INTEGRATION OF ENVIRONMENT, SOCIAL AND GOVERNANCE RISKS INTO INTERNAL CONTROL SYSTEM OF BANKS

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Abstract: *The research represents an assessment of the implications of the environment, social and governance risks for the internal control systems of banks. These risks became an important element in creating the image of banks, influencing investment decisions, stability and could have a negative impact on banks' activities. The objective of the research is to study how environment, social and governance risks could be systematically integrated into the banks' internal control frameworks. The research mainly follows a qualitative approach supported by literature review, reports, regulatory frameworks and other relevant publicly available data. The originality of this study derives from the integrated analysis of environment, social and governance risks; thus, the research examines the impact, challenges and necessary adaptations of these risks across the five internal control elements and the model of the three lines of defense. The study is also focused on the sustainability progress in the Moldova's banking system. The research findings reveal the importance of creating a robust environmental, social and governance-oriented internal control framework to ensure long-term sustainability of banks. By incorporating environmental, social and governance risks into the internal control system, banks are demonstrating a positive impact on their business, stability and improvement of their financial results.*

Keywords: *ESG risks, banking system, internal control.*
JEL Classification: *G21, M42, Q50.*

1. Introduction

One of the main concerns in the banking system during current times is related to environmental, social and governance (ESG) topics and supporting sustainable development. The reason is the fact that it plays a crucial role in sustainable financing which lead to a transition of businesses to ESG practices, thus, integration of ESG risks in banks' activities became a necessity. The transition to a low carbon economy and the climate change which transposed ESG factors into the traditional financial risks, resulted in the appearance of ESG issues that are affecting not only reputational risks as was believed before, but also triggers the credit risk, market risk and operational risk. Unlike traditional risks, ESG risks are related to possible appearance of negative financial effects on an organization due to non-traditional risks such as environmental issues (eg. climate change), social problems (eg. customer mistreatment) and governance factors (eg. fraud). The requirement of dealing efficiently with ESG issues has been addressed mainly by regulatory authorities and stakeholders, thus, by implementing ESG factors into banks' internal control frameworks, banks are demonstrating an impact on their business as well as on the stability and improvement of their financial results and on reducing banking risks. The focus on ESG initiatives became more highlighted after the adoption by the European Union (EU) related regulatory framework. Given the Strategy for financing the transition to a sustainable economy adopted by the European Commision (EC), banking intermediation plays a crucial role in financing the transition to a more sustainable economy. In the meanwhile, it is likely that this transition will entail risks that institutions will need to manage appropriately to ensure that risks to financial stability are minimised. The new focus on ESG issues represents a challenge for internal control frameworks in the banking sector as banks have to develop them along with risk management to monitor the ESG exposures.

The objective of the research is to study how non-traditional ESG risks could be systematically integrated into the banks' internal control frameworks. The topic is of great importance and actuality since the Republic of Moldova, as an EU candidate country is in process of regulatory harmonization and ESG integration principles are currently covered by different strategies at the national level, while the banking sector is adopting the European Union regulations and sustainability tendencies.

The originality of this study derives from the integrated analysis of ESG risks; thus, the research examines the impact, challenges and necessary adaptations of ESG risks across the five internal control elements and the model of the three lines of defense (3LoD). In addition, the study presents a focus on the evolution of sustainability progress in the Republic of Moldova's banking system, ESG risk culture in Moldovan banks along with the analysis of good practices related to the integration of ESG risks. The research also highlights that the integration of ESG factors into internal control has become mandatory and European regulators are imposing requirements that ESG risks should be assessed in a similar way to any other material risk.

Although there is no enforceable regulatory framework dedicated to the integration of these criteria in the Republic of Moldova, banks have started to create action plans towards financial resilience and sustainability, and best practices and requirements imposed by the European Banking Authority (EBA) and the European Central Bank (ECB) are seen as a benefit rather than a burden. The main limitation that should be acknowledged is data scarcity regarding the non-financial sustainability reporting in case of Republic of Moldova's banking sector, once the ESG reporting is currently voluntary. Therefore, only one bank realizes detailed ESG reports, while other banks publish general non-financial statements.

2. Literature approach

Historically, ESG issues were seen only from the view of corporate social responsibility or socially responsible investing, thus, being noticed as reputational issues that have no connection to financial strategies. A greater attention to sustainability by defining the term "ESG" along with the fact that ESG issues could have impact on the financial situation on entities was stressed by initiative "Who Cares Wins" initiated by The United Nations Global Compact in 2004 and endorsed by 23 financial institutions including the World Bank Group. Globally, more than 2 400 sustainability regulations are in place, which means that ESG became one of the main segments in institutions' compliance. The leading place of the ESG regulations is taken by the EU with the core ESG reporting standards and frameworks such as Sustainable Finance Disclosure Regulation (SFDR), Corporate Sustainability Reporting Directive (CSRD), Carbon Border Adjustment Mechanism (CBAM), EU Taxonomy and Fit for 55' Package and the rules to enhance the climate disclosures by The Securities and Exchange Commission (SEC). ESG factors have begun to being rapidly asked, to be integrated into risk assessment, strategies, and 3LoD of banks since 2020, following the regulatory authorities' requirements.

Internal control system is critical for piloting entities to a environmentally responsible development (Akisik and Gal, 2017). Therefore, issues related to ESG risks and their impact on financial effects of financial institutions led researchers to develop investigations on ESG risks/performance effect over internal control systems as well. In this context, a recent study of the COSO element by Feng and Sale (2024) stresses that a sound internal control, in addition to improved risk management is mandatory for an efficient resource allocation and

ESG risks monitoring. Research on the effect of financial mismatch argues that to have robust ESG operations it is required to have set a sound internal control system which would establish transparent supervisory roles, thus, preventing Corporate Social Responsibility gaps (Li et al., 2025). Bumbac (2022) states that the banks' governance processes should consider the assessment of the effect of ESG risks in the short, medium and long term. Moffitt et al. (2023) in their research identified that a sound internal control of the institution is correlated to high ESG ratings, and less issues linked to "tone at the top" ethics; thus, if ESG is not properly managed, it can reflect internal control issues. Studies of Liu et al. (2023), in the study of United States banks also stated that non-performing loans are negatively correlated to high ESG ratings. As well, a study based on a list of European Union banks by Conca et al. (2026) found that social disclosure plays a one of the most important factors for reducing non-performing loans level i.e. reducing credit risk and increasing financial stability of banks. According to Defung et al. (2024), there exists a negative link between ESG risks and bank stability in Indonesian banks, therefore it is stated that sound internal control systems could prevent vulnerabilities and reduce the impact of ESG risks. In a similar way, Covid 19 pandemic has also influenced negatively banks all over the world, and led entities to take social responsibilities (Sachin and Rajesh, 2021). As well, the pandemic brought to light the materiality of environment and social dimensions and the highlighted the importance of a sound governance, making ESG risks to be taken more into consideration as a part of the financial analysis (Bumbac, 2022). Therefore, the knowledge and adaptation skills gained by banks due to pandemics could be used to face ESG risks impacts. Researchers Nardella et al. (2020) mention that improving the internal controls and compliance tools are crucial once the entity is involved in investing in ESG initiatives. Therefore, embedding ESG practices into the financial reporting could lead internal controls to improvement as they will strengthen the ESG initiatives credibility (Bachtiar, Mujennah and Husein, 2025). In addition, Thakor (2020) found that financial technology (FinTech) is also playing a huge role in the banking sector by improving internal control systems, which, in their view are considered the core of ESG performance. Alim and Mansour (2026) show evidence that using FinTech within the internal control environment, improves the internal governance and reduces ESG and corruption risks. Apparently, as Srairi and Kateb (2025) conclude in their research based on Governance dimension of ESG, that in the case of the Islamic banks, gender diversity of board could partially diminish ESG risks i.e. boosts financial stability and lower credit risk. Findings of El Khoury et al. (2023) which analysed the ESG risks in the Middle East and North Africa bank systems, identified that the Environment dimension is negatively impacted by the economic development of the country where the bank is located, while the social development shows a positive impact over Social and Governance dimensions. In a reality that internal control systems have a greater importance in the ESG reporting process, O'Dwyer et al. (2011) mentions that there should also not to be underestimated the great role of internal audit, which, inter alia is involved in boosting conviction in sustainability reporting (DeSimone, 2020). According to Olteanu Burcă et al., in the countries where the ESG regulation is highly developed, internal audit has a great role in improving the ESG disclosure and reporting. Therefore, as the regulations as well as the literature review lead to the fact that ESG risks could have adverse effects of the internal control system of banks and have to be part of their risk management frameworks.

3. Methodology of research

To assess the relationship between the ESG risks and internal control of banks, it is proposed to use a mixed method approach including both qualitative analysis and secondary quantitative data. Focus of the research is qualitative, including literature review combined with reports and other published information by banks and international financial organizations and relevant international, European Union and national regulatory frameworks. Since the quantitative data in the context of ESG is scarce for the Republic of Moldova, as an emerging economy, the study aims to use a limited quantitative input.

4. Research results and discussion

4.1. ESG risks and transmission channels

ESG factors are a group of the dimensions it stands for, i.e. "E" for Environment, "S" for Social and "G" for Governance, consequently, the dimensions are transcribed in ESG risks. According to EBA, ESG risks are defined as "*risks of any negative financial impact to the institution stemming, from the current or prospective impacts of ESG factors on its counterparties*". These non-traditional risks emerge differently for banks, depending on multiple factors such as geographical location, complexity, size, main type of business, business model, interaction with stakeholders, i.e. is important to understand the ESG themes (table 1.) and the transmission channels through which they transform into traditional risks within banks:

Table 1. ESG factors

E (Environment)		**S (Social)**		**G (Governance)**	
Climate change	**Natural resources and pollution**	**Internal stakeholder management**	**External stakeholder management**	**Board quality**	**Corporate behaviour**
• Weather events; • Transition to low-carbon economy,	• Waste and management; • Environmental degradation; • Biodiversity.	• Staff rights; • Diversity and culture; • Health and safety.	• Community relations • Customer relations; • Access to finance.	• Board effectiveness; • Board independence • Greenwashing.	• Business ethics; • Ownership • Corruption

Source: developed by the author, based on review of scientific literature.

1) Environmental risks refer to climate change and natural resources and pollution issues that might have specific impacts on banks. Main risk drivers of the climate change and environment risk are:

- Physical risk (result from changing climate conditions or extreme weather events) which have a direct impact on destroying assets or property by lowering asset values, increasing insurance claims or disrupt supply chain.

- Transition risks (result from shift of low-emissions economy), which are driven by climate related policy changes, social adaptation or technological innovation and lead to increase energy sources prices or reputational risks, etc. Therefore, these types of risk could have tremendous effects on economy, banks and could face financial losses because of the cascade effects, chain reactions as well as to blocked assets (eg. oil or gas sector).

2) Social risks refer to issues that imply internal (interested parties well-being) and external stakeholder (overall social issues) management. Therefore, the issues involved are

customer protection, human rights, workplace safety and other labour standards, data security, product quality as well as community and customer impacts. These risks could potentially result in loss of trust due to deficiencies in staff of customer treatments or even due to financing debatable projects.

3) Governance dimension risks include mainly failures of the internal governance, corruption, fraud, intransparency and board independence. Governance risk might be considered the fastest financially material element of ESG risk in banks due to the fact that weak management and internal controls are related to high systemic risk, low credit quality and fragile resilience.

According to the World Economic Forum Global Risks report, the main global risks are technological (misinformation and disinformation, cyber espionage and warfare and adverse outcomes of AI technologies); environmental (extreme weather events, pollution, biodiversity loss and ecosystem collapse, natural resources shortages and critical change to earth systems); geopolitical (state-based armed conflict and geoeconomic confrontation); social (societal polarization, inequality, involuntary migration or displacement and erosion of human rights). ESG risks might have an impact on banks either directly, being affected by the ESG dimensions or indirectly through investment activities and lending to a company affected by ESG risks. Consequently, ESG factors represent risk drivers that are transposed in traditional financial risks (credit risk, market risk, operational risk and reputational risk), as ESG risks sooner magnify these existing risks. As an example of transmission channels to credit risks are income change or sovereign impact; for market risk might be recorded price or volatility hit; in case of liquidity risk, the collateral condition; for operational risk might be business continuity and reputation effects.

4.2. Integration of ESG risks and transformation of the internal control system

Integration of ESG risks into the bank regulatory framework is a relatively new approach that totally reshapes banks' risk management and strategies. Considering the rise of ESG considerations, standard setting institutions along with regulators and central banks equally agree that ESG factors represent the one of the most important drivers of traditional financial risks and therefore, banks must improve their internal control systems to include ESG risks, also agreeing that just a creation of a different unit that would focus on ESG risk monitoring would be inefficient.

The EU regulation CSRD was adopted to expand the ESG disclosure requirements and included mandatory reporting on ESG, that is supposed to increase the transparency standard and require banks to disclose the way of ESG risks management. As a result, EBA issued guidelines to improve ESG risk management, thus, EU prudential framework has evolved from the stage of defining and examination of ESG risks through old banking package (CRR2/CRD5) to quantitative integration and sound regulation (table 2**)** through the latest revised package (CRR3/CRD6). The latest guidelines issued by the European Banking Authority (EBA) require banks to transform their optional ESG risk management into a mandatory requirement, which means that the inclusion of ESG risks in banks' risk management frameworks is set to become one of the main internal control obligations within banks. As well, EBA's new Guidelines require banks to "*monitor ESG risks through effective internal reporting frameworks and a range of backward- and forward-looking ESG risk metrics and indicators*".

Table 2. EU existing prudential regulation (CRR3/CRD6) embeds three mandates for the EBA regarding ESG

Pillar 1 (Minimum capital requirements) **EBA report on the role of environmental and social risks in the prudential framework**	**Pillar 2 (Supervisory review process – SREP)** **EBA guidelines on the management of ESG risks; Guidelines on environmental scenario analysis**	**Pillar 3 (Disclosure: risk, capital ratios)** **Updated Implementing Technical Standards on Pillar 3 disclosure requirements for ESG risks**
• Maintains the risk-based approach since the introduction of a general "green factor" is not yet justified; • Integrates environmental risks into the evaluation of real estate collateral; • Incorporates clients' climate transition plans into credit risk weights.	• Requires ESG risks management and minimization over short, medium and long terms (at least 10 years); • ESG risks are assessed as triggers for traditional financial risks; • Imposes specific standards for climate stress testing.	• Extends ESG reporting requirements proportionally to all institutions; • Integrates clarifications on physical risks and sectoral emissions; • Automatically harmonize reporting templates with the EU Taxonomy and CSRD to ensure transparency and reduce operational burdens.

Source: developed by the author, based on review of EBA regulations

The transition is based on the roadmap on sustainable finance issued by EBA that describes the objectives and the way of implementing its mandate in ESG risks and sustainable finance. Thus, the main objectives of the EBA roadmap include: transparency and disclosures, risk management and supervision, prudential treatment of exposures, stress-testing, standards and labels, greenwashing, supervisory reporting, ESG risks and sustainable finance monitoring. That means that ESG risk assessments have to be included in front line business units while suggesting to risk management units to improve monitoring frameworks and for internal audit to embed ESG risks in the auditing processes.

The COSO framework based on its five principles (control environment, risk assessment, control activities, information and communication and monitoring activities) is still the most important standard for internal controls. In the context of emerging of ESG risks and the fact that, similar to financial data, the internal control systems have to ensure the quality of ESG data, COSO issued guidance on Internal Control over Sustainability Reporting (ICSR). This guidance is supposed to help entities to adjust internal controls with regards to sustainable reporting and to use similar controls to prevent ESG reporting inaccuracy, therefore, changes traditional internal control principles.

Depending on the COSO elements of the internal control of banks, the ESG risks have the following impacts, challenges and ways of adaptation:

- *control environment* represents the fundamental element of internal control that, being determined by setting the tone at the top, decide the standards of conduct, ethical values and integrity, allocation of the responsibilities, enforcement of accountability, culture within organization and the organizational structure. Therefore, the ESG risks have a serious shift on bank board's expectations as it is responsible for adjusting governance setting to integrate the banks' strategy and objectives with ESG principles. Banks' management have to move from the objective of assessing and increasing financial results (eg. profit maximisation for the shareholders) to a multi capital approach i.e. they have to fundament their decisions on more complex relations between human, social and natural capital. One of the most challenging elements is the competency gap and scientific knowledge of the board related to ESG themes and risks that could affect the bank activity and asset protection in the short, medium and long term in order to make suitable decisions. In addition, banks might find difficult identification of skilled staff in ESG field. Another challenge is driven by the possible existence of an inadequate remuneration policy of the management that supports the increase of short term financial results and ignores ESG factors and practices as it is complicated to create and maintain an adequate ESG culture once the high-carbon emission businesses are still the most profitable. In order to adapt the control environment the banks should consistently organize regular discussions, trainings and workshops as for the supervisory/management bodies as well as for all the units on ESG matters. It is also required to be implemented periodical Key Performance Indicators and Key Risk indicators to base on ESG transition plans of the bank and align the remuneration policies with ESG objectives. Thus, once the control environment is aligned with relevant frameworks, banks will be able to create an environment that embeds ESG risks and helps to diminish them.

- *Risk assessment* aims to identify and analyze threats, warnings and emerging trends as well as the probability of fraud in evaluating risks on a forward-looking basis, that would have an important impact on entity's objectives and therefore on internal control systems.

Implication of ESG risks into this COSO component is driven by "double materiality" concept that was solidified by the greater focus on ESG themes and imply that banks should assess whether their lending activity has a financial materiality i.e. ESG impact on the bank and impact materiality i.e. in what matter their lending activity impacts the planet and society. As well, according to the fact that the ESG risks are non-linear and data-constrained their impact leads to unpredictable threats to bank assets. Therefore, the primary challenge within risk assessment is the proper quantification of ESG risks and the forecast of future probabilities, as it is not possible to rely on historical data as in case of traditional risks. As a result, banks are required to develop sophisticated models to evaluate ESG risk exposures, especially due to the fact that the final impact of ESG risks could be seen over horizons larger than ten years. The development of forward-looking methodologies for risk assessment in order to adapt to ESG risk integration, becomes imperative. In this context, bank employees should be able to understand how to identify and monitor ESG risks.

- *Control activities* are established to help minimizing the risk of objectives' achievement, therefore assuring that management's decisions are implemented properly within institution by oversighting through development of procedures or specific controls. ESG risks emergence influences the banks' operational controls reshape, especially within the lending activities where environment, social and governance criteria should be integrated as during the customer onboarding, during to the loan application, assessment, monitoring and up to reimbursement. In addition to prevention of lending to ESG harmful activities, regulators expect from control activities to guide capital in the direction of activities that are aligned to green taxonomies, transition plans and carbon intensity metrics. It is very difficult to take into account all ESG issues, thus, there comes the necessity to find the relevant ESG risks that might threaten banks activity. In this situation banks have to identify proactively, based on their business model, strategy and risk appetite what are the most significative ESG risks and incorporate them into internal controls. In addition, due to the fact that ESG activities are relatively new and there is no relevant data as customer reporting is not standardised and control activities are relying on overall industry results using outside service providers, internal control system might weaken. In order to adapt to new reality, banks have to use mandatory environmental and social management systems that include the identification of ESG risks in their risk management framework for their lending activities. Another good practice is to include ESG questionaries for clients or integrate ESG into Client Due Diligence or Know Your Customer and accumulate necessary data to be analysed. Control activities are also covering the internal operations by introducing stringent frameworks to reduce its operational footprint (eg. increasing energy efficiency).

- *Information and communication* help institutions generate, receive, process, and communicate relevant and high-quality information necessary for effective control and the achievement of its objectives. Nowadays, regulators, but also stakeholders and general public has much more demand for a qualitative, transparent and detailed disclosures related to banks' exposure to ESG risks their sustainability performance. Respectively, bank have a much more pressure on collecting ESG data from their customers, while the most important indicator is represented by the greenhouse gas emissions produced by the clients i.e. financed emissions. As financed emissions are the core of bank's capital filings and sustainability report, the relevant data communication is subject to internal controls and has to be qualitative. The biggest challenge with information and communication component is the greenwashing risk, which represents the practice of misleading about the bank's environmental impact, actions or risk profile and could lead to damage of reputation of the bank. This happens, usually due to the lack of the ESG level data or it is fragmented, or unverified by an independent party. Due to the requirements about the data, banks could develop their technology systems by incorporating emerging technology. A good practice is to communicate the roadmap of ESG actions taken by the bank so that interested parties were aware of the way in which banks manage ESG risks and benefit from ESG opportunities. As well, banks should support a prompt collection of data along with creating a correct and efficient flow of information; in the meanwhile, to control if the communications methods are relevant to the bank's objectives.

- *Monitoring activities* are responsible for assessing whether internal control elements properly function, adapt to emerging changes and identify their deficiencies, which helps confirming or realigning activities relevant to the bank's objectives. Due to the constantly changing typology of ESG risks, updates of ESG related regulatory frameworks, new researches in this field along with increasing expectations from society, ESG related controls have to improve as well. In this context, banks have to persistently run the assessment their environment and social management systems, ongoing climate stress testing and monitoring the financed emissions track. Therefore, the main impact lies on the internal audit that has to review ESG controls and to assure regarding the reliability of ESG reporting. The absence of globally harmonised environmental, social and governance auditing standards makes it particularly challenging to audit environmental indicators and governance matters. According to best practices, internal audit units develop climate disclosure verification programs which include testing of scenario methodologies based on climate stress, tax evasion and declared commitments. As well, banks could integrate ESG risk data within centralised governance, risk and compliance platforms to more efficiently reduce the main banks' risks.

The ESG risks nature, complexity and long-term horizon required a different approach over the three lines of model, an improved version of the three lines of defense model, which is a globally recognised framework for governance and risk management in banks that helps institutions to achieve its objectives. Therefore, banks are expected to assign responsibility for the management of climate-related and environmental risks in accordance to it.

The effect of the ESG risks over the three lines model, in the ESG setting is the following:

- first line (front-line business operations) responsibilities related to managing generating risk activities have suffered significative expansion. Currently, first line managers have to supervise the determination of materiality assessment i.e. whether the subordinate has collected client data regarding ESG matters (eg. energy consumption, reliance on fossil fuels). however, the lack of expertise in ESG theme is the main challenge that has to be solved, thus, it is mandatory to have the front-line personnel very well trained as they are accountable for daily ESG risk taking.
- second line (risk management and compliance) in banks represents the fundamental role in identification, assessment, monitoring and reporting of ESG risks where Chief Risk Officer function, compliance and specialised ESG teams represent the main actors. Consequently, its responsibilities, in the ESG context, relate to transposing ESG risk taxonomy into day-to-day internal procedures. This line is also asked to validate climate models and monitor exposures relative to ESG risk appetite, establishing limits on portfolio concentration and calculating adjusted risk premiums. a great challenge for this line is that ESG risk integration fails if the roles between the lines are not clear, therefore, if regulatory requirements are not transposed properly in procedures and the first line has an unclear of the requirements, their activities are blocked.
- Third line (internal audit) is responsible for independent assessing of the efficiency of internal controls across the previous two lines to assure the governing body. Regulators and important international financial organisations agree the degree to which a bank is prepared to handle climate-related risks depends mainly on internal audit. The main challenges are the lack of data and the over reliance on external ESG data providers as well as the limitations in methodologies, lack of ESG knowledge of internal auditors, greenwashing risk„ therefore it is difficult to assess the accuracy of ESG data used in risk evaluations, reliability of climate metrics and the bank's real exposure.

4.3. Sustainability progress in the Republic of Moldova's banking system

ESG concept in the Republic of Moldova accelerated once it received the status of EU candidate country and by the adoption of National Strategy of Economic Development 2030 that aims for a faster growing, more inclusive and durable economy. As well, in 2023 NBM joined the Sustainable Banking and Finance Network (SBFN), thus, strengthening its commitment to promoting ESG in the Moldovan financial sector. In addition, NBM has developed the Sustainable Finance Roadmap (2024-2028) as a reference point, including four main pillars i.e. increasing awareness and improving institutional capacities, sustainable capital flows, integration of ESG and risk management and transparency and market discipline. Consequently, NBM is implied in organization of events for capacity building and rising awareness on ESG and sustainable finance. Due to the fact that Republic of Moldova is required to adopt directly the prudential expectations to align to EU standards, banks do not have the luxury of a long voluntary reporting. In this context, there is a high current pressure on internal control systems of the Moldovan banking sector i.e. develop board competences and skills, integration of ESG risks within SREP or to adjust controls to loans that are reactive to climate change and transition to a sustainable economy.

Currently, one of the biggest climate issues Republic of Moldova faces are extreme weather conditions (mainly floods, droughts and late frosts) with a high impact on agriculture loans, that recorded a decrease from 9,3% in 2020 to 5,4% by the end of 2025 (fig. 1). In this context, a challenge for internal control of banks is the fact that banks might have an illusion of the loan coverage if the external valuation companies do not integrate in their report the collateral vulnerability i.e. exposure to physical risks.

Another element of climate risk that has financial impacts on the loan portfolio of Moldovan banks are transition risks generated by transition process to a low-carbon economy, while the fields most related to this risk are: agriculture, forestry, and fisheries; food industry; productive industry; constructions; real estate transactions; transportation and storage; health and social assistance; energy industry; public administration and defense. The share of brown economy sectors (operating in fields related to transition risks) of the total banking system loan portfolio recorded an increase from 45,3% in 2020 to 48,6% by the end of 2025, while the highest share over the analysed years was reflected in loans granted for purchasing/building real estate (32,3% at end of 2025), the second and third positions are loans granted to agriculture and food industry. Therefore, the high share of real estate loans is considered a critical ESG transition risk and banks internal control systems should introduce mandatory criteria to assess the energy efficiency of loans starting from the loan generation.

There is evidence of social risks in the Moldovan banking sector manifested by geopolitical spillovers, gender disparities or labour standards as well as the Ukrainian refugee financing. Governance risks also might exist in form of the gaps in ethical lending, implications of politically exposed persons, anti-money laundering gaps that would erode internal controls.

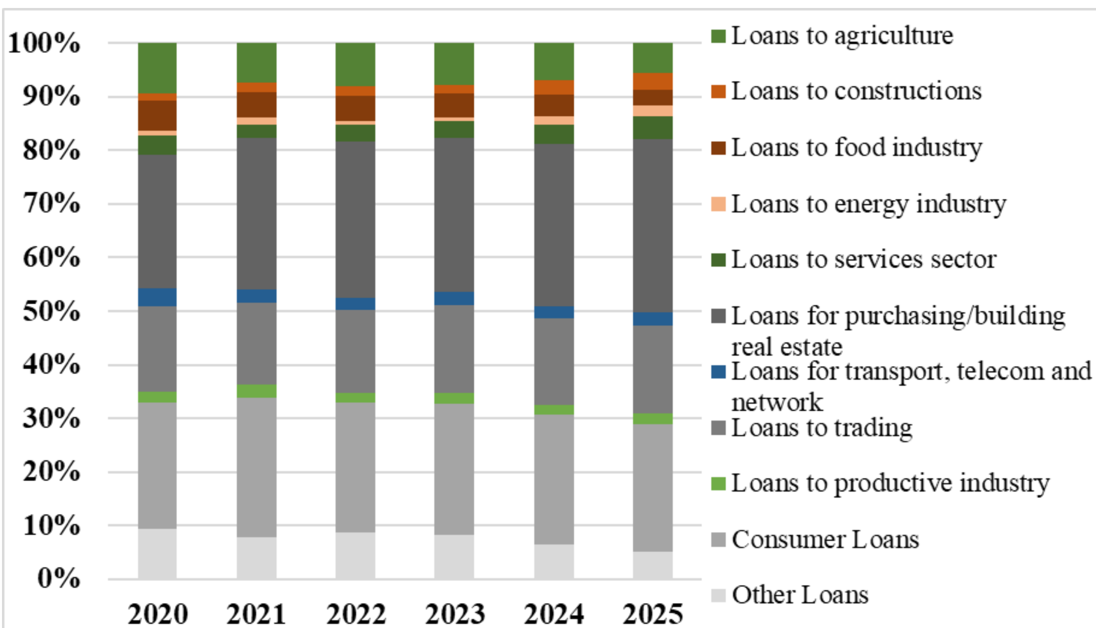

Fig. 1. Evolution of the share of loans granted by banks in the Republic of Moldova
Source: developed by the author, based on NBM data

On a voluntary basis, a couple of Moldovan banks now give or aim to provide loans whose rates and other terms depend on whether the company complies to ESG principles. As well, due to this initiative, they were able to access loans with international financial institutions which have certain ESG obligations. Additionally, many banks are continuously introducing ESG services (eg. loans for electric cars or "green" housing) and ESG products (eg. digital cards). However, there is only two banks that received an ESG rating from an international rating agency (CB "Moldova-Agroindbank" JSB that have a Sustainalytics rating of 25,5/100 i.e. low-medium risk and OTP Bank JSC that have a Sustainalytics rating of 17,4/100 i.e. low risk and MSCI rating "A"). CB "Moldindconbank", for example, had its ESG activity assessed by the German Sparkassenstiftung for International Cooperation through Sustainable Finance Compass. Other banks are at the beggining point of implementation of ESG risks and are only declaring their commitments to the ESG stating that they apply ESG principles in their activity.

Main strategic recommendations for Moldovan banks are related to enforcement of the management skills to understand ESG risks and their possible impact on the bank assets and quantification of ESG risk limits in line with the banks' risk appetite; operationalization of the three lines model in ESG context; establishment of sound internal procedures to use ESG proxy data and to fill the data gap.

Currently in Moldova, there does not exist methodology that would allow banks to compile a personal ESG rating among their clients, which represents a critical challenge in the domestic banking sector. However, based on the international practices and the existing methodologies for assigning ESG ratings by rating agencies, banks could develop their own assessment criteria for each of the three dimensions of ESG. That is the case where the internal auditor (third line) has to assess the correct attribution of an ESG rating based on the developed methodology.

4. Conclusions

The ESG risks integration into the banks is a complex challenge as a full reconfiguration of internal control and risk management frameworks is needed, requiring additional effort in the short term. In addition, as demonstrated by the EBA guidelines and the National Bank of Moldova's aligned strategies to ESG taxonomy, ESG risks became a core metric of the credit quality, financial solvency and stability and is no longer seen as a secondary compliance consideration. The research points out that integration of ESG risks into internal controls is driven by "double materiality" concept due to which social and climate domains are accepted as material risks that react as main channels for transmission for traditional risks. Consequently, ESG risks have to be integrated into the internal controls of banks and to be assessed similar to other bank risks. Therefore, the three lines of defense model has also been impacted and has to be upgraded to catch, monitor and oversee the ESG forward-looking data. By incorporating ESG risks into the internal control system, banks are demonstrating a positive impact on their business as well as on the stability and improvement of their financial results. On the other side, in case of failure to integrate ESG risks starting from the first line (front-line business operations) and audit assurance, the banks could face significant reputational and greenwashing risks. However, despite the challenges, integration of ESG principles lead to multiple advantages and opportunities as reduction of environmental impact, social responsibility, regulatory compliance and risk management, access to finance, attracting responsible investors, reputation enhancement, etc. Although there is no enforceable regulatory framework dedicated to the integration of these criteria, banks, including the ones from the Republic of Moldova have started to create action plans towards financial resilience and sustainability, and best practices and requirements imposed by the European Banking Authority and the European Central Bank are seen as a benefit rather than a burden. At the same time, both banks and the National Bank of Moldova are recommended to implement appropriate measures that will allow the assessment of ESG risks and to develop effective internal control tools.

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