Google, 2023a), and Oracle details its GDPR support on its website (Oracle, 2023). In response to GDPR and other data privacy regulations, studies delve into technical implementation technologies and algorithmic solutions. Corliss, M. (2010) proposed the need for a balance between technology and data privacy regulations to expedite compliance, emphasizing a harmonious integration of both elements. Ko, S. Y. *et al.* (2011) advocated for the HyberEX model in 2011, specifically designed for enhancing privacy in cloud environments. Raghavan *et al.* (2021) highlighted the role of De-Identification of Personal Information (DIPI) technology in safeguarding data privacy within big data applications in Asia.

**Figure 1. Solutions of AWS and Azure for GDPR requirements**

Category	Pattern title	Solutions in AWS	Solutions in Azure
Compliance and Regulatory	Data Citizenship	Use AWS location tags to designate the location for data processing	Azure information protection and location tag. Azure frontdoor service
	Cryptographic Erasure	Use AWS KMS	Use Azure Key Vault
	Shared Responsibility Model	AWS provides different services to ensure protection of data and system. It is upto client to use it or not. However, AWS is responsible for only the vailability and basic security of cloud platform.	Azure provides different security tools to ensure protection of data and system. It is upto client to use it or not. However, Azure is responsible for only the vailability and basic security of cloud platform
	Compliant Data Transfer	AWS locaton tags	Azure location tag
	Data Retention	The data retention policies can be defined and executed by AWS. For example Lambda	Azure provides option to define data retention policy in Database system
	Data Lifecycle	AWS data lifecycle manager	Azure blob storage lifecycle
	Intentional Data Remanence	database (e.g. DynamoDB)	database (e.g. Azure backup)
Identification, Authentication and Authorisation	Multi-Factor Authentication	AWS Cognito	Azure active directory : multi-factor
	Federation (Single Sign-On)	AWS SSO (Single Sign-On)	Azure AD Seamless Single Sign-On
	Access Token	AWS security token service	Azure active directory : Token service
	Mutual Authentication	Use AWS TLS/SSL certificate, Certificate feature of API Gateway (AWS client VPN)	Azure App service
	Secure User Onboarding	AWS customer on boarding	Azure security center
	Identity and Access Manager	AWS IAM and Cognito	Azure IAM
	Per-request Authentication	AWS Signing and Authenticating REST Requests	Azure API management & REST API authentication
Secure Development, Operation and Administration	Access Control Clearance	AWS cloud watch and AWS Cognito/IAM	Azure access control service
	Bastion Server	AWS bastion host	Azure Bastion host
	Automated Threat Detection	AWS GuardDuty	Azure advanced threat protection
	Durable Availability	AWS cloud watch, AWS WAF	Azure web access firewall & firewall application gateway
	Economic Durability	AWS cloud watch	Azure Monitor
Privacy and Confidentiality	Vulnerability Management	AWS vulnerability scanning	Vulnerability scan in Azure security center
	End-to-End Security	AWS KMS, Certificate manager	Azure Key Vault
	Computation on Encrypted Data	N/A	N/A
	Data Anonymisation	Algorithms can be defined and ran by AWS module (e.g. lambda)	Azure provides Dynamic Data Masking on SQL database
Secure Architecture	Processing Purpose Control	N/A	N/A
	Virtual Network	AWS Virtual Private Cloud	Azure Virtual Network
	Web Application Firewall	AWS WAF	Azure application firewall gateway
	Secure Element	AWS IoT Device Management	Azure IoT Hub & IoT Suit
	Secure Cold Storage	AWS Glacier	Azure Coldblob storage
	Certificate and Key Manager	AWS Certificate and Key manager (AWS KMS)	Azure Key Vault
	Hardware Security Module	AWS CloudHSM	Azure Dedicated HSM
Secure Auditing	AWS Auditing Security Checklist	Azure Monitor, Stream, Network Watcher	

Source: Spasic *et al.*, 2019

Georgiou and Lambrinoudakis (2020) presented insights into modifying cloud security policies to support GDPR, providing valuable guidance for developers, particularly in the context of cloud-based healthcare systems. Glova (2022) suggested various algorithmic approaches to secure and privacy-preserving computation in data centers, emphasizing the ongoing quest for robust privacy solutions. Jain *et al.* (2016) addressed challenges in existing data-privacy implementations like HybrEx, k-anonymity, T-closeness, and L-diversity. The need for more recent privacy-preservation



mechanisms in big data, such as hiding a needle in a haystack, identity-based anonymization, differential privacy, privacy-preserving big data publishing, and fast anonymization of big data streams, was advocated by Jain. Alnajrani and Norman (2020) derived seven hypotheses supporting the utilization of the privacy by design model (PbD) in mobile cloud computing (MCC) for privacy preservation.

Cloud service providers and enterprise vendors play a crucial role in offering advanced features to meet GDPR requirements. As highlighted by Spasic *et al.* (2019), organizations leverage these offerings to save time and effort, avoiding the need for unique on-premises customization and configurations to meet the regulations. This underscores the symbiotic relationship between regulatory compliance, technological innovation, and the support provided by cloud service providers in the evolving landscape of data protection.

### 3. Methods

For this paper, a deliberately chosen mixed method of descriptive literature review (King and He, 2005; Pare *et al.*, 2015; Petersen *et al.*, 2015) and narrative review (Cronin *et al.*, 2008; Green *et al.*, 2006; Levy and Ellis, 2006; Webster and Watson, 2002) was conducted. Qualitative techniques of content analysis, narrative analysis, and thematic synthesis were employed. A strategic analysis covered journals, theses, and research papers from four databases: Google Scholar, Proquest, Science Open, and Base-search.net. The primary objective was to identify patterns and gaps in the literature, focusing on known findings, theories, and concepts. To achieve this, the sources were mapped, evaluated, and subjected to content analysis to uncover patterns and relationships. This robust approach aimed to enhance the depth and breadth of insights gained from the literature, aligning with the comprehensive nature of the study.

For the descriptive review, the following steps were employed: Initial search within the databases, identifying and exploring literature focusing on the topic, evaluation, and analysis, piling the literature by main concept categories, organizing information in a table, and sorting key findings. These steps were chosen to systematically extract relevant information, provide a structured analysis, and ensure a comprehensive coverage of the literature landscape. Mixed techniques, including an inductive approach using content analysis to explore main themes and a deductive approach to uncover trends and connections, were utilized by interpreting common keyword frequencies from the abstracts of every article. The inductive approach allowed for an open exploration of emerging themes, while the deductive approach facilitated the identification of overarching trends and connections, adding depth and context to the analysis.

The results were then synthesized using thematic narrative synthesis, drawing common findings and insights and suggesting potential implications for future research. The descriptive review tabling structure is described in Table 1. The search keywords used included the following words and phrases: “NIS2 Directive”; “DORA regulation”; “DORA Act”; “EU recent regulations (2020-2023)”; “effect of NIS2 and DORA on cloud adoption”; “effect of NIS2 and DORA on cybersecurity and resilience”; “data privacy and cloud adoption”; “GDPR effects”; “data privacy regulations(2011+)”; “Directive(EU)2022/2555”; “Regulation (EU)2022/2554”; “digital operational resilience for the financial sector”.

The criteria for inclusion in the literature review were: Most relevant to the article’s topic and disciplines; article types: scholarly journal, books, dissertations and theses, and papers in response to the latest regulations announcements.

**Table 1. Descriptive literature review tabling**

Article Title	Author & Published Year	Main Theme	Aim	Conclusion	Common Findings/Gaps and Relation to the Topic	Disciplines	Reference
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Content analysis technique was used: abstracts of articles were coded; main themes were identified using WordCloud: trends, insights, patterns and relationships were uncovered; and narrative thematic synthesis was conducted to gather conclusions. This detailed and multi-faceted approach ensured a nuanced understanding of the literature, capturing not only the main themes but also the subtleties and interconnections within the data. The methodology exhibits strengths in comprehensive coverage through the inclusion of diverse databases and literature sources, fostering a thorough understanding of the topic. Additionally, the use of mixed methods, combining descriptive literature review and narrative review techniques, enables a multifaceted exploration of the research landscape. However, weaknesses include the potential introduction of subjectivity in qualitative data interpretation and the limited generalizability of findings due to specific search criteria and a focus on recent regulations.

## 4. Results

### 4.1. Identified themes

The initial search results yielded over one hundred and sixty articles, reflecting the breadth of literature on the subject. The rigorously applied inclusion criteria, detailed in the methodology, were

pivotal in selecting articles that adhered to specific parameters. Fifty-five articles successfully met these inclusion criteria, demonstrating their alignment with the research focus on recent EU cybersecurity and resilience regulations, specifically the NIS2 Directive and DORA. These inclusion criteria ensured a targeted selection, emphasizing relevance and direct applicability to the study's objectives.

Subsequently, the selected articles underwent a meticulous analysis, utilizing qualitative techniques such as content analysis and thematic synthesis. This process not only affirmed the relevance of the chosen articles but also led to the identification of four overarching themes, as elucidated in Table 2. These themes comprehensively covered various aspects of the literature, including challenges in the adoption of data privacy regulations, consequences such as fines following infringements, responses and actions taken in the context of data privacy regulations, and considerations specific to data privacy regulations within cloud environments, encompassing methods to preserve privacy. This systematic approach ensured a nuanced exploration of the literature, enriching the depth of insights derived from the selected articles.

As a concise summary, Table 3 serves as a visual representation of the literature review, classifying the findings based on the identified themes. This categorization not only aids in organizing and presenting the results but also provides a structured reference point for readers to navigate through the diverse dimensions of the literature. The inclusion criteria, implemented with precision, were instrumental in refining the article selection, guaranteeing that the chosen literature directly contributed to the elucidation and exploration of pivotal themes, thereby enhancing the overall depth and relevance of the descriptive literature review.

**Table 2. Identified themes**

Theme	Theme's Reference	Year
1. Challenges in adopting data privacy regulations	Barbara, C. G. <i>et al.</i>	2001
	Nauwelaerts, W	2004
	Taylor, P	2011
	Chazan, G	2017
	Cutler, S	2018
	Ross, W	2018
	Newstex	2019
	Bartlett, T	2020
	Tzanou, M	2020
	Jacuch, A., PhD	2021
	Perdereaux-Weekes, A	2021
	Biasin, E., and Kamenjasevic, E	2022
2. Fines following infringement of data privacy regulations	Murgia, M., and Coulter, M.	2019
	Ford, A <i>et al.</i>	2021
	Venkataramakrishnan, S	2021

3. Responses and actions related to data privacy regulations	EBA	2019
	Copeland, L., Jr	2021
	EIOPA	2020
	ESMA	2020
	ITI	2021
	NIS2	2021
	Rajamäki, J	2021
	ITI	2021
	Targeted News Service, Washington, D.C	2021
	Schmitz-Berndt, S., and Chiara, P. G	2022
	Splunk	2022
	Targeted News Service, Washington, D.C	2022
	DORA	2022
	GDPR	2023
	Google	2023a,2023b,2023c
	MENA Report, London: SyndiGate Media Inc	2023 2023a,2023b
	Microsoft	
4. Data privacy regulations in the cloud and preserving privacy methods	Machanavajjhala,A. <i>et al.</i>	2007
	Corliss, M	2010
	Ko, S. Y. <i>et al.</i>	2011
	Domingo-Ferrer, J., and Soria-Comas, J	2015
	Jain, P., Gyanchandani,M., and Khare, N	2016
	Express Computer, Mumbai	2018
	Singh, N., and Singh, A. K	2018
	CommunicationsToday, Noida	2019
	Spasic, B. <i>et al.</i>	2019
	Alnajrani, H. M., and Norman, A. A	2020
	Georgiou, D., and Lambrinouidakis	2020
	Mahanan, W. <i>et al.</i>	2021
	Raghavan, A. <i>et al.</i>	2021
	Amiri-Zarandi. <i>et al.</i>	2022
	Glova, A. O	2022
	Gartner	2023
	Google	2023a,2023b,2023c
Johnson, G. <i>et al.</i>	2023	

**Table 3. Summary of literature review and themes classification**

Theme	Count of Articles
Challenges in adopting data privacy regulations	12
Fines following infringement of data privacy regulations	3
Responses and actions related to data privacy regulations	20
Data privacy regulations in the cloud and preserving privacy methods	20

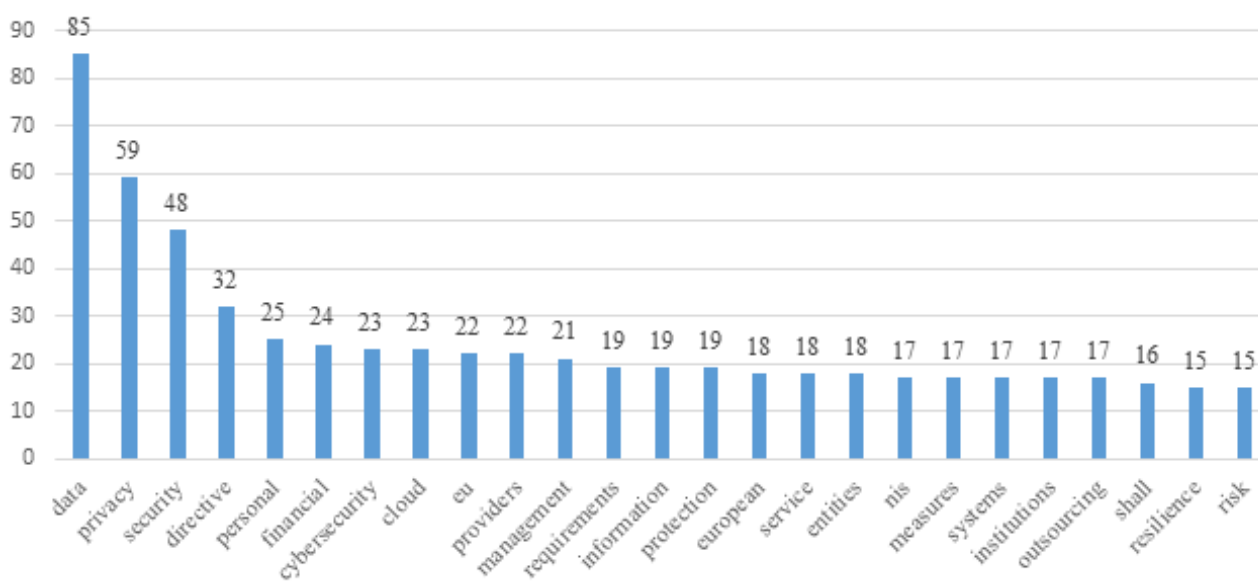
Using the WordCloud app (Free Word Cloud Generator, 2023), the word frequency of all article abstracts was analyzed. Most of the articles do not contain the words DORA and NIS2, which implies insufficient literature and a knowledge gap about the effect of these regulations, challenges and barriers, and other implications (Figure 2). This reinforces the importance of this article's contribution to the literature in refining the barriers, the gaps, and the potential effects of these regulations.

The top fifty keywords identified in the frequency analysis are words that are linked with the topic and widely discussed in the literature, such as data privacy, cybersecurity, directive, personal, financial, and cloud. Among the top ten keywords were cloud and cybersecurity, suggesting a strong relationship with the topic of these regulations. However, the analysis did not reveal a specific relationship between cloud adoption and data privacy regulation, and resilience only ranked 24<sup>th</sup>. This finding highlights the need for further research on these two topics, such as this study (Figure 3).

Figure 2. Top 50 keywords in the article abstracts



Figure 3. Abstracts word frequency



## 4.2. Narrative analysis and thematic synthesis

Through a comprehensive narrative analysis and thematic synthesis of fifty-five papers, including journals, theses, and various research articles connected to data privacy, cloud adoption, and cyber resilience, encompassing both qualitative and quantitative papers that meet the inclusion criteria and align with the keyword search used, this study aims to provide an in-depth understanding of the effect of NIS2 and DORA on cloud adoption and the potential implications for cybersecurity and resilience in the EU. The following are the conclusions drawn from the thematic synthesis:

Balance is required between data privacy regulations and technology adoption (Corliss, M., 2010) and most of the world population will be covered under modern data privacy regulations by 2024 (Gartner, 2023).

New data privacy preservation algorithms methods and technologies are making it easier to implement regulations over the cloud and big data applications. (Alnajrani and Norman, 2020; Amiri-Zarandi *et al.*, 2022; Communications Today, 2019; Express Computer, 2018; Corliss, 2010; Domingo-Ferrer and Soria-Comas, 2015; Georgiou and Lambrinouidakis, 2020; Glova, 2022; Gartner, 2023; Google 2023a, 2023b; Johnson *et al.*, 2023; Jain, Gyanchandani and Khare, 2016; Ko *et al.*, 2011; Machanavajjhala *et al.*, 2007; Mahanan *et al.*, 2021; Raghavan *et al.*, 2021; Singh and Singh, 2018; Spasic, 2019). Data privacy on the cloud is covered extensively in literature by cloud service providers. For example: (Google 2023a, 2023b, 2023c; Microsoft, 2023a; 2023b; Oracle, 2023; Spasic, B *et al.*, 2019). Microsoft already submitted a list of recommendations in response to the NIS2 regulation (Microsoft, 2023b). Google claim that in many aspects, security on the cloud exceeds on-premises security (Google, 2023b).

IoT vendors must address data privacy by design (PbD) and development, for items such as medical devices, smart city sensors, and CCTV surveillance that are used to collect data. When PbD was utilized, it improved privacy (Alnajrani and Norman, 2020; Biasin and Kamenjašević, 2022). Designing and developing products to include protection and meet the requirements for NIS2 and DORA will take time. Hackers and nation-state actors can leverage the time between legislation and implementation, take advantage of existing vulnerable IoT devices, and use this time gap for extensive attacks.

New directives will have a significant effect outside of the EU. For example, if a US global organization has branches in EU, they should get prepared and check the implications; during M&A processes, regulations need to be followed. It also needs to be considered regarding data requests from courts. For example, Nauwelaerts (2004) pointed out the importance of meeting with data privacy regulations even during the negotiation of the M&A, especially if the buyer is a US entity

and the seller has European employees, and Barbara *et al.* (2001) raised the challenges US and other companies have in complying with EU regulations. Cutler (2018) discusses the effect of EU data privacy regulations in US courts; for example, when a court orders data to be produced which is protected by EU data privacy regulation, The court may consider using Hague evidence convention. In the new regulations, penalties are defined between a fixed amount to a percentage of the organization's global annual turnover. The higher of the two amounts will be imposed on large global organizations, so although the effect may seem to be only on EU member states it is already clear that global organizations will also be affected.

Fines, sanctions, and enforcement are expected to rise as soon as legislation is passed in member states and becomes effective. Since the number of sectors has increased, organizations with more than 250 employees which meet the defined criteria of essential or important entities will be included (NIS2, 2023; Directive (EU) 2022/2555, 2022). More enforcement and fines are expected, especially after cyber breach incidents and the failure of organizations to protect their data. It was also the case after enforcing GDPR and other past regulations. For example, the following papers discuss penalties for organizations following the infringement of GDPR: (Ford *et al.*, 2021; Murgia and Coulter, 2019; Venkataramakrishnan, 2021).

The public is not sufficiently concerned about the broad exposure of vulnerabilities of IoT devices (Bartlett, T, 2020). Based on historical studies, data privacy regulations may slow down startups and new organizational developments (Chazan, 2017; Taylor, 2011; Ross, 2018). Some EU member states would need to invest much more than others to prepare since their level of resilience and cybersecurity is not as advanced as other states (Jacuch, 2021; MENA Report, 2023; Rajamäki, 2021). Additionally, some member states face an increased risk of attacks compared to others. For example, specific member states that face significant attacks were identified in the recent threat report by Trellix (Trellix, 2023).

Organizations in the EU will need to allocate more funding for resilience and cybersecurity products and cloud service providers to prepare for the new EU regulations and equip themselves with new enhanced features to assist in complying with the regulations. In recent years, EU member states invested much less than the US in cybersecurity, and so the upcoming budget allocated by the EU to cybersecurity has been raised (NIS2, 2023; Directive (EU) 2022/2555, 2022).

EU organizations above 250 employees meeting the defined criteria of essential or important entity should work fast to identify and explore the most appropriate cybersecurity software, data protection resilience software, and technology tools that can support their efforts to comply rapidly with the requirements of the new regulations.

Cooperation between member states is required for intelligence sharing. Member states would need to expand their joint knowledgebases, vulnerability disclosure, and processes for escalations at all levels (Directive (EU) 2022/2555,2022; Dora, 2023; NIS2, 2023; Regulation (EU) 2022/2554, 2022).

Ransomware attacks, advanced persistent threats (APT), and supply chain attacks are expected to grow. Based on a Trellix report from 2022, 38% of global ransomware family attacks hit EU countries (Directive (EU) 2022/2555,2022; NIS2, 2023; Trellix, 2022).

Organizations would need to seek and assess tools to improve their early warning detection capabilities and resilience programs by ensuring proper backup and recovery, and business contingency plans covering and protecting data across all platforms used within their organization. They should improve mitigation, remediation, and containment capabilities. Organizations would need early detection solutions to meet the requirements of reporting significant attacks within seventy-two hours (Directive (EU) 2022/2555,2022; NIS2, 2023). Early detection systems, such as systems based on active defense technology and deception technology, may act as a game changers when trying to keep up with tight Service Level Agreement (SLA) reporting of detection. Organizations need to improve their resilience by ensuring they can easily protect web services and workloads, and restore systems backups within a specified recovery point objective (RPO) and recovery time objective (RTO). They should ensure resilience with their cloud assets such as cloud mailbox, workloads, instances, virtual machines, databases, containers, and blobs buckets. They should ensure proper retention backup to meet sovereignty requirements by using regions, proper retention, and new features to comply more effectively with the regulations.

Technologies and solutions to assist in complying with early warning, detection, and business contingency would significantly help organizations meet their needs. For example, the following articles in Directive (EU) 2022/2555 (Directive (EU) 2022/2555, 2022) support it:

- Article 21, “Cybersecurity risk-management measures,” refers to business continuity, such as backup management and disaster recovery, crisis management, supply chain security, and security in networks, which encompasses threat detection in networks.
- Article 11 and article 15 “Computer Security Incident Response Team (CSIRT) Network requirements, technical capabilities, and tasks of CSIRTs” refer to early warning detection.
- Article 23, “Reporting obligations” refers to early warning detection.
- Article 29 “Cybersecurity information-sharing arrangements” refers to detection capabilities. In the Regulation (EU) 2022/2554 (DORA regulation, 2022; Regulation (EU) 2022/2554,2022).



- Article 10 refers to detection capabilities.
- Article 11 refers to response and recovery and backup.
- Article 12 refers to backup policies and procedures, restoration and recovery procedures, and methods.
- Article 15 refers to further “harmonization of ICT risk management tools, methods, processes and policies” which encompasses detection capabilities.
- Article 17, “ICT-related incident management process” refers to early warning detection.
- Article 45, “Information-sharing arrangements on cyber threat information and intelligence,” refers to threat detection.

The regulation emphasizes the importance of cooperation between member states and intelligence sharing. New software offerings for cybersecurity intelligence sharing capabilities between EU member states for incident reporting and vulnerability disclosure are an opportunity ripe for development by enterprise software vendors.

Contractors’ terms and contracts will need to be reevaluated and assessed by the legal teams of both vendors and customers, with care taken to protect both sides from unexpected fines (Directive (EU) 2022/2555, 2022; DORA, 2023; NIS2, 2023; Regulation (EU) 2022/2554, 2022). Contracts specifying new obligations and responsibilities will need to be modified to meet the requirements. Vendors may face increased exposure to chain trials where the government may fine an organization and the organization in turn sues its vendor for not complying with new policies. Supply chain mapping and assessment will need to examine every vendor in the chain to ensure mapping was done correctly and that no vendor contract is missing. Organizations will need to invest more in data privacy consultants. More time will be spent by internal and external accounting and legal teams for scheduled audits and for random audits that the member state may execute. Cloud service providers already meet outsourcing guidelines regulations that were published by the EU, for example (EBA, 2019; EIOPA, 2020; Esma, 2020). Such regulations implemented by cloud service providers can save lots of time for organizations looking to comply with existing and future regulations. Giant cloud service providers can most likely quickly adopt and maintain any adjustments to these regulations. It is easier for customers to go through their checklist compared to other on-premises solutions that need to invent the wheel from scratch. Additionally, enterprise software vendors using cloud service provider platforms can leverage the providers’ new features and incorporate them into their application solutions.

## 5. Discussion

Over the last decade, many researchers showed that data privacy regulations slow cloud adoption. Organizations have been more reluctant about migrating to the cloud to ensure they do not violate the regulation, such as keeping the data under the same sovereignty it was collected from and creating isolated networks from the internet to reduce risks. The following studies discuss in more detail the challenges when migrating to the cloud: (Bhayal, 2011; Boillat and Legner, 2013; Gai, 2014; Gumbi and Mnkandla, 2015; Griffith and Stewart 2020; Ivan and Ille, 2021; Meersman and Mulchahey, 2019; Taylor, 2018).

When GDPR became effective, cloud service providers made a significant effort to meet its requirements. They leveraged the opportunity to help their customers comply faster and to increase their income and profit by a broader offering of Platform as a Service (PaaS) supported GDPR features (Spasic *et al.*, 2019). In recent years, there has been a paradoxical trend where organizations are increasingly adopting cloud computing technology to comply with their regulatory requirements and enhance their capabilities. This trend has resulted in a significant increase in the number of organizations embracing cloud computing, even those that were previously hesitant to do so. According to IDC (2022), this trend is expected to continue, with more organizations adopting cloud computing in the coming years. The shift towards cloud computing has been facilitated by government support, as Evidenced by the release of guidelines such as “Guidelines on outsourcing to cloud service providers” by EIOPA (2019).

The paradox effect may even significantly change in the future when hackers and nation-state threat actors find that, in some cases, an on-premises environment would be more vulnerable to attacks because they may not meet the rate of changes in regulatory requirements and hardening which are monitored regularly in cloud mode.

Some defense, governmental, financial, public, or other conservative, strict organizations may decide not to migrate to the cloud and prefer to rely on strict segregation of networks wholly isolated from the internet. However, at some point, they may lose capabilities and support with the tools and technology solutions they operate. Such organizations should consider in-house development, implementing hybrid cloud, gradually migrating some of their environment to the cloud, or working with vendors who offer enhanced regulations features in on-premises mode.

The limitation of this paper is that the regulations are still at a very early stage prior to legislation by member states. Some of the recommendations of cloud providers are under discussion, for example (Microsoft, 2023b). It is possible that within the year, some of the regulations will be softened. Cloud

providers, enterprise software vendors and legal teams are currently still in the review and learning stages.

The intricate interplay between cloud adoption, regulatory compliance, and the overarching cybersecurity landscape adds a nuanced layer to understanding the broader ramifications of the discussed regulations on the EU's overall cyber resilience. Furthermore, the contribution of this paper to the existing literature lies in its exploration of the paradoxical trend observed in recent years, where regulatory compliance drives increased cloud adoption. By delving into the challenges and shifts in organizational behavior, this study sheds light on a dynamic that has not been extensively covered in the current literature, offering valuable insights into the evolving relationship between regulations, cloud adoption, and cybersecurity resilience.

## Conclusions

The descriptive literature review, narrative analysis and thematic synthesis uncovered a gap of knowledge and a lack of discussion and research about the new regulations NIS2 and DORA. The main themes derived and common key insights and important trends were explored regarding the potential effects of the regulations on cloud adoption and EU resilience in the coming years.

First, challenges with preparation for the regulations are expected to increase. From a budgetary perspective, it is recommended that organizations allocate sufficient funds towards resilience and cybersecurity tools, as well as engage consultants and legal experts to reassess third-party contracts. This will enable them to invest in more effective cybersecurity and resilience tools, thereby simplifying their implementation process. Moreover, an in-depth exploration of the literature synthesis highlights the need for proactive measures in addressing challenges related to resource constraints, training deficiencies, and supply chain vulnerabilities across various sectors building upon the lessons learned from the GDPR implementation. On the macro side, it may affect the global turnover in investments in the cybersecurity and resilience industry. Failing to comply due to breaches of threat actors will affect national security, especially in ICT, healthcare, and finance markets. The literature synthesis underlines the interconnectedness of national security and compliance, emphasizing the need for comprehensive strategies that address the specific vulnerabilities within each sector. Drawing parallels to the GDPR's impact on global data privacy practices, the literature synthesis establishes the relevance of past regulatory experiences in shaping future strategies.

From a readiness perspective, sectors defined as essential and important which are affected by the regulations face a challenge in complying with it because many of these sectors use old legacy systems and have interconnected systems dependency. Some of these sectors use industrial control

systems (ICS) like Scada, which contains ICS vulnerabilities. In some sectors like healthcare, different organizations use different systems and there is a lack of consistency. The literature synthesis emphasizes the need for sector-specific readiness assessments and tailored strategies to address the unique challenges and complexities within each sector, mirroring the diverse responses observed during the GDPR implementation. Most of these sectors have limited resources, a lack of training for employees, a lack of budget for cybersecurity, and a risk of supply chain vulnerability. Some of these sectors, like transportation, use smart connected IoT devices. Others have third-party risks, large complex systems, and limited resources.

Second, as the scope of the NIS2 directive broadens to include additional sectors, hundreds of thousands of organizations are expected to be affected. To avoid hefty penalties ranging from seven to ten million euros or 1.4%-2% of their global annual turnover, many of these organizations are likely to allocate more funds towards compliance efforts. It is worth noting that the specific penalty amount will be determined by selecting the higher number of the two options for essential and important entities. The literature synthesis provides insights into the potential financial impacts and underscores the necessity for organizations to strategically allocate resources to comply with the evolving regulatory landscape. Referencing the GDPR's influence on global data protection frameworks, the literature synthesis draws parallels, emphasizing the financial motivations and implications associated with regulatory compliance.

Under the DORA regulations, critical ICT third-party service providers can face fines of up to 1% of their average daily worldwide turnover. For medium and large organizations with global turnovers in the billions of dollars, such fines can amount to dozens or even hundreds of millions of dollars. The literature synthesis emphasizes the substantial financial implications under DORA, highlighting the need for critical ICT service providers to reassess their strategies and fortify their compliance efforts. This echoes the experiences of cloud service providers aligning with GDPR requirements, illustrating the financial repercussions associated with regulatory non-compliance. These significant financial penalties are expected to motivate affected organizations deemed essential or important to comply with the new regulations, potentially driving them towards migrating to modern cloud infrastructure in order to expedite their compliance efforts and meet regulatory deadlines.

Third, cloud providers and enterprise software vendors would continue the race to assist their customers. They should evaluate the implications and act accordingly to add more enhanced features to assist organizations in complying with the regulations. They should listen carefully to their customers, conduct an in-depth analysis of the new regulations, and suggest changes to their product

roadmaps. The literature synthesis indicates that ongoing collaboration between organizations and cloud providers is crucial, emphasizing the role of vendors in proactively supporting compliance efforts and adapting to the evolving regulatory landscape. Reflecting on the GDPR's influence on cloud service providers, the literature synthesis establishes a precedent for providers evolving their services to meet regulatory demands.

Fourth, organizations should consider that early warning detection and technologies to support data protection and resilience are essential to comply with the regulations. They should seriously consider migrating to modern cloud providers offering enhanced features to meet the regulations faster. The literature synthesis underscores the significance of early warning systems and cutting-edge technologies, emphasizing the role of modern cloud providers in facilitating swift compliance with evolving regulations. Drawing connections to the GDPR's emphasis on data protection technologies, the literature synthesis highlights the continuous evolution of cybersecurity measures in response to regulatory mandates.

Future work on this topic is recommended to research the readiness of specific member states that are lagging behind in their reaction to the new regulations, the effect of NIS2 and DORA on on-premises environments, and the broader effect of NIS2 and DORA on other continents. Additionally, the literature synthesis suggests avenues for future research, including in-depth investigations into the readiness of specific member states, the implications of NIS2 and DORA on on-premises environments, and the potential global impact of these regulations beyond the EU borders, building upon the lessons learned from the GDPR's impact on global data protection frameworks and strategies.

### **Disclosure and conflict of interest**

The author of this article is a doctoral student researcher at "Alexandru Ioan Cuza" University of Iasi and was the former COO of TrapX Security (a global leader in deception security technology), which Commvault (a global data protection leader) acquired. Today he works at Commvault as Field Security CTO. ThreatWise solution offered by Commvault is an early warning cloud data protection solution based on TrapX deception technology. The author worked in the high-tech industry for 25 years and has more than 10 years of experience in deception technology solutions. The author has tried to remain unbiased in writing this research.

## References

- Alnajrani, H. M., and Norman, A. A. (2020), The effects of applying privacy by design to preserve privacy and personal data protection in mobile cloud computing: An exploratory study, *Symmetry*, 12(12), 2039.
- Amiri-Zarandi, M., Dara, R. A., Duncan, E., and Fraser, E. D. G. (2022), Big Data Privacy in Smart Farming: A Review, *Sustainability*, 14(15), 9120. <https://doi.org/10.3390/su14159120>
- Barbara, C. G., Lynch, P., and Marsnik, S. J. (2001), US multinational employers: Navigating through the “safe harbor” principles to comply with the EU data privacy directive, *American Business Law Journal*, 38(4), 735-783.
- Bartlett, T. (2020), *Privacy and Security Management Practices of Emerging Technologies: Internet of Things*, PhD thesis (Order No. 28000028). Available from Publicly Available Content Database (2461614134).
- Bhayal, S. (2011), *A study of security in cloud computing*, California State University, Long Beach.
- Biasin, E., and Kamenjašević, E. (2022), Cybersecurity of medical devices: new challenges arising from the AI Act and NIS 2 Directive proposals, *International Cybersecurity Law Review*, 3(1), 163-180.
- Boillat, T. and Legner, C. (2013), From on-premise software to cloud services: the impact of cloud computing on enterprise software vendors’ business models, *Journal of theoretical and applied electronic commerce research*, 8(3), pp.39-58.
- Chazan, G. (2017), SAP raises fears over EU data privacy rules, *Financial Times*, FT.Com.
- Express Computer (2018), 83% Indian IT security practitioners believe managing privacy & data protection regulations in cloud is more complicated than on-premises networks, *Express Computer*.
- Copeland, L., Jr. (2021), *Developing National Cybersecurity Data and Privacy Protection*, PhD dissertation (Order No. 28963520). Available from Publicly Available Content Database (2634881999).
- Corliss, M. (2010), *The use of information: How new technology is changing discussions of privacy*, Master dissertation (Order No. 1475484). Available from Publicly Available Content Database. (305206632).
- Cronin, P., Ryan, F., and Coughlan, M. (2008), Undertaking a literature review: a step-by-step approach, *British journal of nursing*, 17(1), 38-43.

- Cutler, S. (2018), The face-off between data privacy and discovery: why US courts should respect EU data privacy law when considering the production of protected information, *Boston College Law Review*, 59(4), 1513-1540.
- Digital Operational Resilience Act (DORA) - Regulation (EU) 2022/2554 (2022), retrieved from <https://www.digital-operational-resilience-act.com/> (Accessed: 26 February 2023).
- Directive (EU) 2022/2555 of the European Parliament and of the Council of 14 December 2022 on measures for a high common level of cybersecurity across the Union, amending Regulation (EU) No 910/2014 and Directive (EU) 2018/1972, and repealing Directive (EU) 2016/1148 (2022) retrieved from <https://eur-lex.europa.eu/eli/dir/2022/2555/oj>
- Domingo-Ferrer, J., and Soria-Comas, J. (2015), From t-closeness to differential privacy and vice versa in data anonymization, *Knowledge-Based Systems*, 74, 151-158.
- ESMA publishes cloud outsourcing guidelines. (2023), retrieved 30 March 2023, from <https://www.esma.europa.eu/press-news/esma-news/esma-publishes-cloud-outsourcing-guidelines>
- Finland: NIS2 Directive strengthens cybersecurity across the EU National implementation launched in January (2023, Jan 11), MENA Report London: SyndiGate Media Inc.
- Ford, A., Al-Nemrat, A., Ghorashi, S. A., and Davidson, J. (2021), *The Impact of GDPR Infringement Fines on the Market Value of Firms*, Academic Conferences International Limited. <https://doi.org/10.34190/EWS.21.088>
- Free Word Cloud Generator (2023), retrieved 2 April 2023, from <https://www.freewordcloudgenerator.com/generatewordcloud>
- Gai, K. (2014), A review of leveraging private cloud computing in financial service institutions: Value propositions and current performances, *International Journal of Computer Applications*, 95(3), pp. 40-44.
- Gartner Says By 2023, 65% of the World's Population Will Have Its Personal Data Covered Under Modern Privacy Regulations (2023), retrieved from <https://www.gartner.com/en/newsroom/press-releases/2020-09-14-gartner-says-by-2023--65--of-the-world-s-population-w> (Accessed: 26 February 2023)
- General Data Protection Regulation (GDPR) Regulation (EU) 2016/679 (2018) Official Legal Text (2023), retrieved from <https://gdpr-info.eu/> (Accessed: 26 February 2023).
- Georgiou, D., and Lambrinouidakis, C. (2020), Compatibility of a security policy for a cloud-based healthcare system with the EU general data protection regulation (GDPR), *Information*, 11(12), 586.

- Glova, A. O. (2022), *Architectural Support and Modeling of Emerging Technologies for Datacenter Privacy and Security Applications*, PhD dissertation (Order No. 29325081). Available from Publicly Available Content Database (2729050668).
- Google (2023a), *8 megatrends drive cloud adoption—and improve security for all*, Google Cloud Blog (2023), retrieved 25 March 2023, from <https://cloud.google.com/blog/products/identity-security/8-megatrends-drive-cloud-adoption-and-improve-security-for-all>
- Google (2023b), *DORA's implementation period starts now. What we're doing to prepare for the new law*, Google Cloud Blog. (2023), retrieved 25 March 2023, from <https://cloud.google.com/blog/products/identity-security/doras-implementation-period-starts-now-what-were-doing-to-prepare-for-the-new-law>
- Google (2023c), *How Google Cloud is preparing for NIS2 and supporting a stronger European cyber ecosystem*, Google Cloud Blog. (2023), retrieved 25 March 2023, from <https://cloud.google.com/blog/products/identity-security/how-google-cloud-is-preparing-for-nis2-and-protecting-europe-from-cyber-threats>
- Green, B. N., Johnson, C. D., and Adams, A. (2006), Writing narrative literature reviews for peer-reviewed journals: secrets of the trade, *Journal of chiropractic medicine*, 5(3), 101-117.
- Griffith, L.D. (2020), *Strategies Federal Government I.T. Project Managers Use to Migrate I.T. Systems to the Cloud*, Walden University.
- Guidelines on outsourcing arrangements - European Banking Authority (2019) retrieved 30 March 2023, from <https://www.eba.europa.eu/regulation-and-policy/internal-governance/guidelines-on-outsourcing-arrangements>
- Guidelines on outsourcing to cloud service providers (2023), retrieved 30 March 2023, from [https://www.eiopa.europa.eu/publications/guidelines-outsourcing-cloud-service-providers\\_en](https://www.eiopa.europa.eu/publications/guidelines-outsourcing-cloud-service-providers_en)
- Gumbi, L.N. and Mnkandla, E. (201), Investigating South African Vendors' cloud computing value proposition to small, medium and micro enterprises: a case of the City of Tshwane Metropolitan Municipality, *The African Journal of Information Systems*, 7(4), p.1.
- IBM Unveils Z15 With Industry-First Data Privacy Capabilities (2019), Communications Today Information Technology Industry Council: Tech Industry Welcomes Vote on NIS2 Directive, 2021, Oct 29, Targeted News Service.
- ITI Offers Recommendations for NIS2 Trilogue Negotiations (2022), Washington, DC.
- ITI: Tech Industry Welcomes Vote on NIS2 Directive (2021), Washington, DC.
- Ivan, T.R. and Ille, E.E. (2021), *Applying Multi-Criteria Decision-Making to the Technology Investment Decision-Making Process*, Acquisition Research Program.



- Jacuch, A. (2021), Comparative analysis of cybersecurity strategies. European Union strategy and policies. Polish and selected countries strategies, *Online Journal Modelling the New Europe*, 37, 102-120. <https://doi.org/10.24193/OJMNE.2021.37.06>
- Jain, P., Gyanchandani, M., and Khare, N. (2016), Big data privacy: a technological perspective and review, *Journal of Big Data*, 3(1), 1-25. <https://doi.org/10.1186/s40537-016-0059-y>
- Johnson, G. A., Shriver, S. K., and Goldberg, S. G. (2023), Privacy and market concentration: intended and unintended consequences of the GDPR, *Management Science*. <https://doi.org/10.1287/mnsc.2023.4709>
- King, W. R., and He, J. (2005), Understanding the role and methods of meta-analysis in IS research, *Communications of the Association for Information Systems*, 16(1), 32.
- Ko, S. Y., Jeon, K., and Morales, R. (2011), The HybrEx Model for Confidentiality and Privacy in Cloud Computing, *HotCloud*, 11, 8-8.
- Levy, Y., and Ellis, T. J. (2006), A systems approach to conduct an effective literature review in support of information systems research, *Informing Science*, 9.
- Machanavajjhala, A., Kifer, D., Gehrke, J., and Venkitasubramaniam, M. (2007), l-diversity: Privacy beyond k-anonymity, *ACM Transactions on Knowledge Discovery from Data (TKDD)*, 1(1), 3-es. DOI:10.1145/1217299.1217300
- Mahanan, W., Chaovalitwongse, W. A., and Natwichai, J. (2021), Data privacy preservation algorithm with k-anonymity, *World Wide Web*, 24, pp. 1551-1561.
- Meersman, M.W. (2019), *Developing a Cloud Computing Risk Assessment Instrument for Small to Medium Sized Enterprises: A Qualitative Case Study Using a Delphi Technique*, Doctoral dissertation, Northcentral University.
- Microsoft (2023a), Policy position paper EU cyber resilience act proposal. (n.d.), retrieved March 25, 2023, from <https://blogs.microsoft.com/Microsoft-Policy-Paper-Cyber-Resilience-Act-January-2023.pdf>
- Microsoft (2023b), provided a set of recommendations chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/<https://blogs.microsoft.com/wp-content/uploads/prod/sites/73/2023/02/Microsoft-Policy-Paper-Cyber-Resilience-Act-January-2023.pdf>
- Murgia, M., and Coulter, M. (2019), Blockbuster GDPR fines proves boost for cyber protection firms, *Financial Times*.
- Nauwelaerts, W. (2004), How EU Data Privacy Affects Due Diligence, *International Financial Law Review*, 23, 41.

- NIS 2 Directive (2023), retrieved from <https://www.nis-2-directive.com/> (Accessed: 26 February 2023).
- NIS2 is coming... What does it mean? (2022), retrieved 25 March 2023, from [https://www.splunk.com/en\\_us/blog/security/nis2-is-coming-what-does-it-mean.html](https://www.splunk.com/en_us/blog/security/nis2-is-coming-what-does-it-mean.html)
- Oracle (2023) *What is GRPR?* retrieved 14 April 2023, from <https://www.oracle.com/il-en/security/gdpr/>
- Paré, G., Trudel, M. C., Jaana, M., and Kitsiou, S. (2015), Synthesizing information systems knowledge: A typology of literature reviews, *Information & Management*, 52(2), 183-199.
- Perdereaux-Weekes, A. (2021), To Investigate the Impact of Data Privacy Regulation on Disclosure Decisions: Examining Consumers' Willingness to Share or Withhold Personal Identifiable Information in the Wake of GDPR, CCPA, and LGDP, St. Thomas University.
- Petersen, K., Vakkalanka, S., and Kuzniarz, L. (2015), Guidelines for conducting systematic mapping studies in software engineering: An update, *Information and software technology*, 64, 1-18.
- Phil's Stock World: Google Accused of Intentionally Breaking EU Data-Privacy Laws; YouTube Pays \$170M Fine For US Violations (2019). Newstex.
- Raghavan, A., Demircioglu, M. A., and Taeihagh, A. (2021), Public health innovation through cloud adoption: a comparative analysis of drivers and barriers in Japan, South Korea, and Singapore, *International Journal of Environmental Research and Public Health*, 18(1), 334.
- Rajamäki, J. (2021), Resilience Management Concept for Railways and Metro Cyber-Physical Systems, Academic Conferences International Limited. <https://doi.org/10.34190/EWS.21.074>
- Regulation (EU) 2022/2554 of the European Parliament and of the Council of 14 December 2022 on digital operational resilience for the financial sector and amending Regulations (EC) No 1060/2009, (EU) No 648/2012, (EU) No 600/2014, (EU) No 909/2014 and (EU) 2016/1011. <https://eur-lex.europa.eu/eli/reg/2022/2554/oj>
- Ross, W. (2018), EU data privacy laws are likely to create barriers to trade, *Financial Times*.
- Schmitz-Berndt, S., and Chiara, P. G. (2022), One step ahead: mapping the Italian and German cybersecurity laws against the proposal for a NIS2 directive, *International Cybersecurity Law Review*, 3(2), 289-311.
- Singh, N., and Singh, A. K. (2018), Data Privacy Protection Mechanisms in Cloud, *Data Science and Engineering*, 3(1), 24-39. <https://doi.org/10.1007/s41019-017-0046-0>
- Spasic, B., Boucart, N., and Thiran, P. (2019), Security Pattern for Cloud SaaS: From System and Data Security to Privacy Case Study in AWS and Azure, *Computers*, 8(2), 34. <https://doi.org/10.3390/computers8020034>

- Strengthening EU-Wide Cybersecurity and Resilience - Provisional Agreement by the Council and the European Parliament. (2022, May 14), Targeted News Service
- Taylor, C.M., Sr. (2018), *Identifying and Overcoming the Barriers to Cloud Adoption within the Government Space*, The George Washington University.
- Taylor, P. (2011), Privacy concerns slow cloud adoption, *Financial Times*.
- The Threat Report: February 2023, Trellix (2023), retrieved 2 April 2023, from <https://www.trellix.com/en-us/advanced-research-center/threat-reports/feb-2023.html>
- Tzanou, M. (2020), The future of EU data privacy law: towards a more egalitarian data privacy, *Journal of International and Comparative Law*, 7(2), pp. 449-469.
- Venkataramakrishnan, S. (2021), GDPR fines jump as EU regulators raise pressure on business, *Financial Times*.

## A systematic PRISMA review: transparency in reporting of economic entities

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### Abstract

*In the business environment, economic entities are aware of the importance of reporting transparency for them and their stakeholders. This study provides a comprehensive review of the topic of transparency, with the aim of identifying current research trends. PRISMA method ("Preferred Reporting Items for Systematic Reviews and Meta-Analyses") is used to analyze literature published since 1990 on "Scopus", "Web of Science" and "Google Scholar" platform. The study is based on a corpus of 125 articles. Our research found that very few literature review articles capture all aspects of transparency in reporting, leading us to believe that transparency in reporting is still a major challenge in accounting research. Transparency was studied at the level of the country, sector of activity or economic entity. It has also been strongly associated with the quality of reporting and influenced by the application of national or international standards of accounting, corporate governance and auditing.*

*Keywords:* transparency, disclosure, fair value, value relevance, reporting, accounting

### Introduction

The analysis of causes of bankruptcies of large US and European firms since the early 2000s concluded that improving transparency in reporting would be the solution to avoid such problems (Forssbaeck and Oxelheim, 2014). Thus, new codes of conduct and regulations have been introduced in many countries to ensure transparency, such as the "US Sarbanes-Oxley Act" (2002), the "EU Transparency Directive" (2004), the "OECD Principles of Corporate Governance" (2004) and "UK Corporate Governance Code" (2010). In most cases improving transparency in reporting has meant increasing the amount of information reported and less the quality of information reported. A good example is the "US Sarbanes-Oxley Act". Drahuschak (2006) argues that the "US Sarbanes-Oxley Act" was primarily aimed at improving transparency in reporting and imposed a number of detailed

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reporting obligations on companies, but Kuschnik (2008) considers that this law did not bring substantial changes in business practice.

The global adoption of the "International Financial Reporting Standards" (IFRS) principles in 2005 is another important step towards improving. Edeigba and Amenkhienan (2017) suggest that one of the factors that have favored the implementation of IFRS is the common perception that they enhance the comparability of accounting information, transparency, reliability, relevance, uniform measurement and valuation of assets and liabilities. Differences between accounting standards in different countries were seen as the main culprit for this lack of transparency. Armstrong *et al.* (2010) observed that the implementation of IFRS helps improve the quality, understanding of reported information and create a reporting system designed to achieve transparency, consistency and comparability in reporting. The convergence of accounting standards worldwide has shown that no matter how strict accounting standards are, some firms will continue to alter and manipulate the figures they report to financial markets. Laghi *et al.* (2012) argued that in the run-up to the 2008 crisis, users and preparers of financial reports considered fair value essential for transparent and relevant information. After the crisis period, more and more researchers are talking about the need to reintroduce historical cost valuation and use the principle of prudence, the fundamental concepts of conservative accounting.

In the "new economy" based on knowledge, intangible assets have become more important (Stewart 1997; Drucker 2002) and intellectual capital has become essential in value creation (Eustace, 2001). Thus, the question arose whether reporting according to the standards is still sufficient in the new economy (Nielsen, 2004). These changes, together with the changing business environment, have also changed user requirements for organizational communication. Transparency requirements have changed because traditional financial reporting is no longer sufficient (Nielsen, 2004). McEwen and Hunton (1999), as well as Holman (2002) argue that the solution may be a detailed description of the company and its rationale for creating value, rather than only financial information. This detailed description should include information about your company's identity, existing resources, role in society, etc. and be presented in an abbreviated, easy-to-understand format.

Forssbaeck and Oxelheim (2014) consider that the fast development of information technology can increase transparency. Technology and integrated systems can reduce barriers for a transparent reporting (Halabi, Alshehabi and Zakaria, 2019).

In this context, a study that systematically reviews the literature to reveal the evolution and current state of knowledge on transparency topic in entity reporting, with a focus on the interplay between transparency - fair view - information quality, as well as on identifying future research trends on this topic may prove useful. To this end, a systematic review of the literature was based on 125

articles published since 1990 on "Scopus", "Web of Science" and "Google Scholar" platforms, in order to understand how the phenomenon of transparency is perceived by the aforementioned articles' authors, the angles from which the issue of transparency in reporting is approached, the research methodology used for this purpose.

I believe that this study adds some knowledge to what already exists in the literature on this topic. Thus, from a theoretical perspective, the study is designed to furnish a comprehensive and up-to-date literature review of research trends on the topic of transparency. From a practical view, the results may be useful to managers who dealing with reports, who may benefit from ways of assessing transparency. Regulators should continue to monitor the findings and discussions of researchers on the subject of transparency of information in order to use them in the regulatory process.

Introduction of the paper presents the economic context that has generated interest in the topic of transparency in corporate reporting, and the first part captures from the literature some attempts to define the concept of transparency. The second part describes the research approach: the choice of methodology, the source of the information, the establishment of inclusion/exclusion criteria, the keywords used in the query, the process of selecting the articles. The results are presented in the third part of the study, and in the last part, the major conclusions and research shortcomings which are highlighted to identify new or less researched topics on transparency in reporting.

## 1. Literature review

The implementation of regulations on improving transparency in corporate reporting has generated increased academic interest in studying the phenomenon (definition, measurement, evaluation, identification of influencing factors). Ruiz-Lozano *et al.* (2021) consider the subject of transparency and credibility of disclosures is still a challenge.

Although the terms "corporate transparency" and "corporate transparency" are widely used in the literature, it is difficult to capture all that transparency means in a single definition, so there is no generally accepted definition of corporate transparency. Thus, Williams (2005) considered the concept volatile and imprecise. In the literature, this concept is associated with various aspects by the authors, as follows: Espinosa-Pizke (1999) - reporting accounting information to shareholders; Kaptein (2004) - principles of the relationship between company and stakeholders; Audi (2008) - the basis of confidence in business practices; Quaak, Aalbers and Goedee (2007) integrated corporate reporting.

The transparency of the financial statements was considered by Istianingsih, Trireksani and Manurung (2020) reliable, timely financial reporting that can be used as a key element of efficient financial management.

Changwony and Paterson (2019) consider transparency to be comprehensive, open, reliable, timely and relevant reporting. Transparency, as per Montes and da Cunha Lima (2018), is a manifestation of openness to society by offering financial information reliable, comprehensive, timely, understandable and internationally acceptable about its operations. Chau and Gray (2010) defined financial transparency as a system designed by management to regulate the enterprise and effectively manage financial resources, increase corporate value and obtain maximum return on shareholder investment. When it comes to the nature of transparency, this is a sensitive issue and there are several subtle levels of transparency that can be achieved (Biondi and Lapsley, 2014). Nielsen and Madsen (2009) consider that access to information can be considered as the main objective of transparency, and the availability of information as a minimum level of transparency. Hood and Heald (2006) express the challenge of moving beyond theoretical transparency to real transparency, where stakeholders can successfully process and use information. This is, as Winkler (2000) suggests the second level of transparency. In the opinion of Winkler (2000), transparency is best achieved if the disclosed phenomenon is understood at some level. A third level of transparency is reached when stakeholders have a high level of understanding about the disclosed phenomenon (Christensen, 2002). Certain authors link the disclosure of accounting information to transparency. Thus, Healey and Palepu (2001) considered that the companies report accounting information in order to facilitate the investment decision. The disclosure of financial information is a useful strategy in decreasing agency cost, as noted by Quintiliani (2018) and Van Buskirk (2012). Petersen and Rajan, (2002) suggests that reporting helps entities adapt to environment in which they operate and achieve targets established by stakeholders. In addition, transparency is considered to be very important (Barth and Schipper, 2008) in order to help creditors, attempt their own deductions about entity. Hutton (2007) argues that transparency could be a good tool to limit the growth of opportunistic managerial behaviours.

As previously stated, this article aims to investigate the research trends on transparency in reporting.

## 2. Methodology

A systematic literature review needs a rigorous methodology to ensure that all relevant articles are identified and a proper review procedure is followed (Dienes *et al.*, 2016). Hedin *et al.*, 2019 found that systematic literature review approach is widely used in the fields of finance, management

and economics. Hazaea *et al.* (2021b) argue that a systematic review can provide more unbiased findings. Systematic Literature Review (SLR) according to Webster and Watson (2002) is a comprehensive, unbiased technique and a transparent way of reviewing existing literature, which provides additional knowledge.

To achieve the research objective, we used the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) method related to systematic review techniques and meta-analyses. Using the PRISMA method according to Mengist, Soromessa and Legese, (2020) involves selecting the literature in three stages: identification, selection, inclusion.

In this study were used "Web of Science" (WoS) and "Scopus" databases. The Web of Science Core Collection is one of the world's leading research databases (Kamble *et al.*, 2018), giving access to records via the Clarivate Analytics core platform. Scopus is also a comprehensive database of abstracts and citations, academic literature from a wide variety of disciplines, contains over 26,000 titles, over 243,400 books published by over 7,000 publishers and provides an overview of research in different fields.

The search criteria used in the paper include the field of research, publication language, region, time of publication and kind of documents and literature included. In terms of time frame our research begins with papers published since 1987, the year when the term „transparency” was first used in writing, and culminates with the reference date of our study (March 2023).

Identifying the current state of knowledge on transparency in entity reporting is the main objective of our research, thus the term "*transparency*" is included in the key search terms. Barlev and Haddad (2010) consider that "full disclosure" and "transparency" complement each other, they represent quantitative and qualitative characteristics of the reported information.. Full disclosure is achieved when reported financial information includes all relevant facts, faithfully presents the economic activities of the entity and distributes them timely and equally to users. Transparency is achieved when users of the information can "see through" the reported numbers, get a view of the reasons behind economic events and assess whether the activities carried out are compatible with the entity's assumed objectives. Aksu associates the phenomenon of transparency with disclosure, regarding transparency as timeliness and quality of reporting financial information. These views in the literature justify the inclusion of '*disclosure*' as a key query word in the title of articles.

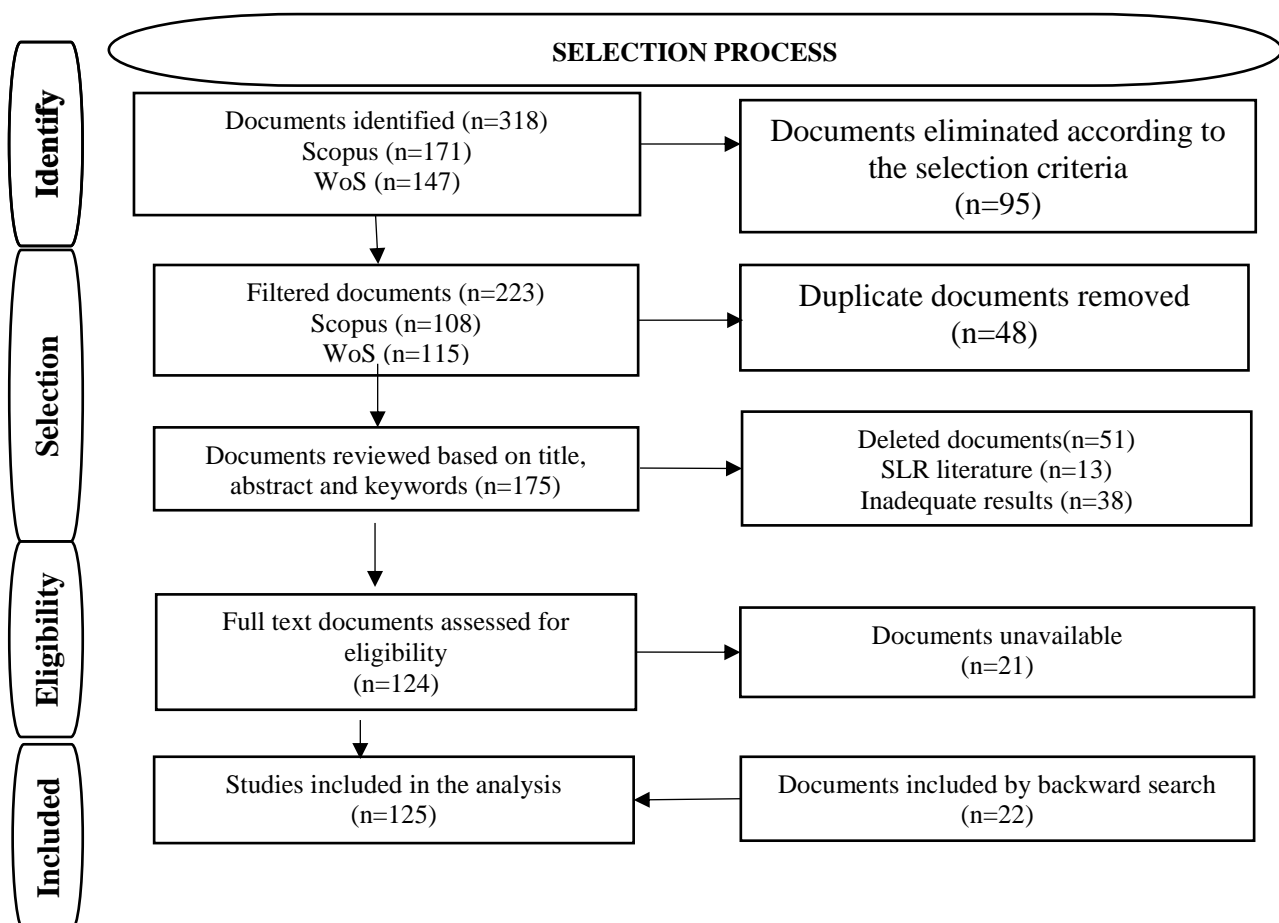
The combination of the keywords "*transparency*", "*disclosure*" and the disjunctive logical connector 'OR' was used in queries of the Scopus and WoS platforms in article titles. The combination of the keywords "*fair value*", "*value relevance*", "*accounting*", "*reporting*" and the disjunctive 'OR' logical connector was used in the search for the topic of the articles (title, abstract and keywords). The



database queries were limited in terms of publication date (after 1987). In line with the above-mentioned aspects, we designed and searching the following queries of the Scopus and WoS databases, resulting in a total of 318 papers.

I have filtered the articles obtained in the previous step to ensure a high degree of accuracy in my research. The previous query identified documents of different types, such as articles, conference reviews, proceedings papers or conference proceedings, books, editorials, book chapters, notes, reviews from different research areas. Our study only comprises articles published in journals or conference volumes. We also filtered the results according to the publication language (English), and according to the research area, ("Business", "Management and Accounting", "Economics", "Econometrics and Finance" and "Social Sciences"). Merging the two selections resulted in a total of 175 papers, as 48 papers were found in both databases, 95% of the total documents were articles published in journals and only 5% published in conference proceedings. After going through the identification, selection and inclusion steps (Figure 1) 125 studies remained to be examined and analysed in full text.

**Figure 1. Flow chart according to PRISMA**



Source: Moher *et al.*, 2009

The main findings of this study are included in the following two subsections. In the first subsection, the articles studied are analyzed descriptively in order to answer the following questions: What has been the evolution of research in accounting transparency over time? Which are the journals that have published the most papers on the subject of transparency? Who are the main authors who have addressed transparency in reporting? What is the theoretical underpinning in addressing the topic? In the second subsection, the content is analyzed to identify research trends on the topic of transparency in reporting.

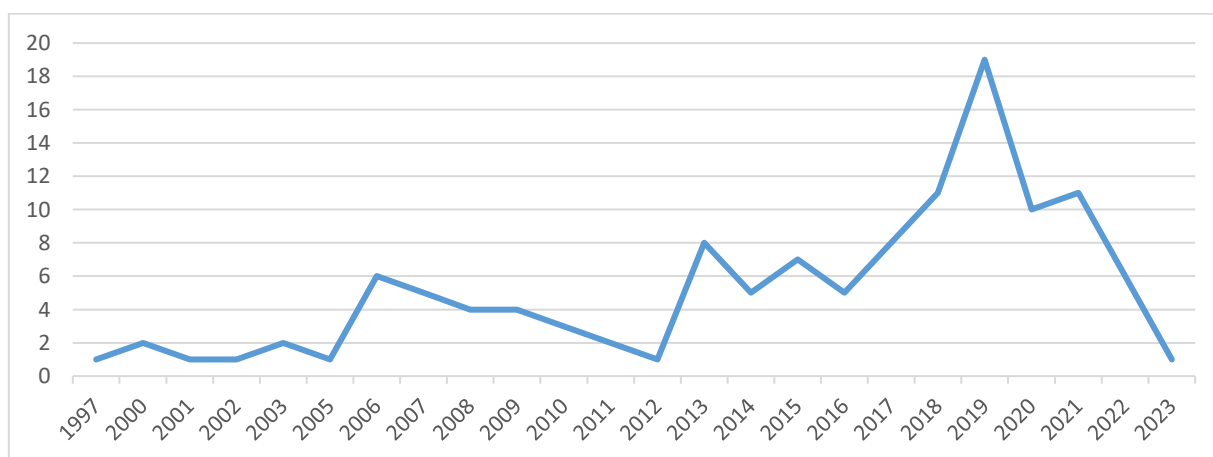
### 3. Results

#### 3.1. Descriptive analysis

In order to provide an overview of the research undertaken on the topic of transparency in entity reporting, articles were analyzed by publication year, most significant journals, most prolific authors and theoretical foundations used.

The 125 articles analysed are published between 1997 and 2023. We observed that the first paper on this topic was published in 1997, and up to 2017 a maximum of eight papers were published per year, notwithstanding several years where there was only one paper published (see 2001, 2002, 2005, 2012). Between 2018 and 2022, the annual number of papers on this topic varied between 10 and 19, with the exception of 2022, when 6 papers were published. There is a continuous increase, from 1 to 19 articles per year, but in 2022 there is a slight decrease in the number of papers published, which continues into the first three months of 2023, when only one paper was published. The chart showing the dynamic evolution of the number of works per year is shown in Figure 2.

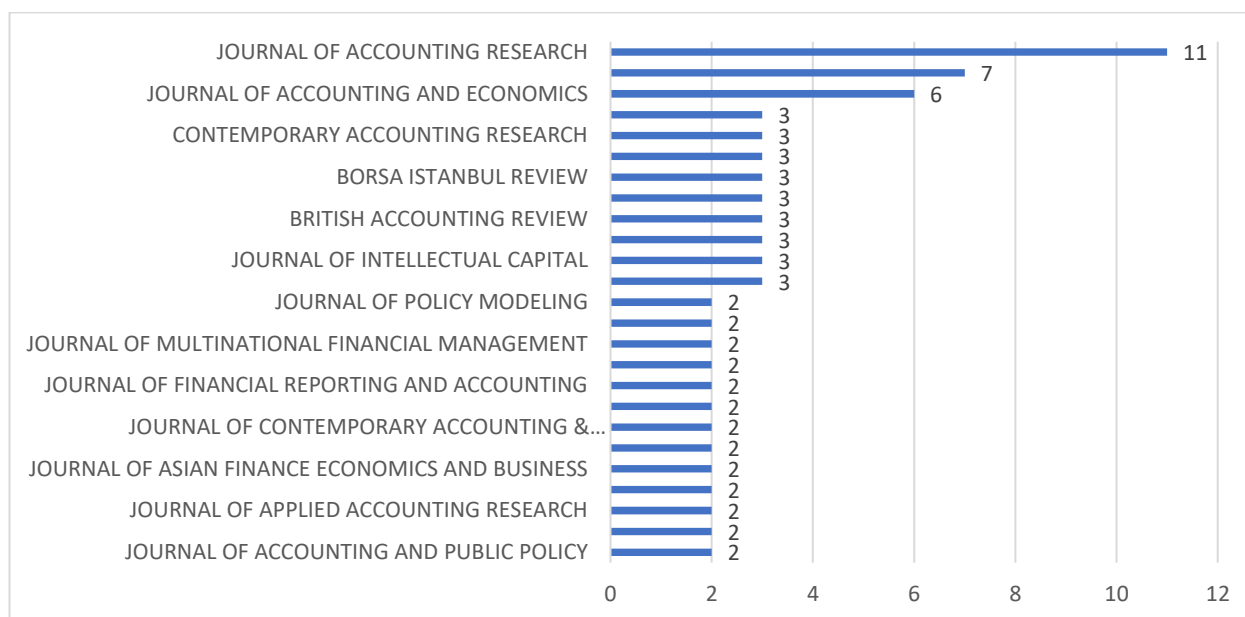
**Figure 2. Dynamic evolution of publications**



Source: Own processing

The reputation and quality of the journals in which one publishes has a significant influence on how researchers' value and utilize published articles in a specific field (Waltman, 2015). We analyzed the sample of articles to identify journals in which articles on transparency in entity reporting were published. We made a top list of publications with the highest number of articles on the subject, as shown in Figure 3.

**Figure 3. Relevant journals**

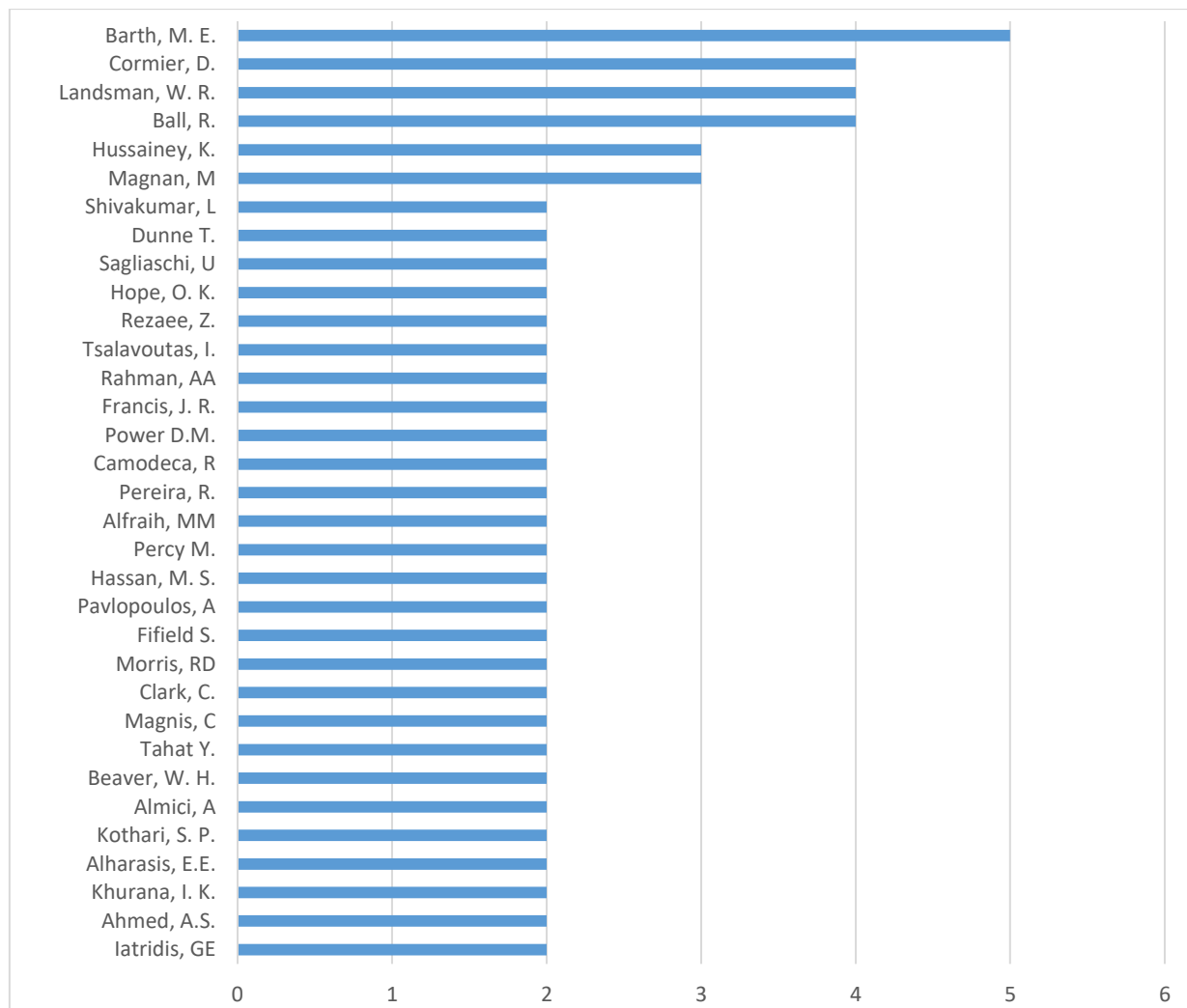


Source: Own processing

The analysis revealed that the "Journal of Accounting Research" has the most published papers (11), followed by "Accounting Review" with 7 papers and "Journal of Accounting and Economics" with 6 papers. All journals that have published on the topic of transparency are included in the ABDC (*Australian Business Deans Council*) top level ranking "A - A\*", only the journal *Asian Review of Accounting* is ranked medium level "B".

We ranked authors by the number of articles published individually or co-authored. The most prolific authors, as measured by the number of articles published, are reported in Figure 4. Only one author published 5 articles, three authors 4 articles, two authors 3 articles, twenty-seven authors 2 articles each. The remaining 259 authors published only one article. The author with 5 published Mary E. Barth articles is Joan E. Horngren, professor emeritus of accounting at the "Stanford Graduate School of Business" (GSB).

**Figure 4. Relevant authors**



Source: Own processing

Professor Mary Barth studied recognition versus disclosure, the relationship between the cost of capital and the quality of the reported information the quality of financial statements, the use of fair values in financial reporting, share-based compensation, asset revaluations, the informational roles of liabilities and cash flows and financial reporting and convergence issues.

Regarding the theoretical basis used in the reviewed articles, we found that most of them are based on the notion of information asymmetries and conflicts between insiders and outsiders. The authors used different economic theories clarifying the motivation of entities to give information. The theories used in the theoretical foundation are:

1. Agency theory promulgated by Jensen and Meckling (1976), according to which the board of directors is the agent of the stockholders and conduct business in their interests. Shareholders monitoring the managers' results into an agency cost, and managers provide greater transparency to mitigate the agency cost;

2. In his signalling theory, Trueman (1986) argues that entities attempt to differentiate themselves from their competitors in the marketplace, and providing more information than their competitors is one way to achieve this differentiation;

3. The theory of ownership and competition costs, that Verrecchia put forth (1983) asserts the existence of an ideal level of reporting and advises firms seeking wider disclosure that they must strike a balance between transparency and vulnerability;

4. Legitimacy theory requires economic entities to comply with society's rules in order to protect their business, accomplish their objectives and provide sustainable development (Milne and Patten, 2002). This theory is often used for explaining the environmental and social voluntary disclosure;

5. Political cost theory suggests that entities with political market visibility "tend to increase disclosure as a means of mitigating potential political costs" (Dey *et al.*, 2018);

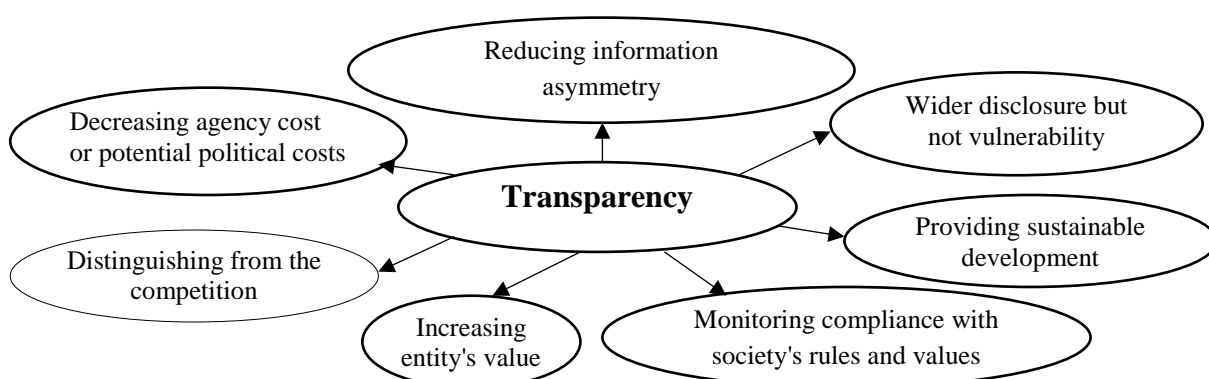
6. Share compensation theory, assumes that an entity chooses to provide more information to increase its value Aboody and Kasznik (2000);

7. The theory of the information economy assumes that any voluntarily reported information is the result of a management analysis of the benefits and costs generated to the entity by the publication of extra information;

8. Under stakeholder theory, disclosure of information by entities serves as a tool for addressing the specific information needs of various influential groups including shareholders, employees and investors, private sector, public agencies, consumers, etc. Gray *et al.* (1996) finds that managers, through the reported information, try to control and manipulate the majority of interested parties in order to obtain support or for their own survival.

Reverte (2016) notes that stakeholder pressure can improve transparency by reducing information asymmetry and investors can reward the entity through a high stock market valuation. The main conceptual frameworks relating transparency are presented in figure 5.

**Figure 5. The main conceptual frameworks**



Source: Own processing

### 3.2. Content analysis

Information asymmetry and conflicts between stakeholders lead to the requirement for financial information. "Transparent financial statements are reports that reveal the underlying events, transactions, judgments and estimates and their implications" (Pownall and Schipper, 1999, p. 262). "Transparency" has been used interchangeably with "quality". Some researchers have considered the quality of accounting information and of information disclosure as important factors in determining reporting quality. Kothari and Robin (2000) assessed quality as the recognition of economic income in accounting income. Accruals levels are used to assess quality, as noted by Bradshaw, Richardson, and Sloan (1999), dar Lang *et al.* (2003) found evidence of earnings manipulation and a powerful connection between earnings and stock prices. Renkas *et al.* (2015) studied the quality of financial reporting through two components: the quality of disclosure and the quality of information. The form and structure of financial information determines the quality of presentation, while the analyze of the explanatory notes to accounting information can be used to evaluate quality of provided information. IFRS compliance and non-financial information disclosure in a company's annual report are integral components of financial reporting quality.

Transparency of financial information is an important factor in achieving accounting globalization and in delivering economic benefits to the capital market. The subject has been studied at international/national, industry and entity level. Transparency on the microeconomic level promotes efficient investment, while on a macroeconomic scale, it facilitates effective use of limited resources. Francis *et al.* (2009) argue that corporate transparency improves a company's ability to access external financing at lower costs, contributes to better information on share prices and allows greater monitoring by external investors. The authors demonstrate through empirical evidence that corporate transparency improves resource allocation in all industries, even in weaker countries where institutions are less transparent. Only countries that are highly transparent have a connection between their growth opportunities and the subsequent real growth in real GDP per capita. Previous researches have been carried out to identify the determinants of the reporting quality in different countries, which are represented by external factors such as the political and legal environment. Aerts, Cormier and Magnan, (2007) concluded that the dissemination and use of information in capital markets is strongly affected by a country's political regime. The results obtained by Aerts *et al.* are consistent with previous research, according to Bushman *et al.* (2004), financial information transparency differs across countries due to political regimes. These factors represent both opportunities and threats to entities because they cannot be controlled. Financial and macroeconomic stability, prevailing growth prospects, and cultural and

geographic proximity to the foreign country are some of the many factors that influence and determine how investors evaluate specific outcomes of a foreign region and/or country (Joliet and Muller, 2016). According to Ball, Kothari and Robin (2000), the degree to which accounting earnings are influenced by politics differs across institutional contexts.

Analyzing the interpretations of the reporting quality, we have distinguished the following views in the literature:

- (1) Prudence and/or fair value are dimensions of accounting quality;
- (2) Management performance and stimulate profit reporting based on economic performance;
- (3) Quality investigation based on accruals level;
- (4) The measurement of compliance with accounting standards, known as disclosure quality, can

be done through qualitative-quantitative methods.

Quantitative methods can be used to evaluate these research dimensions since they are built upon measures taken from the main financial reporting elements, including profit and loss account, the statement of financial position, and cash flow statement.

Conservative accounting mitigates agency problems of delayed recognition of poor managerial decisions. Understanding the level of accounting conservatism provides an alternative for assessing how well companies' financial reports reflect governance and borrowing disclosure requirements. Historical cost accounting provides the manager with a "veil" to hide the company's performance (Bleck and Liu, 2007). Under historical cost accounting, the opaquer financial markets are, historically, asset prices have fallen more frequently and with greater intensity. An academic debate has focused on the adoption of fair value accounting, which raises questions about its reliability and whether it is useful or not. Managers may rely on estimates made due on economic incentives, making it difficult for them to provide objective and verifiable fair value estimates. The fair value approach is considered by Ball R. (2006) to be more applicable and less trustworthy to users than the historical cost approach. According to Ryan (2008), fair value accounting is believed to improve transparency by providing accurate estimates of fair values that reflect the current market situation. Those who disagree claim that fair values are inadequate and question their dependability due to market inefficiencies, financial issues and investor irrationality, as well as uncertain liquidity or management assumptions (Skoda and Gabrhel, 2015). There are two ways in which fair value manipulation can happen: through end-of-period trading to manipulate asset prices in markets with poor liquidity (Heaton, Lucas and McDonald, 2010) or by making subjective estimates about fair values without an establish market price (Benston, 2008).

Herring (2011) examined fair value method and its connection to financial stability. The author

asserts that the crisis cannot be compounded by fair value approach, but instead encourages researchers to examine the lack of comparability and transparency of financial statements.

The incentives given managers to manipulate fair value estimates resulted in a distortion of results, leading Watts (2003) to advocate for conservative accounting and reject fair value approach.

Accounting areas where argumentatively weak accounting can have a negative impact on transparency are: business combinations, related party disclosures, consolidation, financial instruments, foreign exchange, goodwill, risk reporting, intangible assets and intellectual capital. Fair value accounting influences the accounting for goodwill both at initial recognition and measurement and at the subsequent annual impairment test.

Hsu, Pourjalali, and Song (2018) used a measure of financial reporting transparency referring to fair value measurement information. The results indicate that greater transparency due to improved disclosures required by the accounting standards updates significantly reduces the risk of bankruptcy in the banking sector. Manganaris and colab. (2017) assessed the level of transparency in the banking sector and the impact of the 2008 crisis on the level of conservatism and timeliness in the banking sector. Timeliness is the measure of accounting income's compatibility with the economic income in the current period and the indicator for changes in the market value of equity. Conservatism, according to Basu (1997) is defined as the degree to which accounting income asymmetrically incorporates economic losses relative to economic earnings. Findings of the study indicate that earnings timeliness and conservatism increased after the onset of the crisis suggesting a change in bank accounting tactics in an attempt to increase transparency and therefore mitigate the negative consequences of the opacities that typically characterize this sector.

Hassan *et al.*, 2008 found that derivative financial instruments expose companies to many financial, operational and economic risks. Thus, a long-standing debate has emerged among stakeholders regarding the presentation, measurement and disclosure of financial instruments, which must comply with relevant financial standards (Bernhardt and colab., 2014). Ameer (2009), Hassan, Percy and Stewart (2006), Hassan *et al.* (2008), Ahmed, Kilic and Lobo (2006) examined the transparency of derivatives disclosures in the Australian, Malaysian and US equity markets. Hedging, settlement, and speculative accounting are the three accounting methods used to handle derivatives. If a derivative is used to hedge an existing transaction, asset or liability, it is accounted for in accordance with hedge accounting requirements, and if a derivative is used to change the nature of one financial instrument into another financial instrument (such as an interest rate swap that converts a floating rate liability into a fixed rate liability), it is accounted for in accordance with settlement accounting. Hassan, Percy and Stewart (2006) conclude that corporations and those with high price-



to-earnings and debt-to-equity ratios deliver more transparent information on derivatives. Ahmed, Kilic and Lobo (2006) suggested that the implementation of SFAS No. 133 has been successful in improving the transparency and the visibility of derivatives, but investors do not give equal attention to the amounts disclosed relative to the amounts recognized in the financial statements. Hassan *et al.* (2008) concluded that the ratio of debt to total assets, firm size and risk management committee are associated with the quality of disclosure of financial instruments, and the subsequent period is closely related to the quality of disclosure. Ameer (2009) found that the use of derivatives among firms increased steadily over the period analyzed, and the total value of derivatives used increased in line with profits, suggesting that increasing profits give firms confidence in using derivatives to protect against unforeseen market risks. Israel (2015) examined the accounting and disclosure of real estate investments, which enables companies to boost the book value of equity and current earnings. It has been found by research that managers can choose between recognition and disclosure, even if the amounts recorded or disclosed are of equal significance to financial performance. In the future, investors will weigh less publicly available information to determine value of entity.

Entities provide information through mandatory financial reports, including footnotes, management discussion and analysis. Accounting figures are reported through the balance sheet, profit and loss account to give a true and fair view of the company's financial situation, but may not be sufficient for users of the information. In addition to mandatory reporting some entities engage in voluntary disclosure activities such as corporate websites, social media analyst presentations, management forecasts, press releases, conference calls and other reports. Depending on the type of disclosure, studies can be divided into those investigating voluntary disclosures, mandatory disclosures or integrated reporting. Directive 2004/109/EC established transparency obligations on information reported by entities whose securities are admitted to trading on a regulated market. Voluntary reporting research has been extended to non-financial information. Financial reporting discloses the financial and economic status of firms, while non-financial reporting covers topics such as intellectual capital held, the company's impact on the environment and society in general, the measures taken to mitigate climate change, etc.

Mandatory reporting complemented by voluntary reporting can result in a growing problem known as disclosure overload, which affects financial reporting (Monga and Chasan, 2015) and which can affect the transparency of information reported to stakeholders. Cazier and Pfeiffer (2016) consider that much of this growth is not attributed to the increasing complexity in the underlying economics of entity operations. While disclosure overload is a concern and may be relevant to financial reporting users, there is limited empirical data on user types that consider reporting overload to be a problem.

Hope *et al.* (2013) compared the quality of financial reporting of listed and unlisted firms in the United States. The authors empirically proved that listed firms have on average significantly higher accrual accounting quality than unlisted firms and report more conservatively. The results show that listed entities are more conservative, but their conservatism decreases when they exceed earnings benchmarks, have lower leverage, or do not issue debt in the following year. Also, the higher conservatism of publicly traded firms is reduced in less litigious sectors, in these environments upward earnings manipulation is incentivized. Managers of listed entities often have a portion of their personal wealth tied directly to the firm's shares, which incentivizes them to maintain a high share price Morris *et al.* (2011) studied in the Malaysian context, corporate governance and transparency before and after the 1997/98 Asian financial crisis and found that at the most entities was significant shares controlled by families. Malaysian families have a culture of opacity for given information to outsiders. Kanapickiene *et al.* (2021) assessed the quality of accounting disclosure of tangible fixed assets in the annual financial statements of Lithuanian private companies and identified characteristics of these companies that affect the quality of accounting disclosures. Entity characteristics impacting the quality of accounting disclosure were found to be: size of the company and tangible assets with statistically significant positive impact, and debt repayment capacity, indebtedness and profitability of the company with statistically significant negative impact.

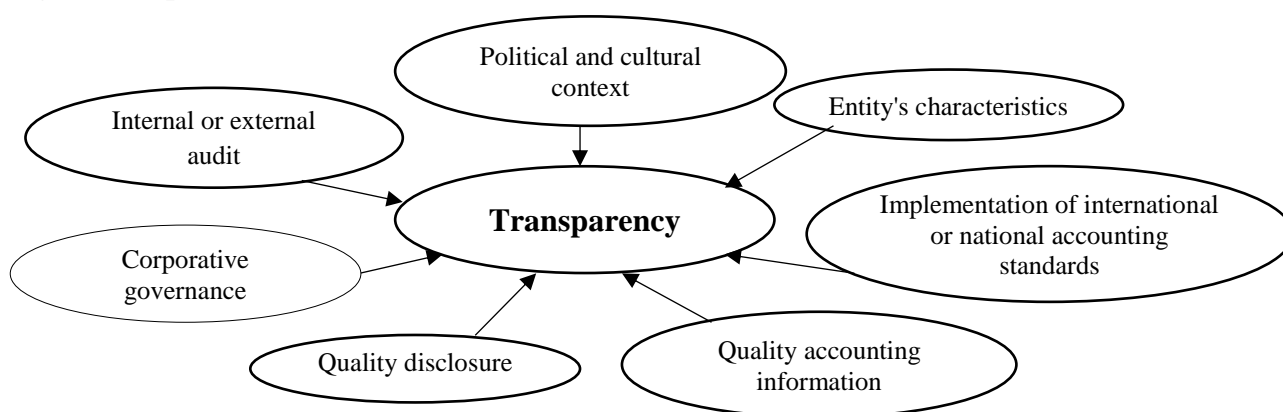
Another step towards improving transparency is the worldwide implementation of the "International Financial Reporting Standards" (IFRS) principles for corporate disclosure (2005). Various studies have been carried out in academia on the consequences of adopting IFRS and opinions have been formulated for and against the use of IFRS depending on the subject under investigation.

Baboukardos and Rimmel (2014) concluded that a highly transparent annual report appears to be an essential prerequisite for the relevance of accounting figures, at least in the case of mandatory goodwill disclosures, as they found that companies that do not comply with IFRS disclosure requirements suffer from a lack of relevance of their accounting figures. Ball, Li and Shivakumar (2015) find that financial reporting under IFRS has important limitations for debt contracting and possibly for contracting in general. The authors conclude that IFRS sacrifices the usefulness of debt contracting to achieve other objectives, such as providing valuation-relevant accounting information. Ahmed, Neel and Wang (2013) suggest that the application of IFRS has led to a decline in accounting quality. IFRS standards are principles-based without detailed implementation guidance and provide managers with more flexibility, so managerial decisions may result in lower accounting quality more than accounting changes covered by the new standards. Li *et al.* (2021) found that entities adopting

IFRS provide more detailed information from the time of IFRS application, such as more detailed disclosure of intangible assets and long-term investments on the balance sheet and greater detail of impairment, depreciation and non-operating income items in the income statement. The authors believe that the adoption of IFRS improves market liquidity and reduces information asymmetry, but does not affect audit fees.

The credibility and transparency of management reporting is enhanced by regulators, standard setters, auditors and other capital market intermediaries. Many studies suggest that managers intervene in the earnings reporting process by manipulating results as well as managing expectations to meet or exceed a market expectation. Managers' forecasts, whether negative or positive, can only have greater credibility through audit verification. The level of independent audit chosen by the entity affects both the accuracy, the degree of manipulation of reported financial results and therefore affects the ability of reported results to act as a complementary confirmatory mechanism that disciplines voluntary disclosure. Increasingly complex fair value measurements require high quality audit engagements, so auditors put more effort and time into determining compliance of financial statements and charge higher fees. At the same time, financial analysts are an external mechanism of corporate governance, externally monitoring managers and helping to detect misreporting. Consistent monitoring by analysts of entities' financial information should reduce the opacity of information by reducing the possibility of manipulation of results. Risk management, another dimension of corporate governance, identifies factors that may have negative consequences for the entity and establishes actions that can prevent or even minimize negative effects on the entity' value. Reporting on the existence of risk management and identified risk factors is relevant to investors because it indicates the magnitude of an entity's expected - possible and probable - losses and shows management's efforts to limit their expected negative effects. The factors which have an impact on transparency can be seen in Figure 6.

**Figure 6. Impact factors**



Source: Own processing

## Conclusion

Reporting transparency is still a big challenge in accounting research. The study revealed that so far, from the literature reviewed in Scopus and Web of Science databases, there is a small number of articles capturing all aspects of transparency in reporting, therefore the present work will be of high interest, as it will contribute to filling a gap in the literature.

Through this study I have aimed to provide a comprehensive review of the existing literature and of the latest research trends on the topic of transparency. Thus, several criteria have been followed in the selection of databases, such as research field, language of publication, geographical area, publication period and type of documents and literature used. The review highlighted the perspectives from which the issue of transparency in reporting is approached. Transparency was strongly associated with the quality of reporting and influenced by the application of national or international accounting, corporate governance and auditing standards. Transparency has been studied at country, sector or economic entity level. At the microeconomic level transparency ensures more efficient investment and at the macroeconomic level transparency will contribute to the efficient allocation of scarce resources. The determinants of transparency at country level are the political and legal environment, which create both opportunities and threats for entities because they are outside their control. Accounting areas likely to have a negative impact on transparency are: business combinations, related party disclosures, consolidation, financial instruments, foreign exchange, goodwill, risk reporting, intangible assets and intellectual capital. In order to obtain relevant financial information and better transparency/full disclosure of annual reports, but also to solve the inherent problems of the historical cost principle, the "International Accounting Standards Board" (IASB) has adopted the fair value method. However, applying fair value accounting increases the risk of manipulation in financial reporting as in some cases it is very difficult to accurately assess fair value. Managers' estimates can only have greater credibility through audit verification. Auditing allows clients to choose their auditor, varying levels of quality and effort. The level of independent audit chosen by the entity affects both the accuracy and the degree of manipulation of reported financial results.

The study considered research papers from the Scopus and WoS scientific databases that met the selection criteria for inclusion in the analysis. Therefore, articles published in other databases and which might bring to light some interesting issues were not included. Consequently, I include these issues under the heading of research limitations.

In the next stage of research, I will try to capture the transparency of reporting and the influence of corporate governance and auditing through an empirical study using mixed methods, as transparency has both qualitative and quantitative characteristics. Secondly, corporate transparency is

both an observable and empirically testable reality (by relating it to hypothesis-driving variables). Thirdly, transparency is a social reality with meaning that exists in the minds of managers involved in making decisions about whether and how to report.

## References

- Aboody, D. and Kasznik, R. (2000), CEO stock options awards and the timing of corporate voluntary disclosure, *Journal of Accounting and Economics*, 29(1), pp. 73-100.
- Aerts, W., Cormier, D. and Magnan, M. (2007), The association between web-based corporate performance disclosure and financial analyst behaviour under different governance regimes, *Corporate Governance: An International Review*, 15(6), pp.1301-1329.
- Ahmed, A. S., Kilic, E. and Lobo, G. J. (2006), Does recognition versus disclosure matter? Evidence from value - relevance of banks' recognized and disclosed derivative financial instruments, *The Accounting Review*, 81(3), pp.567-588.
- Ahmed, A. S., Neel, M. and Wang, D. (2013), Does mandatory adoption of IFRS improve accounting quality? Preliminary evidence, *Contemporary accounting research*, 30(4), pp. 1344-1372.
- Aksu, M. and Kosedag, A. (2006), Transparency and disclosure scores and their determinants in the Istanbul Stock Exchange, *Corporate Governance: An International Review*, 14(4), pp. 277-296.
- Ameer, R. (2009), Value-relevance of foreign-exchange and interest-rate derivatives disclosure: The case of Malaysian firms, *The Journal of Risk Finance*, 10(1), pp. 78-90.
- Armstrong, C. S., Barth, M. E., Jagolinzer, A. D. and Riedl, E. J. (2010), Market reaction to the adoption of IFRS in Europe, *The accounting review*, 85(1), pp. 31-61.
- Baboukardos, D. and Rimmel, G. (2014), Goodwill under IFRS: Relevance and disclosures in an unfavorable environment, *Accounting Forum*, 38(1), pp. 1-17.
- Ball, R. (2006), International Financial Reporting Standards (IFRS): pros and cons for investors, *Accounting and business research*, 36(sup1), pp.5-27.
- Ball, R., Kothari, S. P. and Robin, A. (2000), The effect of international institutional factors on properties of accounting earnings, *Journal of accounting and economics*, 29(1), pp. 1-51.
- Ball, R., Li, X. and Shivakumar, L. (2015), Contractibility and transparency of financial statement information prepared under IFRS: Evidence from debt contracts around IFRS adoption, *Journal of Accounting Research*, 53(5), pp. 915-963.
- Barlev, B., Haddad, J. R. (2010), Information asymmetry, transparency and the conceptual framework, *International Journal of Economics and Accounting*, 1(1-2), pp. 22-45

- Barth, M. E. and Schipper, K. (2008), Financial reporting transparency, *Journal of Accounting, Auditing and Finance*, 23(2), pp.173-190.
- Basu, S. (1997), The conservatism principle and the asymmetric timeliness of earnings, *Journal of Accounting and Economics*, 24, pp.3-37.
- Benston, G. J. (2008), The shortcomings of fair-value accounting described in SFAS 157, *Journal of accounting and public policy*, 27(2), pp. 101-114.
- Bernhardt, T., Erlinger, D. and Unterrainer, L. (2014), IFRS 9: The new rules for hedge accounting from the risk management's perspective, *ACRN Journal of Finance and Risk Perspectives*, 3(3), pp. 53-66.
- Biondi, L. and Lapsley, I. (2014), Accounting, transparency and governance: the heritage assets problem, *Qualitative Research in Accounting and Management*, 11(2), pp.146-164.
- Bleck, A. and Liu, X. (2007), Market transparency and the accounting regime, *Journal of accounting research*, 45(2), pp.229-256.
- Bontis, N. (2001), Assessing Knowledge Assets: A review of the Models Used to Measure Intellectual Capital, *International Journal of Management Reviews*, Vol. 3, No. 1, pp.41-60.
- Bradshaw, M. T., Richardson, S. A. and Sloan, R. G. (1999), Earnings quality and financial reporting credibility: an empirical investigation, SSRN 170558.
- Cazier, R. A. and Pfeiffer, R. (2016), Why are 10-Ks so long? *Accounting Horizons* 30 (1), pp.1-21.
- Changwony, F. K., and Paterson, A. S. (2019), Accounting practice, fiscal decentralization and corruption, *The British Accounting Review*, 51(5), 100834. <https://doi.org/10.1016/j.bar.2019.04.003>
- Chau, G. and Gray, S. J. (2010), Family ownership, board independence and voluntary disclosure: Evidence from Hong Kong, *Journal of International Accounting, Auditing and Taxation*, 19(2), pp. 93-109.
- Christensen, L. (2002), Corporate communication: the challenge of transparency", *Corporate Communications: An International Journal*, 7 (3), pp.162-168.
- Dey, R. K., Hossain, S. Z. and Rezaee, Z. (2018), Financial Risk Disclosure and Financial Attributes among Publicly Traded Manufacturing Companies: Evidence from Bangladesh, *Journal of Risk and Financial Management*, 11(3), 50.
- Dienes, D., Sassen, R. and Fischer, J. (2016), What are the drivers of sustainability reporting? A systematic review, *Sustainability Accounting, Management and Policy Journal*, 7(2), pp.154-189. <https://doi.org/10.1108/SAMPJ-08-2014-0050>
- Drahuschak, G. M. (2006), Investor protection act had its consequences, *Pittsburgh Tribune-Review*.
- Drucker, P. (2002), *Managing in the Next Society*, Oxford: Butterworth-Heinemann.

- Edeigba, J. and Amenkhienan, F. (2017), The influence of IFRS adoption on corporate transparency and accountability: Evidence from New Zealand, *Australasian Accounting, Business and Finance Journal*, 11(3), pp.3-19.
- Espinosa-Pizke, M. (1999), Business ethics and accounting information. An analysis of the Spanish code of best practice, *Journal of Business Ethics*, 22(3), pp.249-259.
- Eustace, C. (2001), *The Intangible Economy: Impact and Policy Issues*. EU Commission: Report of the High Level Expert Group on the Intangible Economy.
- Forssbaeck, J. and Oxelheim, L. (2014), The multifaceted concept of transparency, *The Oxford handbook of economic and institutional transparency*, pp. 3-30.
- Francis, J. R., Huang, S., Khurana, I. K. and Pereira, R. (2009), Does corporate transparency contribute to efficient resource allocation? *Journal of Accounting Research*, 47(4), pp. 943-989.
- Gray, R., Owen, D. and Adams, C. (1996), *Accounting & accountability: changes and challenges in corporate social and environmental reporting*, Prentice hall.
- Halabi, H., Alshehabi, A. and Zakaria, I. (2019), Informal institutions and managers' earnings management choices: Evidence from IFRS-adopting countries, *Journal of Contemporary Accounting and Economics*, 15(3), pp.100-162.
- Hassan, M. S., Mohd-Saleh, N. and Che Abdul Rahman, M. R. (2008), Determinant of financial instruments disclosure quality among listed firms in Malaysia, SSRN 1157788, 8.
- Hassan, M. S., Percy, M. and Stewart, J. (2006), The value relevance of fair value disclosures in Australian firms in the extractive industries, *Asian Academy of Management Journal of Accounting and Finance*, 2(1), pp.41-61.
- Hazaea, S. A., Zhu, J., Al-Matari, E. M., Senan, N. A. M., Khatib, S. F. and Ullah, S. (2021), Mapping of internal audit research in China: A systematic literature review and future research agenda, *Cogent Business and Management*, 8(1), 1938351
- Healy, P. M. and Palepu, K. G. (2001), Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature, *Journal of accounting and economics*, 31(1-3), pp.405-440.
- Heaton, J. C., Lucas, D. and McDonald, R. L. (2010), Is mark-to-market accounting destabilizing? Analysis and implications for policy, *Journal of Monetary Economics*, 57(1), pp. 64-75.
- Hedin, B., Katzeff, C., Eriksson, E. and Pargman, D. (2019), A systematic review of digital behaviour change interventions for more sustainable food consumption, *Sustainability*, 11(9), 2368. doi:<https://doi.org/10.3390/su11092638>

- Herring, R. J. (2011), Fair value accounting, disclosure and financial stability: does how we keep score influence how the game is played?, Working Papers 11-72, University of Pennsylvania, Wharton School, Weiss Center.
- Holman, R. (2002). The Annual Report of the Future, *CrossCurrents*, No. 3, pp.4-9.
- Hood, C. and Heald, D. (2006), Beyond exchanging first principles? Some closing comments, 135, pp. 211-22, Oxford University Press.
- Hope, O. K., Thomas, W. B. and Vyas, D. (2013), Financial reporting quality of US private and public firms, *The Accounting Review*, 88(5), 1715-1742.
- Hsu, A. W., Pourjalali, H. and Song, Y. J. (2018), Fair value disclosures and crash risk, *Journal of Contemporary Accounting & Economics*, 14(3), pp.358-372.
- Hutton, A. P. (2007), A discussion of 'corporate disclosure by family firms', *Journal of Accounting and Economics*, 44(1-2), pp.287-297.
- Israeli, D. (2015), Recognition versus disclosure: evidence from fair value of investment property, *Review of Accounting Studies*, 20, pp.1457-1503.
- Istianingsih, Trireksani, T. and Manurung, D. T. (2020), The impact of corporate social responsibility disclosure on the future earnings response coefficient (ASEAN banking analysis), *Sustainability*, 12(22), 9671.
- Jenson, M. and Meckling, W. (1976), Theory of the firm: Managerial behavior, agency costs and ownership structure, *Journal of Financial Economics*, 3(4), pp.305–360.
- Joliet, R. and Muller, A. (2016), Are foreign earnings disclosures value-relevant?: Disaggregation solves the puzzle, *Research in International Business and Finance*, 37, pp. 170-183.
- Kamble, S. S., Gunasekaran, A. and Gawankar, S. A. (2018), Sustainable Industry 4.0 framework: A systematic literature review identifying the current trends and future perspectives, *Process safety and environmental protection*, 117, pp. 408-425.
- Kanapickiene, R., Keliuotyte-Staniuleniene, G. and Teresiene, D. (2021), Disclosure of non-current tangible assets information in private sector entities financial statements: The case of Lithuania, *Economies*, 9(2), 78
- Kaptein, M. (2004), Business codes of multinational firms: What do they say? *Journal of Business Ethics*, 50(1), pp.13-31.
- Kothari, S. P. (2000), The role of financial reporting in reducing financial risks in the market, *Conference Series-Federal Reserve Bank of Boston*, 44, pp. 89-102, Boston: Federal Reserve Bank of Boston.



- Kuschnick, B. (2008), The Sarbanes Oxley Act: Big Brother is Watching You or Adequate Measures of Corporate Governance Regulation, *Rutgers Bus. LJ*, 5, 64.
- Laghi, E., Pucci, S., Tutino, M. and Di Marcantonio, M. (2012), Fair Value Hierarchy in Financial Instruments Disclosure-Is There Transparency for Investors? Evidence from the Banking Industry, *Journal of Governance and Regulation*, 1(4).
- Lang, M., Raedy, J. and Yetman, M. (2003), How representative are firms that are cross-listed in the United States? An analysis of accounting quality, *Journal of Accounting Research*, 41(2), pp.363-386.
- Li, B., Siciliano, G., Venkatachalam, M., Naranjo, P. and Verdi, R. S. (2021), Economic consequences of IFRS adoption: The role of changes in disclosure quality, *Contemporary Accounting Research*, 38(1), pp.129-179.
- Manganaris, P., Beccalli, E. and Dimitropoulos, P. (2017), Bank transparency and the crisis, *The British Accounting Review*, 49(2), pp. 121-137.
- McEwen, R. and Hunton, J. (1999), Is Analyst Forecast Accuracy Associated With Accounting Information Use? *Accounting Horizons*, 13(1), pp.1-16.
- Mengist, W., Soromessa, T. and Legese, G. (2020), Method for conducting Systematic Literature review and Meta-Analysis for Environment Science Reserch, *MethodsX*.
- Milne, M. and Patten, D. (2002), Securing organizational legitimacy: An experimental decision case examining the impact of environmental disclosures, *Accounting, Auditing & Accountability Journal*, 15 (3), pp.372-405.
- Monga, V. and Chasan, E. (2015, June 1), The 109,894-word annual report, *Wall Street Journal*.
- Morris, R. D., Pham, T. A. and Gray, S. J. (2011), The value relevance of transparency and corporate governance in Malaysia before and after the Asian financial crisis, *Abacus*, 47(2), pp.205-233.
- Nielsen, C. (2004), *Business reporting: how transparency becomes a justification mechanism*, University of Aarhus, Aarhus School of Business, Department of Business Studies.
- Nielsen, C. and Madsen, M. T. (2009), Discourses of transparency in the intellectual capital reporting debate: Moving from generic reporting models to management defined information, *Critical Perspectives on Accounting*, 20(7), pp.847-854.
- Petersen, M. A. and Rajan, R. G. (2002), Does distance still matter? The information revolution in small business lending, *The journal of Finance*, 57(6), pp.2533-2570.
- Pownall, G. and Schipper, K. (1999), Implications of accounting research for the SEC's consideration of International Accounting Standards for US securities offerings, *Accounting Horizons*, 13(3), pp.259-280.
- Quaak, L., Aalbers, T. and Goedee, J. (2007), Transparency of corporate social responsibility in Dutch breweries, *Journal of Business Ethics*, 76(3), pp.293-308.

- Quintiliani, A. (2018), Determinants of Corporate Financial Disclosures: An Empirical Analysis of Family and Non-Family Small and Medium-Sized Enterprises, *Research Journal of Finance and Accounting*, 9(6), pp.44-52.
- Renkas, J., Goncharenko, O. and Lukianets, O. (2015), Quality of financial reporting: approaches to measuring, *International Journal of Accounting and Economics Studies*, 4(1), pp.1-5.
- Reverte, C. (2016), Corporate social responsibility disclosure and market valuation: evidence from Spanish listed firms, *Review of Managerial Science*, 10, pp.411-435.
- Ruiz-Lozano, M., De Vicente-Lama, M., Tirado-Valencia, P. and Cordobés-Madueño, M. (2021), The disclosure of the materiality process in sustainability reporting by Spanish state-owned enterprises, *Accounting, Auditing and Accountability Journal*, 35 (2), pp.385-412.
- Ryan, S. G. (2008), Accounting in and for the subprime crisis, *The accounting review*, 83(6), pp. 1605-1638.
- Skoda, M. and Gabrhel, W. (2015), Fair value accounting after times of financial crisis, *Intational Business Management* 9(5), pp.676-684.
- Stewart, T. (1997), *Intellectual Capital*. London: Nicolas Brealey Publishing, London: Nicolas Brealey Publishing.
- Trueman, B. (1986), Why do managers voluntarily release earnings forecasts?, *Journal of Accounting and Economics*, 8(1), pp.53–72.
- Van Buskirk, A. (2012), Disclosure frequency and information asymmetry, *Review of Quantitative Finance and Accounting*, 38, pp. 411-440.
- Verrecchia, R. E. (1983), Discretionary disclosure, *Journal of Accounting and Economics*, 5(1), pp. 179–194.
- Waltman, L. (2015), A review of the literature on citation impact indicators, *Journal of Informetrics*, 10, pp. 365-391.
- Watts, R. (2003), Conservatism in Accounting Part I: Explanations and Implications, *Accounting Horizons* 17, pp.207-221.
- Webster, J. and Watson, R. (2002), Analyzing the past to prepare for the future: writing a literaturereview reproduced with permission of the copyright owner, *MIS Quarterly*, 26 (2), pp.13-23. doi.org/10.2307/4132319
- Williams, C. (2005), Trust diffusion: the effect of interpersonal trust on structure, function and organizational transparency, *Business and Society*, 44, pp.357-368.
- Winkler, B. (2000), Which kind of transparency? On the need for clarity in monetary policy, *European Central Bank Working Paper Series*, Working Paper No. 26, ECB.

## Structural transformation, trade and development: Georgia in comparative perspective

Lela JAMAGIDZE\*

### Abstract

*The goal of the present paper is to analyze changes in the compositional structures of Georgia's economy, explore the related qualitative transformations and explain implications for trade and development. By comparing the evidence of several European countries, we put Georgia's structural changes within a broader regional-level context. We rely on two key measures of structural transformation: sector employment shares in total employment and sector value-added shares disaggregated at the industry level. To explain trade implications, structural transformation indicators across exporting sectors are evaluated. The existing divides between structural transformation of Georgia and that of the Eastern European economies reveal those structural risks that can negatively affect regional positions of Georgia and its long-term economic development.*

**Keywords:** structural transformation, trade, economic development, Georgia, transition economies, Eastern European economies

### Introduction

Structural transformation is an essential element of economic growth and development. Sector-specific nature of growth is shown by economic scholars like Nurkse (1953), Lewis (1954), Prebisch (1949), Chenery (1960, 1979), etc. They characterized the development process as an increase in the industry's share in GDP. Although industry and manufacturing continue to remain important sectors, contemporary development patterns exhibit an increasing share of services both in terms of GDP and employment. The idea behind sectorial changes and structural transformation, which is key to the development process, lies in the shifts of production factors from lower- to higher-productivity activities (Tregenna, 2015). As concluded by Duarte and Restuccia (2010), any lag in structural transformation is systematically related to the level of development of the country.

Just like in the developed countries, the share of the broad economic sectors (agriculture, manufacturing, and services) in value-added and employment has undergone a significant

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transformation in the post-socialist economies (Eastern European economies and post-Soviet economies). These countries represent a specific group from a development studies perspective. Due to their former planned economic system and fundamental structural reforms undertaken by them, they are characterized by specific development paths and scenarios. Despite this, as mentioned by Gevorkyan (2018), countries of Eastern Europe and Post-Soviet economies are "great unknowns" to contemporary economic development studies. Therefore, the analysis of their structural transformation patterns can be an important aspect of understanding their economic development processes.

Studies that explore structural transformation issues in transition economies involve Landesmann's (2000) analysis of structural change in transition economies in 1898-1999. Libman (2008) has done research on the structural transformation of Kazakhstan and in the case of Moldova. Havlik, Leitner, and Stehrer (2012) analyze the interrelationships of growth and structural change in East European countries. Cerovic *et al.* (2014) show that the most important change in transitional countries concerns the share of industrial output in GDP, which is found to be one of the most important factors of growth after the initial phase of reforms. Comunale and Felice (2019) assess trade-related determinants of structural change covering several East European transition economies. Havlik (2015) conducted a shift-share analysis of CEECs' economies for the period from 1995 to 2011 and revealed a distinct North-South pattern of growth: manufacturing and trade have driven growth in the North, while there has been much less structural change in the South. Stojcic *et al.* (2019) investigated the determinants of structural and productive transformation and showed a decline in manufacturing employment with a simultaneous increase in the value-added share of manufacturing, which indicates productive transformation towards high-technology-intensive activities.

The goal of the present paper is to provide a comparative analysis of structural transformation in Georgia and selected East European economies. Justifications for such an analysis are as follows: for one thing, these countries have a common experience of planned economies and they all have made huge economic, political, and institutional reforms to build functioning market economic systems. Understanding the compositional structures of their economies can show to what extent those reforms have contributed to improved resource allocation from low to high productivity activities; another reason is that East European countries have had significant progress in catching up with the advanced economies and understanding their experience as well as lessons learned can be valuable for the understanding of Georgia's catching up with pairs in the region, on the one hand, and with more advanced countries on the other. Last but not least is the need to understand the implications of the structural transformation patterns that are being formed in Eastern Europe and the

related economic development issues (such as middle-income traps, technological and structural traps, etc.) which are emphasized by recent studies.

The paper is organized as follows: the first part gives an analysis of the sectorial composition of the economies of Georgia and selected Eastern European economies based on employment shares and value-added shares of the sectors. The second part discusses structural transformation issues from a trade integration perspective. The exporting and importing sector performance indicators and global value chain participation indicators are analyzed. The final part of the paper gives the main findings, conclusions, and questions for future research.

## **1. Sectorial composition and implications for development: Georgia and the Eastern European economies**

In Post-Soviet period, during the early transition towards market economy Georgia experienced a large-scale deindustrialization and reliance on agriculture as a source of employment and production. The responsive measures involved structural reforms, economic deregulation and liberalization, including openness to foreign trade and investments. As a result, the macroeconomic conditions improved and there was a progress in welfare level. From 2011 to 2020 the country maintained stable economic growth, which accounted for 4% average annually. After the COVID-19 pandemic, Georgia managed to recover quickly and demonstrated 10.4% growth rate in 2021. The benefits of growth have been translated into improved welfare indicators. GNI per capita has been increasing each year, reaching 5,620 US dollars in 2022. According to the World Bank estimations, the poverty rate measured by the international upper-middle-income line (US\$5.50 per capita per day, 2011 purchasing power parity) declined from 59% in 2011 to 42% in 2021. The absolute poverty rate also decreased by 1.9% and equaled to 15.6% in 2022.

Georgia is highly dependent on external trade. Trade openness and increased integration into regional markets has been supportive to its export growth. However structural constraints of the economy have been displayed in trade patterns. The prevalence of primary products in exports and manufactured goods in imports indicates that lack of diversification of the economy is a persistent issue. Georgia's policy is also open and supportive to foreign direct investments (FDI), but the overall effectiveness of the inward FDI in terms of export orientation, productivity growth and job creation raises doubts, because mostly they are directed to non-tradable sectors. Services play a significant role in exports and it makes a positive contribution to growth. Travel and transport take 90% of total services export. Telecommunications and financial services are also dynamic sectors of the economy.

Georgia's current structural reforms are predominantly determined by its aspirations to get EU candidacy status.

The Eastern European member states of the EU have been one of the best-performing parts of the global economy for the past 20 years, and they achieved impressive catch-up with developed Europe. This was supported by structural reforms as part of the EU accession process, and a deep integration into global value chains (GVCs). The Czech Republic and Slovenia now even surpass several pre-2004 EU member states in their GDP per capita levels (Grieverson *et al.*, 2021).

**Table 1. Economic structure, Eastern European countries, 2021 (sector contribution to GDP growth, %)**

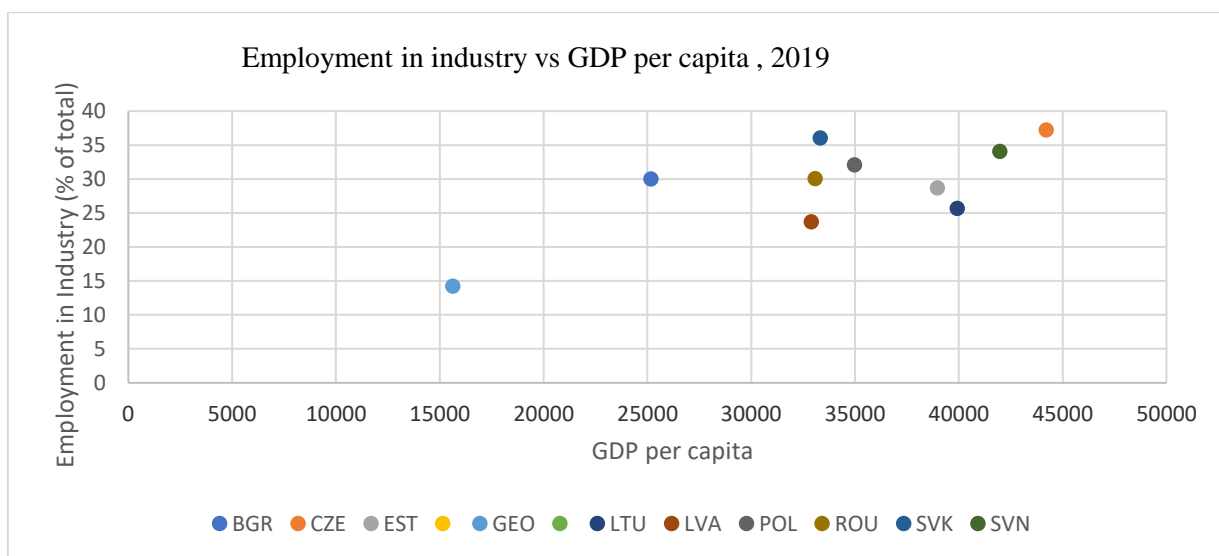
Country	Agriculture	Industry	Finance and Business Services	Trade, Transport, Hospitality and communication services
Bulgaria	5.0	20.0	22.5	30.9
Czech Republic	2.0	27.7	20.8	24.8
Estonia	2.3	19.7	24.8	28.1
Georgia	7.4	17.0	18.5	28.6
Latvia	4.8	17.2	22.5	29.2
Lithuania	3.7	21.1	17.1	33.2
Moldova	12.3	14.7	15.0	29.8
Poland	2.6	25.9	18.3	28.9
Romania	5.0	22.7	19.3	27.6
Slovak Republic	2.0	27.0	23.1	22.5
Slovenia	1.9	26.2	21.0	24.3

Source: UN Economic Commission for Europe

The data in Table 1 shows the difference in the economic structures of the EU member and non-member Eastern European states. During the transition process the EU members have reduced their structural divide with the advanced economies by increasing the shares of industry and services and reducing the share of agriculture in GDP. Unlike them, non-EU countries, such as Georgia and Moldova are to a larger extent dependent on agriculture as a contributor to GDP. Georgia's industry contribution to GDP was also lower compared to other EE countries in 2021, while services give more promising picture in terms of sector contribution to GDP and employment. It is noteworthy that in Georgia services are very dynamic, but the output is concentrated in less skill and technology-intensive activities, such as trade, internal transport, and hotels. According to the official statistics of Georgia, in 2022 wholesale and retail trade and repair services created the largest output in absolute terms - 15,499.9 million GEL at current prices, the second largest sub-sector was transportation and storage with the output of 8161.09 million GEL.

As a rule, economic development course implies a declining share of employment in agriculture, a hump-shaped share in manufacturing, and a rising share in services. EE countries follow the same path. In Georgia, such a development-oriented pattern of structural transformation emerged in the middle of the 2000s. Figures 1 and 2 represent industry and services employment shares in Georgia and selected Eastern European (EE) economies in comparison to their GDP per capita levels in 2019. As shown, Georgia represents an outlier with its lowest industry employment indicator mixed with the lowest per capita GDP.

**Figure 1. Industry employment shares in Eastern European countries, 2019**

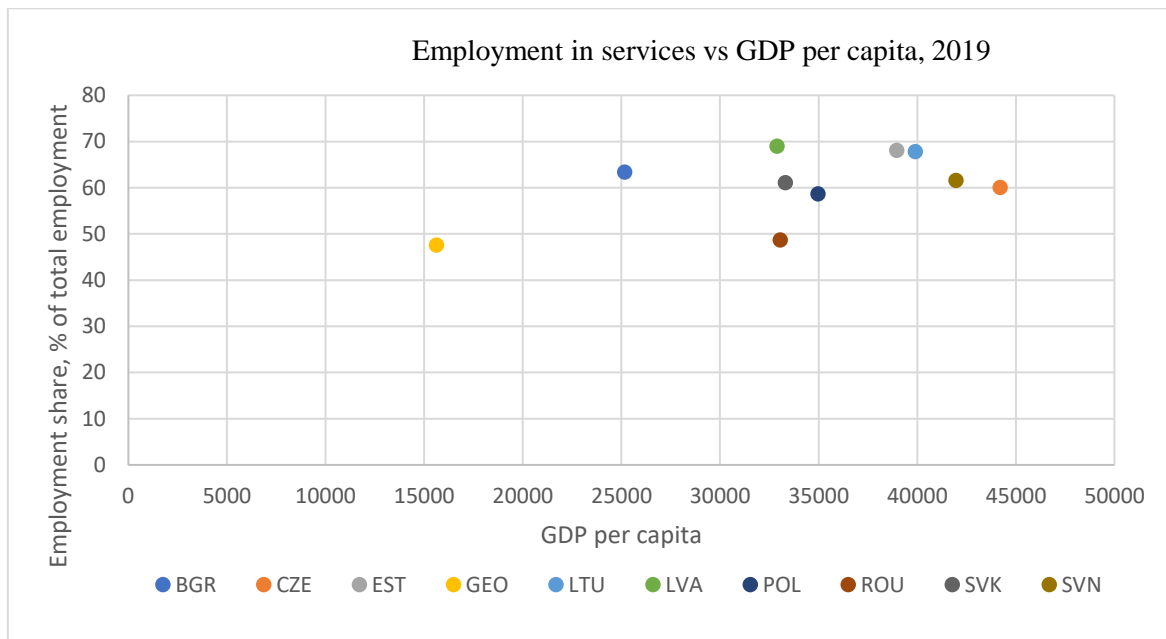


Source: World Bank Development Indicators

The employment share of agriculture has been on a downward trend since 2005. According to World Bank World Development Indicators it fell by 14%, from the level of 55% to 41% of total employment in 2021. Agricultural employment is disproportionately high compared to the sector contribution to total output, which was around 7% of the GDP. Among other EE countries, Romania has a relatively high 19% share of agricultural employment. It is followed by Poland with 10% share, while Slovakia, Czech Republic and Estonia have the lowest shares around 3% of total employment. In EE countries the declining trend of agriculture emerged earlier than in Georgia (back in the 1990s). Market-oriented transition together with the EU membership perspective helped them accelerate agricultural reforms (Csaki and Nucifora, 2005). As a result, EE countries managed to reduce dependence on more labor-intensive agricultural technologies and attracted foreign capital, which contributed to upgrading and better performance of their agricultural sectors.

In Georgia the industry employment share as a percent of total employment fell from 11% to its minimum level of 8% during 1995-2002. Beginning from 2004 there was a slight improvement, it reached 9% in 2004. Later in 2010 it equaled to its 1995 level \_ 11%. Although since then it has been on an upward trend, its growth rate has been modest. In 2019 it reached around 14% of total employment. The same level was maintained in 202 and 2021.

**Figure 2. Services employment shares in Eastern European countries, 2019**



Source: Source: World Bank Development Indicators

In the period of 2006-2020 the percentage decrease in the agricultural labor force accounted for 31%, while the percentage increase in services was 33%. Georgia’s employment in services as a share of total employment was reported at 41% in 1998. In the subsequent years it maintained a downward trend and reached 36% in 2006. Since 2006 we are witnessing an ever-increasing trend in services employment, which exceeded 48% in 2019. At the beginning of the transition period the EE countries under review had similar employment indicators varying between 41% (in the case of Bulgaria) and 47% (in the case of Latvia). The exception was Romania with 25% share of service employment. Later on, labor transfer from the real sectors of the economy to the tertiary sector went at a faster pace in EE countries than in Georgia. Generally, EE countries lag behind more advanced economies by service employment shares. Simultaneously Georgia shows almost the same indicators as EE countries have, thus services employment gap between them and Georgia is considerably smaller than the gap in industrial sectors. Currently, services employ 62% of the workforce in Georgia, while

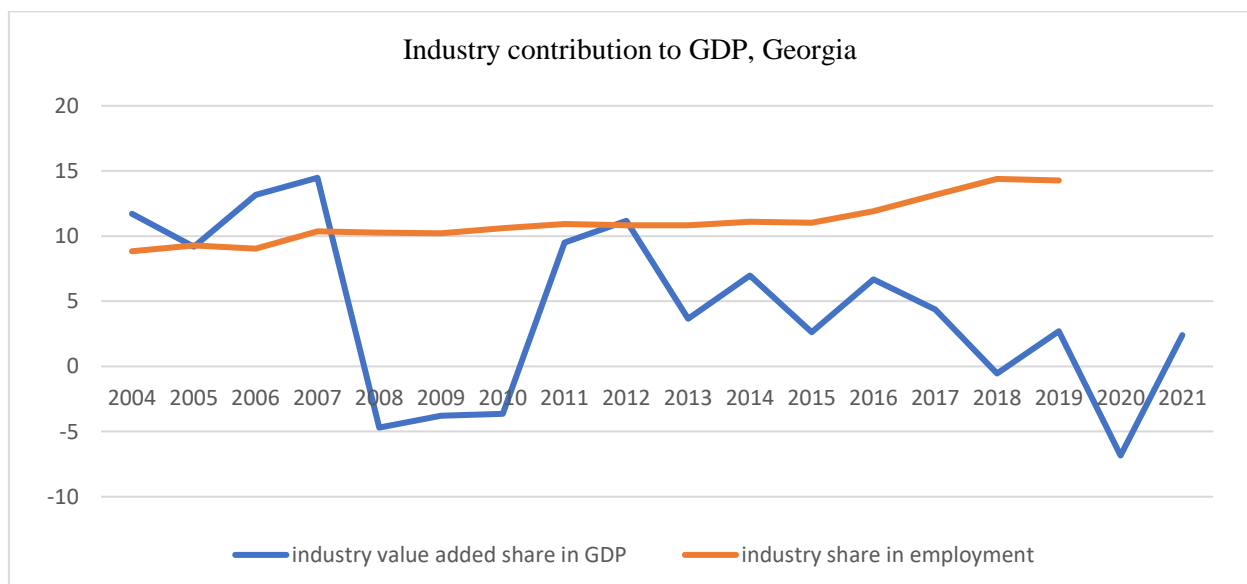


comparable indicators are 59% in Bulgaria, 60% in Poland, 61% in the Czech Republic, and 69% in Estonia.

Except for the sector employment shares, sector value-added is a widely accepted indicator to analyze structural transformation. It enables us to capture additional values created at each production stage and characterize the level of sophistication and the progress in sector upgrading, if analyzed in dynamics.

During 1998-2021 Georgia's agriculture value added share to GDP has been steadily falling from, 33% to 6.5%. Manufacturing value added was also falling, from 17% of GDP to around 10% in 2021, while services value added was rising from 41% to 59%. Such a mode of transformation corresponds with the typical development-oriented path that has been common to advanced economies. However, a more detailed sub-sector analysis reveals some structural and productivity-related problems. The decline in manufacturing employment was not associated with the changes in favor of more technology and skill-intensive and less labor-intensive sub-sectors of manufacturing. The declining share of employment in manufacturing accompanied by a decreasing manufacturing share of GDP indicates the deterioration of the overall performance of manufacturing sub-sectors. As the data on Figure 3 shows, there was a significant fall in value-added shares to GDP in industrial sectors against the background of increased employment in industry.

**Figure 3. Employment and Value Added in Georgia's Industry**



Source: Georgia's Statistics Office, [www.geostat.ge](http://www.geostat.ge)

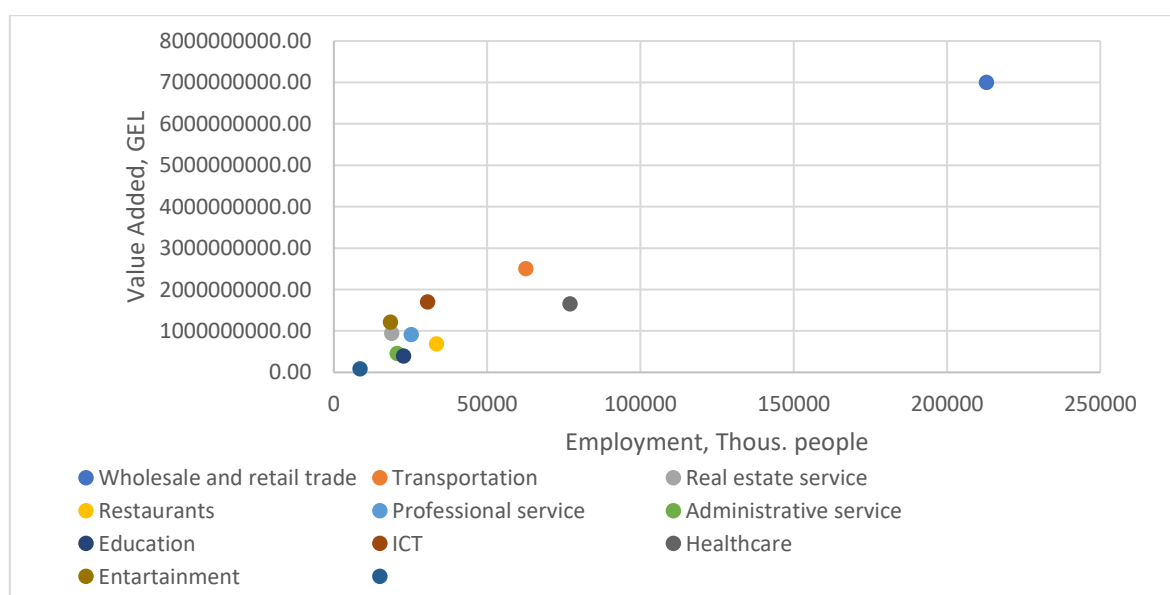
Georgia lags behind its peers in the EE region by industrial labor productivity and services labor productivity. Its industry value-added per capita accounted for 453 (constant 2010 US dollars) in

2022, which is the lowest among all the above EE countries. According to the World Bank data, Georgia’s industry value added per worker accounted for 13 649 constant 2015 US dollars in 2019. It is less than 2016 level of 14 934 dollars, which represents the highest value since 2004. Thus, the indicator shows a decline. Bulgaria is close to Georgia with 13 208 dollars, while with all other EE economies under review there is a significant divide in industrial productivity. Slovenia and the Czech Republic have leading positions in terms of valued added per employer, equal to 44 538 and 35 938 dollars, respectively, as well as in terms of per capita value added, which accounted for 5964 dollars and 5062 dollars, respectively.

The reasons behind the above gap are related to ineffective resource allocation, technological backwardness, and low competitiveness of industrial sectors in Georgia. The proportion of medium and high-tech industry value added in total value added shows a deteriorating trend. There was a decline from 17% in 2010 to 12.4% in 2020. Georgia lags not only the EU member countries, but also Moldova, which showed medium and high-tech industry value-added share almost twice as high as that of Georgia in 2020. The increase from 8.9% in 2010 to 23% clearly indicates to Moldova’s improved capabilities and technological upgrading.

Bah and Brada (2009) emphasize low productivity and significantly lower total factor productivity compared to advanced economies as a general feature of transition economies’ service sector and that remains especially challenging for Georgia, where services are main contributors to GDP growth. An in-depth analysis of value-added per employer across various sub-sectors reveals limited technological intensity. The highest value added per employer is created in leisure and entertainment, ITC, and real estate-related services.

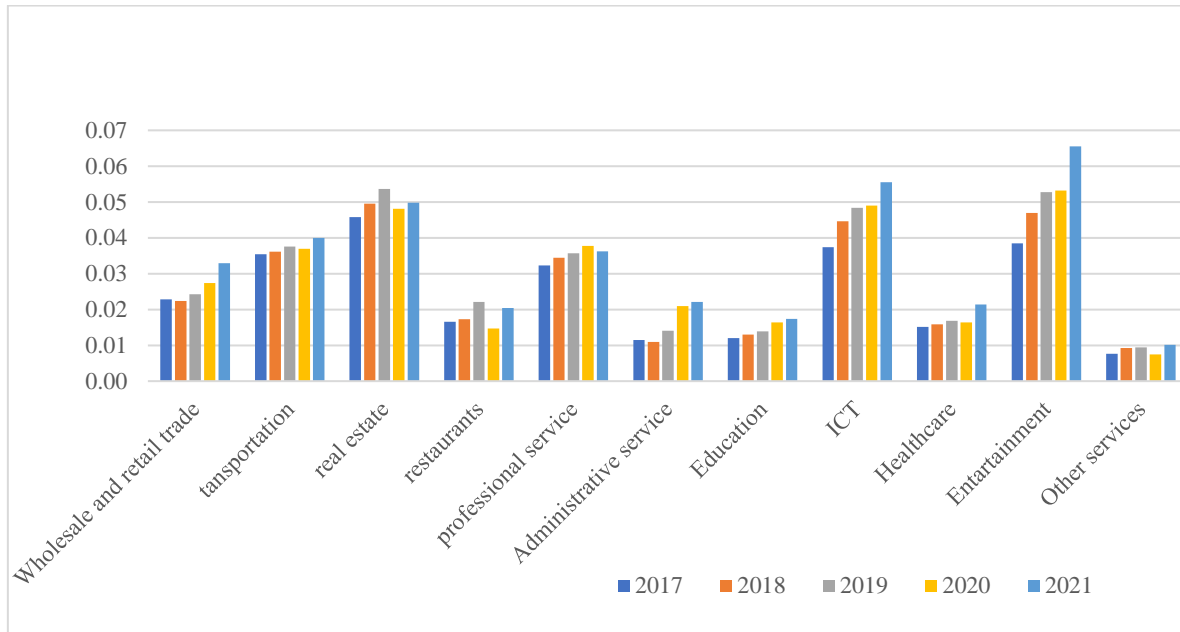
**Figure 4. Value added and number of employers in services sub-sectors, Georgia, 2021**



Source: Georgia’s Statistics Office, [www. geostat.ge](http://www.geostat.ge)

Thus, as Figure 4 shows, in absolute terms the largest part of the services labor force is concentrated in relatively low-productivity sub-sectors, such as trade, healthcare, and transportation. A positive correlation between a sub-sector value added and the number of employees indicates to labor-intensive, rather than skill or technology-intensive nature of services

**Figure 5. Value added per employer in services sub-sectors, Georgia**



Source: own calculations based on World Bank Development Indicators and the data by the Statistics Office of Georgia, [www.geostat.ge](http://www.geostat.ge)

Although services value added per employer has been on a rising trend since 2003, Georgia, with approximately 14.2 thousand US dollars value added per worker, lags behind all other EE economies discussed above. Slovenia, Czech Republic, and Estonia have the highest value added per employer. It accounted for around 45.9 thousand, 36.9 thousand, and 36 thousand constant 2015 US dollars respectively in 2019, according to the World Bank data. These three countries are followed by Latvia, Romania and Bulgaria, with 31.1 thousand, 28.8 thousand and 15.9 thousand constant 2015 US dollars respectively.

The above analysis of changes in sector shares in GDP, sectorial allocation of labor force and sectorial value-added indicators confirms labor movement from agriculture to services, but the labor force has been absorbed by low-productivity sub-sectors in services. Such a type of labor transfer raises questions regarding development and welfare enhancing nature of structural transformation. As we can see from the above data, employment in agriculture is still much higher and in services is much lower compared to EE economies and accordingly, to more advanced economies' respective indicators. This is the sign of insufficient pace and depth of structural transformation in Georgia

(Lekashvili and Jamagidze, 2022). Simultaneously, the existing gaps in value adding capabilities and productivity with the EE countries uncover several development risk, such as middle-income traps, described by Tregenna (2020) and structural under-development, described by Sen (2019). Furthermore, the existing pattern of resource allocation can potentially lead to greater income inequalities within country and enhance growth and development disparities at the regional level.

## 2. Trade and structural transformation

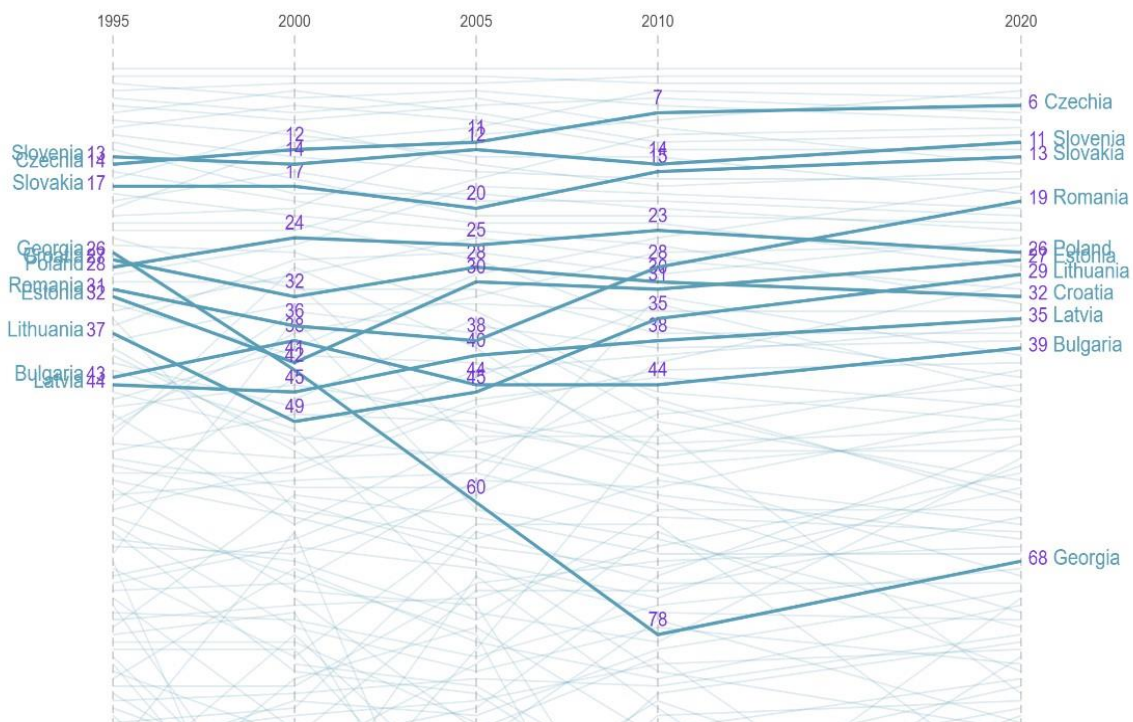
In open economies, international trade is a powerful factor that affects structural transformation. According to standard trade models, comparative advantages induce specialization and hence, transform sector compositions of the trading economies. These comparative advantages may come from either relative difference in productivity (in Ricardian models) or relative factor abundance (Heckscher-Ohlin models). Contemporary trade is significantly determined by the development of global value chains (GVCs). Through GVCs countries engage in global trade by specializing in one or a few stages of production of a certain product. Such a mode of specialization can potentially transform production structures. Tasks in which countries specialize define the share of the value that they add, and consequently, the income generated through those tasks. Hence, whether a country supplies critical high-tech components or is responsible for assembly makes a huge difference in structural transformation and development (UNCTAD, 2015).

Export patterns and complexity is a widely accepted indicator to characterize economic structure in an open economy setting. Georgia ranks 68<sup>th</sup> by the *Atlas of Economic Complexity*. It lags behind all the EE countries under review. Significant structural reforms and institutional changes facilitated by the Eastern Enlargement of the EU played a decisive role in the increased complexity and diversification of the EE countries. The EU membership eliminated barriers for foreign investors, keen to take advantage of the EE's relatively cheap and skilled labor force. There was an influx of foreign direct investment (FDI), most notably in the production of complex manufacturing sectors (wiiw, 2023). As a result, they increased their integration into regional and global value chains (GVCs).

The OEC's economic complexity index ranks Czech Republic, Slovenia and Slovakia in the top most knowledge-intensive product exporters in the world. In 2021 they took 7<sup>th</sup>, 12<sup>th</sup> and 16<sup>th</sup> positions, respectively, while Georgia had 64<sup>th</sup> rank. According to the methodology developed by UNIDO, the Czech Republic, Slovakia, and Slovenia belong to the top 30 most competitive manufacturing exporters in the world. Slovakia is outstanding among EE countries by its successful structural transformation revealed in the development high-productivity sectors, such as vehicles and

machinery that are designed for the global market. Czech Republic has similar positions, it increases specialization in complex manufacturing sectors, such as vehicles, machinery and electronics. These industries are the most dynamic in terms of growth of the country’s global market share. Export has grown by an annual average of 7.2% over the past five years. Services industries also play an important role in Czech exports. In Slovenia’s case high complexity industries are main contributors to export growth. Its global market share in chemicals and namely, pharmaceuticals has been the most dynamic recently. In contrast to the above, Georgia’s economic complexity indicators have been worsening through the 1995-2010 period and Some positive shifts have been observed since 2010, as the country managed to increase its economic complexity mainly by diversifying its exports. The number of exported products as well as export destinations have increased, but in export composition of both manufacturing and services, relatively unsophisticated and low value-added categories prevail.

**Figure 6. Economic Complexity in Eastern European Countries (rankings)**

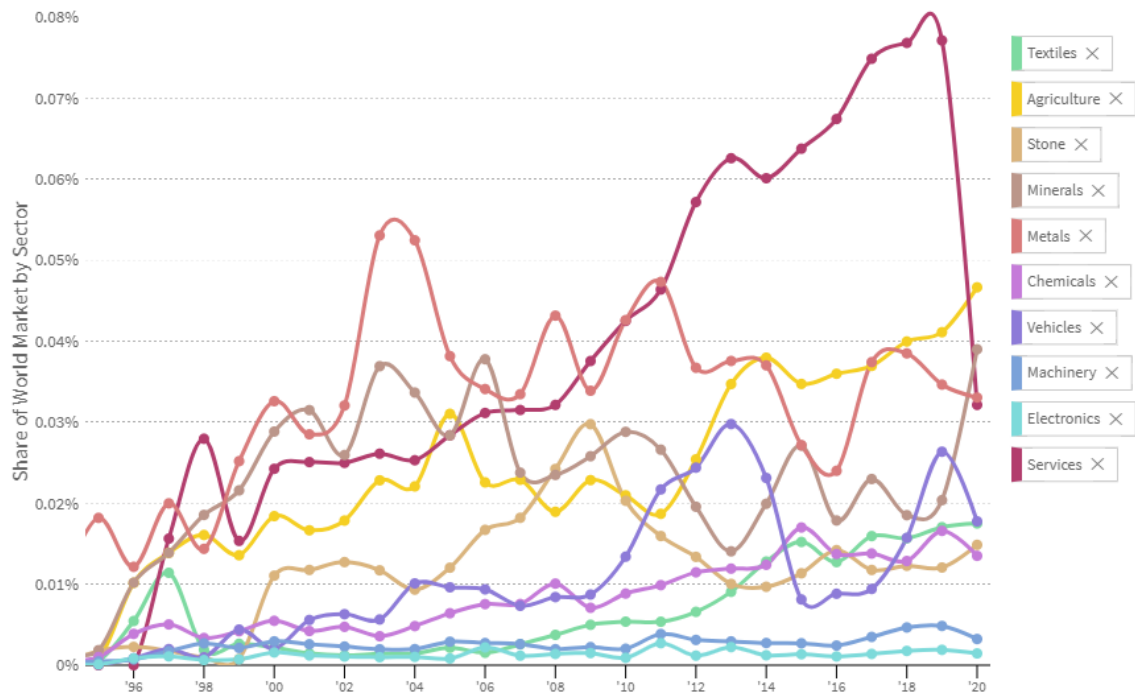


Source: Growth Lab, <https://atlas.cid.harvard.edu/countries/82>

In 2020, Georgia exported a total of \$3.92 billion, making it the number 124 exporter in the world. During the last five years, the exports of Georgia have changed by \$1.15 billion (from \$2.77 billion in 2015 to \$3.92 billion in 2020). In 2022, copper ores and concentrates reclaimed the first place in the list of top export items, equaling 18.4% of total exports. The share of motor cars (re-

export) in the total exports amounted to 14.4 %. The Ferro-alloys exports occupied the third place, constituting 10.5% of the total exports. These commodity groups are followed by nitrogenous fertilizers at 5.1% and wine of fresh grapes at 4.2%.

**Figure 7. Georgia's export patterns, evolution of the global market share**



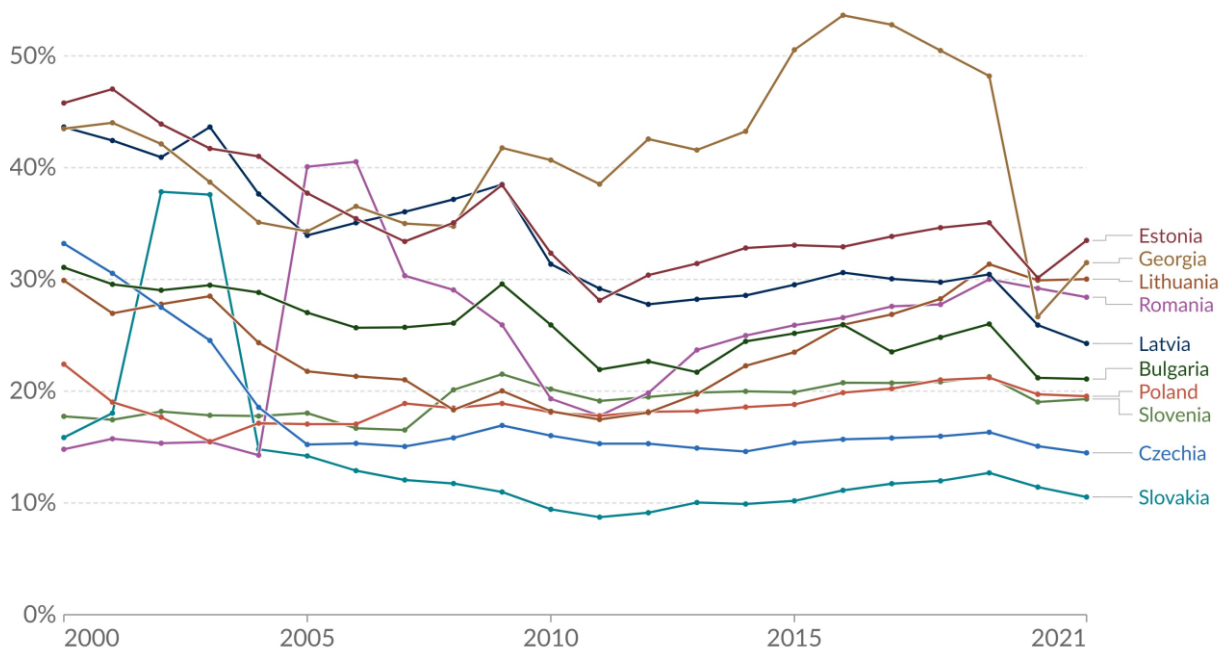
Source: *Atlas of Economic Complexity*

The manufacturing sub-sectors, where Georgia increased its global market share are agricultural products and minerals. Its position in technologically more complex industries such as machinery and electronics is extremely weak and it has not changed significantly through the last decades. Chemicals, vehicles, and other medium technology-based industries are represented with lower market shares in the global market compared to services. In absolute terms, transportation and travel are leading export categories followed by other business services and ICT services. After the sharp fall caused by the COVID-19 pandemic, in 2021, services exports increased again. It amounted to 2.5 billion USD, which is 61.2% higher than in 2020. The positive trade balance was 724 million USD. In 2021 travel reclaimed first place in the list of top export types of services in Georgia, amounting to USD 1.2 billion (48.9% of total exports). Travel is followed by transport services, totaling USD 822.6 million (32.3%); and telecommunications which totaled 215.9 million US dollars (8.5%).

A more detailed observation on the composition of both manufacturing and services exports indicate very limited progress in terms of shifts towards more technology-intensive and knowledge-intensive sectors. Manufacturing export is dominated by primary products and low-skill manufacturing. Technologically export reveals dependence on resource-based manufacturing. In comparison with peers in Eastern Europe, Georgia shows one of the lowest shares of high-tech exports in total manufacturing exports. High-technology exports account for about 4% of total export, while EE countries that had similar characteristics at the beginning of their transition now reach around 13% share in high-tech exports.

Although currently services play a major role in positive export dynamics and contribute to positive revenues, its structure is particularly non-resilient. In the 2000s, services took a significant jump, reaching to above 40% of the total exports, which further increased and exceeded 50% in 2015. It had been maintained higher than in any of the sample countries until the sharp fall in 2020 as a result of the COVID-19 pandemic. In 2020, the three leading services export categories were other transport, personal travel, and business travel. Under the crises and uncertainties travel and tourism flows do not ensure long-term resilience of growth because of their highly volatile characteristics.

**Figure 8. Services export shares to total exports (%) in Eastern European countries**



Source: World Bank Economic Development Indicators

Participation in global value chains is one of the basic criterion to assess the movement of an economy to more complex or technologically sophisticated economic activities. GVCs enable

companies and economies to improve productivity through gaining access to the international markets, and new technology sources. EE countries involvement in GVC related trade was almost twice as high as that of Georgia in 2015 (table 2). Lack of the latest data for Georgia makes comparisons complicated, but the analysis of the past data shows its low intensity of engagement in GVC related exports compared to its counterparts in Eastern Europe.

**Table 2. GVC-related trade, percent of gross trade**

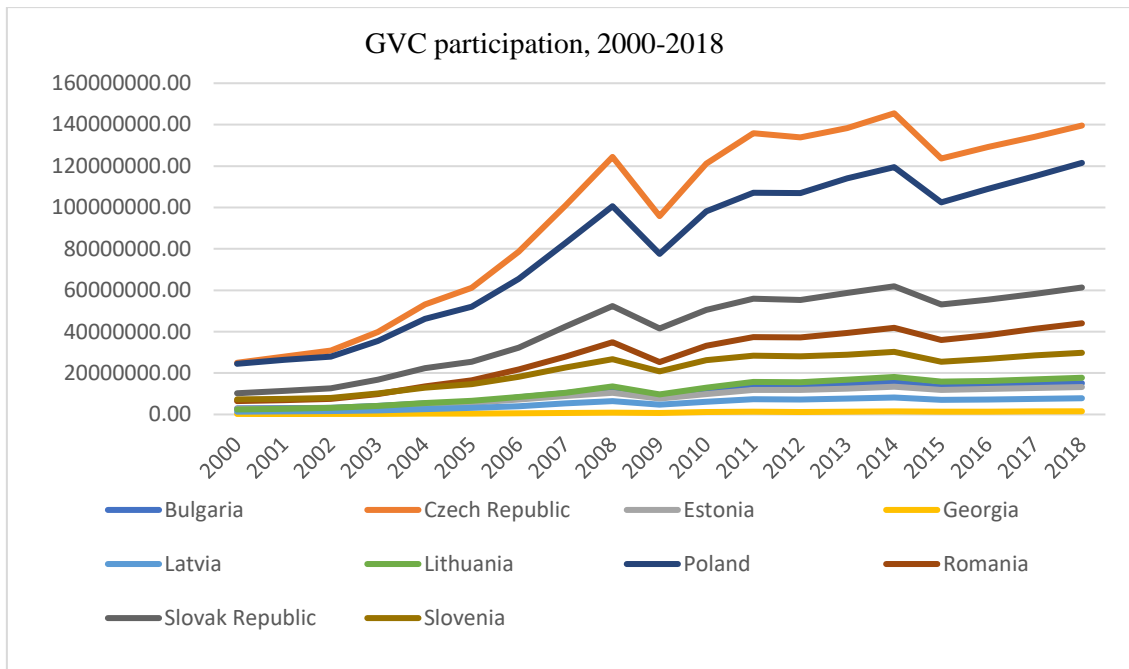
Exporter	2014	2015	2016	2017	2018	2019	2020	2021
Bulgaria	53.23	51.68	51.16	53.18	55.22	52.71	50.96	55.39
Czech Republic	62.90	63.08	62.73	63.41	60.86	57.90	56.70	61.27
Estonia	59.05	60.55	61.65	62.91	57.98	59.33	59.69	60.44
Georgia	35.66	33.87	-	-	-	-	-	-
Latvia	49.88	49.62	46.88	48.05	50.01	47.94	47.93	53.40
Lithuania	53.59	56.73	50.66	51.44	53.90	53.17	48.43	56.24
Poland	52.30	53.08	51.32	51.95	51.62	50.44	51.06	57.68
Romania	49.19	50.13	45.30	46.73	49.16	47.92	45.95	51.29
Slovakia	66.34	68.69	65.66	67.27	65.03	64.16	63.09	65.91
Slovenia	58.10	58.35	53.82	55.91	57.43	56.85	55.71	62.61

Source: World Integrated Trade Solutions, GVC Trade Table

A recent study by Hagemeyer and Muck (2019) finds out that exports account for at least 50% of the overall value-added growth in most EE countries since 1990s. In Bulgaria, Czech Republic, and Slovakia more than 70% of GDP growth has been determined by exports of intermediate inputs.

An integrated GVC participation indicator is calculated based on backward and forward linkages. Backward linkages measure foreign value added in exports, while forward participation involves domestic value added used in the intermediary exports to other countries. GVC participation indicator as a sum of foreign value added embodied in a country's exports and domestic value added of a particular country embodied in the exports of other countries, shows the extent to which a country is involved in a vertically fragmented international production process. The development of the integrated GVC participation indicator through the last decades is represented on figure 9.



**Figure 9. GVC Participation indicator, 2000-2018**

Source: UNCTAD Eora Global Value Chain Database

EE countries are competitive exporters and well represented in GVCs, but the degree of their integration in GVCs varies. Those with relatively strong manufacturing sectors and diversified economies (such as the Czech Republic, Poland and Slovakia) are better represented in GVCs. As shown in Figure 9 Georgia's GVC participation has been stagnant, with little progress in reducing disparities with other countries in the EE region. Further analysis of the decomposed GVC Participation indicator of Georgia reveals that domestic value-added growth exceeded foreign value-added growth in exports from 2010 through 2018. Obviously, it is due to the following economic and structural characteristics: because of its small market size and low share of manufacturing in GDP, it develops forward linkages more intensively. Proximity with Europe as one of the large manufacturing hubs of the world is a significant advantage to intensify GVC participation, which is currently underused. As a middle-income country, Georgia will have to consider the experience of many other middle-income countries that face the difficulties of moving into more technologically sophisticated segments of GVCs. The specialization patterns that imply an insufficient pace of resource allocation towards more sophisticated and technologically complex sub-sectors in manufacturing as well as in services can potentially undermine long-term economic development.

## Conclusions

The present study shows significant gaps in structural transformation of Georgia and Eastern European (EE) countries, which had similar experiences of planned economic systems in the past, but saw huge progress in catching up with the advanced economies.

Georgia has the lowest industry employment indicator mixed with the lowest per capita GDP among EE countries. The declining share of manufacturing employment accompanied by a decreasing manufacturing share of GDP is an indication of the deteriorated performance of manufacturing sub-sectors. Although Georgia's structural transformation has been marked with labor movement from agriculture to services, currently employment in agriculture is still much higher and in services is much lower compared to EE economies and accordingly, to more advanced economies' respective indicators. Furthermore, the labor force has been absorbed by low-productivity sub-sectors in services. Such a type of labor transfer raises questions regarding development and welfare enhancing nature of structural transformation. Large part of labor force retained in low productivity sub-sectors of the economy can potentially lead to greater income inequalities within country and enhance growth and development disparities at the regional level.

The exports dependence on low-productivity and low-tech intensive manufacturing and low-value-added services further emphasizes the existing divide between Georgia and EE countries. The latter is represented with more technologically advanced export industries and greater GVC related trade. Closing Georgia's structural gaps with the European countries requires faster pace of structural transformation. There is a need for the rapid growth of productivity per worker and industry upgrading. Georgia should take advantage of its proximity with Europe as one of the large manufacturing hubs of the world to intensify GVC participation.

The emergence of new knowledge-intensive and technology-intensive sub-sectors in the region and globally will undoubtedly exert additional pressures on the economy of Georgia in terms of adopting them and transforming its economic structures towards more productive activities.

Although Georgia and EE countries faced similar challenges on their way to functioning market economies, the evidence is that the majority of EE countries has experienced development-enhancing structural transformation, while in Georgia the process is still incomplete. It is noteworthy that along with the economic and technological advancements, the meaning of transition concept is changing itself, new qualities, such as inclusiveness, greenness, resilience and integration are attributed to it, together with competitiveness of a country. Therefore, one of the topics for future studies should be the evaluation of Georgia's structural transformation against the criteria of more inclusive, green and resilient economy.

**References**

- Andreoni, A., Tregenna, F. (2020), Escaping the middle-income technology trap: A comparative analysis of industrial policies in China, Brazil and South Africa, *Structural Change and Economic Dynamics*, 54(C), pp. 324-340. DOI: 10.1016/j.strueco.2020.05.008
- Bah, El-hadj., Brada, Josef C. (2009), Total Factor Productivity Growth, Structural Change, and Convergence in Transition Economies, *Comparative Economic Studies*, 51, pp. 421–446.
- Casella, B., R. Bolwijn, D. Moran., Kanemoto, K. (2019), Improving the Analysis of Global Value Chains: the UNCTAD-Eora Database, *Transnational Corporations* 26(3), pp. 115-142
- Csaki, C., Nucifora, A. (2006), *Ten years of transition in the agricultural sector: Analysis and lessons from Eastern Europe and the Former Soviet Union*, Academic Press.
- Comunale, M. Felice, G., (2019), *An Empirical Investigation of the Relationship between Trade and Structural Change*, Bank of Lithuania Working Paper Series 62, Bank of Lithuania. DOI: 10.1016/j.inteco.2022.04.007
- Duarte, M. Restuccia, D., (2010), The Role of the Structural Transformation in Aggregate Productivity, *The Quarterly Journal of Economics*, 125(1), pp. 129-173.
- Gevorkyan, A.V. (2018), *Transition Economies: Transformation, Development, and Society in Eastern Europe and the Former Soviet Union* (1st ed.), Routledge. <https://doi.org/10.4324/9781315736747>
- Hagemeyer, J., Mućk, J. (2019), Export-led growth and its determinants: Evidence from Central and Eastern European countries, *The World Economy*, 42(7), pp. 1994-2025 <https://doi.org/10.2478/ijme-2022-0004>
- Havlik, P. (2015), Patterns of Structural Change in the New EU Member States, *DANUBE: Law and Economics Review*, 3, pp. 133-157.
- Havlik, P., Leitner, S., Stehrer, R. (2012), Growth Resurgence, Productivity Catching-up and Labour Demand in Central and Eastern European Countries, in: Mas, M. and Stehrer, R. (ed.), *Industrial Productivity in Europe*, Edward Elgar Publishing.
- Landesmann, M. (2000), *Structural Change in the Transition Economies, 1989 to 1999*, wiiw Research Reports 269, The Vienna Institute for International Economic Studies, wiiw.
- Lekashvili, E. Jamagidze, L. (2022), *Structural Transformation and Export Performance in Georgia: Is There a Need for the New Industrial Policy*, Proceedings of 2d International scientific conference “strategic planning and marketing in digital world”, University of National and World Economy, Sofia (Bulgaria).

- Libman, A. (2008), Explaining Structural Change in Kazakhstan: Resources and Institutions, in: Grinberg, R., Havlik, P., and O. Havrylyshyn (eds.), *Economic Restructuring and Integration in Eastern Europe: Experiences and Policy Implications*, Baden-Baden: Nomos, 2008, pp.219-230.
- Libman, A. (2008), Moldova: Structural Changes, Trade Specialization and International Integration, in: Grinberg, R., Havlik, P., and O. Havrylyshyn (eds.), *Economic Restructuring and Integration in Eastern Europe: Experiences and Policy Implications*, Baden-Baden: Nomos, 2008, pp. 231-259.
- Novák, Z. (2020), Structural Change in Central and South Eastern Europe—Does Technological Efficiency Harm the Labor Market? *Sustainability*, 12(11), 1-22. 4704. <https://doi.org/10.3390/su12114704>
- Sen, K. (2019), *Structural Transformation around the World: Patterns and Drivers*, *Asian Development Review*, 36 (2), pp. 1–31. doi: [https://doi.org/10.1162/adev\\_a\\_00130](https://doi.org/10.1162/adev_a_00130)
- Tregenna, F. (2009), Characterizing Deindustrialization: An Analysis of Changes in Manufacturing Employment and Output Internationally, *Cambridge Journal of Economics*, 33(3), pp. 433-466.
- Tregenna, F. (2015), *Deindustrialization, Structural Change, and Sustainable Economic Growth*. UNU-MERIT Working Papers, (032).
- UNCTAD (2015), *Global Value Chains and South-South Trade: Economic Cooperation and Integration among Developing Countries*, United Nations. Geneva and New York.
- UNECE. (2020), *Sub-regional Innovation Policy Outlook 2020: Eastern Europe and the South Caucasus*, Geneva.
- wiiw (2023), *Industrial Policy for a New Growth Model. A Toolbox for EU-CEE Countries*, <https://library.fes.de/pdf-files/bueros/budapest/20260.pdf>.

## Absorption capacity and the impact of cohesion policy in Romania

Andreea – Mădălina CIMPOEȘU\*

### Abstract

*The European Union's (EU) Cohesion Policy, the oldest policy within the EU, has undergone numerous transformations over more than three decades, evolving in both objectives and implementation instruments. The recent expansion of the European Union has rekindled discussions on the efficacy of Structural Funds in achieving economic goals. (Drăgan, 2018). Analyzing the impact and effectiveness of cohesion policy in Romania, as well as understanding the challenges involved in fund absorption and distribution at all levels, is crucial for achieving sustainable regional development to benefit citizens. Starting from the research question: "To what extent has Romania capitalized on the funds allocated through the cohesion policy?", this study outlines the following main objectives: (O1) identifying and analysing the main challenges for the regional policy and for the strengthening of regional and urban development (O2) determining the thematic priority areas to which the majority of cohesion funds in Romania have been allocated, (O3) identifying the primary investment priorities for which European funds have been attracted in Romania. This study aims to address the stated objectives and, where necessary, to identify areas for improvement and suggest strategies to overcome these obstacles.*

*Keywords:* European Union, cohesion, funds, region, absorption

### Introduction

The European Union's cohesion policy is the oldest policy of the Community bloc that aims to reduce economic, social and territorial disparities between regions and promote their economic and social development. This is achieved by allocating EU funds to less developed regions and by supporting projects aimed at creating jobs, developing infrastructure and improving citizens' quality of life. This policy has become an essential tool for supporting growth and employment, especially among young people and those facing social and economic difficulties. At the same time, cohesion policy has helped reduce disparities between regions and improve the quality of life for millions of European citizens.

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At the same time, for more than thirty years, it has undergone numerous transformations, both in terms of objectives and in the instruments by which they have been put into practice. The penultimate wave of the enlargement of the European Union has brought to the fore precisely issues relating to the usefulness and effectiveness of the structural funds in achieving economic objectives.

From a theoretical point of view, the use of the funds has at least two major interconnected implications, namely, on the one hand, it generates substantial economic growth by increasing the demand for certain goods and services related to the sectors benefiting from investments. Moreover, it leads to the reduction of disparities in terms of infrastructure and human resources development. (Drăgan, 2018).

Cohesion policy in Romania is thus a field of study for the academic environment, and holds the interest of various stakeholders, including public and private entrepreneurs, central and local authorities, regional organizations, and the European Union and its institutions.

Upon Romania's accession to the European Union on January 1, 2007, the nation entered a new phase with the opportunity to benefit from EU funds during the 2007-2013 programming period. This period marked a significant juncture, with Romania starting to integrate into the EU's Cohesion Policy framework, contributing to the growth and development of its regions. The macroeconomic outcomes and the experience gained during this period laid the foundation for understanding the challenges and opportunities that followed in the subsequent programming period, from 2014 to 2020.

In the 2014-2020 period, the European Union allocated €9.3 billion to Romania under its cohesion policy, so as to bridge the gap between Europe's different regions. Around a third of the union's total budget has been allocated to cohesion policy, so much so that in the 2014 - 2020 budget period, EUR 351.8 billion has been allocated to all 28 Member States. These resources have funded hundreds of thousands of projects across Europe, implemented through the European Regional Development Fund (ERDF), the European Social Fund (ESF), the Cohesion Fund (CF) and the Youth Employment Initiative (YEI). The additional funds were earmarked for INTERREG programmes, which aim to encourage cooperation between regions belonging to different states. (Ornaldo Gjergji, 2022).

Therefore, there is a huge amount of money available, on the one hand, and on the other hand, a great responsibility for the Romanian authorities in terms of spending them with reference to the strict observance of the imposed rules, the achievement of the assumed objectives, and the stimulation of development.

## Argument development

*Research Question: To what extent has Romania capitalized on the funds allocated through the cohesion policy?*

Cohesion policy stands as a foundational element within the European Union (EU) and is strategically aimed at diminishing economic and social disparities among its member states. Among the Eastern European members of the EU, Romania has emerged as a notable beneficiary of cohesion funds. This literature review delves into the repercussions of cohesion policy on Romania, with a particular emphasis on the nation's capacity to absorb funds. It conducts a rigorous evaluation of extant research in this area, casting light on primary discoveries, obstacles, and prospective ramifications.

Cohesion policy is a key tool in the European Union's endeavours to foster economic, social, and territorial unity. Its significance lies in its role in reducing the development disparities among regions and states within the EU. This policy hinges on financial allotments, investments, and institutional mechanisms to stimulate economic progress, enhance infrastructure, and promote social inclusivity. In this context, cohesion policy has played an integral role in shaping Romania's economic environment.

The core research question of this study, "To what extent has Romania capitalized on the funds allocated through the cohesion policy?" invites a nuanced evaluation of the socio-economic impacts and developmental progress achieved by Romania through its engagement with the European Union's Cohesion Policy. While acknowledging the formidable challenges faced, this research contends that Romania has derived substantial socio-economic benefits from its participation in the Cohesion Policy. It is crucial to emphasize that the degree of fund absorption may not have reached the ideal 100%, but what has been accomplished should not be underestimated.

## Absorption, administration, institutions, technology and other challenges

As we delve into the facets of absorption, administration, institutions, technology, and other challenges, it becomes evident that Romania has faced significant hurdles.

- **The ability to absorb funds** refers to a country's ability to make efficient and effective use of the funds it receives from the EU. In Romania, the capacity to absorb funds was relatively limited by a number of factors, including administrative capacity, institutional capacity and technical

capacity. In particular, Romania has struggled with administrative capacity, which has hampered its ability to manage and deliver projects effectively.

- **Administrative capacity** refers to the ability of a country's public administration to effectively implement policies and programmes. In Romania, administrative capacity has been a significant challenge, especially in the management of EU funds. The country has struggled with corruption, a lack of transparency and weak institutional structures, which have made it difficult to manage EU funds effectively. As a result, many projects were postponed and the funds were underutilised.

Several studies such as those conducted by Iancu in 2017 (Iancu, 2017, pp. 127-134) and Georgescu in 2019 (Georgescu, 2019, pp. 126-136.) have observed that Romania has grappled with administrative and bureaucratic hurdles that impede the effective absorption of EU funds. Notable challenges include delays in project approvals, intricate application processes, and a deficiency in institutional capacity. These difficulties have ramifications for the prompt execution of projects and, consequently, the achievement of policy objectives.

- **The institutional capacity** was also a challenge for Romania. The country has a weak institutional framework, which has made it difficult to manage EU funds effectively. In particular, Romania has struggled with the coordination of the different levels of government, as well as with the involvement of civil society in the management of EU funds. This has led to a lack of accountability and transparency, which has prevented the efficient use of EU funds. Research by Borlea and Dobre in 2018 underscores the importance of strong institutional frameworks for successful fund absorption. The Romanian government has made efforts to address this concern, but the progress remains mixed, with persistent concerns about transparency and accountability in public administration. (Borlea and Dobre, 2018).

- **Technical capacity** is another challenge for Romania. The country has a shortage of qualified personnel in areas such as project management, procurement and financial management. This has made it difficult to manage EU funds efficiently and has led to delays and underutilization of the funds. Nonetheless, a 2020 report by the European Commission highlights the role of cohesion policy in fostering infrastructure development, enhancing education and healthcare services, and promoting regional growth. It also underscores that the policy contributes to job creation and economic diversification, thereby improving the overall living standards in Romania. (European Commission, 2020).

In light of these challenges, this study seeks to critically assess the tangible socio-economic outcomes achieved by Romania, particularly in terms of job creation, infrastructure development,



reduction of regional disparities, and improvements in citizens' quality of life. It aims to provide a comprehensive view of whether Romania has managed to reduce development gaps and enhance socio-economic aspects through its utilization of European funds.

The impact of cohesion policy on Romania is not uniform across the country. Research, such as Dumitrescu and Stancu, suggest that regional disparities persist, with some regions benefiting more than others. This highlights the need for a more targeted approach to ensure a balanced and equitable distribution of funds, which aligns with the fundamental objectives of cohesion policy (Dumitrescu and Stancu, 2016, pp. 313-324).

Romania's experience with cohesion policy is expected to evolve as the EU enters the post-2020 programming period. The ongoing discussions surrounding the EU's Multiannual Financial Framework will likely have implications for Romania's funding allocation. Research into the potential changes and their consequences is emerging, but the full effects will become clearer in the coming years.

The impact of cohesion policy on Romania is a complex and multifaceted topic. While there have been notable achievements in terms of socio-economic development, the challenges related to absorption capacity remain a significant concern. Administrative and bureaucratic obstacles, institutional capacity issues, and regional disparities have shaped the Romanian experience with cohesion policy.

### **Treating the subject**

In line with the European Union's regional policy, Romania's regional policy has as its general objective the reduction of the economic and social disparities between the eight development regions of the country, focusing on supporting the less developed regions, preventing the emergence of new imbalances, as well as supporting the sustainable development of all regions of the country. However, barriers such as corruption, bureaucratic inefficiencies, and a lack of transparency at the local level have often hindered the effective implementation of cohesion policy in Romania.

Regional policy in Romania has a bottom-up approach, based on development initiatives, plans and programmes initiated by local and central public administration authorities, in partnership with private or public actors. Thus, it starts from the premise that the real needs and development needs are best known by these communities.

One of the first challenges (O1) for Romania was to identify development needs and opportunities at the local and regional level and to include them in the regional development plan and, subsequently, in the national development plan, in order to align the national development policy

with the community's development priorities. For this purpose, a wide consultation of the public authorities, but also of the representative non-governmental partners, was carried out: regional bodies, trade unions, employers' associations, research and higher education institutions, and non-governmental organizations.

Overcoming this challenge has brought others, namely legislative harmonization, compliance with European regulations, establishment and adaptation of working procedures in our country to the requirements of structural funds imposed by the European Commission, elaboration of the legislative and regulatory framework of public procurement.

The co-financing of programmes and projects supported by the European Union, the planning and guarantee of these contributions in the multi-annual national budgets were another major concern for the Romanian authorities. Legislative measures were needed to attract and involve the banking system in ensuring the necessary sources of financing both for public beneficiaries, and especially for private ones to support their own contributions, by granting loans and guarantees.

Another impediment concerned the administrative capacity of the state for the effective implementation of regional policy. It is linked to human resources, namely to the existence of well-trained officials in the public administration, capable, with the necessary experience and knowledge and integrity, not involved politically, to staff fluctuations, but also to changes in the administrative structure caused by the economic and financial crisis. The measures adopted were aimed at economically appropriate reward, increasing skills by attending professional development courses, establishing the legal framework on conflict of interest and incompatibilities.

The above enumeration is not exhaustive through this paper I did not propose a complete radiography of the difficulties encountered by Romania in the experience of using the funds allocated through the European Union's regional policy, but the identification of some of the challenges it had to face.

Although the implementation of European Union policies in general is difficult because the requirements to be complied with are very strict, it takes time to adapt and find the most appropriate means of implementation, the existing bureaucracy at both the European and regional levels are often obstacles to the use of the allocated funds. However, there are many areas in which investments have been made with European funding, and the results are visible beyond the dry reality of the figures. **For Romania, the Structural and Cohesion Funds represented an opportunity for development, to recover the functional and infrastructure gaps, to counteract** the negative effects of the economic and financial crisis triggered in 2008, a chance to create new perspectives, to highlight creativity and inventiveness, and to improve the visibility of Romanian enterprises.

Regional policy interventions under the convergence objective were targeted in particular at less developed regions to prevent the development gaps between different areas of the country from widening. Through the investments made under the regional policy, the level of urban infrastructure has improved, thus contributing to increasing the quality of life of citizens, mobility and accessibility, and a sense of public safety.

The interventions carried out in the rehabilitation, modernization and equipping of the infrastructure of health services and social services have led to an increase in the number of users, their satisfaction with the accessibility and quality of the services offered, the development of the competences of the staff employed, an improvement in the quality of life, and new opportunities for social inclusion.

Another area that benefited from the funds allocated through the regional policy was the educational infrastructure, which carried out the rehabilitation, modernization, development and equipping of the educational institutions. The results obtained consisted in improving the quality of education infrastructure, facilitating access to education, facilitating the participation of students with different disabilities in education, and increasing the school performance of students.

The financing of small and medium-sized enterprises, the "engine" of the economy, has contributed to the creation of new jobs, the development of entrepreneurship in Romania, the modernization and restructuring of the productive capacity, the increase of the strategic orientation and the change of the field of activity, the improvement of the quality of production and of the services offered, the emergence of new opportunities for insertion on the labor market, the increase of the degree of competitiveness in our country, and the promotion of research, development of technology, and innovation applicable in the economic environment.

The restoration of cultural heritage, taking into account the three types of monuments: UNESCO heritage, national cultural heritage and local cultural heritage, has contributed to improving the country's tourism potential, the attractiveness of the territory, creating new jobs and, last but not least, generating economic growth at local and regional levels. The key benefit, however, was the restoration of the cultural heritage, represented by churches, monasteries, museums, historical centres of cities, etc.

Investments in human capital have contributed to ensuring a skilled and more adaptable workforce on the labour market, improving the education system, promoting lifelong education, and ensuring the necessary qualifications and knowledge for integration and mobility into the labour market.

Through the funding carried out under the "European Territorial Cooperation" objective, it has been achieved the improvement of cross-border mobility and communications, the development of transport infrastructure, environmental protection, the development of tourism, the valorisation and development of the economic, institutional (health, education) and cultural potential of the regions that have benefited from allocations, and cooperation in the field of labour market.

For Romania, the European Union's **regional policy** offered **the opportunity to benefit from a value system based on economic efficiency, environmental protection, qualified human resources, ensuring minimum living standards.**

For example, in the 2007 – 2013 period the assistance for Small and Medium-Sized Enterprises (SMEs) included financial support and expert guidance extended to emerging businesses, fostering entrepreneurship and establishing new ventures spanning diverse domains like technology, tourism, and manufacturing, formation of business incubators and accelerators that furnish SMEs with support services and mentorship, facilitating their development and the expansion of their business activities, as well as investment in training initiatives for entrepreneurs, augmenting their competencies and comprehension in business administration and innovative practices. (European Commission, 2007).

Moreover, in 2014-2020 period the Cohesion Policy extended financial aid and assets to bolster the expansion and progress of small and medium-sized enterprises (SMEs) within Romania. This encompassed grants, loans, and initiatives aimed at enhancing business development. By nurturing the entrepreneurial environment and facilitating access to funding and business advisory services, the policy played a pivotal role in generating fresh employment prospects and nurturing economic advancement on both local and regional scales (Adascalitei, 2020, pp 9-10).

For the 2007 – 2013 period the Cohesion Policy extended financial aid and assets to sustainable development and environmental preservation, in order to deploy waste management infrastructure, encompassing the establishment of recycling facilities and landfill sites, advocating responsible waste disposal techniques, and mitigating pollution, also, financial support for environmental education ventures, including awareness campaigns and educational programs in educational institutions, advocating eco-conscious behaviors and enhancing awareness about environmental concerns. (European Commission).

Furthermore, in 2014-2020 period European Union (EU) funds were put to use in the enhancement and modernization of healthcare establishments, with particular attention given to rural regions where the availability of quality healthcare was previously restricted. This financial commitment led to the refinement of healthcare infrastructure, expanded access to medical services,

and consequently elevated the general state of well-being for the citizens of Romania. (European Parliament, 2021, pp.5-6, p.9).

These illustrations showcase the concrete impacts of the Cohesion Policy in Romania during the 2007-2013, as well as 2014-2020 periods on the nation's infrastructure, economy, and environment. They played a pivotal role in advancing its comprehensive development and fostering integration into the European Union.

In Romania, the funds made available through the European Union's regional policy represent a significant source of funding. Their effective use is an opportunity to overcome the effects of the economic and financial crisis by boosting investment and creating new jobs that support economic growth. On the other hand, the low level of overall development means that allocations from the European Union cover to a small extent the real needs existing at regional and national levels.

From the analysis of the difficulties encountered, the way of approaching them and the learning from past experiences, I identify some recommendations for the programming period 2014 - 2020. In my opinion, they are aimed at creating a more effective institutional framework, improving the decision-making system, coherence and speed in implementation, decentralisation, coordination within and between different administrative levels, simplifying the way of working and regulations, taking concrete actions to combat corruption, strengthening management and control systems, and institutional transparency.

I also believe that it would be appropriate to involve potential beneficiaries in the process of planning and developing strategies, developing public-private partnerships, promoting the exchange of experiences, efficient management of human resources, and collaboration between institutions involved in all the stages that a programme goes through, starting from the identification, formulation and planning of financing needs, continuing with accessing the most appropriate method of financing and, last but not least, implementation and impact assessment.

The opportunities offered by the use of technical assistance funds should be capitalized, in order to support the beneficiaries of European funds in developing eligible projects, ensuring adequate management, the correct elaboration of the reimbursement requests and the requested reports.

Capitalizing on the lessons learned and the experience gained in the previous programming period is all the more necessary as in the 2014-2020 programming period, Romania has allocated significant sums within the framework of the regional policy. The total amount allocated is approximately EUR 23 billion, detailed as follows: EUR 15.06 billion for the less developed regions (all except Bucharest). EUR 441.3 million for the more developed regions (Bucharest). €6.93 billion from the Cohesion Fund. EUR 453 million for European territorial cooperation. €106 million for the

"Youth Employment Initiative". Of these, the European Social Fund will represent EUR 4.8 billion. (European Commission, 2014).

The challenges for Romania, in the programming period 2014-2020, were all the greater as there were important changes in the way regional policy is conceived and implemented at European level. They aim to: focus on Europe 2020 targets, reward performance, support integrated programming (combining investments), strengthen territorial cohesion, focus on results and monitor progress more closely.

Appropriate national and regional operational programmes shall define the priorities and activities with which to exploit the available resources. Their aim is to reach a modern and competitive economy and to strengthen regional and urban development, and for these, Romania has identified in the Partnership Agreement with the European Commission **five challenges to be addressed through the Cohesion Policy (O1)** (European Commission, 2014):

1. The first challenge concerns **people and society** and the objective was to achieve this through improved employment, social inclusion and education policies, contributing to the EU2020 national targets so that the increase in the employment rate is 70%, the aim was to reduce the number of people at risk of poverty by 580 000 by 2020, as well as reducing early school graduates to 11.3%, and increasing participation in tertiary education to a percentage of 26.7%. As such, in 2021, the EU Member States witnessed a reduction of 0.5 percentage points in the rate of severe material and social deprivation compared to 2020. Notably, one of the most substantial declines occurred in Romania, where it decreased by 2.2 percentage points. (Eurostat,2022). Thus, by 2020, the nation made commendable progress in raising the employment rate, significantly reducing the number of individuals at risk of poverty, and making strides in early school dropout reduction. However, there is room for further improvement in tertiary education participation.
2. A second challenge is **infrastructure**, especially in transport, aiming at improved accessibility of less developed regions in Romania and connectivity with the international market, the use of a more sustainable transport mix, improved traffic safety and travel time, and more sustainable urban transport. The country notably improved road and rail infrastructure, contributing to better accessibility and connectivity. A great example in this case would be the establishment of fresh railway routes, such as the renovation of the Bucharest-Constanta railway, which contributes to enhanced connectivity and streamlines the movement of both goods and passengers. (Radio Romania International, 2016).

3. **Economic competitiveness** is another challenge, and this is reiterated by a more compact and modern R&D environment, focused on the needs of enterprises and on Romania's competitive sectors, and the transformation of traditional sectors through innovation and market development, aiming at increasing the GDP that started in 2020 to be invested in research and development by 1.5%.
4. **Resources** are indispensable in such a process and by moving towards a low-carbon economy, including energy efficiency in the built environment, promoting adaptation to climate change, risk prevention and resource efficiency and protecting the environment and the desire to contribute to the EU 2020 national targets by reducing greenhouse emissions and energy intensity by 19% and increasing the share of renewable energy to 24% is a desideratum of The Union and our country in progress. Romania's progress aligns with a commitment to environmental protection and climate adaptation, which are vital for meeting EU targets.
5. **Administration and governance** are challenges in terms of bureaucracy and it is necessary to optimize the institutional environment and improve the quality of public services provided by the administration and justice. Nonetheless, the quality of public services has seen enhancements, making government services more efficient and accessible to citizens through means such as digitalisation.

Cohesion policy in Romania is thus a field of study for the academic environment, but also a subject of interest for the public opinion, private entrepreneurs, central and local public authorities, regional organizations and, last but not least, the European Union and its institutions.

**As regards the thematic priority (O2) to which the majority of cohesion funds in Romania have been allocated**, this concerns transport networks and energy networks, with almost a third of the total resources. Analyzing the distribution of these funds at the regional level (NUTS 2), we can gain a more detailed insight into their dispersion across the territory. Hunedoara County emerged as the largest beneficiary, receiving approximately 550 million euros during the 2014-2020 period, followed by the Bucharest region, which received around 420 million euros. It's important to note that absolute values can sometimes be misleading as the impact of the same investment can vary significantly depending on the size and economic development of each region.

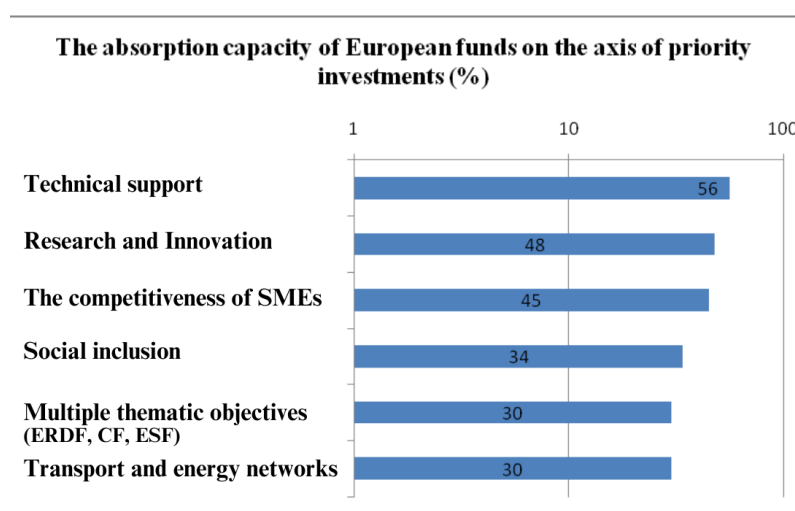
To gain a better understanding of the scale of European investments in Romania, it's helpful to compare cohesion funds with the GDP produced by each region in 2014. When we do so, we find that Hunedoara County, while remaining the top recipient of resources, received over 200,000 euros per million euros of GDP produced. However, it's worth noting that these figures may be indicative of the situation in 2014 and may not fully reflect the evolving economic dynamics and changes in

subsequent years. This underscores the need for ongoing analysis to comprehensively understand the impact of cohesion funds allocation. From this point of view, it is found that, although Hunedoara County remains the one that attracts the most resources, with over 200,000 euros per million euros of GDP produced, Bucharest, being the richest economic region, proportionally receives much smaller funds. (Ornaldo Gjergji, 2022).

This data relates to the cohesion funds that were actually disbursed in the 2014-2020 period. However, this is only part of what the European Union initially allocated to Romania, as in other cases, countries and regions are not always able to absorb all the available funds. There is often no adequate capacity to plan, spend or manage approved projects, but European funds are only disbursed on the basis of very detailed evidence. In Romania, there has been a great deal of heterogeneity in terms of the ability to spend the funds made available. Only some regions managed to get at least half of the funds, while others did not spend even 10% ((Ornaldo Gjergji, 2022). of the total. Beyond the performance of individual regions, the absorption capacity of European funds also depends on the thematic area because some priority investment axes manage to be more exploited than others. For example, excluding technical assistance expenditure related to preparatory, management, evaluation, monitoring and control activities, the R&D budget was spent most efficiently, with 48% of the total, while only 13% of the funds were allocated to projects related to adaptation to climate change and prevention of this risk (Ornaldo Gjergji, 2022).

Next, I will expose **the main priority investments for which European funds were attracted in our country (O3).**

**Table1. The absorption capacity of European funds on the axis of priority investments (%)**



Source: Eurostat, 2022



We therefore note that areas such as technical assistance, research and innovation and the competitiveness of SMEs are the main areas that have absorbed European funds within a percentage range of 45-56%. Romania's successful absorption rate of European funds is 59%. **The European Union average in terms of absorption rate of these funds was 67%, as of 31 December 2021. (Eurostat 2022).**

Unfortunately, also in terms of absorption of funds, Romania is at the bottom of the ranking being the fifth ranked among the countries with **the lowest absorption rate, in the EU28 ranking**, it also includes the United Kingdom of Great Britain, which has since left the Union. After us, Denmark has a score of 58%, but this is a developed country, net contributor to the Union budget. Another country with weaker absorption than Romania's is Malta, with a score of 57%. Over Romania's absorption rate are 22 EU member countries, including Bulgaria with a score of 60% as well Hungary with a rate of 73%. (Eurostat, 2022).

## Conclusions

Despite the difficulties encountered, the funds allocated to Romania through the European Union's regional policy were a factor of change and reform for the state institutions, an important engine for the country's economy, a means by which the effects of the economic and financial crisis triggered in 2008, a catalyst for public and private financing, were countered, if not totally, at least partially. This role was largely strengthened and amplified in the 2014-2020 programming period.

In view of the achievements listed, I believe that Romania has used the opportunity offered by the funds made available through the European Union's regional policy, in the **programming periods 2007-2013 and 2014-2020**.

The use of the experience gained and a better capitalization of the financing opportunities made available through the regional policy of the European Union, during the programming period 2021 - 2027, the elaboration of projects that better meet the real development needs of the regions is a current challenge for Romania. The way in which the financing possibilities offered by regional policy will be exploited will be ascertained only at the end of this period and could be the subject of new studies to assess the economic and social impact of the regional policy implemented at the national level.

At the same time, although the Member States are responsible for drawing up and implementing the funded programmes, they must be in line with the EU's objectives and approved by the European Commission. The programmes are focused on the regions' priorities and include projects that are funded by the FSIE and currently also by the NRPS.

Moreover, in the context of the COVID-19 pandemic and the conflict in Ukraine, cohesion policy has become more important than ever to ensure solidarity between Member States and to support economic and social recovery.

Cohesion policy is an essential tool to ensure solidarity and cohesion between EU Member States and to promote balanced economic and social development. In the context of the COVID-19 pandemic, the conflict in Ukraine and climate change, cohesion policy and investment in key areas are essential to ensuring a resilient Europe and preparing for the future.

Its impact on Romania's development and on its ability to absorb EU funds has been and is significant. As a beneficiary of the cohesion policy, our country has received significant support in various areas, such as economic and social development, environmental protection, infrastructure and institutional capacity building. Cohesion funds have contributed to improving living conditions in Romania's disadvantaged regions and have supported the strengthening of economic and social cohesion within the country.

In short, with all the programmes available, the effectiveness of cohesion policy depends on each country's ability to absorb European Union funds effectively, and in these difficult times, it is important that the European Union continues to invest in cohesion policy in order to create a stronger and more united Europe.

In conclusion, cohesion policy has had and is having a significant impact on Romania, especially in terms of its ability to absorb funds. Although the country faced challenges in the efficient management of EU funds, it has made progress in reducing regional disparities and improving its economic development, and the funds provided by the EU have supported the development of infrastructure, including roads, railways and airports, as well as the development of social and educational programmes.

In order to improve its capacity to absorb funds, Romania needs to address the administrative, institutional and technical challenges it faces. This will require significant reforms in areas such as public administration, governance and education. With the right reforms, Romania can continue to benefit from the Cohesion Policy and achieve its economic and social development objectives.

## References

Adascalitei D. (2020), *Cohesion policy and EU identity in Romania*, CEU Center For Policy Studies, retrieved from <https://cps.ceu.edu/sites/cps.ceu.edu/files/attachment/project/2796/cohesify-case-study-romania.pdf>

- Borlea, S., and Dobre, A. (2018), Romanian Institutional Capacity for Implementing European Cohesion Policy, in: Barbieru, M. and Bejan A. E. (eds.), *European Integration - Realities and Perspectives*, EIRP Proceedings, Online ISSN: 2069 – 9344.
- Drăgan G. (2018), *Trends and developments in EU cohesion policy*, EIR, retrieved from [http://ier.gov.ro/wp-content/uploads/publicatii/Politica\\_coeziune.pdf](http://ier.gov.ro/wp-content/uploads/publicatii/Politica_coeziune.pdf).
- Dumitrescu, L., and Stancu, S. (2016). Cohesion policy and regional disparities in Romania: Evidence from regional composite indicators, *European Journal of Operational Research*, 251(1).
- Ornaldo, G. (2022), *Cohesion funds in Romania in 2014-2020*, retrieved from <https://www.balcanicaucaso.org/eng/Projects2/Work4future/schede-paese-Work4future/Cohesion-funds-in-Romania-in-2014-2020-215343>.
- European Commission, (2014), *Factsheets: Cohesion Policy and Romania*, retrieved from [https://ec.europa.eu/regional\\_policy/en/information/publications/factsheets/2014/cohesion-policy-and-romania](https://ec.europa.eu/regional_policy/en/information/publications/factsheets/2014/cohesion-policy-and-romania).
- European Commission (2020), *Factsheets Cohesion Policy in Romania*, retrieved from [https://ec.europa.eu/regional\\_policy/en/atlas/programmes/2014-2020/romania/2020cc](https://ec.europa.eu/regional_policy/en/atlas/programmes/2014-2020/romania/2020cc);
- European Commission (2007), Press corner: Romania, retrieved from [https://ec.europa.eu/commission/presscorner/detail/en/memo\\_07\\_306](https://ec.europa.eu/commission/presscorner/detail/en/memo_07_306).
- European Commission, *Operational Programme 'Environment'*, retrieved from [https://ec.europa.eu/regional\\_policy/in-your-country/programmes/2007-2013/ro/operational-programme-environment-3\\_en](https://ec.europa.eu/regional_policy/in-your-country/programmes/2007-2013/ro/operational-programme-environment-3_en).
- European Parliament (2021), *Cohesion Policy and support to health*, retrieved from [https://www.europarl.europa.eu/RegData/etudes/BRIE/2021/690903/IPOL\\_BRI\(2021\)690903\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2021/690903/IPOL_BRI(2021)690903_EN.pdf).
- Eurostat (2022), available at: <https://ec.europa.eu/eurostat/web/cohesion-policy-indicators/>
- Eurostat (2022), Living conditions in Europe - material deprivation and economic strain, retrieved from [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Living\\_conditions\\_in\\_Europe\\_-\\_material\\_deprivation\\_and\\_economic\\_strain](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Living_conditions_in_Europe_-_material_deprivation_and_economic_strain)
- Georgescu, D. (2019), *The Administrative Capacity in Romania - Main Bottleneck for Effective Absorption of EU Structural and Cohesion Funds*, *European Research Studies Journal*, 22(2).
- Iancu, A. E. (2017), Bureaucracy, Institutional Weakness and the Poor Absorption of EU Funds in Romania: Revisiting the Recent Literature, *Procedia - Social and Behavioral Sciences*, 237.
- Radio Romania International (2016), *European funds for transport infrastructure*, retrieved from Radio Romania International - Print (rri.ro).

## Circular economy discourses in the Central and Eastern European countries

Boglárka VAJDA\*, Gabriela DRĂGAN\*\*

### Abstract

*The practical implementation of a circular economy in the European Union poses significant challenges, notably for the EU-11 (Central and Eastern Europe) countries. The aim of this paper is to analyze the transition of the EU-11 countries toward a CE by examining existing circular strategies, national-level policies, as well as bottom-up initiatives, and on the other hand to explore the prevalent circularity discourses within the EU-11 countries. The study employs a discourse analysis method to comprehensively examine documents related to the CE aspects. This methodology integrates both quantitative categorization (codes and categories) and qualitative interpretation (reading and explanation) to support the understanding of circularity discourses. The results of this paper indicate that the countries within the EU-11 are actively advancing their efforts towards a CE. These countries are seen to be proactively developing a circular vision and setting ambitious objectives to facilitate a transition to a circular economic model.*

*Keywords:* circular economy, circular discourse, Central and Eastern Europe

### Introduction

Since the introduction of the Circular Economy Package by the European Commission in 2015, the concept of a circular economy (CE) has gained traction among EU Member States. However, implementing a circular economy poses a challenge, especially for EU-11 (comprising the Central and Eastern European countries). The transition to a circular economy requires adaptation to the specific situation of each country and region. As a response, the EU-11 countries have been implementing different policies to comply with EU requirements and facilitate the transition to a circular economy.

A prevailing emphasis on a technocentric or sector-oriented approach to the CE is evident in the current policy documents of the EU-11 countries. However, a significant challenge lies in the

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comprehensive implementation of a holistic concept of the circular economy. Effective systemic changes require integrating holistic approaches (European Union, 2020).

The European Environment Agency (EEA) report highlights that compliance with existing legislation represents the main driver of any action taken at the national level. Also, targets seem particularly effective in energizing policy development and guiding policy implementation (EEA, 2016).

The aim of this paper is twofold: to analyze the transition of the EU-11 countries toward a CE by examining existing circular strategies, national-level policies, as well as bottom-up initiatives, and on the other hand to explore the prevalent circularity discourses within the EU-11 countries. The central research question is: How do EU-11 countries envision their journey towards a circular economy? Or, in other words: Is the European Green Deal (European Commission, 2019) a motivational and inspirational compass for EU-11 countries or rather a set of formal targets and external requirements to comply with?

The paper is structured as follows: Section 1 provides an overview of the theoretical foundations of the circular economy, its stages of development, and the type of discourses, as well as the main strategies related to CE development within the EU-11. Section 2 outlines the methodology adopted for this research paper. Section 3 presents the main policy documents related to CE in the EU-11 countries as well as bottom-up initiatives that are active in promoting the concept of CE. Finally, Section 4 presents the main findings regarding the transition of the EU-11 countries toward a circular economy.

## **1. Theoretical framing**

### **1.1 The concept of the circular economy**

The circular economy has been defined in various ways by different researchers (Govindan & Hasanagic, 2018). Due to the abundance of CE conceptualization (Kirchherr *et al.*, 2017), it remains an unclear and contested concept (Calisto Friant *et al.*, 2020; Korhonen, Nuur, *et al.*, 2018) with fundamental paradigmatic divides in conceptualization (Reike *et al.*, 2018). Merli *et al.* (2018) emphasize that the CE is still evolving, requiring a consolidated definition.

Many scholars recognize the CE as a pivotal concept in advancing sustainable development (Murray *et al.*, 2017), positioning it as a key approach to achieving sustainability (Geissdoerfer *et al.*, 2017; Kirchherr *et al.*, 2017).

The CE promotes a more effective and efficient use of resources to achieve a better balance of interplay between the economy, environment, and society (Ghisellini *et al.*, 2015). Central to this

approach is the avoidance of unnecessary resource destruction (van Buren *et al.*, 2016). The CE is a core component of the green economy, defined as an ecosystem where “environmental, economic and social policies and innovations enable society to use resources efficiently, thereby enhancing human well-being in inclusive manner while maintaining the natural systems that sustain us” (EEA, 2012). The CE represents an approach with the potential to revolutionize production and consumption patterns (Korhonen *et al.*, 2018), contributing to sustainability and well-being (Ghisellini *et al.*, 2015).

Developed from a multidisciplinary perspective, the CE draws insights from economics, ecology, engineering, design, and business. Emerging as an alternative to the currently dominant and traditional extract-make-use-dispose material and energy flow model (Korhonen, *et al.*, 2018), the CE addresses the detrimental impacts of the linear throughput flow model, which include environmental degradation, resource depletion, pollution, and excessive waste generation (Korhonen *et al.*, 2018).

The linear economy, which originated during the Industrial Revolution in the 17th century, and persists today, has led to the depletion of the Earth’s resources. Characterized by its exploitative nature, it disregards environmental limits and ultimately inflicts long-term harm on society (Prieto-Sandoval *et al.*, 2018). It is commonly accepted that this economic model cannot lead to sustainable development (Millar *et al.*, 2019).

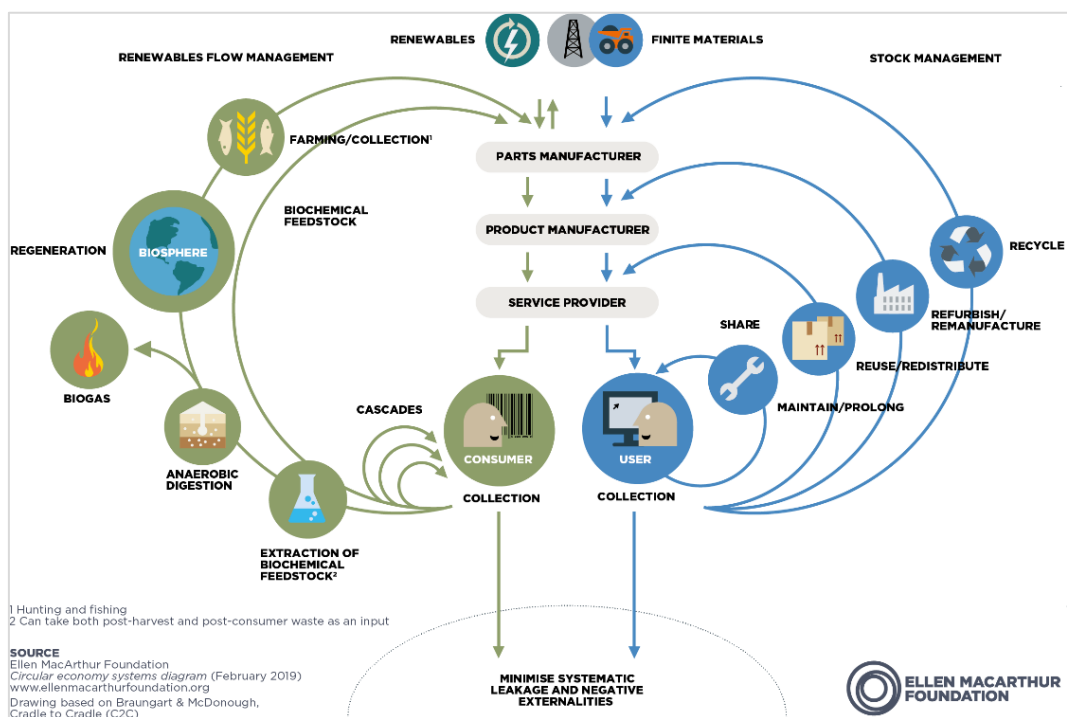
Circular economy, contrary to the linear economy, promotes a sustainable, regenerative and restorative economy, designed and intended to function in harmony with our ecosystems (Stahel *et al.*, 2019). This paradigm shift requires fundamental changes in society’s production and consumption practices (Korhonen *et al.*, 2018; Prieto-Sandoval *et al.*, 2018).

Based on the cradle-to-cradle principles and systems thinking, the concept of circular economy introduces a fundamental distinction between two different types of materials as illustrated in Figure 1. These categories comprise materials of biological origin, capable of returning to the biosphere as feedstock, and technical materials, which cannot biodegrade and become part of the biosphere (e.g. metals, plastics). According to this model, the circular economy aims to keep both material types at their highest utility and value through design, management and technological innovation (Govindan & Hasanagic, 2018; Millar *et al.*, 2019).

In addition to promoting more sustainable production patterns and technological shifts, the CE must also place a greater attention to the societal level. Active engagement of consumers becomes paramount in the paradigm shift required to change the current unsustainable consumption culture and drive profound changes in consumer behavior (Korhonen *et al.*, 2018; Merli *et al.*, 2018). Failing to incorporate this societal dimension risks downgrading the CE to a mere technical tool, potentially

incapable of steering the trajectory away from the current take-make-dispose economic paradigm (Korhonen *et al.*, 2018).

**Figure 1. Circular economy systems diagram**



Source: Ellen MacArthur Foundation, 2019

Viewing the CE only as an approach to refine waste management or as a combination of reduce, reuse, and recycle activities is a limited perspective (Kirchherr *et al.*, 2017). On the other hand, Ghisellini *et al.* (2015) assert that such a narrow viewpoint overlooks its comprehensive scope. Similarly, Geissdoerfer *et al.* (2017) think that many authors oversimplify the CE to focus exclusively on resource input, waste and emission outputs and environmental considerations, rather than embracing its holistic approach across all three dimensions of sustainability.

Associating the CE only with waste management, waste minimization or waste management policies, risks diluting its main objective of catalyzing the essential societal changes required for a comprehensive global transition (Haupt & Zschokke, 2017).

However, the concept of the circular economy extends far beyond its surface implications. It involves a profound systemic transformation encompassing not only innovation and technological systems, but also policies, societal dynamics, business models, and financial frameworks (European Commission, 2015a). The CE should be viewed in its intricate complexity and recognized for its potential to facilitate a transition towards a more sustainable economic model (D’Amato, 2021). By

aligning itself with the inherent laws of nature, the CE emerge as a promising alternative to the prevailing economic growth paradigm (Ghisellini *et al.*, 2015). Lieder *et al.* (2016) consider that CE offers a solution to reconcile aspirations for economic growth with imperatives for environmental protection. Similarly, Murray *et al.* (2017), EEA (2021), and EMF (2017) underscore that the ultimate objective of the CE is to decouple economic growth from environmental pressures and degradation.

Mapping a sustainable future for humanity requires more responsibility and a holistic mindset, that deeply involves society, environment, and economics (Murray *et al.*, 2017). The pursuit of a circular economy implies a fundamental societal transition. Such a transition is complex and requires collective efforts, not only at regional and national level, but also on a European and global scale (van Buren *et al.*, 2016).

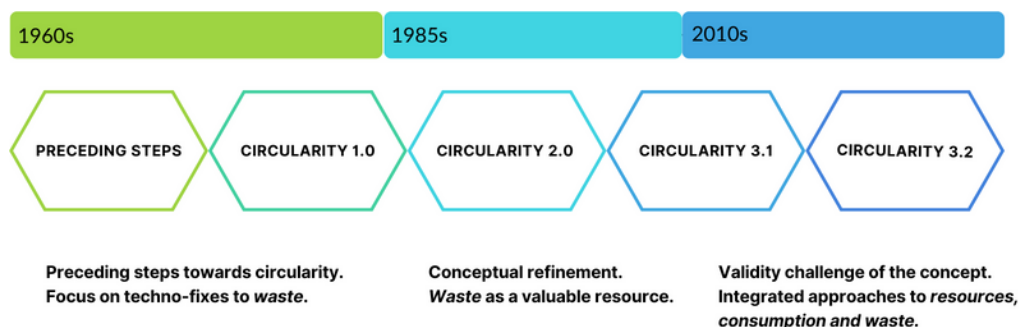
Although the CE is considered as a potential solution, there is an ongoing debate regarding its ability to drive economic growth while simultaneously avoiding environmental degradation (Millar *et al.*, 2019; Velenturf & Purnell, 2021). Ghisellini *et al.* (2015) situate the theoretical background of the CE between neoclassical economics – focused on efficient allocation of resources in the market, but not addressing the finite and depletable nature of natural resources and steady-state economics – which emphasizes the necessity of conducting activities within the constraints imposed by nature. In essence, the question remains whether the circular economy can effectively function in a context of sustained economic expansion, casting doubts on its capacity to actively promote further economic growth (Calisto Friant *et al.*, 2020; Ghisellini *et al.*, 2015).

In conclusion, the CE requires a thorough consolidation of its theoretical foundations (Calisto Friant *et al.*, 2020), along with a shared understanding of how it could effectively serve as a useful tool for achieving sustainability.

## 1.2. Stages of development of CE narratives

The origins of the CE are primarily rooted in ecological and environmental economics, as well as industrial ecology (Ghisellini *et al.*, 2015; Blomsma and Brennan, 2017; Merli *et al.*, 2018; Ashby *et al.*, 2019). Various scholars have outlined the significant stages of the CE's evolution and its key theoretical influences, along with related concepts. These contributions are summarized in Figure 2, as detailed by Blomsma and Brennan, (2017), Reike *et al.* (2018), and Calisto *et al.*(2020).



**Figure 2. Stages of development of CE**

Source: authors' representation based on Blomsma and Brennan, 2017; Calisto Friant *et al.*, 2020; Prieto-Sandoval *et al.*, 2018; Reike *et al.*, 2018

### a) Preceding steps towards circularity

Prior to the 1960s, economic theories had largely overlooked environmental concerns. A pivotal moment came with Boulding's proposition in 1966, which introduced the idea of an economy that operates within environmental limits and produces minimal waste. This notion not only laid the foundation for the circular economy concept but also paved the way for other concepts like Planetary Boundaries. During the 60s and 70s, several scholars engaged in discussions about reducing natural resource extraction and waste generation, marking early steps towards CE principles (Velenturf and Purnell, 2021).

### b) Circularity 1.0: Emergence and early concepts

In the 1980s, environmental movements gained momentum, focusing on the waste management and the detrimental impact of waste pollution. The “3R concept”, comprising reduce, reuse, and recycling, began to gain increased attention to address these issues. Although knowledge about waste management, such as regulations for landfills and incineration, began to emerge during this period, a comprehensive systemic approach had yet to take shape (Reike *et al.*, 2018).

Notable concepts that contributed to this early stage of circularity include waste-water treatment, solid waste management and recycling, energy recovery, and the notion of a closed-loop economy (Calisto *et al.*, 2020). These concepts laid the groundwork for the subsequent development of circular economy principles.

**c) Circularity 2.0: Transition and conceptual refinement**

During this period, a significant shift occurred as waste was redefined from a liability to a valuable resource. The CE emerged as a comprehensive framework, articulated by Pearce and Turner in 1989. Also, a multitude of related concepts surfaced or gained renewed emphasis, including zero-waste, resource efficiency, extended producer responsibility, sustainable consumption and production, industrial ecology, and the green economy (Blomsma and Brennan, 2017).

Noteworthy concepts contributing to the Circularity 2.0 include industrial ecology, circular economy, cleaner production, eco-industrial parks and networks, biomimicry, extended producer responsibility, industrial symbiosis, closed-loop supply chain, and biobased economy / bioeconomy (Calisto *et al.*, 2020)

**d) Circularity 3.1: Challenges and refinement**

After 2010, the CE entered a phase where it needed to prove its effectiveness, as pointed out by Blomsma and Brennan (2017) and Reike *et al.* (2018). This phase has been marked by efforts to address inconsistencies and conceptual challenges within the CE framework, aiming to establish a coherent understanding of its principles and potential. Key concepts that have come in attention during Circularity 3.1 include Cradle-to-Cradle™ (Braungart and McDonough, 2018), the Performance Economy (Stahel, 2010), the Blue Economy (Pauli, 2010), and the Circular Economy (EMF, 2015). This phase represents a critical juncture in refining the CE framework and working towards a more unified and comprehensive understanding of its principles and practical implications.

**e) Circularity 3.2: Holistic Circular Society**

This stage represents a transition from solely emphasizing the CE to envisioning a broader concept, a Holistic Circular Society. In this evolved perspective, the circulation extends beyond material and energy resources to include wealth, power, knowledge, and technology. This circulation occurs in a profoundly democratic and redistributive way, marking a fundamental transformation of socio-economic structures (Calisto Friant, 2021).

### 1.3. Visions and discourses of the Circular Economy

Some scholars (Dryzek, 2013; Audet, 2016; Mann, 2018; Calisto Friant *et al.*, 2020) have developed typologies of environmental discourses, describing and classifying stances on fundamental socio-ecological issues. These discourses pertaining to the environment and sustainability contribute to shaping social perceptions, motivations, and the debate around development, sustainability, and society's future.

Dryzek (2013) provides a comprehensive and a dynamic assessment of environmental discourses (see Table 2).

**Table 1. Dryzek's classification of environmental discourses**

	<b>Reformist</b>	<b>Radical</b>
<b>Prosaic</b>	Problem solving	Limits, boundaries, and survival
<b>Imaginative</b>	Sustainability	Green radicalism

Source: Dryzek, 2013

The reformist-prosaic discourse type, known as *Environmental Problem Solving*, recognizes the existence of ecological problems but considers them manageable within the existing framework of industrial society. The reformist-imaginative discourse, named *Sustainability*, seeks creative ways to reconcile the conflicts between environmental and economic values. Radical discourses have been classified as *Survivalism*, advocating comprehensive measures to prevent global disaster and *Green Radicalism*, which promotes a transformation in human consciousness, economics, and politics (Dryzek, 2013).

Mann (2018) presents an alternative discourse typology, distinguishing between the perspectives of Wizards, who perceive technology as the solution, and Prophets, who advocate behavioral change.

Audet (2016) introduces a transition discourse typology categorized into two broad categories, localism and technocentrism. These groups break down into more specific discourses such as 'grassroots' and 'policy change' within localism, and 'economic' and 'institutional' within technocentrism. Technocentrist transition discourses focus on scientific innovation, while localist discourses emphasize the bottom-up social transformation.

Calisto Friant *et al.* (2020) have identified four types of circular economy discourses, based on their stance regarding fundamental social, technological, political, and ecological issues (see Figure 3).

**Figure 3. Typology of circularity discourses**

<p style="text-align: center;"><b>Holistic - Optimist discourses</b></p> <ul style="list-style-type: none"> <li>- Propose a <b>mix of behavioural and technological change that led to</b> a prosperous, fair, democratic and sustainable future for all through a combination of technological breakthroughs, social innovations, and alternative business models.</li> <li>- <b>Social, economic, industrial, and environmental innovation</b> can lead to a sufficient level of eco-economic decoupling.</li> <li>- Social justice, socio-cultural change, new forms of public participation and inclusion are important aspects to be considered.</li> </ul>	<p style="text-align: center;"><b>Segmented – Optimist discourses</b></p> <ul style="list-style-type: none"> <li>- <b>Technical innovations</b>, practical, applicable, implementable new technologies, innovations, business models can transform the industrial production system without having to change social-economic power relations.</li> <li>- <b>Green growth and technological advancements, circular innovations</b> will lead to absolute eco-economic decoupling.</li> </ul>
<p style="text-align: center;"><b>Holistic – Sceptical discourses</b></p> <ul style="list-style-type: none"> <li>- Seeks to completely reconfigure the current societal system and democratize and redistribute wealth and power so that humanity and nature might live in mutual harmony. It proposes the transformation of the entire socio-economic <b>system</b> (economic downscaling, sufficiency, a simpler, slower, more meaningful life.</li> <li>- Giving greater importance to <b>cooperative, collaborative</b> economic structures, direct <b>participation</b>, citizen <b>inclusion</b>, <b>bottom-up governance, open-innovations, eco-friendly technologies</b>.</li> </ul>	<p style="text-align: center;"><b>Segmented – Sceptical discourses</b></p> <ul style="list-style-type: none"> <li>- With a rational, unidealistic understanding of systemic conditions it aims to secure natural resources, economic prosperity, socio-ecological resilience and geopolitical power through top-down migration controls, technological innovations, and economic rationalism.</li> <li>- Innovative technologies and business models, rationalize resource use, impose sufficiency, population control, resource efficiency, crisis management from the <b>top-down</b>.</li> </ul>

Source: authors' representation based on Calisto *et al.* (2020)

The first typological axis centers around the extent of consideration given to social, economic, environmental and political factors:

- (a) Holistic discourses encompass a comprehensive integration of social, ecological, and political considerations within circularity, aiming for substantial socio-political and cultural transformation, like circular society visions.
- (b) Segmented discourses, on the other hand, adopt a homogeneous perspective, focusing on the “technical, industrial and business components of circularity in order to improve resource efficiency” (Calisto Friant *et al.*, 2020).

The second typological axis evaluates the ability or inability of the current socio-economic system to prevent ecological collapse by decoupling economic growth from environmental degradation:

- (a) Optimist discourses consider that “the socio-technical innovations can lead to eco-economic decoupling and thereby prevent an ecological collapse”
- (b) Skeptical discourses, in contrast, harbor doubts about the feasibility of socio-technical innovations to prevent ecological collapse by decoupling economic growth from environmental exploitation.

#### **1.4. Circular Economy in the European Union**

Over the years, the EU institutions have been actively involved in promoting a circular economy that maximizes the efficient utilization of resources. It was the European Commission *Thematic Strategy on the sustainable use of natural resources* (2005) that set the basis for developing current circular economy strategies and roadmaps across the EU. This strategy highlighted the importance of measuring resource efficiency and established as main objective the decoupling economic growth from natural resource consumption. This objective aims to achieve a reduction in environmental impact while improving resource productivity (European Economic and Social Committee, 2019).

The Strategy was followed by the *Roadmap to a Resource Efficient Europe* (European Commission, 2011). This document integrated circular economy logic into EU-wide policy making and represented a call for a circular, resource-efficient, and resilient economy (European Commission, 2012).

In 2015, the European Commission adopted its first *Circular Economy Action Plan* (2015-2019) (European Commission, 2015). It included measures to facilitate Europe's transition towards a circular economy. The action plan established concrete and ambitious actions, with measures

covering every stage of the lifecycle: from production and consumption to waste management and the secondary raw materials market. Additionally, it featured a revised legislative proposal on waste.

A *Circular Economy Package* has been adopted by the European Commission in 2018. This package included multiple components, respectively: a monitoring framework for the circular economy, a report on critical raw materials, a strategy on plastics in the circular economy, an analysis and policy options to address the interface between chemicals, products and waste legislation. In the subsequent year, the Commission finalized the circular economy package, complemented by a Report on the implementation of the circular economy action plan and with a Staff Working Document on sustainable products in a circular economy.

One of the latest strategic initiative at the EU level is the newly *Circular Economy Action Plan* (European Commission, 2020), officially adopted by the Commission in March 2020. This Plan is one of the main building blocks of the European Green Deal (2019), Europe's new agenda for sustainable growth. It announces initiatives alongside the entirety of a product's life cycle. It targets product design methods and aims to promote the circular economy process, promote sustainable consumption, reduce waste generation and optimize the retention of resources within the EU economy. It includes new rules to make almost all physical goods on the EU market more friendly to the environment, circular, and energy efficient throughout their whole lifecycle from the design phase through to daily use, repurposing, and end-of-life.

In March 2022 a first package of measures has been adopted for implementing the circular economy action plan. This package includes: a Sustainable Products Initiative, including the proposal for the Eco-design for Sustainable Products Regulation, an EU strategy for sustainable and circular textiles, a proposal for a revised construction products regulation, and a proposal for empowering consumers in the green transition.

## 2. Methodology

The study employs the Critical Discourse Analysis (CDA) method to comprehensively examine documents related to the CE aspects. This methodology integrates both quantitative categorization (codes and categories) and qualitative interpretation (reading and explanation) to support the understanding of circularity discourses.

The methodology consists of four distinct steps designed to ensure a systematic and insightful analysis. In the **first step** of the methodology, a process of data selection and corpus creation was undertaken. The focus is on publicly available documents, respectively country assessment reports,

EU-level policy documents and CE related reports, as well as national CE strategies, action plans, roadmaps of EU-11 countries, complemented by research articles focusing on country-specific CE aspects. This phase is characterized by a focused CDA, reflecting a deliberate choice of documents/countries for analysis.

**Table 4. List of strategies or similar studies included in the content analysis**

Country	Strategy or similar
Czech Republic	Circular Czechia 2040 (OECD, 2021)
Croatia	Circular Economy Approaches in Solid Waste Management: Diagnostic Analysis (World Bank, 2022)
Hungary	Towards a National Circular Economy Strategy for Hungary (OECD, 2023)
Slovenia	Roadmap towards the Circular Economy in Slovenia (Circular Change, 2018)
Slovakia	Closing the Loop in the Slovak Republic a Roadmap Towards Circularity for Competitiveness, Eco-Innovation and Sustainability (OECD, 2022)
Poland	Roadmap for Circular Economy Transition (Ministry of Development, 2019)
Romania	National Strategy for the Circular Economy (Romanian Government, 2022)

Source: authors

**Table 5. List of strategies not included in the content analysis**

Country	Document title
Bulgaria	The Strategy and Action Plan for the transition to a circular economy for the period 2022–2027 (2022) - only in Bulgarian
Latvia	Action plan for the transition to a circular economy 2020– 2027 (2020) - only in Latvian
Lithuania	National Action Plan for the Circular Economy for 2023–2035 (under development) - only in Lithuanian
Estonia	White Paper on the Circular Economy (2022) - only in Estonian

Source: authors

The **second step** involves the development of coding schema. Following the collection of relevant publications, a structured coding schema was created to identify empirical observations that pertain to validity claims and ascertain the frequency of specific arguments within the documents. Drawing inspiration from Cukier *et al* (2009), this schema serves as a framework for systematically

categorizing and labeling distinct sections of the text. To facilitate an organized and efficient analysis process, the study has employed the ATLAS.ti software for content analysis. This software has contributed to the systematic labeling, organization, and examination of coded segments of text.

Based on the typology of circularity discourses developed by Calisto Friant *et al.*(2020), the methodology of this study involves the definition of a number of *54 codes*, categorized into *four code categories*. These codes were established using dedicated software to ensure a structured and systematic analytical process.

**Table 6. List of codes by categories**

Code category	Codes
Holistic discourse	awareness, behaviour*, citizen, consumer, cooperat*, collaborat*, partner*, education, knowledge, skills, competences, employ*, job*, governance, health*, inclusive*, local value chain, participat*, social, society*, stakeholder*, well-being / wellbeing
Segmented discourse	"energy efficiency", "life cycle", "resource efficiency", "waste management", bioeconomy, compost*, durability, incinerat*, recyclab*, recycling, renewable*, repair*, reuse*
Optimistic discourse	AI / artificial intelligence, business*, competitiveness, industry, digitalization, efficien*, GDP / "gross domestic product", growth, innovation, productivity, R&D / "Research & development", technical, technolog*
Sceptical discourse	"critical raw materials", resilien*, risk*, crisis, secur*, migra*

Source: authors

In the **third step**, the process of reading and interpretation is engaged. This phase involves a comprehensive exploration of the **qualitative insights** derived from the documents. It is important to acknowledge that this interpretative process inherently carries a certain level of subjectivity, potentially introducing bias into the interpretation.

Moving to the **fourth step**, the focus shifts to elucidating the aggregate findings. Within this phase, the study highlights the prevailing perspectives that emerge from the extensive body of literature under scrutiny. This final step presents a comprehensive panorama of the prevailing discourses within the domain of circularity. In Step 4 the aggregate finding is explained, by highlighting the dominant perspectives found in the body of literature.

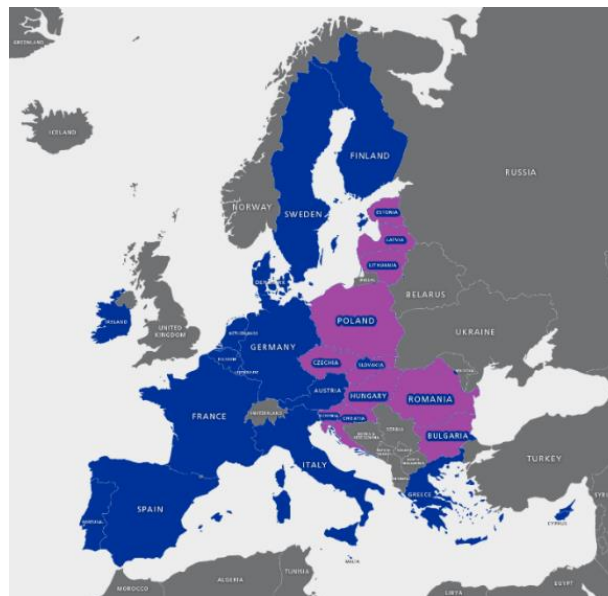


### 3. Circular economy in the EU-11 macro-region

#### 3.1. The EU-11 macro-region

Following the collapse of Communism in 1989, the Central and Eastern European (CEE) countries expressed their willingness to join the EU. Since their accession, one of the central political objectives has been to close the economic gap between the new and the old member states (Popov, 2021).

**Figure 3. Older and newer EU member states in Central and Eastern Europe**



Source: authors' representation  
 Note: newer member states are displayed in pink.

When it comes to the speed of their green transition efforts, the CEE countries are facing difficulties in keeping pace with their counterparts in Western Europe. Establishing such a shift is a complex task demanding fundamental changes in culture, structure and practices in many subsystems of society (Vanner *et al.*, 2014).

**Table 7. General economic data of EU-11 countries**

	<b>Population</b> (mil. people, 2022)	<b>GDP</b> (billion PPS, 2021)	<b>GDP per inhabitant</b> PPS, EU =100 (2021)
<b>Visegrad countries</b>			
Czech Republic	10.51	316	91
Poland	37.65	953	77

Hungary	9.69	238	76
Slovakia	5.43	120	68
<b>Baltic countries</b>			
Estonia	1.33	37	87
Latvia	1.87	43	71
Lithuania	2.80	80	88
<b>Ex-Yugoslav countries</b>			
Croatia	3.87	88	70
Slovenia	2.10	61	90
<b>South-Eastern countries</b>			
Bulgaria	6.83	123	55
Romania	19.03	452	73

Source: Eurostat, 2022

Moving towards a circular economic model is a necessity for EU-11 countries. However, the approach to addressing various aspects of this transition varies based on the territorial context (European Economic and Social Committee, 2019) and the vision of each EU country.

### 3.2 National policy frameworks and bottom-up initiatives in the field of Circular Economy

#### Visegrad countries (V4)

V4 is a regional configuration within the EU composed of four former post-socialist countries, characterized by an energy and material intensive economy. The transition toward resource-efficient, low carbon and circular economy represents a common challenge for them (Pomázi and Szabó, 2020).

#### a) Czech Republic

The Czech Republic developed a national circular economy strategic framework towards 2040 (Circular Czechia 2040), that was adopted in December 2021 (EEA, 2022).

Circular Czechia 2040 defined its vision as follows: “In 2040, the circular economy brings significant environmental, economic, and social benefits to the Czech Republic. As part of the measures taken, the Czech Republic systematically supports the circular economy as a model for improving environmental protection, strengthening competitiveness and technological sophistication, creating new jobs, increasing raw material security, and acquiring new competencies of the citizens,” with a main goal of “Less waste and more value for the Czech Republic”.

As priority areas, Circular Czechia 2040 strategy puts emphasis on (a) a more circular consumption (changes in consumption patterns and consumption behaviour), (b) waste management and (c) circular production and design (OECD, 2021).

Three Action Plans, each for a six-year period are set to be developed, which will establish the implementation of the strategy.

The country has a well-developed and fairly complete policy and legal frameworks for waste and materials management; however it faces challenges related to high shares of direct landfilling, lack of cost-efficiency in waste management, insufficient measures to minimize the environmental impact of waste and materials management over their life-cycle, and inadequate waste prevention and “upcycling” of waste into higher-value products (OECD, 2021).

The Czech Republic also has an overarching sustainable development Strategic Framework 2030, a State Environmental Policy to 2030, a Waste Management Plan of the Czech Republic for the period 2015-2024, all including the notions of circular economy (EEA, 2022).

Relevant bottom-up initiatives, promoters of the circular economy concept: the Circular Economics Institute (INCIEN), the Czech Association of Circular Economy, Prague Circular Hub, The Union of Redistributors and Processors of Secondary Raw Materials (SVDS).

## **b) Poland**

Poland already started in 2016 to prepare a Roadmap for Circular Economy Transition. Its main goal was the preparation of an action plan for increasing resource efficiency and waste reduction in Poland.

Four main avenues were proposed as follows: (I) Sustainable industrial production – aiming to highlight the important role of industry and opportunities for its development; (II) Sustainable consumption – showing how much potential exist is this; (III) Bioeconomy - dealing with the management of renewable, biological raw materials, with a great potential; and (IV) New business models – emphasizing the possibilities of reorganizing the way various market participants operate (Avidiushchenko, 2021), (EEA, 2022).

The roadmap development is the result of an intensive interdisciplinary and inter-sectoral work, more than 200 partner organizations participated in its preparation: the business sector, NGOs, the academic and research community, and local and regional authorities. The final version of the roadmap was presented at the end of 2018 and adopted in September 2019.

Deloitte consultancy company also carried out a report about possible ways of boosting CE development from a business and consumer perspective, as well as possible supporting actions on the side of the public administration (Avdiushchenko, 2021).

An essential role in disseminating and awareness raising of the CE concept is made by INNOWO and the Polish Circular Hotspot - a public cooperation platform based on networking among partners from various sectors for the purpose of introducing innovative, comprehensive, practical, and scalable solutions in all sectors of the economy.

### **c) Hungary**

The national CE strategy of Hungary has been developed in cooperation with the Organization for Economic Co-operation and Development (OECD) and with the participation of relevant policy and economic actors (OECD, 2023).

The country has targeted that "by 2040, Hungary will become a more competitive and sustainable economy, having adopted a holistic approach to the CE transition, focusing not only on waste management, but also on the industrial, agricultural and service sectors" (EEA, 2022). The National Circular Economy Strategy identified three main sectors with the highest circular potential: food/biomass; construction and plastics.

Beside the CE strategy 2040, other policy frameworks also include specific aspects of the CE – mainly regarding waste management (Waste Management Development Concept 2014- 2027, the National Waste Management Plan 2021-2027).

In Hungary, CE policies are primarily focused on raw materials, industry, agriculture and food, energy and climate, transportation, building, R&D&I, and digitalization (OECD, 2023). Resource efficiency in production, sustainable use of natural resources, creation of new business models and efficiency in waste management are key aspects within CE related policies.

In terms of CE networks, the Circular Point – established by Geonardo Ltd., and the Circular Economy Platform – developed by the Business Council for Sustainable Development in Hungary (BCSDH), are contributing to the development of circular economy related topics.

### **d) Slovakia**

The core policies relevant to the circular economy in the Slovak Republic include the general frameworks: Slovakia 2030 and Envirostrategy 2030, the sectoral policy on raw materials related to

the technical cycle in a circular economy (Raw Materials Policy), and three waste management related policies (Waste Management Plan, Waste Prevention Programme, Food Waste Prevention Plan) (OECD, 2022).

The Greener Slovakia – Strategy of the Environmental Policy of the Slovak Republic until 2030 (2019) highlights waste management as one of the main environmental challenges. It also states the stagnation of the waste management system and emphasizes the need to transition to a circular economy. The Envirostrategy 2030 sets the vision “to achieve better environmental quality and sustainable circulation of the economy, which is based on rigorous protection of environmental compartments and using as little non-renewable natural resources and hazardous substances as possible, which will lead to an improvement in health of the population. Environmental protection and sustainable consumption will be part of the general awareness of citizens and policy makers.”

A Circular Roadmap and implementation plan has been carried out by the Ministry of Environment of the Slovak Republic with the support of OECD and through a stakeholder dialogue process (OECD, 2022). The main objectives are to improve waste management, decrease the environmental footprint, use natural resources effectively, support innovation progress, and increase the competitiveness of the country.

Three areas have been prioritized: the sustainable consumption and production with a focus on economic instruments, the construction sector, and the food and bio-waste value chain (OECD, 2022).

A public-private partnership, named Circular Slovakia promotes and supports the circular economy. The platform's founding members are the Environment Ministry, the Dutch Embassy, the Slovak Business Agency, Pricewaterhouse Coopers Slovakia, the Circular Economy Institute - INCIEN, the Slovak Environment Agency and the Dutch Chamber of Commerce in Slovakia.

## **Baltic countries**

### **a) Latvia**

The country has adopted a designated CE strategy in 2020, called Action plan for the transition to a circular economy 2020– 2027. Seven initiatives have been proposed, such as (a) transition from waste management to resource management, (b) improving resource productivity in all sectors of the economy, (c) reuse of goods, (d) transition from the purchase of goods to services, (e) improve the management of materials, processes, and waste in priority sectors, (f) strengthen the role of municipalities and (g) engagement, information, and education of the public (EEA, 2022).

## **b) Estonia**

Estonia introduced the White Paper on the Circular Economy in 2022, developed by the Ministry of the Environment (Parksepp and Piirsalu, 2023). The strategy has set an ambitious vision: “Estonia has a functioning circular system of production and consumption, and we are a smart country leading the transition to a circular economy” and it aims to support different stakeholders – the government, municipalities, entrepreneurs and individuals – in mainstreaming the principles of circularity in production, consumption, policies, lifestyle, culture and values (EEA, 2022).

With regards to circular economy related platforms, the Estonian Environmental Management Association established in 2018 a Circular Economy Forum, which now already counts several companies among its members and receives support from the national Ministry of Environment. The Circular Economy Forum is an open platform for communication and cooperation to raise business awareness of the circular economy and support wider application of circular business models.

## **c) Lithuania**

The country supports the EU circular economy package and the shift to the circular economy in general, and a National Action Plan for the Circular Economy for 2023–2035 is currently under development. According to the country profile published by EEA (2022) the action plan will cover the circularity of industry, the bioeconomy, transport, construction, consumption, and new business models.

Lithuanian civil society is getting more involved in promoting circularity, with examples of fruitful cooperation with local authorities. For example, the ‘Žiedinė ekonomika’ (circular economy) non-profit organization networks local, national and European public authorities with companies to help develop circular business models in Lithuania and provides seminars on the circular economy.

## **South-Eastern countries**

### **a) Romania**

The National Strategy for the Circular Economy was developed under the coordination of the Department for Sustainable Development as part of the Prime Minister’s Office, in partnership with the Ministry of Environment, Waters and Forests and the Ministry of Economy in the frame of the

Technical Support Instrument project funded by European Commission. The strategy has been adopted in 2022 (EEA, 2022).

The strategy will be accompanied by an Action Plan, planned to be in place by the third quarter of 2023.

The National strategy on circular economy identified the following sectors with the highest circular potential: agriculture and forestry, automotive, construction, consumer goods such as food and beverages, packaging, textiles and electrical and electronic equipment.

Circular economy related policy elements are also included in the legislation of waste management, in the Recovery and Resilience Plan as well as in the De minimis aid scheme for the transition to the CE (dedicated for industry) (EEA, 2022).

Platforms that actively promote CE and facilitate cross-sectoral dialogue are the Romanian Circular Economy Stakeholder Platform (ROCESP) launched at national level by the Ernest Lupan Institute for Research in Circular Economy and Environment (IRCEM) and CERC – the Circular Economy Coalition.

## **b) Bulgaria**

The Strategy and Action Plan for the transition to a circular economy for the period 2022–2027 was approved by the interim government Council of Ministries in 2022 (Bulgarian News Agency, 2022). It aims to achieve resource efficiency through the implementation of the waste management hierarchy, preventing waste generation, promoting material and reuse through recycling, reducing landfilling and limiting the harmful impact of waste on the environment and human health (EEA, 2022).

The main National strategies and action plan tackling the circular economy is the National Waste Management Plan 2021-2028 (implemented by the Ministry of Environment and Water /MOEW/).

The country has the EU's lowest rate of resource productivity. Waste management, including separate collection, remains a challenge. While there was some progress in the closure and rehabilitation of non-compliant landfills, the process is still not completed and illegal landfilling remains an issue.

Circular and low-carbon economy is a priority of the National Development Programme Bulgaria 2030 (Council of Ministers, Bulgaria 2020). The main goal is to reduce the resource intensity of the country's economy and increase the efficiency of the materials used. Action will be taken to

increase resource productivity throughout their life-cycle and the rate of circular (secondary) use of materials in the economy, to stimulate product life extension, to reduce waste and control the need to extract new resources.

As promoter of the CE, the Bulgarian Association Circular Economy and Biotech - BACEB work towards transforming the linear business models into circular ones in the agricultural, food, and feed sectors in Bulgaria. BACEB works together with the state and European bodies in the direction of implementation and utilization of the opportunities of the circular economy for the Bulgarian business in order to increase the innovative performance of the country.

## **Ex-Yugoslav countries**

### **a) Croatia**

Croatia is lagging behind in transitioning to CE although the Government is trying to apply CE approaches in waste management policies and strategies. (World Bank, 2021). The current National Waste Management Plan 2017-2022 (NWMP) has not been implemented as planned, although Croatia invested substantial public money in the waste management system. Implementation proved to be the problem (Luttenberger, 2020).

The World Bank supports the Government of Croatia in improving waste management processes. The Government has identified the construction and demolition waste sector as a priority in its circular approach to waste management. The aim is to showcase and lead other sectors in Croatia in an effective application of circular economy principles, targeting waste reduction and—where waste generation cannot be avoided—recovering economic value from it while avoiding negative impacts on the environment and climate (World Bank, 2022).

The new NWMP (2023-2028) is intended to bring more advanced waste prevention measures, and detailed policy measures on sustainable products (World Bank, 2021).

In the report elaborated by the World Bank (2022), four sectors were proposed for priority action in the CE context: food, construction, plastics and textile. Out of the four sectors identified, the Ministry of Economy and Sustainable Development chose construction and demolition waste (CDW) as the priority sector for the development of a Circular Economy Action Plan.

### **b) Slovenia**

Slovenia developed its Roadmap for circular economy beginning with 2016, in the framework of the project Partnership for Slovenia's Green Economy, taking place under the patronage of the



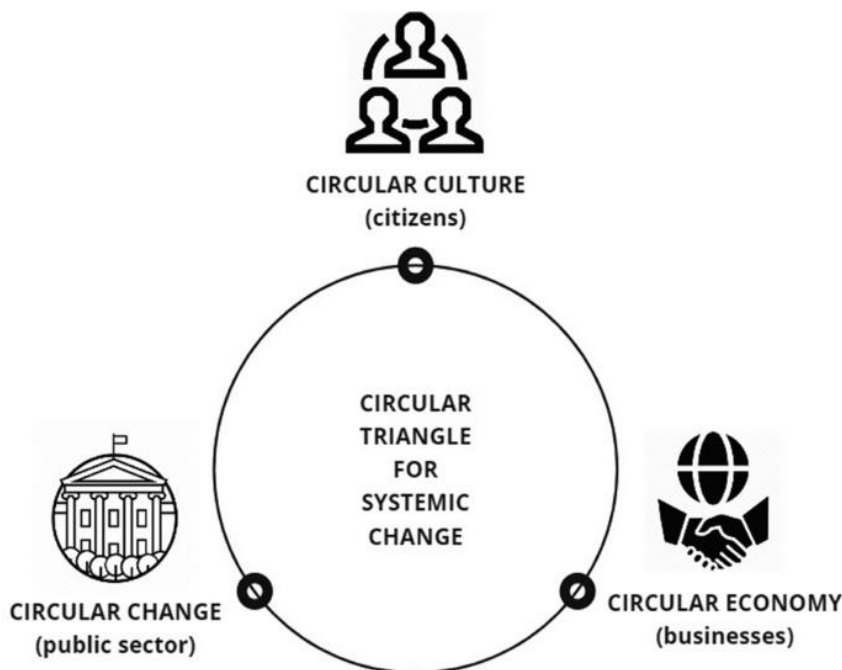
Prime Minister uniting over 3,000 partners. The roadmap represents a bottom-up driven initiative with the involvement of multiple stakeholders (Lavtizar *et al.*, 2021). The consortium of document authors was led by the Circular Change NGO platform (World Bank, 2021).

In the process of creating the roadmap, a number of guidelines were consulted, developed by Ellen MacArthur Foundation, the McKinsey and Systemiq Companies, the Circle Economy – The Circularity Gap Report, the Dutch, Finnish and Danish Roadmaps (Godina Košir, 2018).

The roadmap is based on the concept of the “Circular Triangle” (Circular Change, 2018), presented in Figure 4 (Godina Košir and Giacomelli 2018).

The triangle unites three interconnected elements – Circular Economy (represented by companies/businesses adopting circular business models), Circular Change (represented by public sector on international, national, regional, and local level, adopting policies that support the circular transition) and Circular Culture (represented by the citizens, who support the circular transition through their consumer habits, choice of products and services, by shifting to become a user of a service instead of an owner of the product, practice repairing of items instead of replacing with new ones, reducing waste, purchase high quality, eco-designed products, etc.).

**Figure 4. Representation of the circular triangle**



Source: adopted from Godina Košir and Giacomelli 2018) (Lavtizar Vesna *et al.*, 2021)

The systemic transition is complex and calls upon support, collaboration, and CE-supporting mindset from all—the government, businesses, and citizens. “Systemic change is only possible if all

three aspects are coordinated. The public sector, the business sector and the citizens form a circle of interdependent stakeholders of Circular Change”(Godina Košir, 2018).

As what regards Slovenian cities, Maribor has an official Strategy for transition to circular economy, approved in 2018 and Ljubljana is implementing several CE projects which gained international visibility (Lavtizar *et al.*, 2021).

Additionally, in 2019 the EIT Climate-KIC (2019) selected Slovenia for a Deep Demonstration project. The implementation is taking place from 2021 to 2025. The programme is focused on three pillars and aims at applying a system-based approach to enable a process for decarbonizing Slovenia’s socio-economic system through circular economy principles. The three pillars for National Circular Economy Transition that were defined are: 1. Smart and circular communities, 2. Circular green development and 3. Circular policy design and science (EIT Climate KIC, 2020).

The Deep Demonstration methodology was chosen due to the complexity associated with transforming whole systems (not only technical but also social systems). This mechanism aims to generate actionable intelligence for local policy and decision makers on how to manage system change in the current context of urgency, diversity and uncertainty (EIT Climate KIC, 2019).

Several networks and organizations fulfil promoting the circular economy principles in Slovenia.

Circular Change is a private non-profit organization with a strong international network serving as the best entry point for circular economy projects across Europe. It offers a range of services which enable its partners to design their own unique circular transition. Circular Change engages with small and large companies, government agencies, cities, non-profits, researchers, creatives and the media in collaborative projects to co-create Circular Economy solutions, projects, reports, events and more.

CER Sustainable Business Network Slovenia is a sustainable business network comprised of 90 members, mostly companies. Working to build a more sustainable economy in Slovenia, the network believes that a climate-neutral and circular economy is the only possible future and companies must adapt to the challenges and opportunities present.

The Strategic Research and Innovation Partnership – Networks for the transition into circular economy being a connection of Slovenian business subjects, educational and research institutions (RRI), non-governmental organizations and other interested parties, in collaboration with the state, into new value chains according to the economic principles of closed material flows. Its vision is to sustainably increase the efficiency and competitiveness of the domestic economy in the transition into circular economy.

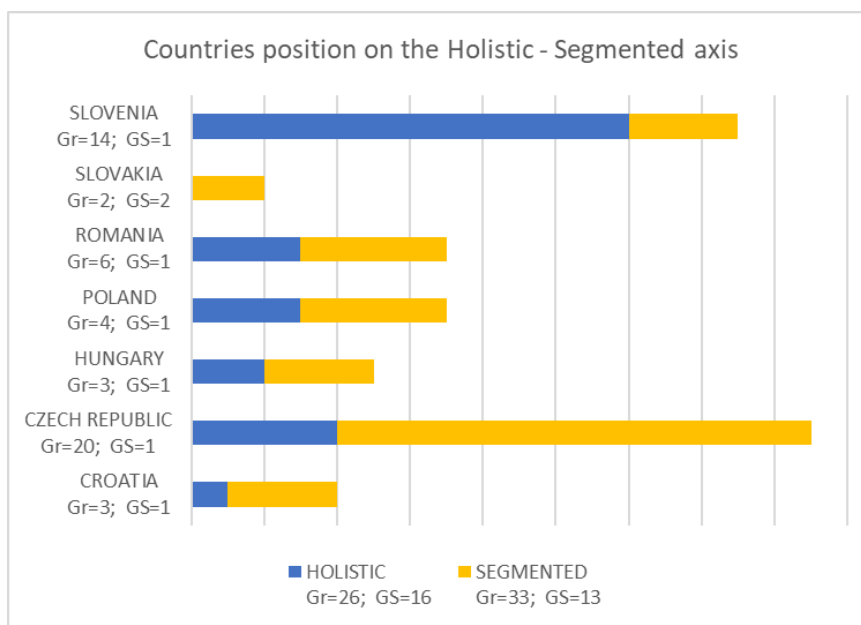
#### 4. Discussions and findings

The aim of this paper was to analyze whether and how EU-11 is moving to a circular economy and to explore the type of circularity discourses in the EU-11 countries. Regarding the progress made, we can state that CEE countries are preoccupied in developing a circular vision and formulated ambitious objectives in transitioning to circular economy.

The strategies being pursued in the CEE countries follow various approaches, including ones with a more technocentric or sector-oriented focus, as well as those grounded in a holistic-reformist vision. Each of these options or a combination of them offers distinct advantages. The adoption of a sector-specific focus is likely to yield relatively prompt results, enabling the support of numerous initiatives and value chains. This process will facilitate a gradual shift towards a circular model. (European Economic and Social Committee, 2019).

The graph representing the first typological axis of “Holistic – Segmented discourses” shows that circularity discourses are predominantly segmented in the case of the Czech Republic, Slovakia, Croatia and Hungary.

**Figure 5. Countries position of the Holistic – Segmented axis**



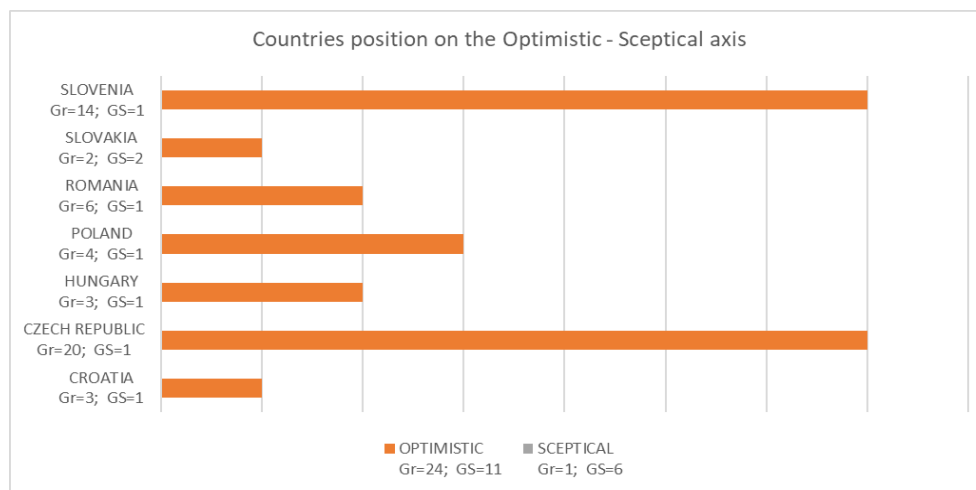
Source: authors' representation

Integrated or holistic approaches address the circular economy in its full complexity, aiming to foster circularity through partnership and mutual learning (European Economic and Social Committee, 2019). A predominantly holistic discourse might be identified in the case of Slovenia. In

the case of Romania and Poland, both elements of segmented and holistic discourses could be identified.

Regarding the second typological axis, “Optimistic – Sceptical discourses”, all the analyzed countries fall under the quadrant of Optimistic discourses.

**Figure 6. Countries position of the Optimistic – Sceptical axis**



Source: authors' representation

It is important to note that this paper has limitations due to the chosen qualitative methodology. Qualitative content analysis is an interpretative technique and as such, the meaning that is extracted may be considered subjective to the researcher.

Therefore, a more in-depth analysis could be performed by analyzing more strategies, policy-related documents, implementation plans, in order to draw clear conclusions. Transitioning to the CE is an evolutive process – that needs to be carefully analyzed in future research works.

## Conclusions

This study has examined the recent developments in Central and Eastern European countries related to circular economy policies and initiatives. The results of this paper indicate that the CEE countries within the EU-11 are actively advancing their efforts towards a CE. These countries are seen to be proactively developing a circular vision and setting forth ambitious objectives aimed at facilitating a transition to a circular economic model.

In terms of strategies being pursued, a range of approaches has been observed. These include strategies with a more technocentric or sector-oriented focus, as well as those characterized by a holistic-reformist vision. Each of these approaches, whether pursued individually or in combination,

offers unique advantages. In addition, active engagement in international cooperation and knowledge exchange alongside the implementation of demonstrative projects are of crucial importance in driving sustainability transitions and shaping a circular society.

Moreover, shaping CE strategies needs multistakeholder involvement: raising the awareness of the citizens and changing their behavioral patterns is one of the key factors in enacting change towards circular economy. The successful transition to a circular economy will require more than just a change in consumer and business behaviors and mindsets. It will also need political and economic responses, requiring close collaboration among all stakeholders: the government, businesses, civil society, academia, media, and citizens.

The research shows that countries like Poland and Slovenia have already carried out significant steps towards CE and took important steps in coordinating and mobilizing various stakeholders in developing their strategies. Public-private cooperation and bottom-up initiatives also contributed significantly in spreading the concept of CE in these countries. It is important that other Member States from the CEE region work on developing and implementing comprehensive Circular Economy strategies.

## References

- Ashby, A., Callegaro, A. M., Adeyeye, K., and Granados, M. (2019), The Spiral Economy: A Socially Progressive Circular Economy Model? *Greening of Industry Networks Studies*, 7, 67–94. [https://doi.org/10.1007/978-3-030-15066-2\\_5](https://doi.org/10.1007/978-3-030-15066-2_5)
- Audet, R. (2016), Transition as discourse, *International Journal of Sustainable Development*, 19(4). <https://doi.org/10.1504/IJSD.2016.080512>
- Avdiushchenko, A. (2021), Circular Economy in Poland: Main Achievements and Future Prospects, *Green Energy and Technology*, 141–154. [https://doi.org/10.1007/978-3-030-57764-3\\_10](https://doi.org/10.1007/978-3-030-57764-3_10)
- Blomsma, F., and Brennan, G. (2017), The Emergence of Circular Economy: A New Framing Around Prolonging Resource Productivity, *Journal of Industrial Ecology*, 21(3), 603–614. <https://doi.org/10.1111/jiec.12603>
- Braungart, M., and McDonough, W. (2018), *Cradle to cradle*. Vintage Classics.
- Bulgarian News Agency (2022), *Cabinet Approves 2022-2027 Strategy, Action Plan on Bulgaria's Transition to Circular Economy*, 26 October, retrieved from <https://www.bta.bg/en/news/bulgaria/350162>

- Calisto Friant, M. (2021), *The Circular Economy: Societal Transformation or Economic Fairytale?*, *Revolve 4.0*, retrieved from <https://revolve.media/the-circular-economy-societal-transformation-or-economic-fairytale-2/>
- Calisto Friant, M., Vermeulen, W., Salomone, R., and Vermeulen, W. J. (2020), *A typology of circular economy discourses: Navigating the diverse visions of a contested paradigm*. <https://doi.org/10.1016/j.resconrec.2020.104917i>
- Circular Change (2018), *Circular transitioning: a multi-layer systemic transformation: Introducing the Circular Triangle*, retrieved from <https://www.circularchange.com>
- Circular Change (2018), *Proposal for a uniform document on the potentials and opportunities for the transition to a circular economy in Slovenia. Roadmap towards a Circular Economy in Slovenia*, retrieved from <https://circulareconomy.europa.eu/platform>
- Council of Ministers, Republic of Bulgaria (2020), *National Development Programme Bulgaria 2030*, retrieved from <https://www.minfin.bg/en/1394>
- Cukier, W., Ngwenyama, O., Bauer, R., and Middleton, C. (2009), A critical analysis of media discourse on information technology: Preliminary results of a proposed method for critical discourse analysis, *Information Systems Journal*, 19(2), 175–196. <https://doi.org/10.1111/j.1365-2575.2008.00296.x>
- D’Amato, D. (2021), Sustainability Narratives as Transformative Solution Pathways: Zooming in on the Circular Economy, *Circular Economy and Sustainability*, 1(1), 231–242. <https://doi.org/10.1007/s43615-021-00008-1>
- Dryzek, J. S. (2013), *The Politics of the Earth: Environmental Discourses*, OUP Oxford. <https://books.google.ro/books?id=EJM1OTeZ0sgC>
- EEA (2012), *Environmental indicator report 2012: Ecosystem resilience and resource efficiency in a green economy in Europe*, retrieved from <https://www.eea.europa.eu/publications/environmental-indicator-report-2012/environmental-indicator-report-2012-ecosystem>
- EEA (2016), *More from less-material resource efficiency in Europe 2015 overview of policies, instruments and targets in 32 countries*, retrieved from <https://www.eea.europa.eu/publications/more-from-less>
- EEA (2022), *Country profiles on Circular Economy in Europe*, ETC/CE Reports 2022/5: Circular economy country profiles, retrieved from <https://www.eionet.europa.eu/etcs/etc-ce/products/etc-ce-reports-2022-5-circular-economy-country-profiles-a-set-of-30-country-profiles-that-summarise-policies-and-initiatives-in-the-area-of-circular-economy>

- EIT Climate KIC (2019), *Slovenia: Systems innovation for the transition to a circular, regenerative and low-carbon economy*, retrieved from <https://www.climate-kic.org/circularslovenia-2/>
- EIT Climate KIC (2020), *Slovenia adopts EIT Climate-KIC Circular, Regenerative Economies Deep Demonstration*, retrieved from <https://www.climate-kic.org/news>
- Ellen MacArthur Foundation (2015), *Towards a circular economy. Business rationale for an accelerated transition*, retrieved from [https://kidv.nl/media/rapportages/towards\\_a\\_circular\\_economy.pdf?1.2.1](https://kidv.nl/media/rapportages/towards_a_circular_economy.pdf?1.2.1)
- European Commission (2005), *Thematic Strategy on the sustainable use of natural resources*, retrieved from <https://faolex.fao.org/docs/pdf/eur202547.pdf>
- European Commission (2011), *Roadmap to a Resource Efficient Europe*, COM(2011) 571, retrieved from <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52011DC0571>
- European Commission (2015), *Closing the loop - An EU action plan for the Circular Economy*. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, retrieved from [https://eur-lex.europa.eu/resource.html?uri=cellar:8a8ef5e8-99a0-11e5-b3b7-01aa75ed71a1.0012.02/DOC\\_1&format=PDF](https://eur-lex.europa.eu/resource.html?uri=cellar:8a8ef5e8-99a0-11e5-b3b7-01aa75ed71a1.0012.02/DOC_1&format=PDF)
- European Commission (2019), *The European Green Deal*, COM(2019) retrieved from [https://commission.europa.eu/document/daef3e5c-a456-4fbb-a067-8f1cbe8d9c78\\_en](https://commission.europa.eu/document/daef3e5c-a456-4fbb-a067-8f1cbe8d9c78_en)
- European Commission (2020), *A new Circular Economy Action Plan For a cleaner and more competitive Europe*, retrieved from <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1583933814386&uri=COM:2020:98:FIN>
- European Economic and Social Committee (2019), *European Economic and Social Committee Circular economy strategies and roadmaps in Europe: Identifying synergies and the potential for cooperation and alliance building STUDY*. <https://doi.org/10.2864/886410>
- European Union (2020), *The Local and Regional Dimension in the New Circular Economy Action Plan*. <https://doi.org/10.2863/514606>
- Geissdoerfer, M., Savaget, P., Bocken, N. M. P., Hultink, E. J. (2017), The Circular Economy – A new sustainability paradigm? *Journal of Cleaner Production*, pp. 757–768. <https://doi.org/10.1016/j.jclepro.2016.12.048>
- Ghisellini, P., Cialani, C., and Ulgiati, S. (2015), A review on circular economy: The expected transition to a balanced interplay of environmental and economic systems, *Journal of Cleaner Production*, 114, 11–32. <https://doi.org/10.1016/j.jclepro.2015.09.007>

- Godina Košir, L. (2018), *Roadmap towards the Circular Economy in Slovenia*, retrieved from <http://www.svrk.gov.si/>
- Govindan, K., and Hasanagic, M. (2018), A systematic review on drivers, barriers, and practices towards circular economy: a supply chain perspective, *International Journal of Production Research*, 56(1–2), pp. 278–311. <https://doi.org/10.1080/00207543.2017.1402141>
- Haupt, M., and Zschokke, M. (2017), How can LCA support the circular economy?—63rd discussion forum on life cycle assessment, Zurich, Switzerland, November 30, 2016, *International Journal of Life Cycle Assessment*, 22(5), 832–837. <https://doi.org/10.1007/s11367-017-1267-1>
- Kirchherr, J., Reike, D., and Hekkert, M. (2017), Conceptualizing the circular economy: An analysis of 114 definitions, *Resources, Conservation and Recycling*, 127(April), 221–232. <https://doi.org/10.1016/j.resconrec.2017.09.005>
- Korhonen, J., Honkasalo, A., and Seppälä, J. (2018), *Circular Economy: The Concept and its Limitations*, *Ecological Economics*, 143, 37–46. <https://doi.org/10.1016/j.ecolecon.2017.06.041>
- Korhonen, J., Nuur, C., Feldmann, A., and Birkie, S. E. (2018), Circular economy as an essentially contested concept, *Journal of Cleaner Production*, 175, 544–552. <https://doi.org/10.1016/j.jclepro.2017.12.111>
- Lavtizar, V., Kos Igor, Godina Košir Ladeja, Bavcon Kralj Mojca, and Trebše Polonca. (2021), *Circular Economy: Recent Trends in Global Perspective. In Circular Economy: Recent Trends in Global Perspective*, Springer Singapore. <https://doi.org/10.1007/978-981-16-0913-8>
- Lieder, M., and Rashid, A. (2016), Towards circular economy implementation: A comprehensive review in context of manufacturing industry, *Journal of Cleaner Production*, 115, pp. 36–51. <https://doi.org/10.1016/j.jclepro.2015.12.042>
- Luttenberger, L. R. (2020), *Waste management challenges in transition to circular economy – Case of Croatia*, *Journal of Cleaner Production*, 256, 120495. <https://doi.org/10.1016/j.jclepro.2020.120495>
- Mann, C. C. (2018), *The Wizard and the Prophet: Two Remarkable Scientists and Their Dueling Visions to Shape Tomorrow's World*, Alfred A. Knopf. <https://books.google.ro/books?id=0qZJDwAAQBAJ>
- Merli, R., Preziosi, M., and Acampora, A. (2018), How do scholars approach the circular economy? A systematic literature review, *Journal of Cleaner Production*, 178, pp. 703–722. <https://doi.org/10.1016/j.jclepro.2017.12.112>



- Millar, N., McLaughlin, E., and Börger, T. (2019), *The Circular Economy: Swings and Roundabouts? Ecological Economics*, 158, pp. 11–19. <https://doi.org/10.1016/j.ecolecon.2018.12.012>
- Ministry of Development (2019), *Roadmap Transformation towards a Circular Economy*, retrieved from [https://circulareconomy.europa.eu/platform/sites/default/files/md\\_goz\\_final\\_en\\_r4\\_4.pdf](https://circulareconomy.europa.eu/platform/sites/default/files/md_goz_final_en_r4_4.pdf)
- Ministry of Environment of the Slovak Republic (2019), *Strategy of the Environmental Policy of the Slovak Republic until 2030 Greener Slovakia*, retrieved from <https://faolex.fao.org/docs/pdf/slo211277.pdf>
- Murray, A., Skene, K., and Haynes, K. (2017), *The Circular Economy: An interdisciplinary exploration of the concept and its application in a global context*. <https://doi.org/10.1007/s10551-015-2693-2>
- OECD (2021), *Towards a national strategic framework for the circular economy in the Czech Republic: Analysis and a proposed set of key elements*, OECD Environment Policy Papers, No. 27, OECD Publishing, Paris. <https://doi.org/10.1787/5d33734d-en>
- OECD (2022), *Closing the loop in the Slovak Republic: A roadmap towards circularity for competitiveness, eco-innovation and sustainability*, OECD Environment Policy Papers, No. 30, OECD Publishing, Paris. <https://doi.org/10.1787/acadd43a-en>
- OECD (2023), *Towards a National Circular Economy Strategy for Hungary*, OECD Publishing, Paris. <https://doi.org/10.1787/1178c379-en>
- Parksepp A., Piirsalu E. (2023), *Circular procurement lessons to be included in Estonian strategies*, retrieved from <https://www.sei.org/featured/circular-procurement-in-estonian-strategies/>
- Pauli, G. (2010), *The Blue Economy: 10 Years, 100 Innovations, 100 Million Jobs*, Konvergenta Publishing UG, Berlin.
- Pomázi, I., and Szabó, E. (2020), Circular economy policy-related national initiatives in Visegrad countries, *European Spatial Research and Policy*, 27(2), 131–154. <https://doi.org/10.18778/1231-1952.27.2.09>
- Popov, J. (2021), The European Green Deal and the Risk of Widening the East-West Gap, *European Policy Analysis*, retrieved from <https://www.sieps.se/>
- Prieto-Sandoval, V., Jaca, C., and Ormazabal, M. (2018), *Towards a consensus on the circular economy*, *Journal of Cleaner Production*, 179, 605–615. <https://doi.org/10.1016/j.jclepro.2017.12.224>
- Reike, D., Vermeulen, W. J. V., and Witjes, S. (2018), *The circular economy: New or Refurbished as CE 3.0? — Exploring Controversies in the Conceptualization of the Circular Economy through*

a Focus on History and Resource Value Retention Options, *Resources, Conservation and Recycling*, 135, 246–264. <https://doi.org/10.1016/j.resconrec.2017.08.027>

Romanian Government (2022), *Strategia națională privind economia circulară (The Romanian Strategy for the Circular Economy)*, Department of Sustainable Development, retrieved from [https://circulareconomy.europa.eu/platform/sites/default/files/national\\_strategy\\_for\\_the\\_circular\\_economy\\_in\\_romania.pdf](https://circulareconomy.europa.eu/platform/sites/default/files/national_strategy_for_the_circular_economy_in_romania.pdf)

Soratto, J., Pires, D. E. P. de, and Friese, S. (2020), Thematic content analysis using ATLAS.ti software: Potentialities for research in health, *Revista Brasileira de Enfermagem*, 73(3), e20190250. <https://doi.org/10.1590/0034-7167-2019-0250>

Stahel, W.R. (2010), *The Performance Economy*, Palgrave Macmillan.

Stahel, W.R. (2019), *The Circular Economy: A User's Guide* (1st ed.). Routledge. <https://doi.org/10.4324/9780429259203>

van Buren, N., Demmers, M., van der Heijden, R., and Witlox, F. (2016), Towards a circular economy: The role of Dutch logistics industries and governments, *Sustainability*, 8(7). <https://doi.org/10.3390/su8070647>

Vanner, R., Bicket, M., Withana, S., ten Brink, P., Razzini, P., van Dijn, E., Watkins, E., Hestin, M., Tan, A., Guilcher, S., Hudson, C. (2014), *Scoping study to identify potential circular economy actions, priority sectors, material flows & value chains*, retrieved from [https://www.ecologic.eu/sites/default/files/publication/2017/1750-44-final\\_report\\_main\\_circular\\_economy\\_incl\\_french\\_es.pdf](https://www.ecologic.eu/sites/default/files/publication/2017/1750-44-final_report_main_circular_economy_incl_french_es.pdf)

Velenturf, A. P. M., and Purnell, P. (2021), *Principles for a sustainable circular economy*. *Sustainable Production and Consumption*, 27, 1437–1457. <https://doi.org/10.1016/j.spc.2021.02.018>

World Bank (2021), *Croatia: Circular Economy Approaches in Solid Waste Management*, retrieved from <https://www.worldbank.org/en/country/croatia>

World Bank (2022), *Rethinking waste: How a circular economy can help Croatia achieve a more sustainable future*, retrieved from <https://blogs.worldbank.org/>