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CALL FOR PAPERS:
The Thematic Issue of the "Bezpieczny Bank" Magazine Devoted to Covered Bonds

The Program and Scientific Council and the Editorial Committee of the "Bezpieczny Bank" magazine invite you to submit papers for a special issue of "Bezpieczny Bank" No. 1(102)2026 devoted to covered bonds as instruments of financial market stability and development. The scientific supervisor and editor of the issue will be Dr Kamil Liberadzki, Professor at the Warsaw School of Economics, Director of the Department of Economic Analysis and Risk at EBA.

📌 The thematic scope of the issue includes, among others: The following topics are covered:

- Interpretation of legal regulations regarding the issuance of covered bonds in Poland, the EU (CRR, Covered Bond Directive), and globally,
- The role of covered bonds in financing mortgage and business loans,
- Risk and ratings of covered bonds – an investor's perspective,
- Covered bonds as an element of bank liquidity and capital management,
- Covered bond issuance models in various jurisdictions additional point: The use of covered bonds in central bank operations,
- The impact of covered bonds on the stability of the financial system,
- Development of the covered bond market in Poland – barriers and prospects,
- Covered bonds in the context of ESG and sustainable finance.

Deadlines:

- Deadline for submitting titles with a brief description of the articles: January 31, 2026.
- Deadline for submitting papers: February 28, 2026.
- Planned publication of the issue: the turn of the first and second quarters of 2026.

Editorial Requirements: Articles should be scientific or expert in nature, contain references to current regulations and market data, and meet the editorial standards of the „Bezpieczny Bank" journal. Detailed editorial requirements are available on the journal's website: www.ojs.bfg.pl in the "Information for Authors" tab.

✉ Please send submissions and questions to: redakcja@bfg.pl

Topic proposals and articles should be submitted in two languages – Polish and English. For texts submitted by foreign authors, the English version is required. The manuscript should not exceed 20 standard typewritten pages, i.e., up to 36,000 characters without spaces, per language version. In the event of significant discrepancies, the English version will prevail.

From the Editor

Dear Readers,

The year 2025 is marked by two symbolic events for the "Bezpieczny Bank" magazine. In April, we celebrated the 30th anniversary of the Bank Guarantee Fund, without which our magazine would not have been possible, and we are now presenting its 100th issue to our readers.

The magazine was established in 1997 at the initiative of the then-Chairman of the BFG Council, Professor Władysław Baka, and from the outset served as an important channel of communication between the new institution and its stakeholders, primarily the banking and academic communities. As the BFG's functions and responsibilities expanded, so too did the scope of its publications. Initially, the dominant topics were deposit guarantees in Poland and abroad, assistance for banks at risk of insolvency, and the characteristics of the BFG's operations. Gradually, the scope of publications expanded beyond its statutory functions and responsibilities.

Today, the mission of Safe Bank is defined as: "promoting knowledge about the stability of Polish and foreign financial systems, in particular regulatory solutions and their consequences, deposit guarantee systems and the compulsory restructuring of credit institutions, insurance companies, reinsurance companies, and investment firms, the activities of other financial market entities, and the behavior of their clients, and above all, promoting original research results on the functioning of financial systems."

The publication of the 100th issue of our journal is an excellent opportunity to express our gratitude to all members of the Program and Scientific Council, the Editorial Board, the reviewers, and above all, the authors and readers who form the foundation of our existence. I extend my sincere thanks to all of them and look forward to continued fruitful cooperation. Special thanks go to the members of the Council and Management Board of the Bank Guarantee Fund, who continually support our promotional mission. I also look forward to further developing our cooperation with the Polish Financial Supervision Authority, with which we have both substantive and personal ties through membership in the Program and Scientific Council.

With this anniversary edition of Safe Bank in mind, we have asked distinguished representatives of the financial community to prepare studies reflecting our mission and nearly three decades of activity. It is with great satisfaction that I report on the success of this initiative and present its results. This issue of Safe Bank opens with a text by Professor Danuta Hübner, the first Polish Commissioner to the European Union (2004–2009). The author considers both retrospectively and prospectively the findings and recommendations of the Lamfalussy reform and the de Larosière report in the context of contemporary challenges, describing them as a "constitutional moment." In his study, the first Chairman of the Polish Financial Supervision Authority, Stanisław Kluza, provides an engaging characterization of the process of developing integrated financial market supervision in Poland.

Nicolas Veron, a senior fellow at the Bruegel and Peterson Institute for International Economics (Washington, DC), shares his thoughts on the benefits of the European Savings and Investment Union project for Poland. Safe Banking goes beyond the narrowly understood financial security of the banking sector, as exemplified by the article by Łukasz Kurowski, a representative of the younger generation of researchers, who uses a modern tool for modeling topics in text documents (BERTopic) to analyze the results of research on the impact of climate change on financial stability.

Leszek Borowiec's and Żaneta Broczkowska's study, "ESG Risk and Banks' Propensity to Finance Enterprises," also fits the theme of sustainable development. A member of our Program and Scientific Council, Prof. Edgar Löw (Frankfurt School of Finance and Management, Frankfurt am Main), a member of the European Banking Authority – Banking Stakeholder Group, addresses the issue of bank confirmations for auditing reports using the example of the high-profile scandal involving TPA Wirecard. The "Problems and Views" section concludes with an article by Arkadiusz Iwanicki on RippleNet as an innovative tool for handling cross-border payments, setting new standards in finance and banking.

For some time now, various groups and stakeholder groups have been addressing the important issue of contractual certainty between banks and borrowers, seeking either shortcomings or solutions to mitigate the legal risk of transactions. For several years, the Responsible Finance Club at the European Financial Congress has been working on developing a model mortgage loan agreement. The results of this work are presented in a paper by Andrzej Reich and Michał Romanowski. Legislators' adoption of this proposal, discussed in various forums, would significantly reduce harmful phenomena in the financial market – including the development of the lucrative segment of services provided by law firms. The 100th issue concludes with a study by Ewa Kulińska-Sadłocha on the Corporate Governance Academy project of the European Financial Congress, namely a report on the Banks' Investor Relations Index. While this index raises hopes for improved investor relations for some, it is met with reserve or indifference by others.

The work on the anniversary issue was guided by Benjamin Franklin's idea, which, loosely translated, reads: there is no contradiction between the security and efficiency of banks – we will either have both of these benefits, or we will have neither.

Hoping that the articles in the anniversary issue will pique your interest, I hope that we will be able to sustain your interest in our work.

Jan Szambelańczyk
Editor-in-Chief

Problems and Opinions

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Danuta Hübner*
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The Constitutional Moment: The Lamfalussy and de Larosière Reforms and Contemporary Challenges

Abstract

This study examines changes in European regulation, particularly the way economic regulations have been proposed and implemented – with a particular focus on financial markets – since the introduction of the Lamfalussy architecture and the proposals of the de Larosière Group. It also offers proposals for addressing future challenges. Market fragmentation within the EU, national protectionism, and divergent supervision hinder the effective functioning of the single financial market. Europe needs massive private investment to increase competitiveness, defense potential, and technological leadership. This requires, among other things, integrated capital markets and profound legislative changes. This includes a shift from directives to regulations and an increased role for EU agencies (e.g., ESMA, EBA, EIOPA) in creating and implementing European law. Furthermore, the growth of cross-border financial interconnections requires centralized supervision, which could reduce transaction costs and increase the efficiency of law enforcement. Unfortunately, the supervisory functions of EU agencies are limited by national supervisory structures and the dominance of the home country principle. However, member states fear a loss of sovereignty, and critics of centrali-

* Danuta Maria Hübner – Polish economist and politician, professor of economics. In 1997–1998, she was the head of the Chancellery of the President of the Republic of Poland, in 2001–2003, she was the head of the Office of the Committee for European Integration, in 2003–2004, she was a minister-member of the Council of Ministers, the first Polish commissioner in the European Union (responsible for regional policy), Member of the European Parliament for the 7th, 8th, and 9th terms.

zation invoke the Meroni Doctrine, arguing that the EU lacks treaty-based powers over prudential supervision. Hence, the growing role of EU agencies in the legislative process raises questions about their legitimacy and democratic oversight.

Keywords: fragmentation of EU markets, Lamfalussy report, De Larosière Group, EU regulations

JEL Codes: A10, E02, E42, E44, F15, F36, G28

In the history of European integration, there have been constitutional moments that have led to changes transforming the structures, institutions and governance of the European Union and adapting them to the requirements of the future. The current constitutional moment involves far-reaching reforms aimed at increasing the global competitiveness of the European economy, building its defence and security capabilities, and strengthening Europe's position on the international stage. Behind all these challenges lie enormous investment needs and a shift from crisis management thinking to strategic thinking. An important factor influencing this change may be the restructuring of the way Europe regulates its economic and financial reality. With the recent enlargements of the Union to the east, the Union's single market has become more heterogeneous and fragmented, characterised by a low level of integration of economic structures and a high degree of diversity in economic bases. Over the years, this process has been further exacerbated by the entrenchment of fragmentation based on the pursuit of national sovereignty, linked, among other things, to the growing role of national institutions, which are increasing their role at the national level. In this context, it is not surprising that, in order to reduce fragmentation tendencies and strengthen the single market, the Commission has for years been inspiring new approaches to the way in which the Union regulates and legislates, in particular by intensifying reform efforts in the area of economic and financial services regulation.

The aim of this study is to draw attention to changes in European economic regulations, the way they are proposed and implemented, with particular emphasis on financial markets. The point of reference is the Lamfalussy and de Larosière reforms, and the context is the challenges facing the European Union.

1. Lamfalussy and de Larosière

The good news for political efforts to rebuild the EU is that there is tangible evidence of the evolution of European financial market regulation. In 1985, before the Maastricht Treaty was signed and the European Union was created, the Commission's White Paper on the creation of a single market focused on regulatory differences that constituted barriers to trade. The document contained a long list of recommendations considered necessary for the development of a single market for financial services. However, many of these recommendations proved difficult

to negotiate due to the prevailing structural differences and conflicts of interest between national financial sectors. This turned the harmonisation process into a conflict between different national interests, as Member States sought to adopt EU rules that best suited their preferences. Due to divergent national realities, Member States regularly opted for vague compromises that were difficult to implement, as national competent authorities tended to interpret both the law and needs differently. Divergent interpretations, 'gold-plating' and inconsistent implementation of regulations fragmented the single market according to the preferences of national jurisdictions. The fragmentation caused by the lack of legislative harmonisation was exacerbated by the fact that, until the beginning of the 21st century, the management of economic regulations was based on the powers of the Commission and the comitology system. This proved to be an inflexible management method that failed to keep pace with the rapid development of financial markets or compensate for the insufficient harmonisation of law within the internal market.

To address the shortcomings in the management of EU economic regulations, in July 2000 the French Presidency of the Council asked a group of experienced market practitioners, chaired by the Belgian economist of Hungarian origin Alexandre Lamfalussy, to identify reforms that would increase the effectiveness of the economic regulation process. The Lamfalussy Report (2001) recommended dividing economic regulation into four levels.

- At level 1, the European Parliament and the Council would adopt the basic rules proposed by the Commission under the traditional co-decision procedure. According to the Lamfalussy report, this procedure, due to its complexity and time-consuming nature, should only be used to define the framework rules;
- At level 2, the Commission would adopt and update technical implementing measures with the assistance of advisory bodies. In other words, the Council and Parliament could focus on key policy decisions, while the technical details of implementation would be worked out later by the Commission.
- At level 3, committees of national supervisory authorities would be responsible for advising the Commission on the adoption of level 1 and 2 acts and for issuing guidelines on the implementation of the rules.
- At level 4, it was recommended that the Commission's role in ensuring the correct enforcement of EU rules by national governments be strengthened.

The four-level regulatory approach recommended in the Lamfalussy report was first adopted for securities and then extended to banking, insurance, occupational pensions and asset management. It enabled a more flexible decision-making process and resulted in improved quality of legislation. Overall, the Lamfalussy reform restructured the governance system and improved its procedural efficiency, while also discouraging the pursuit of overly detailed and prescriptive legislation and its inconsistent transposition and interpretation. However, it also increased the complexity and costs of implementing EU legislative harmonisation, and replicated the same "rigidity" that existed in the previous system.

The Lamfalussy reform was implemented only a few years after the 2004 enlargement, thus failing to enable a significant modification of the regulatory framework that would have protected the EU-25 from the effects of the 2007–2008 financial crisis. However, the experience of the crisis provided a strong impetus for further regulatory reform, covering both the content of the regulations and the framework for their management. In 2009, a committee of experienced experts and politicians, chaired by Jacques de Larosière, based on the Lamfalussy procedure (widely considered a success), developed a plan for a regulatory response to the crisis. The reforms proposed by de Larosière recommended, among other things, upgrading the supervisory committees introduced by Lamfalussy to the level of European Supervisory Authorities (ESAs). These reforms were supplemented by around 30 financial regulation packages between 2009 and 2014. Numerous supervisory institutions were established at European level: the European Securities and Markets Authority (ESMA), the European Banking Authority (EBA), and the European Insurance and Occupational Pensions Authority (EIOPA). They have become independent EU agencies with legal personality and are directly accountable to the European Parliament and the Council.

A novelty in de Larosière's governance model was the granting of certain secure supranational powers to agencies by replacing the old comitology procedures with delegated and implementing acts introduced by the Treaty of Lisbon. Under the de Larosière reform, the European Supervisory Authorities could, in certain situations, take decisions addressed directly to national authorities, issue binding decisions and address decisions directly to individual financial institutions. In such cases, the agencies effectively replace national authorities and act as a supranational body, which is probably the most important innovation of the de Larosière reform – and one that has caused considerable controversy in the Council.

2. Regulations, directives and level 2

The Lamfalussy and de Larosière reforms were necessary because the traditional Community method failed to harmonise single market regulations in the 1990s. The Community method relied mainly on directives as the preferred legal instrument, which resulted in a large number of inconsistent solutions. It also relied heavily on coordination mechanisms such as committees, guidelines and expert reviews, which made the law more flexible. The Lamfalussy and de Larosiere multi-level division of the regulatory process more effectively redistributed the regulatory burden, but also expert knowledge, allowing the Commission and co-legislators to focus on the basic principles contained in the framework legislation and to delegate further work on clarifying these provisions to the bodies responsible for them. At the same time, the use of the possibility of delegating powers to agencies weakened the democratic legitimacy of the resulting regulations. Most of them were legitimised only indirectly, through accountability mechanisms linking the European Supervisory Authorities to the European Parliament and the Council.

According to critics of the system, this led to a transfer of power to experts and industry insiders. From a legal point of view, questions arose about the admissibility and long-term stability of an economic governance framework in which important details are delegated from co-legislators or the Commission to unelected bodies such as the European Supervisory Authorities. The legal basis for such delegation can be found in the Treaty on the Functioning of the European Union (TFEU), in particular Article 114, which grants the EU legislator general competence to adopt measures to approximate national law when their aim is the establishment and functioning of the internal market.

As early as 1970, the Court of Justice of the EU ruled that a distinction should be made between legal acts based directly on the Treaties, which define the 'essential elements of the matter in question', and secondary legal acts, which 'aim to ensure their implementation'.However, the Treaties do not contain any provisions describing the tasks and nature of the powers of EU agencies, and there is a lack of clarity as to their place in the EU's constitutional structure. The CJEU has repeatedly confirmed that the EU legislator may create agencies and delegate powers enabling them to adopt legal acts, but it has also emphasised the importance of a regulatory framework and the need for the EU legislator to limit the powers of agencies through 'criteria and conditions'. The misuse of Article 114 TFEU has often been challenged before the Court of Justice of the EU, usually by one or more governments that have failed to block the Council's approval of a specific legal act. However, the Court has shown relative leniency towards EU legislators, allowing them to interpret for themselves the scope of their powers to adopt measures to approximate national law on the establishment and functioning of the internal market. Another element of reflection on the legal trends that can be observed in EU economic regulations is the use of directives as opposed to regulations. During the first ten years after the entry into force of the internal market reform (1993), the EU introduced four times more directives than regulations into its legal order, using Article 114 TFEU as the legal basis. This trend then began to reverse. The turning point, when regulations became the main instrument, coincided with the entry into force of the Treaty of Lisbon and with certain declared political initiatives, such as the capital markets union. It is worth noting that during the financial crisis, the predominant use of directives was increasingly criticised. Among other things, the transposition of directives was seen as too slow to keep pace with the dynamics of the financial market, allowing for excessive divergence in regulations.

Final remarks

The change initiated by Lamfalussy and de Larosière brought about a fundamental transformation in the way economic regulations are conceived, created and implemented. On the path to deeper integration of European financial markets, regulations have for years prevailed over directives, and supranational bodies such as EU agencies, which are increasingly responsible for important legislative work

at Level 2, have gained in importance. However, there is no doubt that the need for change in the way laws are made is at least as strong today as it was two decades ago. The challenges are indeed real, linked to the need for trillions of euros of private capital to finance investments that increase the competitiveness of the European economy, build the Union's defence capabilities, anchor Europe in advanced technologies and consolidate its role as a global player. These challenges require a deep, fluid and integrated European capital market, a market without barriers that stimulates the flow of capital where it is most needed. The fragmentation of the single market and short-sighted protection of national interests are hampering the Union's growth potential and competitiveness. The debate on the need for European solutions in the field of financial supervision, particularly with regard to the capital market, has been going on for many years. ESMA and other agencies have been set up to contribute to policy-making. They are designed to strengthen the resilience of the economy and increase interpretative convergence in the implementation of EU law. In addition to contributing to the development of EU financial market regulations, ESMA and other agencies play a fundamental role in supervising the activities of market participants. However, most European financial regulation still has its roots in the realities of the Member State in which a financial firm is registered or headquartered, and supervision is based on the principle of home country control. With the increasing interconnectedness of global financial markets, the structure of market participants has changed significantly, and many European firms now have significant operations in multiple jurisdictions where they may pose systemic risks to the host country. These market developments pose numerous challenges to the existing EU regulatory and supervisory framework. Cross-border links cannot be effectively supervised by individual Member States due to differences in institutional capacity for implementation and enforcement. The fundamental difference between the past and the future is that financial crises in Europe are likely to have greater cross-border implications compared to past financial crises. A centralised supervisory authority would promote a level playing field in supervisory practices by overseeing the activities of Member State authorities and coordinating cross-border supervision and enforcement. A European supervisory authority could potentially reduce the high transaction costs associated with monitoring and enforcing EU law across borders. There are recognised benefits to a centralised, institutional supervisory structure at European level in the context of expanding cross-border activities in the financial sector, which provides a natural justification for the involvement of these institutions in shaping legislation. Political resistance has led to fragmentation of supervision in Europe, which weakens the consistency of the system and enforcement of regulations, and also carries the risk of regulatory arbitrage and inefficiency. The need to exploit the Union's full development potential and all its strengths requires an end to the debate on the perception of an integrated Europe as the sum of its Member States and the creation of a European capital market.

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Shaping Integrated Financial Market Supervision in Poland

Abstract

Supervision of the financial market in Poland began with the start of systemic transformation and the development of a market-based system of financial institutions. In its initial phase, it was sector-specific in nature. It then evolved and gained further powers with the development of financial institutions, economic growth and the need to adapt Polish law to EU standards. In 2006, integrated supervision of the entire financial market was established and entrusted to the Financial Supervision Authority.

Integrated supervision of the financial market in Poland is the result of efforts to increase the consistency and effectiveness of supervision by consolidating competences within a single institution – the Financial Supervision Authority. This process reflects international trends and the need to adapt the national regulatory system to European Union standards and the challenges of contemporary and global financial markets. At the same time, it poses challenges for the state in terms of institutional coordination, ensuring the independence of supervision and effective enforcement of regulations, as well as crisis management.

Keywords: financial market supervision, banking sector, financial stability, Financial Supervision Authority, financial crisis

JEL Codes: G28, G21, K23, H81, G18, G38, K22, K24, K42, F36, D73, H11

Introduction

The establishment of the Polish Financial Supervision Authority (KNF) in 2006 was one of the most important events in the development of financial supervision and the financial market in Poland in the period of transformation and, alongside the establishment of the Warsaw Stock Exchange (1991) and the Monetary Policy

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Council (1998). The development of integrated supervision was, among other things, a response to changes in the Polish financial market, including Poland's accession to the European Union and progress in European integration, as well as international trends in financial regulation. The establishment of the KNF created a new infrastructure for financial market supervision and brought Poland closer to the globally preferred model of supervision in developed financial markets. At the same time, the first test for integrated supervision came unexpectedly quickly, with the outbreak of the global financial crisis of 2007–2009. Poland coped with it extremely well.

1. Premises and characteristics of the beginnings of integrated supervision in Poland

The origins of financial market supervision in Poland date back to the beginning of the systemic transformation process, in particular the separation of nine independent commercial banks from the National Bank of Poland (NBP) in 1989. They were created on the basis of NBP branches and given the status of independent economic entities. It also became possible to create completely new entities on the financial market. This applied not only to the banking sector, but also to the insurance and capital markets. A symbolic proof of this was the inauguration of the Warsaw Stock Exchange (WSE) in the spring of 1991.

The emergence of a new category of entities on the financial market required the creation of a regulatory framework for their safe operation, including the protection of customer interests. At that time, the first supervisory authorities were established: the State Insurance Supervision Office[1] (PUNU), the Securities and Exchange Commission (KPWiG)[2] and the Banking Supervision Commission (KNB)[3]. For the banking sector, a deposit guarantee scheme was also established,

[1] PUNU existed between 1995 and 2002. It was established by the Act of 28 July 1990 (in practice, it began operating several years later). Until 1995, direct supervision of the insurance market was exercised by the Ministry of Finance.

[2] The KPWiG was established in 1991. It was the first independent Polish capital market supervisory authority after the political transformation. Its task was to supervise the stock exchange, brokerage activities and other entities operating on the capital market. The predecessor of the KPWiG was the KPW (Securities Commission), which operated only in the period 1989–1991 as an institution established to supervise securities trading and protect investors at the beginning of the formation of the capital market in Poland.

[3] The KNB began operating in 1998 as a banking supervisory authority within the National Bank of Poland. Previously, since 1989, supervision of banks had been exercised by the Minister of Finance. At the same time, in 1994, the General Inspectorate of Banking Supervision (GINB) was established, which was the executive body for banking supervision, operating within the structures of the NBP, under the leadership of the President of the NBP.

implemented by the Bank Guarantee Fund (BFG)[4]. In 1998, the Pension Fund Supervisory Authority (UNFE)[5] joined this group of supervisory institutions.

The first supervisory institutions were sectoral in nature. They were dedicated directly to entities operating in selected segments of the financial market: banking, insurance, capital and pensions. However, after several years, insurance and pension supervision were merged to form a joint office, the Insurance and Pension Funds Supervisory Commission (KNUiFE)[6].

The further development of the financial market in Poland, Poland's accession to the EU and the successes of more than a decade of systemic transformation raised questions about the infrastructure of a modern and target model of financial market supervision. In 2006, the Financial Market Supervision Act[7] was passed, with the aim of integrating the supervision of various market segments (banks, insurance, capital market) and expanding the competences of this institution with the emergence of new financial services. This led to the creation of the Financial Supervision Authority (KNF)[8] and the Financial Supervision Authority Office (UKNF) which supports it. The debate accompanying the integration of supervision raised the issue of its independence from monetary and fiscal policy and the benefits of creating a single institution combining the competences of sectoral supervisory authorities. The key benefits are:

- standardisation of supervisory practices across sectors (including in the areas of licensing, sanctions, capital requirements and security);
- prevention of cross-sector regulatory arbitrage (both in terms of entities and product types);
- consistency of the supervisory position in the legislative process;
- transparency and clarity of the regulator's position in the dialogue with market entities;
- representing Polish regulatory policy on the international stage;
- crisis management;
- responding to globalisation processes and the emergence of large international financial groups operating in all segments of the financial market;
- stronger institutional and socio-political position in important public debates (than in the case of dispersed institutions).

4 The BFG was established by the Act of 14 December 1994 on the Bank Guarantee Fund and began its operations in 1995. In 2016, the role of the BFG was significantly expanded to include the compulsory restructuring of banks/SKOKs (*resolution*), including the possibility of taking over institutions, writing off liabilities (*bail-in*), and recovery plans (it analyses and evaluates banks' plans and creates its own resolution plans, i.e. "contingency plans" in the event of a bank's insolvency).

5 The UNFE was established in 1998, but actually began operating in 1999 with the reform of the pension system in Poland, which introduced Open Pension Funds (OFE).

6 KNUiFE was established in 2002 from the merger of PUNU and UNFE.

7 Act of 21 July 2006 on financial market supervision, Journal of Laws 2006 No. 157, item 1119.

8 The integration process was two-stage: in 2006, the KNF merged the KPWiG and KNUiFE, and at the beginning of 2008, it also took over supervision of the banking sector.

The creation of a single supervisory institution was further justified by the rationalisation of supervisory costs.

The organisation of the integrated supervisory institution provided an opportunity to reflect on its core mission. Attention was drawn, among other things, to:

- a change in the supervisory approach from "literal compliance with *regulations*" to *risk-based* monitoring;
- analysis of supervisory processes in functional vs. sectoral terms, as exemplified by the subsequent creation of teams, departments and divisions dedicated to the entire financial market rather than to individual sectors;
- the exercise of micro- and macro-prudential supervision[9];
- the need to strengthen regional international cooperation in order to represent the position of a wider group of countries (in particular Central and Eastern European countries that are members of the EU) in EU and global institutions bringing together supervisors;
- moving away from reporting and analytical supervision of the financial sector in favour of enforcement of compliance with regulations.

2. Three models of supervision

A milestone in the development of the concept of integrated supervision in Poland was its accession to the European Union in 2004. Membership in European structures forced the harmonisation of Polish regulations with EU directives, which contributed to the modernisation of the supervisory system. In addition, the growing complexity of financial products and the emergence of financial conglomerates operating in various market segments required a new regulatory approach.

In theory and international practice, three main models of financial supervision have emerged: sectoral, integrated and *twin peaks*. The sectoral model assumed the existence of separate institutions supervising individual financial segments – the banking sector, the insurance sector and the capital market, with the central bank usually performing the function of banking supervision. The integrated model involved the complete or partial consolidation of supervisory functions over all segments of the financial market into a single "mega-supervisor" institution. The *twin peaks* model provided for the division of competences between two institutions – e.g. one responsible for prudential supervision and the other for consumer protection.

[9] The terms "macroprudential supervision" and "microprudential supervision" were popularised and appeared in supervisory terminology after the financial crisis that began in 2008. Previously, the same concepts were used to describe supervision from a systemic perspective versus a single entity or group of entities. However, these terms and the principles of micro- and macroprudential supervision appeared in materials and debates of the Bank for International Settlements (BIS) and the International Monetary Fund (IMF)

In Poland, the concept of integrated supervision was seen as a response to the emergence of increasingly complex financial products and services and financial conglomerates, and the blurring of boundaries between individual segments of the financial market and their products. Integrated financial market supervision was to have a stronger position in the country's institutional structure than sectoral supervision and, moreover, it allowed to avoid duplication and overlap of competences of individual supervisory institutions and to increase the transparency of the objectives of their activities, responsibilities and application of regulations. This was associated with rationalisation of expenditure and economies of scale in supervisory activities.

Proponents of sectoral supervision argued that the specific nature of financial institutions in particular sectors militated against integration, especially given the different risk profiles and reporting requirements, which made it very difficult to supervise on a uniform basis. However, with the right approach to the legal basis and organisation of supervision, these contraindications could be treated as ambitious goals, the achievement of which would fully confirm the legitimacy of building integrated supervision.

3. Legislative process and political disputes

Against the backdrop of disputes over the superiority of one of the supervisory models, political processes and the strength of the dominant political option were of significant importance[10]. The main focus of political disputes was the organisational structure of the new supervisory authority and its powers. The disputes mainly concerned whether integrated supervision should also cover the banking sector or whether it should remain with the National Bank of Poland. There were also supporters of placing integrated supervision within the NBP and opponents of this solution. Ultimately, it was decided to gradually integrate all segments of the financial market. The KNUiFE and KPWiG were merged into the KNF immediately, while the process of incorporating the KNB was postponed until 1 January 2008. As part of the discussion on integrated supervision, the need to establish an arbitration court[11] at

[10] The process of creating integrated supervision was initiated by the parliamentary elections in autumn 2005. The management of the Ministry of Finance was ready with a draft bill in mid-2006. The draft law on financial market supervision was submitted to the Sejm in 2006 during the government of Kazimierz Marcinkiewicz, but was finally adopted during the premiership of Jarosław Kaczyński.

[11] The Financial Market Supervision Act, finally adopted in 2006, provided for the establishment of an arbitration court at the Polish Financial Supervision Authority.

the KNF, to supervise the system of cooperative savings and credit unions (SKOK)[12] and to incorporate the office of the Insurance Ombudsman[13] was also raised.

The legislative process for the Financial Market Supervision Act proceeded very smoothly[14].

4. The concept of integrated supervision in Poland

The main assumptions of the 2006 Act on Integrated Financial Market Supervision in Poland were based on an analysis of international experience and took into account the specific nature of the Polish market. In particular, the Polish Financial Supervision Authority was to ensure the proper functioning, stability, security and transparency of the financial market in order to protect the interests of its entities and customers. The Act was concise and contained mainly general provisions with the possibility of their specification in other normative acts, which on the one hand made the KNF management responsible for them and on the other allowed for operational flexibility of the office in special or crisis situations.

The KNF was to supervise the banking sector, the capital market, the insurance and pension markets, as well as payment institutions and payment service offices. To this end, it was equipped with broad powers, including issuing licences for financial institutions to operate, imposing penalties for violations of the law and issuing recommendations to supervised entities.

The organisational structure of the KNF is based on a collegial model, with a chairperson – who has strong powers in the appointment and dismissal process – deputies, and representatives of public institutions specified in the Act.

[12] For many years, SKOKs were supervised mainly internally by the SKOK National Union. The National Union performed a coordinating and supervisory function within the sector. On 5 November 2009, the Act on Cooperative Savings and Credit Unions (the "SKOK Act") was passed as a framework regulation for the operation of credit unions. However, at the initial stage, this Act did not mean full supervision of SKOKs by the KNF. In October 2012, an amendment to the SKOK Act came into force, which formally placed SKOKs under the supervision of the KNF. Date: 27 October 2012 — from this date, SKOKs were placed under the supervision of the KNF.

[13] The institution of the Insurance Ombudsman was established in 1995 with the amendment to the Insurance Activity Act of 8 June 1995. At that time, a chapter entitled "Insurance Ombudsman" was added to the Act, which formally defined its tasks and competences. On 11 October 2015, the Act of 5 August 2015 on the handling of complaints by financial market entities and on the Financial Ombudsman came into force. It was this Act that transformed the office of the Insurance Ombudsman into a broader institution — the Financial Ombudsman.

[14] The draft act was submitted to the Public Finance Committee on 13 July, and the act entered into force on 4 September 2006, which enabled the appointment of the first chair of the Polish Financial Supervision Authority (KNF) on 29 September 2006, and the first meeting of the KNF was held on 9 October 2006.

5. Organisational challenges

The first challenge for the newly created UKNF was to ensure continuity of supervision during the merger of the institutions. The change in regulations and procedures was accompanied by a change in organisational structures aimed at achieving synergies within a comprehensive approach to the financial market and reducing operating costs (e.g. cross-sectoral policy division, legal division, accounting, human resources), taking into account the subsequent incorporation of banking supervision.

These measures made it possible to develop a uniform reporting and supervision system for the entire financial market, which resulted in better monitoring of links between individual market segments and identification of systemic risk.

6. The KNF in the face of the challenges of the global financial crisis

Shortly after its establishment, the KNF and UKNF were confronted with the challenges of the global financial crisis (GFD) of 2007–2009, which began with the subprime mortgage crisis in the United States and quickly spread to other markets. The effects of the GFC began to be felt in Poland in the second half of 2008, among other things through the activities of subsidiaries of international financial groups on the domestic market. Hence the priority action of the national supervisor was to prevent the subsidiaries from being infected by the problems of their foreign parent companies[15].

The KNF required banks to report daily on transactions concluded with foreign institutions, including parent banks, in order to prevent the outflow of funds from subsidiary banks to their foreign owners. These regulations and supervisory measures, together with other public policies, contributed to Poland being the only country in the European Union to avoid recession in 2008–2009 and, on the contrary, to achieve economic growth. Moreover, the banking sector did not require public assistance, and the average solvency ratio increased by more than a quarter[16].

Assessing the success of crisis management in Poland in 2007–2009 in summary, the following can be attributed to it:

- integration of supervisory processes (institutional dimension);
- the introduction of liquidity standards for the banking sector (supervisory tools dimension);
- powers in the area of the obligation to apply supervisory standards (enforcement effectiveness dimension).

[15] From July 2008, Resolution No. 9/2007 of the KNB was in force, imposing on banks the obligation to maintain and report quantitative liquidity standards to the supervisory authority, which improved the liquidity of banks and reduced the risk of a crisis of confidence on the part of customers.

[16] During the GKF years in the G20 countries, public aid to the financial sector reached 3.7% of GDP.

7. Integrated supervision in an international perspective

Poland's experience with integrated supervision was part of a broader trend observed in Europe. The concept of integrated supervision combined elements of microprudential and macroprudential supervision, which resulted from a comprehensive view of the financial market. The integration of financial markets, both in terms of products and institutions, on an almost global scale led to appropriate responses from the regulatory and supervisory infrastructure, with particular emphasis on the European Union. A classic example of integrated financial supervision was the British solution, where the Financial Services Authority (FSA) was established. However, the GFC revealed certain weaknesses in this model, which led to its reform in the United Kingdom and the restoration of some supervisory powers to the Bank of England. Integrated supervision was introduced following the GFC in Finland (2009) and Lithuania (2012). During this period, a Single Supervisory Mechanism (SSM) was established in the euro area, under which the European Central Bank began to exercise direct supervision over the largest banks[17].

8. Evolution of the role and tasks of the KNF

The role and tasks of the KNF have evolved in response to changing market and regulatory challenges. Following a period of consolidation of supervisory institutions, the KNF focused on strengthening its position as a modern regulator and supervisor. The organisational structure of the KNF was expanded to include new departments responding to emerging challenges. This is illustrated, for example, by the creation of the Cybersecurity Department, the FinTech Financial Innovation Department and the Anti-Money Laundering Department.

From the very beginning, the KNF has also developed its activities in the field of financial education and communication with market participants. A "public warning list" (commonly known as the "blacklist") was introduced, containing entities whose activities raise doubts. An arbitration court was also established at the KNF to hear disputes between financial institutions and their clients.

9. Independence of financial supervision in Poland

The issue of the independence of the KNF is one of the key aspects of the functioning of Polish financial supervision. The Chairman of the KNF is appointed by the Prime Minister and his dismissal is subject to statutory conditions, which may entail political risk. However, the Chairman's term of office is five years, which ensures a significant level of stability and operational independence. It is also worth noting that the

[17] Currently, 113 entities are subject to direct supervision by the ECB.

activities of the KNF are determined by its status as a public administration body with the necessary autonomy in terms of supervisory and regulatory decision-making.

In recent years, the risk of politicisation of supervision has manifested itself, among other things, in attempts to involve the KNF in stimulating the implementation of government programmes or initiatives of specific customer groups (e.g. credit holidays), which can be considered a worrying symptom and, at the same time, a temptation to abuse such influence in the future.

10. The KNF as regulator and supervisor

The dual role of the KNF as a regulator and supervisor means that this institution not only supervises compliance with regulations, but also actively participates in the creation of new regulations, particularly through the participation of the Minister of Finance in the Commission and at the same time using his right of legislative initiative. Furthermore, the resolutions and recommendations of the KNF play an important role. The dual role of the KNF as regulator and supervisor carries with it the risk of a conflict of interest when regulations are subject to its assessment in terms of effectiveness. An example of this is the Corporate Governance Rules issued by the KNF, whose legal status has been controversial in legal circles.

11. Crisis management process

The bankruptcy of financial institutions can have a variety of consequences depending on the size and importance of the entity in the financial system. In Poland, the protection system has been organised in such a way as to minimise the negative effects of such events.

In the event of a bank's bankruptcy, the most important protection for customers is the deposit guarantee scheme. The Bank Guarantee Fund guarantees the return of funds deposited in bank accounts up to the equivalent of EUR 100,000. This system has proven effective in practice – in recent years, all bank bankruptcies have been handled without any losses for depositors covered by the guarantee.

For borrowers, the effects of a bank's bankruptcy are usually limited, as the rights and obligations under loan agreements are usually taken over by other financial institutions. In the case of insurance companies, a similar protection system is in place, managed by the Insurance Guarantee Fund.

The Polish crisis management system has proven to be effective. Between 1989 and 2024, a total of 137 cooperative banks and SKOKs, as well as six commercial banks, went bankrupt in Poland. In most cases, these bankruptcies were handled efficiently, without significant losses for depositors or destabilisation of the financial system.

During this time, the Polish financial crisis management system has evolved significantly since the establishment of the Polish Financial Supervision Authority (KNF). Currently, the Financial Stability Committee, composed of representatives of the National Bank of Poland, the Ministry of Finance, the KNF and the Bank Guarantee Fund, plays a key role.

The crisis management system in Poland is based on several pillars. The first is the deposit guarantee scheme managed by the Bank Guarantee Fund, which protects deposits up to EUR 100,000 per depositor in a single bank. The second pillar is the compulsory bank restructuring system, which allows for the orderly liquidation of failing institutions without jeopardising the stability of the financial system.

Challenges related to the future evolution of the financial market supervision model:

A. Financial stability is a public good

Financial stability is recognised as a public good because its benefits are available to all participants in the economy, regardless of their direct contribution to its maintenance. The financial system plays a key role in capital allocation and risk management, which is why its stability is fundamental to the functioning of the entire economy.

Nowadays, it is unreasonable to exclude economic entities and the population from using the services of the financial sector. In particular, basic payment, settlement and deposit and credit product services should be accessible and secure for all customers of financial institutions, regardless of their level of economic and digital knowledge, and at the same time, due to the importance of financial intermediation for the efficient functioning of the socio-economic system, they should be provided by professional entities and supervised by the state.

This nature of public good justifies state intervention in the form of financial regulation and supervision. As a public institution, the Polish Financial Supervision Authority (KNF) is tasked with protecting the stability of the financial system against actions of entities that could threaten the stability of the system by maximising only short-term profits, disregarding the potential long-term negative consequences of their actions. This applies both to compliance with prudential standards and other conditions required by law, as well as to the reputation of market entities, which allows customer confidence in the financial system *as a whole* to be maintained.

The principle that "financial stability is a public good"[18] was one of the guiding principles behind the creation of integrated supervision and the mission of the first term of office in 2006-11. This statement shaped the sense of purpose and meaning of the work of those employed in financial market supervision.

[18] The phrase "Financial stability is a public good" was also commemorated as an inscription in the main hall of the new KNF building at Moniuszki and Jasna Streets, which was put into use in 2011. This accompanied the 5th anniversary of the establishment of the KNF.

B. The utopia of self-regulation

The concept of self-regulation of financial markets assumes that market mechanisms are sufficient to ensure the stability and efficiency of the financial system, in particular the banking sector, which for a long time aspired to treat banks as institutions of public trust. Bankers concluded from this that the entire sector, especially large banks classified as TBTF, SIFI and TITF, are capable of self-regulation and compliance with the highest ethical and prudential standards, and that their activities are primarily aimed at serving the interests of their customers and, in macroeconomic terms, the interests of society and the economy. This thesis fell into the trap of several types of conflicts of interest. For example, the management of a bank (or any commercial company) should first and foremost act in the interests of its shareholders (without violating the law, of course). Secondly, any disputes between entities from a given sector and their customers (including non-professional ones) should be resolved outside the chambers of commerce that bring these entities together.

The concept of self-regulation was popular in the public domain of many developed countries, among other things legitimising trust in financial market entities by state institutions. The 2007–2009 financial crisis dramatically highlighted the weaknesses and even flaws of this approach, revealing that financial markets are vulnerable to, among other things, speculative bubbles, excessive risk concentration and herd behaviour. These risks can and should be monitored and managed by a professional supervisory authority, rather than left to the entities or the financial sector themselves. This does not preclude cooperation and dialogue between the supervisor and the financial sector, albeit in a hierarchical rather than a partnership-based relationship.

C. Medium-term conflict between macroprudential policy and monetary policy in Poland after 2015

The monetary policy pursued by the NBP focuses primarily on maintaining price stability, while the prudential policy pursued by the KNF aims to ensure financial stability. These objectives may be separate and even contradictory, especially in the medium term. This raises the question of the legitimacy of placing macroprudential policy powers with the KSF, entrusting the NBP with the management of macro-prudential policy and the Minister of Finance with crisis management[19]. This concerns, for example, the conflict of interest between stimulating low interest rates as a factor of economic growth (if it is consistent with the inflation target) and, on the other hand, the possibility of excessive credit growth and a deterioration in bank safety indicators. In crisis situations, monetary policy preferences may be to ease it, while prudential supervision policy requires it to be tightened. The

[19] The Act on Macroprudential Supervision of the Financial System and Crisis Management in the Financial System of 5 August 2015 transferred macroprudential supervision powers from the KNF to the Financial Stability Committee (KSF), which is chaired by the President of the NBP and serviced by the NBP. Under this formula, the Chairman of the KNF became one of the four members of the KSF.

examples of conflicts of interest outlined above highlight the need for substantive cooperation between the NBP and the KNF in marginalising, and preferably eliminating, political influence. The issue of the responsibility of KSF members also needs to be addressed, especially in cases of risk materialisation and crisis events.

D. Risk-based supervision vs. classic supervision

Changes in practice require that traditional supervisory policy, which focuses on *compliance-based supervision*, be replaced by *risk-based supervision*, in which the intensity and scope of supervisory activities are adjusted to the risk profile of the supervised institution. The KNF's policy and the UKNF's activities consistently develop the risk-based supervision model in practice. More advanced risk assessment methods, stress tests and individual supervisory plans for the largest institutions are being introduced. However, this process is still evolving and requires further refinement of methodologies and analytical tools.

E. Privatisation of profits and publicisation of losses

In their core business, banks act as financial intermediaries, transforming maturity (short-term deposits into much longer-term loans) and risk (diversification of capital providers and professionalisation of credit assessment). In this sense, banks can be seen as "risk merchants" who earn money by transforming various types of risk (resource, term, quality).

This approach emphasises that risk-taking is a natural function of banks, but at the same time requires appropriate risk management. The role of the Polish Financial Supervision Authority (KNF) is to ensure that banks have competent staff, appropriate methods and powers to manage the risks they take.

On the other hand, an increasing number of EU and national supervisory regulations significantly limit the level and manner of risk-taking, particularly by the banking sector. Exceeding these limits, as in the case of financial institutions during the GKF, leads to costly consequences that cannot always be absorbed by the entity that generates them. The scale or prevalence of a crisis in financial sector entities undermines the market essence of their operations and can transform micro-crises into macro-crises. The materialisation of a macro crisis requires state intervention, although after the GKF measures were taken to limit the risk of such intervention, both through appropriate buffering instruments (e.g. MREL) and *institutional protection schemes* – IPS) and the implementation of the concept of compulsory restructuring (resolution), which involves the capital of owners and selected categories of creditors in covering the losses of an insolvent bank. This is a solution that limits the average taxpayer's share in the costs of compulsory restructuring.

In addition, an appropriate prudential supervisory policy can significantly reduce the risk that entities would be willing to take under market conditions. However, the supervisor cannot force financial entities to take on more risk than they themselves are able to accept. This principle has an impact on the asymmetry of the possibilities for conducting a counter-cyclical policy by financial market supervision.

The principle of "private profits – public losses" applies to situations where profits from the economic activities of entities are due to shareholders, while in the event of losses, various efforts are made to obtain state intervention – using taxpayers' money – to rescue bankrupt entities. This applies in particular to banks, whose assets are usually many times higher than the capital of shareholders in joint-stock companies or shareholders in cooperative banks and are financed from external funds, mainly deposits. The banking sector, whose capital (shareholders' money) is disproportionately smaller than the level of deposits it manages. In a hypothetical situation of significant losses and the threat of bankruptcy, the state must intervene to prevent such an entity from going bankrupt. This applies not only to deposit payments, but also to the risk of contagion to the entire financial system through interconnections. As a result, the costs and economic consequences of such an event would be far more painful than one-off public aid. While it is not possible to fully protect against the risk of bank failure, the state is entitled, in the interests of taxpayers, to take measures to reduce such risks and to transfer the costs of possible crisis events to the financial sector. Examples of such additional charges include the bank tax or contributions to the Bank Guarantee Fund (BFG). The Polish Financial Supervision Authority (KNF) is also trying to counteract this problem through appropriate regulations on bank capitalisation, remuneration systems and risk management. There are also ex-post mechanisms. The introduction of bail-in tools as part of the bank resolution and orderly liquidation system is intended to shift part of the costs of the crisis to bank shareholders and creditors, rather than to taxpayers.

F. Unity of powers and responsibilities

Should the state (which has taxpayers' money at its disposal) be responsible for events that it has no real influence over? This dilemma became very important after the financial crisis of 2007–2009. At that time, work began on a new supervisory architecture in the European Union. Particularly in the initial phase of developing new supervisory solutions in the EU, there was a strong tendency for *host countries*, where subsidiaries of large and even huge financial groups operate, to transfer supervisory powers over these groups to their home countries (*mother-country).* Furthermore, as was the case in Poland, for example, supervisors ensured that savings were not transferred from the host country to the home country or to subsidiaries in other countries. As a result, some national supervisory powers have been transferred to EU institutions, which, in the case of large financial groups, increases the chance of effective crisis management. Nevertheless, in the event of emergencies or possible disputes at EU level, the question of how to protect against the scale and manner of accessing local taxpayers' money in the process of rescuing large international entities remains open.

A side effect of the internationalisation of the national financial system, particularly the banking system, has been an intensification of the debate and actual measures aimed at domesticating banks, and in Poland, their repolonisation.

G. Regulatory balance

Regulatory policy is a „set of rules of the game" established by state institutions. The manner in which they are developed, their final content and, finally, their enforcement can be important tools of regulatory policy. Both excess and deficiency of regulation are harmful. Regulatory balance is a state in which regulations are strong enough to ensure the stability and security of the system, but at the same time flexible enough not to hinder development and innovation. Both excess and deficiency lead to undesirable economic and systemic effects. Excessive frequency of regulatory changes is also harmful because it generates instability and uncertainty about the direction of regulatory policy, especially when it is introduced by „surprise". In simple terms.

The experience of the 2007–2009 financial crisis shows that before it broke out, many countries, especially the US, were dominated by a lack of regulation, particularly in the area of derivatives and the mortgage market. This resulted in huge losses and the collapse of financial institutions. In response to these processes, the crisis was followed by a significant tightening of regulations (e.g. Basel III, Dodd-Frank Act). Some sectors considered them too costly and, in particular, limiting their flexibility. This was especially true in those countries where financial institutions were not prepared for such a drastic shift in the state's attitude towards regulation.

Overregulation increases operating costs for financial institutions, limits innovation and competitiveness, and can also lead to the transfer of activities to less regulated jurisdictions (*regulatory arbitrage*) or the emergence of institutions that offer similar services but are not subject to such drastic requirements. On the other hand, *underregulation* encourages abuse, speculation and crisis situations. It increases the risk of financial institution failures, which can lead to a loss of confidence in the financial system.

Regulatory balance means a level and scope of regulation that protects the stability of the system (in this case, the financial market), ensures the safety of market participants (e.g. consumers, investors) and does not stifle innovation and competitiveness in the sector. The term "regulatory balance" refers to a state in which the system of legal and institutional regulations (e.g. concerning the financial market) is optimally balanced – i.e. it is neither too extensive and restrictive nor too weak and liberal[20]. However, the search for a "golden mean" in regulations is not only a question of their liberality or restrictiveness. Additional factors include transparency, clarity and complexity.

Regulatory balance can be treated as a much broader issue that goes beyond the area of financial market supervision. For example, it may also concern the tax

[20] In 1998, Ricki Helfer, former Chairwoman of the FDIC, said at the World Congress of Deposit Insurers in Washington, D.C., "There is no contradiction between security and freedom. We will either have both of these benefits or neither." The meaning of this idea is often attributed to Benjamin Franklin, who wrote in the 18th century: "*Those who would give up essential Liberty, to purchase a little temporary Safety, deserve neither Liberty nor Safety*."

sphere and many aspects of the daily functioning of companies and citizens. This is an issue of particular importance from the perspective of developed economies competing for human capital and the foundations for further development in the 21st century. In the context of global competition in the 21st century, countries will compete for citizens and entrepreneurs not only in terms of quality of life (access to schools, healthcare, culture, ease and cost of dealing with basic official matters), but also in terms of a friendly tax system and other regulatory restrictions.

Summary and outlook

The establishment of the KNF in 2006 was a landmark moment in the development of Polish financial supervision. The process of creating integrated supervision was lengthy and not without controversy as to its optimal nature and structure in Poland, but ultimately it brought measurable benefits for the stability and development of the domestic financial system. This is evidenced, among other things, by the lack of turbulence in the financial market during the GKF period. Furthermore, it is worth emphasising the institution's ability to respond quickly to threats and effectively coordinate actions within the financial security system. However, the threats identified were not always adequately addressed by institutions outside the financial security network.

The effectiveness of the KNF's activities in the integrated supervision model should not obscure the risk of political influence on preferred solutions or decisions, the challenges of effective adaptation to the technological revolution in the financial sector and the accompanying risks, including the increasingly important issue of cybersecurity. Added to this are new challenges such as the emerging trend of deglobalisation and building resilience to the consequences of global tensions or armed conflicts. The very strong polarisation of society and populist support for demanding customer attitudes are also significant. Last but not least, a rational rather than emotional approach to the concept of sustainable development, and in particular the implementation of ESG goals and objectives.

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The European Savings and Investment Union: What Will Poland Get Out of It?

Abstract

The project of building a single European Union (EU) market for financial services, recently rebranded as Savings and Investments Union (SIU), aims at breaking the barriers that isolate each EU country's financial system from the rest of the EU economy. Given its capital-hungry economic dynamism and relative lack of financial development, Poland has more to gain than most other EU member states from progress towards SIU.

Keywords: capital market integration, Savings and Investments Union, European Union

JEL Codes: G15, G28, G30

1. What is the Savings and Investments Union?

The SIU concept and vocabulary was spearheaded by the report on the single market authored by Enrico Letta in April 2024, and subsequently endorsed by European Commission president-reelect Ursula von der Leyen in her inaugural policy address to the European Parliament in July (Letta 2024, p. 11; von der Leyen 2024, p. 11).

While the label is new, however, the concept is not. The European Commission's first in-depth exploration of and advocacy for a supranationally integrated financial system dates back to 1966 with the publication of an in-depth document, formally titled "The Development of a European Capital Market" and also known as the Segré Report for having been written by a group led by Commission official Claudio Segré (EEC Commission 1966). Commenting on the Segré Report at the time, the renowned academic Charles Kindleberger concluded that, in Europe, *"Many of the faults in the functioning of domestic capital markets, and institutional weaknesses,*

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can be overcome by their progressive integration since the faults of functioning of national security markets are the result principally of their narrowness and compartmentalization" (Kindleberger 1967, pp. 657–658). Nearly six decades later, the same diagnosis is widely shared in the European analytical community and underpins the SIU vision.

This observation does not mean, however, that no progress has been made in the meantime. Major EU policy initiatives, particularly in the last thirty years, have brought the European system somewhat closer to the aspiration of a single financial market. Financial services legislation and applicable regulations have been gradually harmonized, leading increasing plausibility to the idea of a "single rulebook" first officially articulated in a landmark document report by a group led by former central banker Jacques de Larosière at the height of the great financial crisis (European Commission 2009).

Beyond rulemaking, mechanisms have been introduced to ensure the rules' consistent implementation and enforcement, typically catalyzed by crisis episodes. In early 2011, the EU established three agencies to foster Europe-wide convergence of supervisory practices, replacing prior committees that lacked any binding authority. Those three agencies are the European Banking Authority (EBA) in London (later relocated to Paris following Brexit), the European Insurance and Occupational Pensions Authority (EIOPA) in Frankfurt, and the European Securities and Markets Authority (ESMA), also in Paris. ESMA was soon granted direct supervisory authority on limited market segments, for example credit ratings agencies in 2011 and trade repositories in 2013.[1] The euro area then pooled micro-prudential banking supervision under the authority of the European Central Bank (ECB), effective from November 2014. Shortly afterwards, the Single Resolution Board (SRB) was established in Brussels to help manage future failures of significant euro-area banks. In 2024, the EU Anti-Money Laundering Authority (AMLA) started operations in Frankfurt, set to assume a direct anti-money laundering (AML) supervisory role from 2028 over selected entities in the entire EU, including in Poland.

At the current juncture, however, the EU policy framework stops well short of full integration. In many market segments, the rulebook is far from single, with complex interactions between national and EU-level laws and regulations. Most supervisory duties are exercised at the national level, including on most segments of capital markets (such as asset managers, investment firms, and market infrastructures), auditing and accounting, insurance, macro-prudential and consumer-protection supervision of banks, and also micro-prudential supervision and resolution of banks outside the euro area. Aside from AML, the EU has taken no major legislative step towards financial policy integration in the last ten years, even though it started touting an ostensibly ambitious agenda of capital markets union (CMU) from 2014

[1] Due disclosure: the author has long been an independent non-executive director at one of the trade repositories supervised by ESMA, a fully-owned subsidiary of US-based Depository Trust and Clearing Corporation (DTCC).

onwards. In the European Commission's semantics, CMU is now a subset of the all-encompassing SIU, which also includes the banking and insurance sectors.

For good reasons, the Commission consults extensively before making legislative proposals on new initiatives, so that the announcement of SIU last year has not yet been transformed into much tangible action at the time of writing. In March 2025, the Commission published a communication setting up a general strategy and sequence to implement its SIU vision, with an appendix listing 22 individual action items on which 14 entailing (at least potentially) new legislation (European Commission 2025, pp. 18–19). Of the latter, only the review of securitisation legislation has been already published, in mid-June. (In February 2025 the Commission did propose amendments to the legislation on mandatory sustainability-related disclosures, but that is outside what it views as the scope of SIU.) As usual in the EU, the non-legislative initiatives, such as reports, recommendations and communications, may have some value in providing inspiration for national reforms or preparing the ground for subsequent EU level initiatives, but their impact and significance are typically less than for EU legislation, whether in the form of directives of regulations (directly applicable) or directives (which require transposition into national law of each of the member states).

Poring through the appendix of the European Commission's March communication on SIU, two themes look potentially significant. First, before the end of 2025, the Commission will propose legislation on "more integrated and efficient supervision" of capital markets. Second, in the course of 2026 it will release a "report on [the] banking system in the Single Market, including the evaluation of competitiveness". The latter is widely expected to include a review of the banking union framework in the euro area, which could entail the creation of a supranational deposit guarantee scheme (mentioned in the communication as "ongoing" work) but also reforms of the regulatory treatment of banks' concentrated domestic sovereign exposures within the euro area (Véron 2024). Simultaneously, the report is expected to include an assessment of micro-and macro-prudential requirements on banks informed, among other drivers, by the Basel III framework that was set at the global level by the Basel Committee on Banking Supervision in several phases between 2010 and 2017.

In a nutshell, capital market supervision and banking sector policy reform, the latter mostly affecting the euro area, appear likely to be the most substantive areas for legislative discussion under the SIU label during the current EU legislative term ending in 2029 – assuming no financial instability in the meantime that would lead to a reassessment of priorities. By contrast, areas that receive a lot of rhetorical attention but ultimately pertain to national social models, such as insolvency law reform, pension frameworks, housing finance, and of course taxation and government funding, appear unlikely to be the matter of ambitious EU legislation in the near term, even as impactful reform in some of these fields may be considered at the level of individual member states.

2. Poland's position and interests

From this potential EU agenda, the banking union aspects do not affect Poland or at least not immediately, as there appears to be no willingness for the country to join the banking union area, let alone to adopt the euro as its currency. Polish public opinion is wary of euro adoption, like in Czechia and significantly more than in either Hungary and Romania (Bartůšek 2025). Meanwhile, perceptions of euro adoption in Denmark and Sweden are evolving in Northern Europe's changing geopolitical context. It is becoming increasingly plausible that Poland might be the last EU country to ever adopt the single currency.

There is in principle an option to join the banking union without a decision to adopt the euro. But the experience so far suggests that it is only attractive to countries that have placed themselves on a path towards eventual euro adoption, as has been the case with Croatia and Bulgaria which both joined the banking union in 2020. The upshot is that, for the foreseeable future, the baseline scenario for Poland is of staying outside both the euro and the banking union.

Poland's interests and policy outlook are more ambiguous in the forthcoming EU debate about capital market supervisory integration. On the one hand, there is a widespread view among Polish elites and public that the status quo in that area serves the country well. The Warsaw Stock Exchange is an iconic national champion with considerable symbolic power, illustrated by the fact that it was initially headquartered in the former building of the Polish communist party, a metaphor of the post-Communist transition. It is majority-owned by the Polish state, and the related market infrastructures (central counterparty clearing house, central securities depository, trade repository) are two-thirds-owned by the state. After some turmoil in the mid-2010s, the national financial services authority (KNF, for Komisja Nadzoru Finansowego) is well-established and respected.

On the other hand, more cross-border capital market integration would benefit Poland more than most other EU countries, because of the vibrancy of its entrepreneurial sector which structurally needs risk capital to develop. A recent study by economists at the Bank of France attempts to quantify that intuitive impact (Gossé and Jehle 2024). According to the authors' simulations, in a pan-EU market where both the current equity home bias had disappeared and the size of capital markets relative to GDP had converged further, the share of Polish stocks in an optimal European portfolio would rise more than threefold – and even more than twenty-fold in French or German portfolios. In other words, the demand for Polish listed equities would increase dramatically, contributing to easier access to risk capital of the more dynamic part of the Polish economy. Polish savers and investors would simultaneously benefit from better and more diversified investment opportunities.[2] The improvement of financing conditions would be most impactful

[2] The author is grateful to Jean-Baptiste Gossé for his explanations and complementary calculations based on the published paper as referenced.

for high-risk enterprises that cannot rely only on traditional bank lending, not least new or growing Polish companies linked with the defense sector and/or with Ukrainian markets.

Furthermore, the corresponding policy agenda can be rolled out in a way that does not question the continued existence of Poland's national-champion market – provided, of course, that the Warsaw Stock Exchange competes successfully on a level playing field. On this front, the Draghi Report's recommendation that *"the EU should aim to create a single central counterparty platform (CCP) and a single central securities depository (CSD) for all securities trades"* (Draghi 2024, p. 65) is overly top-down and unnecessary. What is needed is a capital market supervisory design that, first, provides better incentives for a genuine single capital market that would provide equal and improved access to finance to companies and better opportunities for investors; and second, increases or at least preserves the level of supervisory effectiveness in every national environment, namely achieving at least as high performance as the status quo in terms of understanding local specificities and practices, enforcing the applicable regulations, and managing the corresponding risks.

The first of these two criterions suggests moving from the status quo of 27 national capital market supervisors complemented by ESMA to a single supervisor. For that purpose, the existing ESMA would be supercharged into a profoundly transformed and much larger organization. The second criterion suggests that organization should embed principles of operational decentralization and what may be called "location neutrality", namely that it would not be biased towards a particular financial center within what is likely to remain for a long time a multicentric capital market: several EU financial entrepots that keep competing with each other. Warsaw is likely to remain one of these, since it has displayed a capacity to outcompete rivals in segments where no competitive distortion comes from national supervisors, such as wholesale banking back-office jobs within the EU single market (McMurray 2025).

Contrary to widespread misperceptions, the two above-mentioned criterions are by no means mutually exclusive. A possible design for the single EU capital market supervisor, or supercharged ESMA, would equip it with national offices in all member states; some of these national offices would assume a pan-EU coordinating mandate over a given supervised market segment. That expanded ESMA would replace national capital market supervisors in each member state, with the transfer of duties completed across all relevant market segments at the end of a decade-long transition. It would likely be between ten and twenty times larger than the present one, with perhaps more than two-thirds of its staff outside of its headquarters country of France. It would combine market savvy, location neutrality and connectivity to local stakeholders with a single market approach, which is structurally impossible to achieve for national supervisory authorities accountable to national stakeholders (Véron 2025).

National authorities would not disappear from the landscape, of course. In the Polish case, the KNF would retain its prudential and conduct-of-business supervisory duties

over banks, insurers, and pension funds. Poland, being the largest non-euro-area country in the EU, could also expect to play a significant role in the new supercharged ESMA, including in terms of key positions in its governing board and staff.

In conclusion, there has been an occasional bias in recent Polish debates towards the status quo in terms of capital market supervisory arrangements. But that option is not in the best Polish interest, because Poland has so much to gain from EU capital market integration. It may be time for Polish stakeholders, as for those elsewhere in the EU, to consider adopting a more forward-looking stance in the ongoing conversation about transforming Europe's Savings and Investments Union from a vision to a reality.

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Climate Change and Financial Stability: A Thematic Analysis of the Literature Using BERTopic[1]

Abstract

This article examines the links between climate change and financial stability in the scientific literature. The BERTopic method was applied to analyse over one thousand abstracts of publications indexed in Scopus, and the results were validated via a dataset from Web of Science. The findings indicate the dominance of topics related to climate policy and transition risk, whose importance increased significantly after 2015. At the same time, issues concerning physical risk, such as climate-related disasters, water resources, and flood risk, are also present, although less prominently represented. A particularly notable gap concerns direct references to macroprudential policy objectives. The comparative analysis also reveals geographical differentiation: in countries pursuing intensive climate policies (e.g., EU member states), research is predominantly focused on transition risk, whereas in regions particularly exposed to extreme weather events (e.g., India), emphasis is placed on physical risk. Analyses of Web of Science abstracts confirmed the conclusions drawn from Scopus publications. The findings highlight the need for further research on the integration of climate-related risks into macroprudential policy.

Keywords: climate change, financial stability, BERTopic, macroprudential policy

JEL Codes: G01, G28, Q54, Q58

Introduction

The stability of the financial system is increasingly analysed in the context of climate change. This development generates both physical risks, which are primarily linked to extreme weather events, and transition risks, which stem from the costs of climate

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policies. The literature highlights that both dimensions of risk can significantly affect banks, capital markets, the insurance sector, and the real economy, thereby shaping systemic risk. Despite the growing number of studies, comprehensive approaches that structure the climate dimension within the financial stability literature remain scarce.

The aim of this study is to examine the extent to which the academic literature identifies and describes the mechanisms linking climate change with financial stability. The analysis is based on a set of more than one thousand abstracts of scientific articles retrieved from the Scopus database. Topic modelling was conducted via the BERTopic method (Grootendorst 2022), which relies on BERT-based language representations and has been widely applied in the literature on topic modelling (e.g., Aristei et al. 2025; Tang et al. 2024). This approach made it possible to identify and interpret the main research themes and their links to categories of climate risk (physical and transition), the goals of macroprudential policy, and the geographical dimension of the studies. To assess the robustness of the findings, an additional comparative analysis (robustness check) was carried out on a set of abstracts from the Web of Science database.

This article makes an important contribution to the literature on the links between climate change and financial stability. First, it structures existing research by systematizing the main topics, which facilitates an understanding of the dominant themes and their interrelations. Second, the analysis reveals research gaps, particularly regarding references to climate risk management within macroprudential policy, highlighting the need for further investigation in this area. Third, the article emphasizes geographical variation in approaches to climate risk – ranging from studies that stress physical threats to those focusing on transition risks associated with climate policy. An examination of author affiliations reveals that different regions assign their research priorities in distinct ways, indirectly reflecting which types of risk are most relevant from the perspective of specific economies.

The article is structured into several sections. Section two provides a literature review, which establishes the theoretical foundations for the subsequent analyses. Section three presents the research methodology, covering the data collection process, the preparation of abstract texts, and the application of the BERTopic model. Section four reports the results, including the structure of the identified topics, their links to categories of climate risk and the objectives of macroprudential policy, as well as the geographical dimension. Section five summarizes the study and outlines directions for further research on the systemic relevance of climate risk.

1. Literature review

The literature review in this article is aligned with the adopted research method and serves as the theoretical foundation for the subsequent analyses. Its structure mirrors the sequence outlined in the research design and is organized in a way that allows

for later semantic comparisons between the abstracts and selected definitions and analytical categories. The first part of the review discusses the concept of systemic risk, which provides a reference point not only for considerations of financial stability but also for the appropriate selection of literature for further analysis. The next part presents the objectives of macroprudential policy, which constitute the regulatory framework for managing systemic risk. The following section addresses climate risk, with attention to its two main dimensions – physical and transition – and its potential impact on financial stability. The final part of the review highlights the geographical differentiation of climate risk and its implications for the global financial system. This structure makes it possible to establish a clear link between the theoretical and empirical parts of the article.

The starting point for considerations of financial system stability is the concept of risk, which is among the most fundamental categories in economics and finance. In the context of financial stability, risk is associated with factors that may lead to disruptions in the functioning of the system as a whole. Of particular importance in this regard is the notion of systemic risk. In accordance with the definition provided in the Article 4(15) act of 5 August 2015 on Macroprudential Supervision of the Financial System and Crisis Management, "*systemic risk – it shall mean the risk of disruption in the functioning of the financial system, which, if materialised, interferes with the operation of the financial system and the national economy as a whole, the sources of which might be in particular trends associated with excessive lending or debt growth and the related imbalances in terms of asset prices, unstable funding models, distribution of risk in the financial system, linkages between financial institutions or macroeconomic and sectoral imbalances.*" As noted by Smaga (2020), systemic risk has several features that distinguish it from other types of financial risk. These include the sudden and hardly predictable nature of changes, the disruption of the core functions of the financial system, the significant scale of the phenomenon, the variable character of its sources, the contagion effect arising from strong interconnections between institutions, and the possibility of leading many entities to insolvency at the same time. Importantly, the materialization of systemic risk not only reduces confidence in financial institutions but also generates consequences for the real economy, leading to substantial social and economic costs.

Citing the definition of systemic risk has methodological significance in this context. It serves as a reference point for subsequent analyses of the academic literature on the links between financial stability and climate risk. A clear definition of the systemic risk category enables the precise use of keywords in the process of abstract exploration and thus makes it possible to capture how climate change research relates to issues of financial stability.

The concept of systemic risk is inseparably linked with the need to develop an appropriate framework for its mitigation and management, which is reflected in the evolution of macroprudential policy (IMF 2013; ESRB 2014). According to the approach of the European Systemic Risk Board (ESRB), the primary objective of macroprudential policy is to safeguard the stability of the financial system as a whole

by preventing and mitigating systemic risk. Five main areas are distinguished as potential sources of such risk (ESRB, 2014):

1. Excessive credit growth and leverage.
2. Excessive maturity mismatch and market illiquidity.
3. Direct and indirect exposure concentrations.
4. Misaligned incentives and moral hazard.
5. Insufficient resilience of financial infrastructure.

These areas also represent the intermediate objectives of macroprudential policy. Their identification makes it possible to organize and match the relevant instruments of this policy in a way that effectively mitigates systemic risk and strengthens the resilience of the entire financial system. Moreover, in the context of the analysis presented later in this article, a precise specification of these objectives has methodological significance. The identified objectives serve as a reference point for the semantic comparison of the academic literature, which in turn allows for an assessment of the extent to which scholarly research addresses the priorities of macroprudential policy.

A new type of risk that is increasingly classified as systemic risk is climate risk. The literature distinguishes between two categories of climate risk: physical risk and transition risk (NGFS 2019; Kurowski 2024). Physical risk refers to the financial consequences of the effects of climate change. It includes both sudden and extreme weather events, such as floods, hurricanes, and prolonged droughts, as well as chronic processes, such as rising average temperatures, sea-level rise, and ongoing ecosystem degradation. These phenomena may lead to substantial material losses, increasing burdens on the insurance sector, and a decline in the value of assets used as collateral for financial obligations. Lamperti et al. (2019) emphasized that climate change significantly increases the frequency of banking crises – by between 26% and 248%. Rescuing insolvent banks as a result of climate change could impose additional fiscal costs of 5–15% of GDP annually. As a consequence, the ratio of public debt to GDP may double. Approximately one-fifth of these effects stem from the deterioration of bank balance sheets induced by climate change. Macroprudential tools reduce bailout costs but only to a limited extent. The authors stress that ignoring the financial system in integrated climate–economic models leads to an underestimation of the consequences of climate change. As climate change progresses, climate risk has gained importance, particularly due to the increasing frequency and intensity of extreme weather events (IPCC 2021).

The second key type of climate risk is transition risk. This refers to the financial consequences arising from the adjustment of the economy to climate policy requirements and the shift toward a low-emission development path (NGFS 2019; Kurowski 2024). This risk encompasses regulatory changes, such as the introduction of CO_2 emission charges under the EU Emissions Trading System (EU-ETS) (Osorio et al. 2021), the tightening of environmental standards (Wang and Wang 2024), technological progress (Daumas 2024), and shifting consumer preferences (Rai et al. 2019). The economic transition involves the potential depreciation of high-

emission assets and the emergence of stranded assets. This phenomenon may substantially reduce the value of investment portfolios and deteriorate the financial standing of companies that remain dependent on fossil fuels (Caldecott et al. 2016; Cahen-Fourot 2024). Battiston et al. (2017) further indicate that sectors particularly exposed to changes in climate regulation account for a significant share of institutional investors' equity portfolios, especially those of investment and pension funds. Moreover, the exposure of banks' loan portfolios to these sectors is comparable to the level of their own funds. Although economic transition entails significant costs for the financial system, it remains less burdensome for the economy than the potential losses from escalating physical risk in the absence of decisive climate policy (EBA 2021).

Climate risk has a clear geographical dimension that differentiates its scale and nature across countries and regions. In the case of physical risk, this variation stems mainly from differing climatic conditions and vulnerabilities to extreme weather events. Tropical and island countries are particularly exposed to cyclones, floods, and sea-level rise (Lal et al. 2002), whereas southern Europe more frequently experiences prolonged heatwaves and droughts (Tripathy and Mishra 2023). This implies that financial institutions operating in different parts of the world face distinct physical risk profiles. In the case of transition risk, geographical variation arises primarily from differences in climate policies and regulations across states (Truffer et al. 2015). The introduction of high carbon prices in some economies may lead to the depreciation of high-emission assets and increased pressure on the financial sector, whereas countries that delay regulatory action may gain short-term competitive advantages in certain industries. This phenomenon is referred to in the literature as the "free-rider effect," where some states benefit from the actions of others without immediately bearing the costs of transition, although in the long term, it involves a greater risk of abrupt and costly adaptation (Roy 2020). Geographical differences in both types of risk mean that the consequences of climate change for financial stability are not uniform. As a result, the global financial system becomes more vulnerable to risk transmission across regions, and the lack of coordinated climate policy increases the likelihood of systemic instability (FSB 2023).

In the following sections, both types of risk (physical and transition) are analysed in bibliometric and semantic terms on the basis of a set of scientific article abstracts. The analysis examines not only how the literature addresses the systemic relevance of physical and transition risks but also the extent to which geographical differences are reflected in studies conducted across different regions of the world.

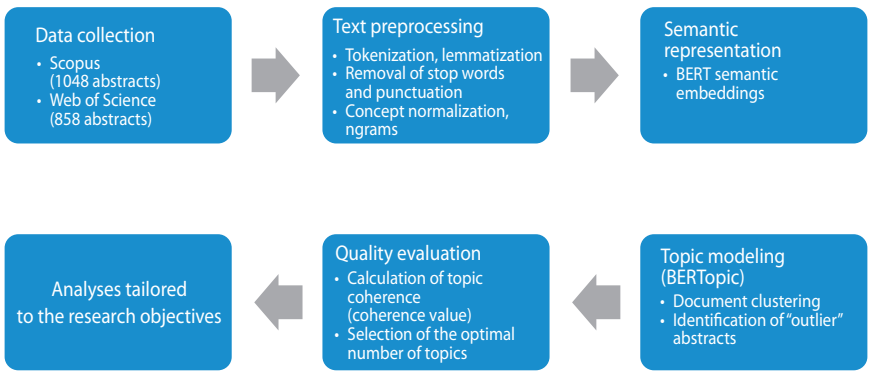
2. Methodology

In the literature on topic modelling in text collections, the Latent Dirichlet Allocation (LDA) method is widely used. It groups documents on the basis of word co-occurrence within a corpus (Blei et al. 2003). Although LDA remains an

important tool, its limitation lies in the fact that it relies mainly on word frequency and co-occurrence analysis, making it more difficult to capture subtle semantic relationships between texts. This study applies the BERTopic method (Grootendorst 2022), which combines the classical vector-based approach with modern BERT language models. This allows for the inclusion of word meaning in context, leading to more accurate topic differentiation and improved interpretability of the results. An additional advantage of BERTopic is its ability to identify documents that do not clearly fit into any topic and are labelled as outliers. In our case, the model classified approximately 19% of the abstracts into this category. This result falls within the acceptable range in studies of highly diverse text corpora and indicates that the vast majority of publications can be assigned to coherent thematic clusters.

The adopted BERTopic procedure consists of several steps: data preparation and preprocessing, creation of semantic representations of abstracts, topic modelling, evaluation of the quality of results, and subsequent analyses (temporal trends, geographical dimensions, and links to macroprudential policy). For clarity, the text analysis procedure is presented schematically in Figure 1.

Figure 1. Methodological Approach to Abstract Analysis



Source: own work.

The first step of the analysis was to collect source material in the form of scientific article abstracts. For this purpose, two leading publication databases were used: Scopus and Web of Science. The Web of Science database was employed as a comparative set to Scopus to assess the robustness of the results. The search criteria included phrases referring both to climate risk (including its physical and transition dimensions) and to financial stability and related regulatory concepts. The query was logically constructed and included terms such as *climate risk, transition risk, physical risk, emissions trading system, EU ETS, CBAM, climate policy, and climate stress test, combined with concepts from the area of financial stability: financial stability, systemic risk, macroprudential, prudential supervision*, and *stranded assets*. As a result, 1,048 abstracts were obtained from Scopus, and 858 abstracts were

obtained from Web of Science, providing a representative dataset for further analysis. The appendix presents the results of the preliminary dataset analysis: (1) the annual number of tokens in abstracts from Scopus and Web of Science and (2) the distribution of abstract lengths (number of tokens per document) shown as a histogram with a kernel density estimation (KDE) curve.

In the next step, the abstract texts were prepared for analysis via the BERTopic method. This process involves the tokenization of texts [2], the lemmatization of words to their base forms (e.g., *banks* → *bank*, *emissions* → *emission*), and the canonization of concepts to unify spelling variants (e.g., *heat wave* → *heatwave*). Extensive stopword lists were applied, covering not only the most common functional words but also technical terms and recurring domain-specific phrases, such as *climate change* or *financial stability*, which did not provide differentiating value, as they appeared in nearly all abstracts. The texts were also normalized, including the removal of punctuation and numerical records. In addition, n-grams (up to bigrams) were incorporated to capture more complex semantic structures, such as *carbon_price* or *renewable_energy*. This produced a normalized text representation suitable for subsequent semantic and topic modelling.

In the third step, each abstract was transformed into a numerical vector representing its semantic meaning. For this purpose, a BERT-based language model from the family of transformer models was applied (Reimers and Gurevych 2019). These models learn the context of words from large text corpora, which enables them to capture not only individual terms but also the relationships between them. As a result, each document receives an embedding – a multidimensional numerical representation that preserves semantic similarities between texts. This means that abstracts addressing similar issues (e.g., those concerning physical climate risk or transition regulations) will have vectors located close to one another in semantic space. Such a representation forms the basis for subsequent topic analysis and makes it possible to group texts according to their content rather than merely shared keywords.

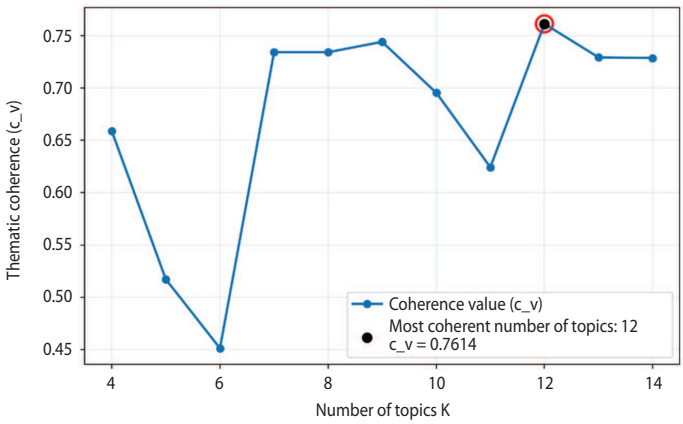
Before the final number of leading topics present in the abstracts was determined, models with different numbers of topics (from 5 to 15) were analysed. Each variant was evaluated via the coherence value (c_v)[3], which measures the semantic consistency of a topic on the basis of the co-occurrence of its keywords within the corpus (i.e., the set of all abstracts used in the study). Figure 2 presents the relationship between the c_v value and the number of topics; the final model was selected as the variant that maximized c_v. This procedure reduces the arbitrariness of choosing the number of topics to be analysed in the literature and ensures that

[2] Tokenization is the process of dividing text into smaller units known as tokens. Most often, a token is a single word, but depending on the tokenization rules it may also be a number, a symbol, or even a combination of words (e.g., bigrams such as *carbon price*). The notion of a "token" is therefore broader than that of a "word," as it encompasses all textual units that are extracted and passed on for further analysis.

[3] The higher the c_v value, the more frequently the words describing a given topic co-occur in documents, which indicates greater topic coherence.

the resulting topics are both linguistically coherent and substantively meaningful. On the basis of the topic coherence measure, the optimal structure was found to be the model with 12 topics.

Figure 2. Semantic coherence (c_v) by number of topics in the BERTopic model (Scopus)



Source: own work.

Each of the 12 topics identified via the BERTopic model was described by a set of top-n keywords that best represent its content. The final outcome of applying the BERTopic model was the assignment of each abstract to one of the extracted topics.

The final step was the assignment of abstracts to risk categories and macroprudential policy objectives. First, with respect to physical and transition risk, we used the definitions from the EBA (2020) report as the semantic reference point: each abstract was compared with these definitions and assigned to the climate risk category with the highest similarity. Next, to classify abstracts into one of the five macroprudential objectives, we applied a hybrid approach: the average of two similarity measures, weighted equally (50/50) – (i) similarity to the regulatory definitions in ESRB/2013/1 and (ii) similarity to representative academic articles selected for each objective (credit growth and leverage: Alessi and Detken 2018; maturity mismatch and liquidity: Bai et al. 2018; concentration of exposures: Giudici et al. 2020; misaligned incentives and moral hazard: Farhi and Tirole 2012; resilience of infrastructure: Vargas-Herrera et al. 2023). If none of the objectives reached the minimum cosine similarity threshold of 0.45[4], the abstract was marked as "no reference to objective." This procedure combines alignment with the regulatory intent of the ESRB with the language and emphasis found in the current literature.

[4] A similar approach, also applying the 0.45 threshold, was adopted by Boutaleb et al. (2024), who justified this choice by the need to capture semantic relationships in cases where the analysed categories are incomplete and general. Similarly, in our study the 0.45 threshold makes it possible to capture content semantically related to the broadly formulated objectives of the ESRB.

Results

The results of the analyses are presented in several complementary steps. First, sets of keywords characteristic of the topics identified in the Scopus abstract collection are shown, which makes it possible to capture their basic semantic profiles. Next, cosine similarity is used to determine the relationships and semantic proximity between topics. The following element is a dynamic analysis that illustrates how the importance of individual topics has changed over time. The study then examines the extent to which the topics can be linked to the categories of physical and transition risk, as well as to the macroprudential policy objectives defined by the European Systemic Risk Board. This approach is complemented by a geographical perspective, which highlights regional differences in the issues addressed. Finally, to assess the robustness of the results, the findings from the Scopus database are compared with those from an analogous analysis conducted on abstracts from Web of Science.

In the first stage of the analysis, the results of topic modelling conducted on the Scopus abstract collection are discussed. Each of the identified topics was described by a set of representative keywords and then assigned a descriptive label reflecting its main content. This approach enabled to capture the main research streams in the literature on the links between financial stability and climate risk. The sets of keywords and the assigned topic labels are presented in Table 1.

Table 1. Research topics addressed in abstracts (Scopus)

Topic number	Representative words based on the BERTopic model	Assigned topic label
1.	'climate policy', 'impact climate', 'macroeconomic', 'climate transition', 'bank sector', 'equity', 'firms', 'regulation', 'sector', 'portfolio'	Climate policy and macroeconomics
2.	'climate policy', 'energy sector', 'fossil_fuel reserves', 'fossil_fuel industry', 'renewable_energy', 'renewable', 'coal power', 'fossil_fuel', 'power generation', 'developing country'	Energy and fossil fuels
3.	'resilience', 'natural disaster', 'disaster management', 'natural hazard', 'resilient', 'infrastructures', 'ecosystem', 'infrastructure', 'disaster', 'climate adaptation'	Climate disasters and resilience
4.	'supply_hydropower generation_environment', 'water availability', 'water resource', 'water management', 'water supply_hydropower', 'water utilities', 'hydropower generation', 'supply_hydropower', 'hydrological', 'water supply'	Water resources and hydropower

Table 1. (cont.)

Topic number	Representative words based on the BERTopic model	Assigned topic label
5.	'china carbon', 'carbon efficiency', 'enterprise emission', 'carbon market', 'environmental regulation', 'carbon neutrality', 'green innovation', 'green development', 'carbon credit', 'inequality renewable_energy'	Carbon markets and China's transition
6.	'bank regulation', 'bank supervision', 'bank stability', 'bank liquidity', 'bank', 'bank capital', 'affected bank', 'supervision central_bank', 'loan', 'bank albania'	Banking regulation and stability of the banking sector
7.	'global institutions', 'global governance', ' international relations', 'global public_policy', 'globalization', 'global challenges', 'emerging powers', 'foreign relations', 'global public', 'governance'	Global climate governance
8.	'tropical cyclone', 'weather', 'monsoon', 'severe cyclone', 'cyclone', 'wind_speed intensity', 'range weather', 'cyclone amphan', 'cyclone track', 'indian ocean'	Extreme weather events – cyclones and monsoons
9.	'natural_resource threats', 'ecosystem services', 'traditional resource', 'reforestation', 'forest_based micro_entrepreneurs', 'grazing', 'forestry', 'forest_based bioeconomy', 'agroforestry', 'conservation'	Ecosystems and natural resources
10.	'insurance policy', 'insurer explicitly', 'insurer margin', 'insurance stability', 'insurer', 'affects insurer', 'insurer profits', 'insurance', 'insurers', 'insurance instability'	Stability of the insurance sector
11.	'crop_insurance', 'area_yield insurance', 'yield insurance', 'index_insurance', 'crop yield', 'insurance subsidy', 'mutual insurance', 'insurance', 'yield variability', 'yield_yield dependence'	Agricultural insurance
12.	'flood households', 'flood hazard', 'flood estimates', 'costs flood', 'flood resilience', 'challenges housing', 'uncertain flood', 'responsibility flood', 'flooded populations', 'flood'	Flood risk and household exposure

Source: own work.

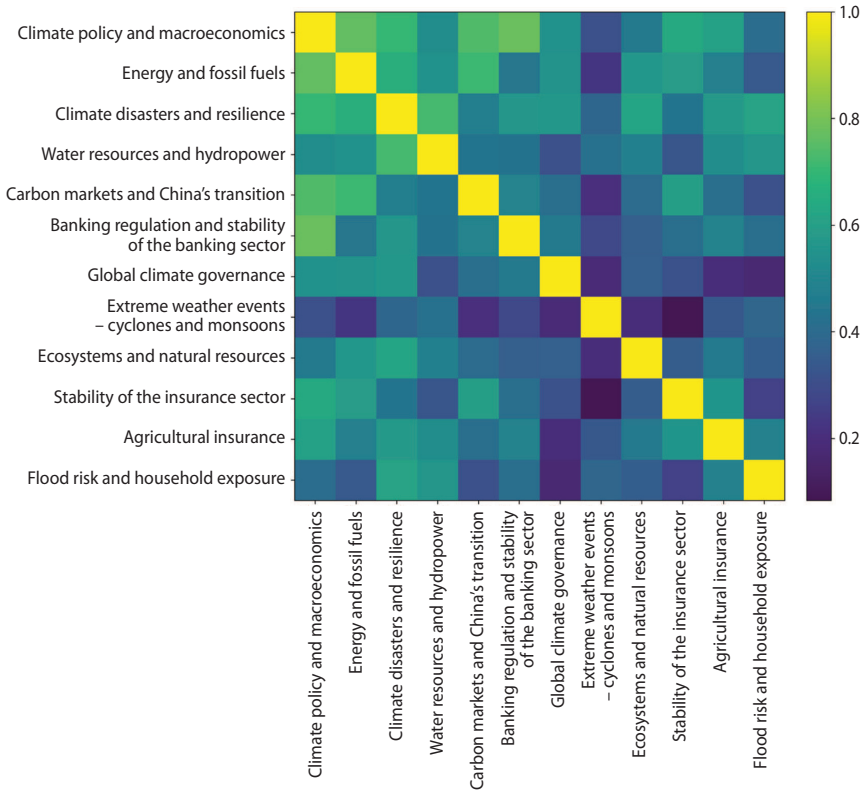
The analysis of the extracted topics indicates that some of them directly and clearly refer to key issues linking climate change with financial stability. These include, for instance, *climate policy and macroeconomics* (topic 1). This topic highlights regulatory aspects and the impact of climate policy on the financial sector and investor portfolios. Another example is *banking regulation and stability of the banking sector* (topic 6), which focuses on the institutional dimension of financial system resilience. At the same time, some topics reveal less obvious yet highly interesting areas of research on the connections between climate change and financial system stability. Examples include *water resources and hydropower*

(topic 4) and *ecosystems and natural resources* (topic 9). The analysis of the *water resources and hydropower* topic revealed important links between hydrological changes, energy security, and potential consequences for financial stability. Projected declines and increasing variability in water flows directly affect the performance of hydropower. In countries highly dependent on this source of energy, this may lead to an increased risk of supply disruptions and greater vulnerability of the economy to energy shocks (Senni et al. 2024). Recognizing that water resources are fundamental to the functioning of many sectors of the economy and thus to the financial health of entities served by financial institutions, both the Network for Greening the Financial System (NGFS 2022) and De Nederlandsche Bank, in their analyses of nature-related risks, emphasize the need to consider hydrological threats in the assessment of financial stability (Tiems et al. 2024).

Another less obvious yet highly important mechanism linking climate change and financial stability is the loss of biodiversity and the degradation of natural resources. This issue was clearly captured by the BERTopic model in the category of ecosystems and natural resources. The analysis of this topic broadens the traditional perspective on financial stability by extending beyond purely regulatory and market considerations to include an ecological dimension. Environmental degradation – such as deforestation or soil quality loss – translates into tangible financial risks, particularly for sectors of the economy that depend on natural capital. Research conducted by De Nederlandsche Bank estimated that investments worth €510 billion, representing 36% of the portfolios of Dutch banks, pension funds, and insurance companies, are critically dependent on ecosystem services (van Toor et al. 2020). Similarly, Ceglar et al. (2024), in a study published in the Economic Bulletin of the European Central Bank, indicate that approximately 75% of all corporate loans in the euro area were granted to firms reliant on at least one ecosystem service. The authors emphasize that *"the risks arising from nature degradation and biodiversity loss pose potentially significant challenges to the ESCB's Treaty-based objective of maintaining price and financial stability*" (Ceglar et al. 2024).

The analysis of the cosine similarity matrix between topics (Figure 3) suggests that most of the identified topics are clearly distinguishable semantically, i.e., they present low cosine similarity values. This finding indicates that the BERTopic model captured distinct and coherent areas of the literature. On the other hand, in several cases, higher similarity values are observed, for example, between topics related to climate policy and energy or between climate disaster issues and flood risk. This is largely expected, as climate policy directly affects the energy sector through emission regulations and the transformation of energy sources, whereas flood risk represents a specific example of the consequences of climate disasters, reflecting a more detailed dimension of this broader issue.

Figure 3. Cosine similarity between the analysed topics



Note: Cosine similarity is a measure of semantic proximity between vector representations of topics. Values closer to 1 indicate greater content similarity, whereas lower values reflect clearer distinctions between topics.

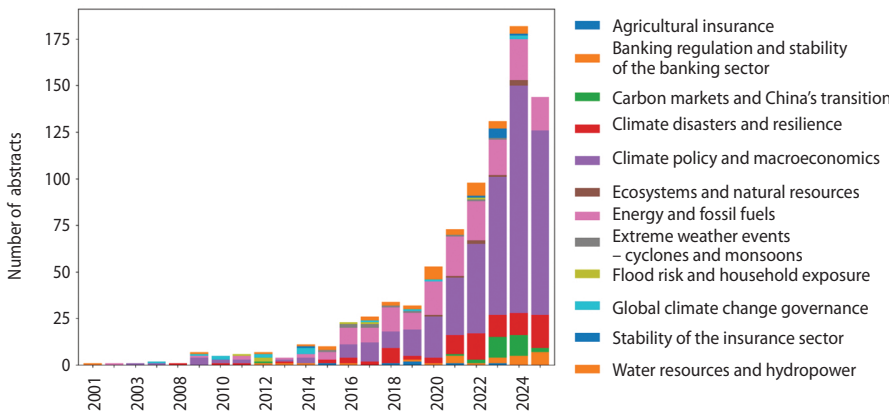
Source: own work.

The next step is the analysis of changes in the number of abstracts assigned to individual topics over time. Figure 4 presents the cumulative number of abstracts divided into the twelve topics identified by the BERTopic model. This perspective makes it possible to capture which issues gained importance in successive years and to identify breakthrough moments in the development of the literature.

Until 2015, the number of publications remained relatively low, and interest in topics related to financial stability and climate risk was niche. The situation changed markedly after 2015, when the Paris Agreement was adopted. From that point onwards, a sharp increase in publications is observed – particularly in the areas of climate policy as well as energy and fossil fuels. This development is a natural consequence of growing regulatory pressure and the involvement of the financial sector in achieving decarbonization goals. From a risk perspective, climate

policy entails a range of financial burdens for high-emission firms, which often rely on financial institutions. Examples include regulations under the EU Emissions Trading System (EU-ETS) and carbon taxation, which, according to findings in the literature, significantly worsen the situation of entities subject to these mechanisms and increase credit risk in banks (e.g., Chherawala 2024; Nehrebecka 2025; Carbone 2022). Notably, the scale of such regulations may also pose a threat to financial stability. For instance, Li et al. (2022) analyse the effects of carbon taxation on the Chinese banking sector. Their results indicate an exponential relationship between the level of the carbon tax and systemic risk, with the risk rising sharply once a certain threshold is exceeded. The findings of Li et al. (2022) also highlight significant sectoral and regional heterogeneity, implying that effective carbon tax policy requires taking this diversity into account to minimize systemic risk.

Figure 4. Cumulative number of abstracts by topic, 2000–2025

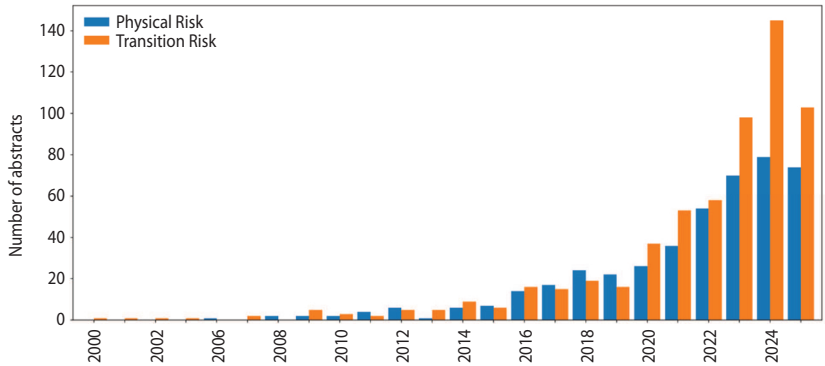


Note: The decline in the number of abstracts in the last year (i.e., 2025) does not indicate an actual weakening of research interest but results from the fact that the data were retrieved in August 2025 and therefore do not cover the entire calendar year.

Source: own work.

As shown in Table 1, the extracted topics include both those referring to physical risk – for example, *extreme weather events: cyclones and monsoons* or *flood risk and household exposure* – as well as those related to transition risk, such as *climate policy and macroeconomics* or *carbon markets and China's transition*. This confirms that the academic literature on financial stability addresses both dimensions of climate risk. In the next step, the semantic similarity of abstracts to the definitions of physical risk and transition risk provided by the European Banking Authority (EBA 2020) was analysed. This approach made it possible to assess the extent to which the examined publications correspond to the division of climate risk that dominates in the literature and supervisory practice.

Figure 5. Number of abstracts referring to physical and transition risk, 2000–2025



Source: own work.

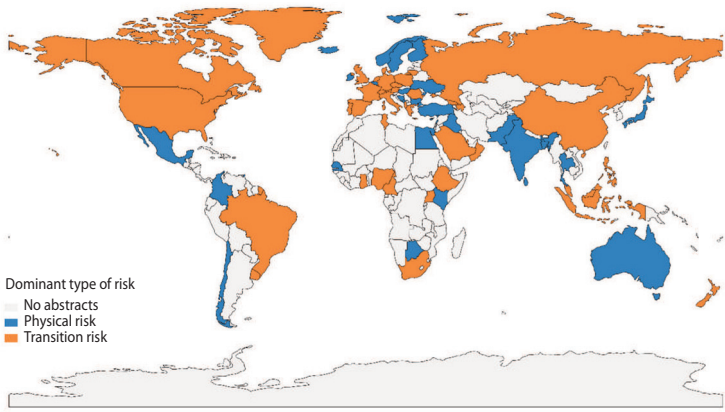
As illustrated in Figure 5, it is worth noting that although physical risk (e.g., the consequences of extreme weather events or long-term climate changes) remains an important subject of research, since 2022, transition risk has attracted increasing attention. Between 2022 and 2025, the number of abstracts addressing transition risk significantly exceeded the number of publications on physical risk. This highlights the growing importance of issues related to climate policy, emission regulations, and the transformation of economic sectors in the discussion of financial stability.

The next stage of the analysis introduces a geographical perspective, which makes it possible to capture how interest in different types of climate risk is distributed across the literature depending on the country of author affiliation. Figure 6 presents a world map indicating the dominant category of climate risk – physical (blue) or transition (orange) – in the abstracts assigned to individual countries. The grey areas denote the absence of abstracts in the sample.

Geographical analysis highlights spatial differences in research on climate risk. In highly developed countries, particularly in Western Europe and North America, transition risk dominates, reflecting intensive regulatory processes and decarbonization policies. In contrast, in countries more directly exposed to the consequences of climate change – such as India (e.g., due to monsoon seasons) or Australia (e.g., due to wildfires and floods) – physical risk plays a more prominent role.

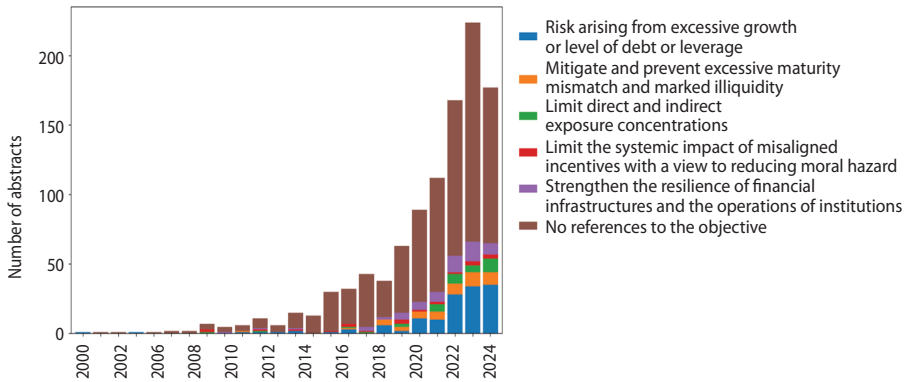
The next step of the analysis was to assess the extent to which the examined academic literature refers to the intermediate objectives of macroprudential policy. The reference point consisted of the definitions of these objectives provided in the ESRB recommendation of April 4, 2013 (ESRB/2013/1), as well as the academic articles indicated in the research methodology section. These documents were then transformed into semantic representations via the Sentence-BERT model. Each abstract was compared with these definitions on the basis of cosine similarity, and it was assigned to the objective whose definition was semantically closest to the abstract's content. The results of this analysis are presented in Figure 7.

Figure 6. Geographical distribution of the dominant category of climate risk (physical vs. transition)



Source: own work.

Figure 7. Number of abstracts referring to individual intermediate objectives of macroprudential policy, 2000–2025



Source: own work.

The trend illustrated in Figure 7 highlights the clear dominance of the "No reference to objective" segment. This means that, in most abstracts, there is insufficient evidence of operationalization in terms of specific macroprudential policy objectives. In other words, despite its growing scale, the literature still more often describes the mechanisms and channels through which climate risk affects the financial sector (e.g., the impact of climate risk on credit risk, liquidity, or asset valuation) than directly refers to the architecture of systemic risk management and macroprudential policy tools (e.g., capital buffers, concentration limits, or liquidity requirements). This represents a research gap that should become the subject

of further studies, as well as an impulse for conceptual work on new prudential instruments dedicated to climate risk.

Among the abstracts that could be assigned to a specific macroprudential objective, the category *excessive credit growth and leverage* appears relatively more frequently, which is consistent with the climate-related credit risk channel. This mechanism can be associated with the excessive financing of "brown" sectors (e.g., mining, coal-based energy). The literature confirms that in some countries, banks still maintain significant exposure to sectors vulnerable to climate policy regulations (e.g., Borsuk 2023; Battiston et al. 2020). At the same time, however, the literature also signals the risk of overvaluation episodes in the segment of "green" assets (e.g., Malim Franco et al. 2025; Doksæter et al. 2021). A potential reversal of sentiment toward such assets could result in sharp price changes and an increase in credit risk for institutions financing the transition. From a macroprudential perspective, this justifies the need to monitor credit expansion both in high-emission sectors and in areas heavily financed by environmentally sustainable loans (e.g., renewable energy). Nevertheless, the share of the *excessive credit growth and leverage* category remains modest compared with the "no reference" segment.

To conduct a robustness check, the analysis was repeated on an independent dataset drawn from the Web of Science. This enabled to verify whether the topic structure previously identified on the basis of Scopus abstracts was also confirmed in another literature database. It should be noted, however, that some publications are indexed in both databases, meaning that a certain number of analysed abstracts may overlap. The results of the Web of Science analysis are presented in Table 2.

Table 2. Research topics addressed in abstracts (Web of Science)

Topic number	Representative words based on the BERTopic model	Assigned topic label
1.	'bank sector', 'climate policy_uncertainty', 'climate policy', 'impact climate', 'economic growth', 'carbon market', 'financing', 'renewable_energy', 'regulation', 'environmental'	Climate policy and the banking sector
2.	'carbon pricing', 'climate policy', 'fossil_fuel industry', 'carbon price', 'renewables', 'renewable', 'fossil_fuel', 'coal power', 'power generation', 'co2'	Energy and fossil fuels
3.	'bank sector', 'bank stability', 'bank france', 'bank', 'commercial bank', 'central_bank', 'macroeconomic', 'impact bank', 'inside debt', 'money market'	Stability of the banking sector
4.	'disaster management', 'ecosystem', 'disaster', 'flood', 'critical infrastructures', 'climate impact', 'biodiversity patterns', 'risk_layering', 'resilience', 'biodiversity'	Climate disasters and resilience

Table 2. (cont.)

Topic number	Representative words based on the BERTopic model	Assigned topic label
5.	'supply_hydropower generation_environment', 'water availability', 'water resource', 'water supply_hydropower', 'supply hydropower', 'water management', 'water supply', 'supply_hydropower', 'hydropower generation', 'hydropower'	Water resources and hydropower
6.	'international regulation', 'international institutions', 'international regulatory', 'international relations', 'globalization', 'international monetary', 'governance', 'foreign policy', 'institutions', 'international'	Global climate change governance
7.	'tropical cyclone', 'monsoon', 'weather', 'severe cyclone', 'cyclone', 'wind_speed intensity', 'range weather', 'cyclone amphan', 'cyclone track', 'indian ocean'	Extreme weather events – cyclones and monsoons
8.	'insurance industry', 'insurance market', 'insurance companies', 'insurance sector', 'insurance', 'insurers non_financial', 'european insurers', 'insurers', 'insurance company', 'conventional insurance'	Stability of the insurance sector
9.	'climate discourse', 'political climate', 'climate targets', 'polarization stakeholder', 'international climate', 'stakeholder', 'political debates', 'perceived endangered', 'outputs stakeholder', 'partisan polarization'	Political polarization and climate discourse
10.	'extreme_weather_events income', 'income inequality', 'large_climate change', 'growth large_climate', 'growing income', 'social resilience', 'impact economic', 'measures income', 'resilience family', 'resilience score'	Income inequality and social resilience to climate change
11.	'flood hazard', 'flood households', 'home flood', 'residential property', 'household exposure', 'flood', 'housing market', 'likely flood', 'housing', 'predict household'	Flood risk and household exposure
12.	'utility asset', 'property asset', 'policy property', 'property', 'local governments', 'utilities', 'real estate', 'residential', 'estate', 'utility'	Real estate market and municipal assets

Source: own work.

A comparison of the results obtained from Scopus and Web of Science reveals that the vast majority of topics overlap, confirming the stability of the topic structure. However, the Web of Science analysis identified three new themes*: political polarization and climate discourse*, *income inequality and social resilience to climate change*, and the *real estate market and municipal assets*. Their emergence is justified given their significant implications for financial stability.

Political polarization and frequent shifts in governing parties increase regulatory uncertainty (Osofsky and Peel 2022). Moreover, increasing polarization hampers

effective climate action (Berkebile-Weinberg et al. 2024), thereby increasing physical risk. The new theme of social inequality emphasizes differences in adaptive capacity to climate change. The literature shows that climate-related threats disproportionately affect lower-income countries and individuals. Lower-income societies face greater exposure to extreme events and possess limited adaptive capacity. This is particularly visible in developing countries, which – despite contributing relatively little to global emissions – suffer the greatest losses and have limited institutional and financial resources to mitigate them (Wildowicz-Szumarska and Owsiak 2024; Taconet et al. 2020; Kurowski and Sokal 2023). Ultimately, these factors, combined with rising income inequality, weaken the resilience of socioeconomic systems to climate change.

The third new theme identified in the Web of Science analysis concerns the *real estate market and municipal assets*. This area is becoming increasingly important for financial stability, as real estate markets are exposed both to the effects of physical risk (e.g., the impact of flood risk on property prices – Miller and Pinter 2022) and to regulatory consequences stemming from growing energy efficiency requirements (e.g., Amen and Kempen 2025).

The analysis of abstracts from the Web of Science led to the following conclusions, which remain consistent with the results obtained from the Scopus database:

1. Research is dominated by the theme of linkages between climate policy and financial stability.
2. In recent years, issues related to transition risk have gained clear prominence (to a much greater extent than physical risk).
3. The literature focuses primarily on the mechanisms through which climate change affects financial stability while paying limited attention to the management of this risk within the framework of macroprudential policy.

Appendix 2 presents charts illustrating these conclusions on the basis of the Web of Science data.

Conclusions

The pace of climate change is making it increasingly a systemic risk (Carney 2015). Because of its scale and complexity, climate change affects every part of the economy and can endanger the stability of financial systems through different financial channels. Understanding how the academic literature conceptualizes the links between climate change and financial stability is therefore crucial both for further research and for the design of effective regulatory instruments.

The aim of the article was to examine how the academic literature identifies the mechanisms linking climate change with financial stability. This objective was addressed through a semantic analysis of more than one thousand abstracts from the Scopus database, supplemented with a robustness check based on abstracts

from the Web of Science. The BERTopic method was applied to systematize the research themes and assign them to categories of climate risk and macroprudential policy objectives. The results show that within the literature on financial stability, climate policy and its implications for the financial system remain the dominant themes. From the perspective of climate risk categories, transition risk has gained particular importance in recent years, clearly surpassing the attention devoted to physical risk. This indicates a growing interest in the regulatory and economic consequences of climate policy, which currently appear to be viewed by researchers as having a stronger impact on financial system stability than the effects of extreme weather events.

The results also highlight that the literature addresses the management of climate risk within macroprudential policy only to a limited extent. This represents a clear research gap, given the systemic nature of climate risk and its potential consequences for financial stability. In practice, this means that further research is needed on the role of macroprudential instruments dedicated to climate change. Reflection on how existing tools can be adapted to climate challenges and whether new regulatory solutions are required is crucial both for regulators and for banking and insurance practices.

This study has certain limitations that should be acknowledged. First, the BERTopic method was applied to a relatively small number of abstracts compared with other bibliometric analyses, which reflects the relatively limited academic interest in the linkages between climate change and financial stability. Second, the analysis was based exclusively on abstracts, which do not always fully capture the content of entire publications. The use of full texts could reveal additional research themes and provide a deeper understanding of the mechanisms linking climate risk and financial stability.

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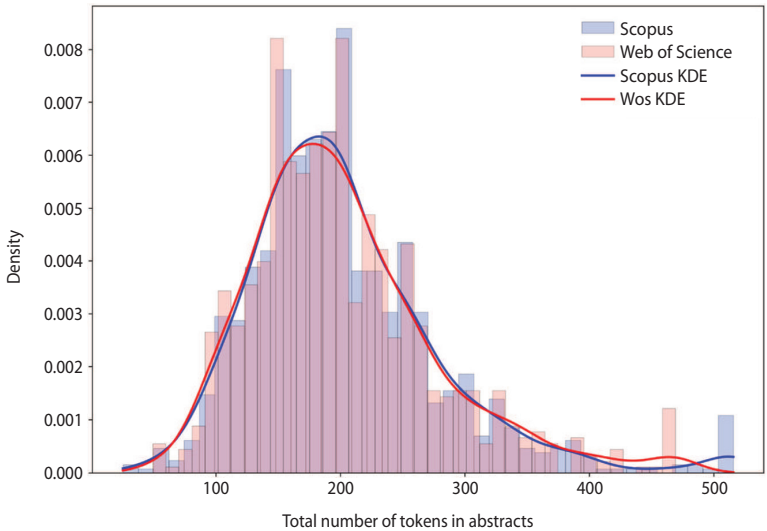
Vargas-Herrera, H., Murcia, A., Machado-Franco, C.L., Cadena-Silva, C.A., Cepeda-López, F.H., Lemus-Esquivel, J.S., … & Villalobos-Perez, J. (2023), *Financial Infrastructure Report 2023*.

Wang, J., & Wang, H. (2024), Environmental regulation and corporate financial risk: The role of credit guarantees. *Finance Research Letters*, *63*, 105357.

Wildowicz-Szumarska, A., & Owsiak, K. (2024), Impact of climate change on income inequality. Implications for rich and poor countries. *Economics and Environment*.

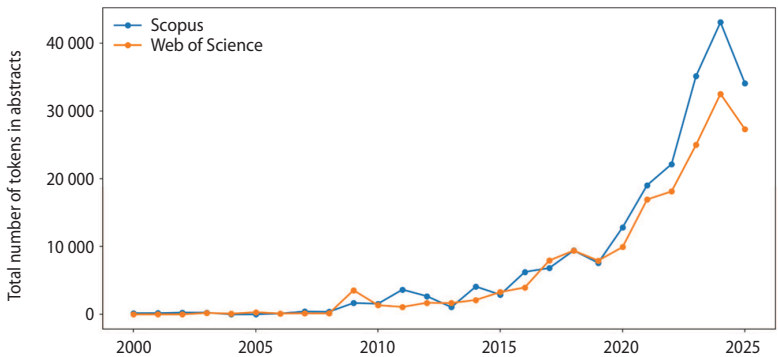
Appendix 1. Descriptive statistics of the analysed abstracts

Figure A1.1. Distribution of document length in the Scopus and Web of Science databases



Source: own work.

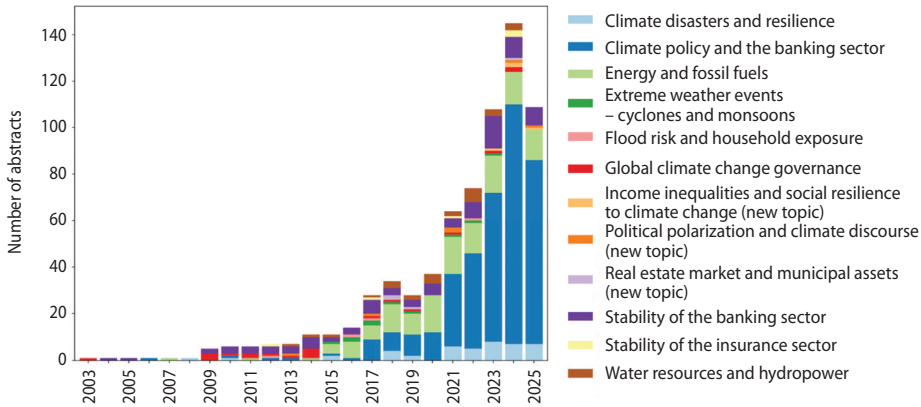
Figure A1.2. Total number of tokens in publications per year (Scopus and Web of Science)



Source: own work.

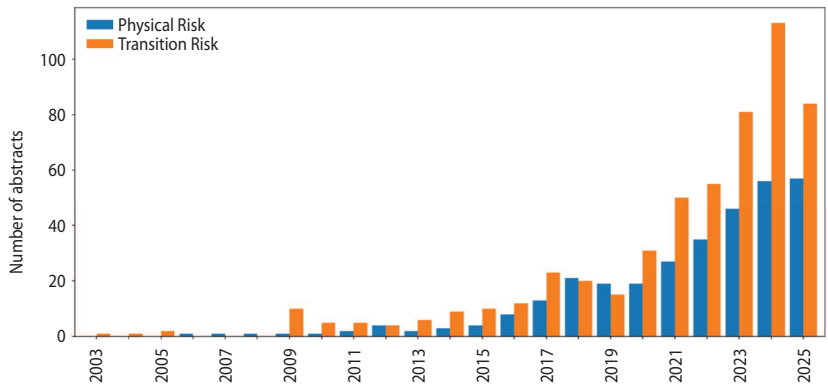
Appendix 2. Results of the analysis for the Web of Science database

Figure A2.1. Cumulative number of abstracts by topic, 2003–2025 (Web of Science)



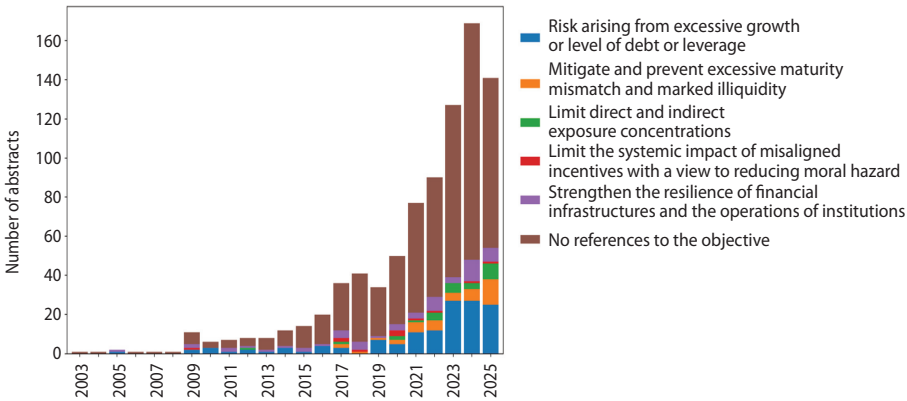
Source: own work.

Figure A2.2. Number of abstracts referring to physical and transition risk, 2003–2025 (Web of Science)



Source: own work.

Figure A2.3. Number of abstracts referring to individual intermediate objectives of macroprudential policy, 2003–2025 (Web of Science)



Source: own work.

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ESG risk and banks' propensity to finance enterprises

Abstract

Sustainable development is present in literature and practice, and regulations require reporting, even in cases where the actual willingness to achieve the goals and objectives of this concept is limited. This applies particularly to reporting on the implementation of ESG objectives. Relatively little is known about the impact of a company's ESG information on third parties, especially in the area of providing financing. The aim of this study is to assess the impact of a company's ESG information on the risk assessment of its financing by banks. This article tests the hypothesis that ESG information disclosed by a company is crucial for assessing the possibility of banks providing financing. The article conducts a critical analysis of literature, legal acts, and internal bank documents regarding ESG. Finally, available industry reports are used. In addition to the issue of granting or not granting financing through the prism of the applied creditworthiness criteria, special attention is paid to assessing the ESG risk – the loss of value of accepted collateral (e.g., real estate). From the perspective of companies, the research results support the conclusion that ESG risk management, depending on the effectiveness of this process, can mitigate the negative impact on an entity's creditworthiness.

Keywords: sustainable development, ESG reporting (environmental, social, governance), bank, credit, creditworthiness.

JEL Codes: G15, G18, G20, Q54

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Introduction

The concept of sustainable development and its legitimacy in the documents or normative acts of international organisations, especially the European Union, stems from the objective challenges of civilisation in the 21st century. Unfortunately, it is increasingly contested, mainly because of the necessary investments in its implementation, especially the goals and objectives in the ESG triad. Nevertheless, it still enjoys the support of actors (institutions, companies, individuals) aware of civilisational risks or conflicts. Conscious customers expect new types of services or products that meet environmental standards, are ethically produced and do not negatively impact the future of planet Earth. Some potential investors or consumers, and sometimes even job applicants, look more favourably on companies that take ESG factors into account in their operations and identify the resulting risks, creating tools for their effective mitigation. The adoption of UN resolutions by member states (Agenda 2030, 2015) is forcing business entities to take steps towards transformation and the achievement of sustainable development goals. Subsequent EU directives expand the scope and structure of mandatory disclosures by imposing, inter alia, the need to monitor and manage the impact that a company's activities have on its environment and to assess the impact that the environment has on its performance. Given this broad systemic context, the research problem in this article is to assess the impact of ESG risk management information; environmental (E – Environmental), social (S – Social) and governance (G – Governance), of non-financial entities on the willingness of banks to provide them with financing in the form of business loans.

The aim of this article is to assess the impact of ESG information disclosed by companies in the process of applying for a bank loan. At the same time, it was hypothesised that this information is crucial in the process of banks' consideration of corporate loan applications. In the analysis of the problem and the verification of the hypothesis, data sources were used for the initial assessment of the level of ESG risk It was also examined what range of information Banks obtain from customers to deepen the analysis of ESG risk, what methods they use to mitigate this risk, and how the outcome of the assessment affects the assessment of creditworthiness. The final section identifies directions for the development of banks' financial offerings as a method of disseminating sustainable finance. The methodology of the study included a critical analysis of the literature, legal acts and non-financial reports of selected banks. An assessment of banks' internal regulations in the studied area as well as the few industries reports available in the financial sector was also carried out.

1. Literature review

Sustainability topics are popular in the literature across a broad spectrum of issues, with interest stimulated by extensive regulation (e.g. NFRD Directive 2014; CSRD Directive 2022) on ESG reporting and auditing. A consensus is forming that corporate financial reporting is no longer a sufficient way of communicating with

the public because it does not fully reflect economic reality (Rogowski, Lipski 2022). Companies are compelled by law to expand non-financial reporting to include ESG aspects (Morrison 2021), not least because access to external capital is determined by the scope and nature of the information reported (Rau, Yu 2023). It is also argued that maintaining or gaining competitive advantage or access to capital will require robust implementation of ESG principles across all entities, with appropriate application of the principle of proportionality (Wróbel, Kowalski 2022).

Ongoing research indicates that investors – by and large – share the view that returns on investment and corporate sustainability resulting from ESG strategies go hand in hand. Therefore, companies are increasingly recognising the economic value of integrating ESG criteria into their operations (Levantesi et al. 2023). This approach is fast becoming a pillar of many companies' growth strategies (DeCotis 2021), and an appropriate ESG strategy is becoming essential for the proper management of a company's operational risks (Herrera & Brenneis 2020). Unfortunately, it is also possible to find evidence of a different approach to this issue exemplified by legislation in some US states prohibiting public entities from investing in funds whose investment policy is compatible with the concept of sustainability and ESG (Krosinsky 2023).

Developing an ESG reporting policy requires expenditures on its design, due diligence and disclosure finally implementation (Nizam et al. 2019). These outlays should be compensated by stability or increased revenues, lower business risk, increased efficiency finally greater attractiveness of the company (Buallay 2019). ESG risk management should also bring benefits in terms of improving a company's creditworthiness.

Polish banks are increasingly aware of ESG risks and the need to take them into account in their risk management processes (Pyka, Nocoń 2024). For banks, the development of sustainable finance and risk management is doubly important (Buallay et al. 2020). Firstly, banks need to integrate social and environmental aspects into their business operations to minimise the impact of ESG risks on the environment. An analysis of disclosures (e.g. environmental disclosures of selected Polish banks against the guidelines of the European Sustainability Reporting Standards), has shown that the required data are found in various documents and their availability on websites is limited (Broniewicz, Jastrzębska, Lulewicz-Sas). Secondly, banks are obliged to consider ESG factors in lending, financing and investment decisions. Furthermore, banks, as public trust institutions, should give more importance to the promotion of the public good including environmental protection (Chen, Wan 2020). This is all the more so as research demonstrates the impact of ESG activities and reporting on bank reputation (Murè et al. 2020; Dabkowska 2023).

Banks are extending the non-financial ESG reporting initiative also to companies to which they provide financing (Zabawa, Łosiewicz-Dniestrzańska 2023). In this way, banks' environmental, social and corporate governance policies inform the environment that they are more likely to work with borrowers who have high

ESG index scores (Houston and Shan 2022; Chang et al. 2021). They adopt pro-environmental measures in their credit assessment process, thus promoting green lending to applicants. Banks, using their knowledge of the green transformation process of companies, will be able to advise clients on the selection of energy transformation projects that lead to carbon neutrality (Dwojak 2023).

It is anticipated that even if some banks will lend to finance dirty assets, these will only be short-term loans, with a high cost of servicing them (commission, margin, legal collateral and insurance) (Costowniak 2024). This is because a portfolio with credit exposures in so-called dirty industries will escalate with an increase in ESG risk (Adrian et al. 2022; Monasterelo 2020; Monasterello, Battiston 2020). Such a portfolio with dirty exposures will require banks to provide additional collateral, increase sectoral risk and consequently lead to higher operating costs (ECB 2022; ESRB 2020; Giuzio et al. 2019). Some banks will cease financing assets from dirty industries, which will mean, their liquidation or abandonment, due to the lack or high cost of upgrading, however, triggering negative socio-economic consequences (Xu et al. 2018).

The literature on the impact of ESG on business performance is rich from narrowly specialised items to broad reviews of the existing body of work (Menicucci, Paolucci 2022). Table 1 presents an overview of current research on the study of the impact of ESG factors on different areas of corporate performance.

Table 1. Scope of research on the impact of ESG factors

Scope of research	Authors of the studies
Study of the relationship between corporate risk and ESG factors	Di Tommaso, Thorton, 2020; Gangi, Meles, D'Angelo, Daniele, 2018; Sassen, Hinze, Hardeck, 2016
Exploring the relationship between ESG and corporate performance	Esteban-Sanchez, de la Cuesta-Gonzalez, Paredes-Gazquez, 2017; Friede, Busch, Bassen, 2015; Xie, Nozawa, Yagi, Fujii, Managi, 2018
Assessing the impact of sustainability indices on profitability indicators	Utz, 2019, Nizam et al, 2019, Siuela, Wang, Deladem, 2019, Forcadell, Aracil, 2017
Research on the impact of ESG factors on market performance and portfolio strategies	Sherwood, Pollard, 2018; Verheyden, Eccles, Feiner, 2016
Research on ESG ratings and measures	Berg, Kölbel, Rigobon, 2019; Eccles, Stroehle, 2018; Escrig-Olmedo, Rivera-Lirio, Muñoz-Torres, Fernández-Izquierdo, 2017; Huber, Comstock, Polk, Wardwell, 2017

Source: own study.

Research findings demonstrate the positive impact of sustainability on banks' share price growth (Carnevale, Mazzuca 2014) and in relation to the impact of the degree of engagement in CSR activities on return on assets and return on equity (Shen, Wu, Chen, Fang 2016). Regarding the banking sector, several studies confirm the relevance of the impact of climate change on credit management (Georgopoulou et al. 2015) and the need for a prudential framework to mitigate the potential impact on financial stability (Nieto 2019, Marcinkowska 2022, Smolenska 2023, Kulińska-Sładocha 2022). In contrast, other studies (Batten, Sowerbutts and Tanaka 2016; Campiglio et al. 2018; Monnin 2018) suggest that climate change may affect not only banks' operations but also central banks' financial stability objectives.

Recent research in the field of ESG and the banking sector examines the integration of environmental, social and corporate governance factors into credit ratings, focusing on the methods used by external credit assessment institutions (Reil 2025). Some studies focus on discussing the types of ESG risks, their interrelationship with corporate credit risk and the methodologies that can be used (Bukreeva, Grishunin 2024). There are also comprehensive studies assessing the impact of environmental risk on the banking sector and strategies to mitigate it, with a particular focus on the role of modelling (Zioło 2023). Environmental risk modelling allows banks to estimate the patterns and consequences of environmental risks on their operations and to take action in the context of asset and liability management to minimise the probability of losses.

The examples cited illustrate the diversity in banks' approaches to ESG risk consideration and the analytical methods or procedures used. However, it is difficult to identify research on the comprehensive impact of ESG risks to be included in analyses and models. This is particularly true for the assessment of borrower perceptions of banking sector actors in the context of the presence of ESG risks. The following section of the paper attempts to capture this in order to manage the risks effectively.

2. ESG risks in bank operations

Risk is often defined as the likelihood of events (positive and negative) that may affect the achievement of objectives or expected outcomes (Aven, Renn 2009). Some authors use the word ‚risk' to describe the essence of risk as the appearance of the probability of negative outcomes of a decision (Gędek 2018). ESG risks should be seen in this context when assessing a bank customer interested in lending.

ESG risks for banks are the possible negative effects resulting from the impact of ESG factors on the financial performance or liquidity of the lending entity. In broad terms, both the direct impact of ESG factors on an entity and the indirect impact (i.e. through its counterparties or invested assets) should be viewed. In the narrow (regulatory-supervisory) view, ESG risk is seen only as the financial consequences of the impact of environmental, social and corporate governance factors on an institution's counterparties or its invested assets (EBA 2021). A bank's assessment that ESG risk

is non-existent or low will be treated neutrally (at best) as a lower probability of loan default/loss of collateral value. Generally, this will not improve the credit rating. Bank practice indicates that the identification of ESG risks can only worsen a borrower's rating. A positive assessment by the bank of ESG risks results in no deterioration of the entity's overall rating.

Currently, banks perform analyses on a sectoral basis to create lists of prospective/preferred industries. But simply including an entity in these industries does not give additional points to the credit score. ESG risk assessments are also analysed on a portfolio basis, but serve to verify the methods used to assess these risks. E.g. when problems are identified in the timely payment of liabilities in customer groups for which ESG risks have been determined to be high. It cannot be ruled out that the practice of banks will change once ESG reporting is fully implemented by operators.

Opportunities from the implementation of the ESG concept in the context of client cooperation policy can be seen in that only preferred investments (e.g. transformation e.g. towards de-carbonisation (as appropriate to the business strategy) will be funded.

Risks arising from ESG factors imply the possibility of their negative impact on a company's operations, including access to capital, as they are taken into account by banks at the stage of assessing an application for financing. Banks expect to be provided with information that allows them to estimate what ESG risks are present in the company applying for a loan and to what extent they may increase the likelihood of loan default, or what difficulties there may be in the potential liquidation of collateral if enforcement occurs.

The potential impact of the emergence of ESG risks may be short, medium or long-term. ESG risk should be considered as a cross-cutting risk of significant importance to the company in the long term. Its mitigation is an important factor for building the value of the company and the sustainability of its growth in the long term. There are tools that make it possible to use the market practices developed in this respect, e.g. the Good Practice Scanner provided by the Stock Exchange.

Taking into account risks related to environmental (physical) factors, they can be divided into sudden risks (e.g. storms and floods) and chronic risks, which are the result of long-term climate change (e.g. droughts, heat). In the environmental scope, transition (transformation) risks can also be defined, which refer to situations where a business is unable to respond adequately to legal changes related to the ESG area.

The indicated risks are taken into account by financial institutions as causing potentially negative consequences for the assessment of cooperation with the customer, or the possibility of repayment of a given credit exposure. Their negative repercussions may affect the value of the property serving as security for repayment. The identification of the absence of risks or their low level can be treated by banks as increasing the probability of continuing business operations and maintaining financial performance at a level no worse than at the stage of applying for a loan.

Table 2. Scope of ESG risk and its possible impact on borrowers

Scope of risk	Impact on borrowers
Environmental risk	• represents the risk of possible deterioration in the borrower's ability to repay its obligations as a result of operating in an area exposed to negative environmental impacts • environmental risk shall also be taken into account in the context of assessing the environmental exposure of the property accepted as security for repayment
Social risk	• represents the risk of possible losses for the bank as a result of negative consequences of social factors (current and future) • the estimation of this risk takes into account the impact of the customer on the local community, violation of applicable laws (e.g. labour law, human rights law), which may end up in legal proceedings
Management risk	• represents the risk of possible losses to the bank as a result of the negative effects of a mismanagement process in the borrower's business, • the impact on the operation of the business and the property serving as security for repayment is taken into account

Source: own compilation based on (Iwanicz-Drozdowska 2024, pp. 161–164).

Table 3. Potential impact of materialisation of environmental risks

Type of ESG risk	Areas of impact	Potential impacts
Physical risks (sudden and chronic)	Change in the value of the entity's assets (effects of sudden weather events like storms, or chronic ones like soil erosion and landslides)	• increased costs resulting from the need to deal with the consequences of risk materialisation • increased costs of insuring assets • the need to obtain funding for replacement investments • risk of loss of business continuity, forced interruptions in the operation of the company due to the materialisation of risk • risk of reduced liquidity and profitability of operations
Transition risk	changing legal environment	• increase in legal costs resulting from the need to adapt to changing legislation (lower profitability) • Reputational risk in case of failure to adapt to changes

Source: own compilation based on (Redqueen 2023).

The combined analysis of physical and transition risks results from the possibility of their initial estimation on the basis of publicly available data, allows the level of risk to be identified even before reference is made to the statements and documents submitted by the client as part of the credit application or before the disclosure report is verified. Table 3 shows examples of areas that may be affected

by physical risks and transitions and the potential impact of such a situation. The range presented is not a closed catalogue, and issues relating to, among other things, location, the industry in which it operates and its markets should be taken into account in a given company. The scope of data extracted by banks from the disclosures prepared by business entities will increase accordingly as more entities are covered. The NFRD requires companies meeting a total of two criteria (public interest entity and employment exceeding 500 employees at the balance sheet date) to prepare and publish a non-financial statement on sustainability issues. From 2025 onwards, the group of entities subject to mandatory disclosure will gradually increase, although this process has been slowed down in light of the European Commission's recent regulations (Directive 2025).

Table 4. Timetable for implementation of the CSRD

First period covered by disclosures	Year of first disclosures	Criteria for companies
Report for financial year 2024	2025	Companies meeting the criteria set out in the NRFD (JZPs and parent companies) for which a total of two of the following criteria are met: • employment > 500 employees • net turnover > EUR 40 million • balance sheet total > EUR 20 million
Report for the financial year 2027	2028	Large entities and parent companies for which a total of two of the following criteria are met: • employment > 250 employees • net turnover > EUR 40 million • balance sheet total > EUR 20 million
Report for the financial year 2028	2029	Entities defined as small and medium-sized (listed on an EU regulated market) for which a total of two of the following criteria are met: • employment > 10 employees • net turnover > EUR 700 thousand • balance sheet total > EUR 350 thousand
Report for the financial year 2028	2029	Indirect non-EU entities which: • have a branch in the EU and have a net turnover in the EU of more than EUR 150 million, or • are a parent company and their subsidiary operating in the EU has a turnover in excess of EUR 40 million.

Source: own elaboration based on the CSRD of 14.04.2025.

Table 4 indicates the criteria on the basis of which the scope of the reporting obligations will be expanded in subsequent years. The CSRD increases the catalogue of companies obliged to prepare disclosures. The eligibility criteria for companies

relate directly to the number of employees and the result of the entity's activities as reflected in the accounts, i. e. net turnover understood as sales revenue and the company's balance sheet total.

Currently, companies have to take into account the transition risks associated with the large number of changing regulations and the fact that their content may evolve. The range of possible risks is very wide and requires consideration of potential risks in every aspect concerning business operations (Marcinkowska 2022). The materialisation of ESG risks may have an indirect or direct impact on the maintenance of adequate profitability of the business, e.g. due to the need to incur investment and regulatory compliance costs or replacement investments in the case of materialisation of sudden physical risks. Sudden and chronic physical risks can have the effect of reducing the value of a company's assets. It should also be pointed out that it is standard practice for valuers to identify in appraisal reports risks related to environmental factors such as flooding. If identified, this has a direct impact on the estimated value of the property when presented to the bank as security for repayment of a debt.

3. Examination of ESG risk in the context of assessing the creditworthiness of companies

3.1. Source data for determining the level of ESG risk

Given that banks will condition their willingness to provide financing on the level of exposure to ESG risks and, in addition, the degree of compliance of the business and the purpose of the investment with the EU Taxonomy, among others, there will be types of business with easier access to capital (mBank 2023). Such a division will result in the selection of industries more willingly financed by banks and those for which credit exposure will be successively limited (PKO BP 2023).

Table 5. Summary of industries with impeded and facilitated access to capital

Industries with impeded access to capital	Industries with facilitated access to capital (preferred)
• those related to hard coal and lignite mining, • industries related to coal (production of machinery for mining, coal trade), • carbon-intensive • extraction of oil, gas • production and distribution of liquid and gaseous fuels, • production and trade in chemicals and rubber products	• RES (photovoltaic and wind farms) • electromobility • recycling • low-carbon industries • construction (investments with energy performance certificates)

Source: own compilation based on non-financial reports: (PKO BP 2023; mBank 2023).

Banks are required by the EBA (European Banking Authority) guidelines to identify borrowers who are exposed directly and indirectly to ESG risks (EBA Guidelines 2020). For this purpose, banks can use risk maps that relate climate-related risks to the relevant economic sectors. The assessment of ESG risks on the basis of risk maps is, in this respect, the first step in the analysis conducted by financial institutions towards the customer. Financial institutions make different assumptions and data sources when creating risk maps, but they always start from two basic issues, i.e. the business object and the location.

Table 6. Extent of information considered when assessing ESG risks based on risk maps

Parameter	Type of code	Scope of analysis
Object of activity	PKD codes	• the type of activity conducted is analysed (the main activity will be taken into account) • each PKD code is assigned a level for E, S and G risks according to gradation, e.g.: high, medium, low or none • each PAC code is also assigned a transition risk level, e.g. significant, insignificant or none
Location	TERYT or postal codes	• the location of the business is analysed, and if the loan is for an investment, the location of the investment project is analysed • location information provides knowledge about exposure to physical climate risks (chronic and sudden)

Source: own elaboration based on EC Regulation 2022/2453.

Data on the type of activity carried out on the basis of the PKD code are uniform and used in business registers (CEIDG, KRS) and for the purposes of public statistics (Table 6). In the case of TERYT codes and postal codes used less frequently for ESG risk assessment purposes, these are unified systems. Financial institutions are more likely to use TERYT codes because they are a set of non-repeating elements, unlike postal codes, where there are already identical codes for different locations.

A much more difficult task is to determine the second component (potential exposure to ESG risks) needed to determine the value of the risks in the matrix. There is currently no single regulatory-approved data source. Currently, banks use a variety of sources including publicly available ones such as Klimada 2.0, Copernicus and those available by subscription such as data from the Cenatorium database (Table 7).

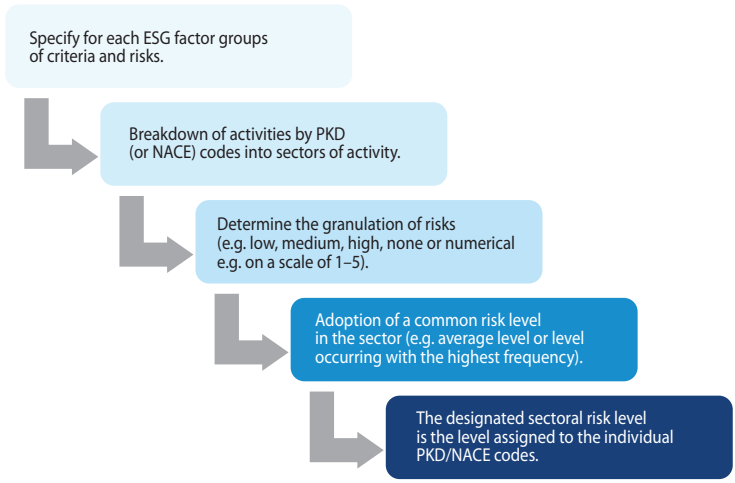
Once the sources of information, the location and the potential exposure to ESG risks have been extracted, a risk map is created to enable the assessment of individual clients. The EBA, in its lending and credit monitoring guidelines, also indicates the need to deepen the analysis if the assessment of potential ESG risks carried out on the basis of the risk maps shows high risks.

Table 7. Scope of available data depending on the source

Type of source	Scope of available information	Source availability
Climatology 2. 0	• climate scenarios (for existing gas emissions and for reductions) • risks associated with environmental impacts (e.g. heat and droughts) • information and analysis on climate change adaptation (can be sorted by decade and factors e.g. temperature, precipitation) • knowledge base on environmental risk legislation	An open resource does not require a contract. Information available at: (15.10.2024) https://klimada2.ios.gov.pl/
Copernicus	• contains statistical data, e.g. number of days with frost, days with heat, days without rain, etc. • collects data in many areas, including by sector using a so-called climate data warehouse • contains historical data and forecasts up to the year 2100	Open resource does not require a contract (EU programme). Information available at: (15.10.2024)https://www.copernicus.eu/pl
ThinkHazard	• allows you to determine the impact of a given factor (e.g. river floods, fires, landslides) on a specific geographical area.	An open resource does not require a contract. Information available at: (15.10.2024) https://thinkhazard.org/en/
Cenatorium Sp. z o. o. (ul. Piękna 68, 00-672 Warsaw)	• a tool designed to assess the ESG risk exposure of real estate collateral • in addition to information on environmental risks, the scope of the presented data can be expanded to include, among other things, the frequency of crimes committed in a given area and their type • includes information on energy certificates and year of construction of the property	Database available after conclusion of a contract, in which the scope of data is defined.

Source: own elaboration.

Figure 1. Example of the ESG risk mapping process



Source: own development.

3.2. Methods for relating the level of ESG risk to creditworthiness

Banks view ESG risk as a cross-cutting risk embedded in all other relevant banking risks, i. e. concentration, operational, reputational, compliance, liquidity and, of course, credit risk. The FSA expects financial institutions to explain whether and how they have integrated ESG risks into the management framework of the other risk areas when answering questions in the BION process.

The processes carried out in banks as part of credit risk assessment are used to determine whether an applicant has creditworthiness, defined as the ability to repay an obligation (loan) incurred with the bank together with the consideration for it (interest) with compliance with the deadlines indicated in the agreement (Article 70(1) of the Banking Act, 1997). Creditworthiness is determined by the bank for a specific transaction, but credit risk is a much broader concept and refers to all activities carried out in cooperation with the bank, such as guarantees, letters of credit, sureties, foreign exchange operations, among others (Iwanicz-Drozdowska et al. 2013, p. 255) As part of the credit process, ESG risk is considered in terms of the risk associated with the requested financing and in relation to the entity with which the bank establishes a credit relationship (Table 8).

Table 8. ESG risks in the lending process

Question	Establishing a relationship with the applicant	As part of the requested credit transaction
What is assessed?	• the extent to which ESG factors have been implemented as part of the entity's policies • the extent to which the entity has taken steps to identify and, where necessary, mitigate ESG risks	• assessment of the investment project's objective, e.g. by evaluating its compliance with the EU Taxonomy • assessment of the positive/negative impact of the financing in terms of environmental, social and governance factors • in the case of working capital finance, an assessment in the context of the business activity
With what frequency is the evaluation carried out?	• at the stage of establishing a relationship or reapplying for financing • as part of credit monitoring	• at the stage of application for financing • as part of credit monitoring
What are the data sources	• reports from the entity • information available on the entity's website • ratings (including search engines on rating companies' websites) • customer statements	• entity reports and information available on the entity's website • ratings (including search engines on rating companies' websites) • technical documentation relating to the investment • expert reports and opinions relating to the investment • statements and questionnaires completed by the client • conclusions from inspections of the investment site

Source: own compilation based on (Iwanicz-Drozdowska 2024, pp. 161–164).

There are methods of calculating ESG risks that, by using a matrix approach, result in a single combined score. The simplified rating assessment constructed in this way forms part of the opinion provided by the staff analysing the credit application to the decision-maker (decision-maker) (Figure 2).

Figure 2. Example of ESG risk assessment in the credit process in matrix terms

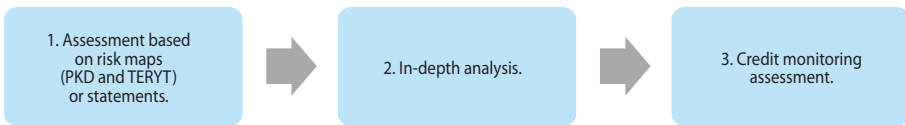
Relationship risk, where: a – low b – medium c – high d – unacceptable	d I	d II	d III	d IV	d V
	c I	c II	c III	c IV	c V
	b I	b II	b III	b IV	b V
	a I	a II	a III	a IV	a V
	Risk of the proposed transaction, where: I – negligible, II – low, III – medium, IV – high, V – unacceptable				

Source: own elaboration.

4. Methods of mitigating ESG risk – market experience

The determination of the basic (first) level of potential exposure to ESG risks takes place at the stage of the customer's contact with the business unit, i. e. the employees responsible for sales and customer service. Banks, in order to reconcile the need to expand business, acquire new customers, maintain profitability with keeping credit risk at an acceptable level, use an additional intermediate risk assessment stage. This is used to classify customers according to the level of ESG risk obtained at the first stage. If ESG risks are identified at a high level, an in-depth analysis is applied.

Figure 3. Stages of ESG risk assessment in the credit process



Source: own compilation based on (EBA Guidelines 2020).

For customers for whom a high level of ESG risk is identified (by default more damaging), the bank will look for opportunities to mitigate credit risk by assuming a higher level of detail. The bank may scrutinise in greater detail, e.g. the management report, the additional information, the entity's website, press releases in search of information on investments made by the company to, for example, reduce electricity consumption, minimise the negative impact of environmental risks (e.g. flooding). Statements and other documents containing ESG information submitted by the client at the loan application stage are also re-examined at this stage.

The extent of information collected varies between financial institutions. Some banks use very extensive questionnaires and tailor the questions in them to the sector or industry in which clients operate. Bank Gospodarstwa Krajowego has a general questionnaire and special questionnaires for entities operating in the health care,

heating and social housing sectors. The cooperative banks (association 2) present their clients with questionnaires in which the questions are divided into blocks on environmental risk, social risk, management risk and, in addition, physical risk and transition risk. The questions also relate to the methods used to mitigate the negative impact of individual risks on stakeholders and the environment. The cooperative banks use questionnaires by customer segment (large entity, small entity, farmer). The smallest range of questions on ESG issues was included in the commercial bank applicant data sheet. Ultimately, the primary information role on ESG risks should be taken over by mandatory ESG reporting.

Table 9. ESG information required by banks in a loan application

Thematic scope of statements made at the loan application stage	Name of bank	Source
• no surveys by sector/industry • thematic scope of the questions concerns: possession of permits, approvals and concessions required by law, impact of the business on protected areas, areas under archaeological protection, areas of particular cultural significance, areas of ecological importance, possible penalties imposed on it (in the last 2 years) resulting from non-compliance with: health and safety rules, labour code, environmental regulations	Commercial bank	Form on information about the applicant.
• 3 questionnaires: for large companies, small companies and farmers • range of questions divided into three blocks, i.e. environmental, social and managerial factors	Cooperative Banks Association 1	Questionnaire to be completed at the loan application stage.
• two questionnaires per segment defined as micro/small/medium and large • division of issues in the questionnaire into environmental, social, governance and in addition physical and transition risks • for the large customer, the expectation of the provision of emissions information from SCOPE 1, SCOPE 2 and SCOPE 3[a] • the possibility of providing information on risk mitigation was included in the survey	Cooperative Banks association 2	Questionnaire to be completed at the loan application stage.
• general questionnaire and specific questionnaires (health, heating, social housing) • scope of questions in specific questionnaires concern: obligation to prepare non-financial statements (according to the Accounting Act), estimation of the carbon footprint, planned measures for its reduction, question on information on whether the area of operation has historically been affected by climatic events with a sudden course, information on water and waste management policy	Bank Gospodarstwa Krajowego	Presentation by a representative of Bank Gospodarstwa Krajowego at the ESG 2024 Conference (18–19.03.2024 Warsaw).

Table 9. (cont.)

Thematic scope of statements made at the loan application stage	Name of bank	Source
• the range of questions in the standard questionnaire concerns: estimation of the carbon footprint, water consumption, procedures regarding employees' rights, carrying out public consultations prior to the start of the project, the scope of activities implemented as part of the fight against climate change		

[a] SCOPE 1 – Scope 1 emissions, these are the direct emissions of the entity (e.g. heating, emissions from the use of owned vehicles, air conditioning). SCOPE 2 – Scope 2 emissions is the value of indirect emissions resulting from e.g. purchased electricity. SCOPE 3 – Scope three emissions are indirect emissions resulting from the values established in the value chain (emissions resulting from the activities of the entity's suppliers and customers).

Source: own study.

The above summary shows the significant discrepancies in the information collected, and the fact that already at this stage banks have extensive information on the client's response to ESG risk factors. When the level of ESG risk is identified as high, the credit process is halted and the applicant is requested to provide additional documentation or clarification.

Table 10. ESG risk mitigation tools following a credit application

Type of document	Type of financing		Comments
	targeted	revolving	
Additional questionnaire with detailed questions	+	+	Constitutes a client statement, there may be difficulties in verifying the reliability of the information.
Statement on high-risk activities	+	+	Represents client statement, may be difficult to verify reliability of information.
Environmental report	+*		Document prepared by a competent person, does not pose risks related to the reliability of the documents. Does not give information on all the activities carried out (* not applicable to SPVs).
ESG rating		+	Prepared by a firm specialising in ESG ratings, addresses ESG risks in the context of the entire business not of individual investment projects. The wide divergence in rating scales and assessment methodologies adopted raises the risk of misreading the level of risk.

Table 10. (cont.)

Type of document	Type of financing		Comments
	targe-ted	revo-lving	
Investment permits (e.g. planning permission), technical opinions	+*		Documents drawn up by persons with relevant competence and authority. Document relates to individual investments from not all activities (* not applicable to SPVs).[a]

[a] SPV or special purpose vehicle, or SPE a special purpose vehicle. Usually a limited liability company or limited partnership that has been established for a specific purpose, e.g. the implementation of a single investment project.

Source: own compilation.

The documents and statements indicated in Tables 9 and 10, depending on the methodology adopted in each bank, can serve to reduce ESG risk in aggregate or for its individual components. The assessment of ESG risk as part of the monitoring indicated in Figure 2 as the third step, is secondary and serves as an assessment within the portfolio analysis. It does not affect further lending per se, but may involve the need for additional information from the client, e.g. when there is a significant change in a previously established risk level.

Conclusion

The implementation of ESG concepts into the company's operations and the appropriate disclosure of the components in cyclical reports is inevitable. In addition, it will be associated with easier access to programmes supporting the implementation of activities in line with the objectives of the concept, in particular obtaining financial support and especially environmental or climate objectives. The assessment of a company through the lens of sustainability, including the proper identification of ESG risks and the implementation of effective ways to mitigate them, already affects access to capital. Entrepreneurs applying for funding are subject to scrutiny on how ESG risks affect their business. Hence, the need to prioritise ESG activities in company strategy (Khalid et al. 2021).

Financial institutions are also subject to mandatory disclosures, and the natural corollary of this will be the increasing demands placed on those applying for finance. Entrepreneurs are currently confronted with an increase in expectations regarding the extent of information that banks deem necessary as part of loan applications – and this process will intensify.

The banking sector is relatively strongly stimulated by, among other things, supervisory policy to implement ESG concepts. Responsibility for the quality of the loan portfolio, the share of projects that comply with sustainability standards, as

well as opportunities to use aid programmes or preferential credit lines to finance them are also becoming a focus for shareholders. At the same time, financial institutions see the obligations arising from the transition towards a sustainable economy as an opportunity to develop lending and even expand their offerings to include services that facilitate entrepreneurs' disclosures in exchange for loyalty to the bank serving the customer in terms of lending, transactions and deposits.

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The Problem of Bank Confirmations for the Audit of Financial Statements: The Example of TPA Wirecard's Operations

Abstract

The Wirecard case was the largest economic scandal in Europe since the Second World War. Thousands of bondholders and shareholders lost their money, and lawsuits were filed against Wirecard, the regulators, the management board, and the auditor Ernst & Young (EY). EY audited Wirecard's consolidated financial statements for ten years. The fraud at Wirecard took place in Asia through business activities with so-called third-party acquirers (TPAs). The scandal resulted in cash funds amounting to 1.9 billion Euros not being available. These funds were allegedly held in escrow accounts. This article shows which audit procedures had to be performed to ensure that the cash funds reported in the balance sheet were actually available. There has been a whole series of alarm signals from outside Wirecard with high relevance for the orientation of the risk-oriented audit approach by the auditor. In addition, Wirecard had numerous indicators of fraud listed in one of the auditing standards. However, this did not have a sufficient impact on EY's risk-based audit approach. On the contrary, the company often relied on Wirecard's verbal statements. Had the audit been conducted properly, the fraud could have been uncovered very quickly. The following article uncovers massive deficiencies in the audit procedures with regard to the escrow accounts. Given the business activity in the TPA business with only three business partners, the dubious nature of the trustee, the involvement of only one bank where the escrow accounts were held, and the paramount importance of the amounts for Wirecard's going concern, it was imperative that the auditor obtain proof of the existence of the cash via a bank confirmation. If the auditor's report had been refused regarding the TPA business at an early stage, which would have been the inevitable consequence if the audit had been carried out properly, the negative financial effects for bondholders and shareholders would have been significantly reduced.

Keywords: Wirecard, Ernst & Young (EY), auditor, accounting scandal, escrow account, risk-oriented audit approach, fundamental principles of proper audit

JEL Codes: M40, M41, M42, O16

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1. Introduction – chronicle of a company full of allegations of manipulation

Wirecard was founded in 1999 and was a pioneer in digital payment processing.[1] The company specialised in linking credit cards to the internet by developing software that served as an interface between credit card companies, online retailers and retailers' customers.

After some turbulence, Wirecard was acquired by Electronic Billing Systems (EBS) in January 2002. Between 2002 and 2004, the company underwent a reorganisation, during which it was listed on the stock exchange as Wirecard AG (Hesse 2016, pp. 65–67). To go public, Wirecard utilised a company called InfoGenie, which had been listed on the market since 2000. A subsidiary of EBS acquired more than 25% of InfoGenie's shares in March 2002. InfoGenie's shares fell on the stock market and were supposed to be delisted. However, this was prohibited by the German Stock Exchange through legal action. In December 2004, it was decided to transfer Wirecard to InfoGenie on January 1, 2005, in exchange for a contribution in kind. InfoGenie was renamed Wire Card, which became Wirecard in June 2006. In this way, Wirecard became a listed company. Markus Braun became CEO. In January 2006, Wirecard bought a bank and developed into a full-service payment company that provided software and systems (McCrum 2020). Wirecard was added to the TecDAX in 2006.

The first allegations of irregularities in Wirecard's balance sheet were made as early as 2008.[2] The board of the German shareholder association Schutzgemeinschaft für Kapitalanleger (SdK) made serious allegations at the Wirecard annual general meeting (Hammer 2008). The Wirecard management and supervisory boards were accused of incomplete and misleading reporting in various key areas in the 2007 consolidated financial statements (Straub stolpert… 2008). Furthermore, the earnings situation of the banking division was said to be non-transparent. Wirecard was accused of concealing income from online betting transactions (Hammer 2008). The SdK also threatened to file criminal charges for balance sheet fraud, which is why an action for annulment was filed with the Munich Regional Court against the resolutions of the Annual General Meeting (Jahn 2008; Hesse 2016, pp. 65–67).

As a result, Wirecard commissioned the auditing firm Ernst & Young (EY) to conduct a special audit, which subsequently replaced a small Munich-based auditing firm that had previously acted as Wirecard's group auditor (McCrum 2020).

According to the Financial Times, there had been an obvious inconsistency in the assets and liabilities reported by Wirecard for its payment business for the years 2009 to 2015. The nature of the growth and the high value of intangible assets of

[1] A short chronicle of Wirecard is also provided by Löw, Kunzweiler 2021, pp. 13–16.

[2] For accounting rumours at Wirecard in the years 2008 to 2019, see in detail Löw, Kunzweiler 2021, pp. 17–27. See also Krüger 2020.

670 million Euros on the balance sheet had already raised questions at that time (McCrum 2020).

In 2010, Jan Marsalek was appointed Chief Operating Officer. In the same year, new allegations were made against Wirecard (McCrum 2020). The financial news service GoMoPa.net (Goldman Morgenstern & Partners) published a critical report. Wirecard obtained a preliminary investigation into market manipulation (GoMoPa.net 2012).

Between 2011 and 2014, the offensive accusations against Wirecard subsided somewhat. In retrospect, the Munich I public prosecutor's office assumes that Wirecard executives had already decided in 2014 to artificially inflate the group's balance sheet with fictitious revenues and to report funds allegedly held in escrow accounts in the 2015 balance sheet (Niedersachsen 2020; Strunz 2020).

In a series of articles entitled House of Wirecard (alluding to the series House of Cards) in the Financial Times (FT) blog FT Alphaville, journalist Dan McCrum, then 37, and Singapore correspondent Stefania Palma began pointing out discrepancies in Wirecard's balance sheet in 2015. On 27 April 2015, the Financial Times began publishing its series of articles in which, based in part on information from whistleblowers, questions about inconsistencies in the Wirecard Group's accounts were continuously raised (McCrum 2020). The FT declared that the biggest accusation in 2015 was that the balance sheet showed a hole of 250 million Euros.

In the third quarter of the year, in October 2015, Wirecard announced the acquisition of the Indian payment company 'GI Retail' for a total value of 340 million Euros – at the time, Wirecard's largest transaction to date (McCrum 2020; Storbeck, McCrum 2018). A year earlier, the value of the acquired companies was only approximately 46 million Euros.

J Capital Research, a US company that specialises in publishing research reports on listed companies, with a particular focus on overvalued companies, revealed that Wirecard's activities in Asia were far less extensive than claimed (McCrum 2020). In its report dated 30 October 2015, J Capital Research also makes serious allegations: "Having found little evidence that Wirecard has any volume of business, we visited five of the subsidiaries in Southeast Asia. Only one of the premises had a reasonably credible presence, and even that one appeared much smaller than disclosures would suggest. At two of the listed locations, we could find no company at all, although there were unrelated companies with similar names."[3] "Wirecard's purchase prices for companies on which it provides valuation details appear to be based on the target company's "customer relationship" value, but that value does not seem to be based on the number of customers acquired: some of the acquisitions are of companies providing a technology platform that is unlikely to deal directly with individual customers. Others seem to be very small companies with few customers. All of this is physical evidence that the balance sheet is bloated with

[3] https://www.jcapitalresearch.com/uploads/2/0/0/3/20032477/2015_10_30_wirecard_initiation_global_shorts.pdf, executive summary (accessed 27.07.2025).

phantom assets. Wirecard's goodwill and intangibles ballooned to a combined total of nearly 50% of revenue by 2014, with no explanation."[4] "Wirecard says it derives its growth from outside Europe. The ex-European portion of the business has grown from 9.1% of total transactions in Q1 2012 to 24.3% in Q2 2015. The implied growth rate of transactions is 47% for Europe over the 2.5-year period and 372% for ex-Europe. In our analysis of the last three years of earnings, we found that less than 10% of Wirecard's growth is organic, and the rest has been generated through acquisitions. To achieve these growth rates, Wirecard tells investors, it needs to acquire customer relationships in Asia by buying companies at inflated valuations. While Wirecard claims that the acquisitions enable it to boost payments activities in the region, it does not appear to have sufficient on-the-ground resources to offer value in payments clearing."[5]

In February 2016, FT reporter McCrum first reported on a disastrous, comprehensive 100-page report, the 'Zatarra Papers'. Behind Zatarra were ultimately investors and short sellers Fraser Perring and Matt Earl. A total of four reports were published in quick succession under the pseudonym Zatarra. In them, hedge funds accused Wirecard of money laundering and balance sheet manipulation and outlined a confusing corporate structure that was used to conceal dubious payments. It also claimed that Wirecard was buying companies in Asia at significantly inflated prices.

In addition, the Financial Times received internal documents from members of Wirecard's finance department. These documents concerned Wirecard's third-party acquiring (TPA) business. The leaked document describes an (alleged) Al Alam transaction and the monitoring of customer relationships (Wirecard AG 2016). The documents record payments from 34 major customers totalling 350 million Euros, which were processed on behalf of Wirecard via Al Alam (McCrum 2020; McCrum, Palma 2019; McCrum, Storbeck 2019). However, there were clear indications that many of these transactions could not have taken place. When contacted by the FT, 15 of the 34 customers said they had never heard of Al Alam. Eight of these companies closed their business activities in 2017, when their names appeared alongside the monthly financial data for transactions (McCrum, Palma 2019; McCrum, Storbeck 2019), six ignored the enquiries and did not comment, and the remaining five alleged customers could not be traced, which is why no contact could be made between them and the FT. According to the Financial Times, the business activity was responsible for about half of the earnings before interest, taxes, depreciation and amortisation (EBITDA) in 2016.

The spreadsheets leaked just one year later, in July 2017, which were shared by Wirecard executives and titled "Overview of Third-Party Acquirers" (Wirecard AG 2017b) as well as several other Excel files (Führungkräfte 2016a; 2016b), containing data sets stating that Al Alam was responsible for revenues of 265 million Euros in

[4] https://www.jcapitalresearch.com/uploads/2/0/0/3/20032477/2015_10_30_wirecard_initiation_global_shorts.pdf, pp. 28–29 (accessed 27.07.2025).

[5] https://www.jcapitalresearch.com/uploads/2/0/0/3/20032477/2015_10_30_wirecard_initiation_global_shorts.pdf, p. 29 (accessed 27.07.2025).

2016. At the time, this represented roughly a quarter of Wirecard's global annual revenue. This means that the 4.2 billion Euros in payments processed through the Al Alam business in 2016 generated more profit for Wirecard than the rest of its transactions (McCrum 2020).

In autumn 2018, Wirecard replaced Commerzbank in the DAX 30 index.

On 21 October 2019, Wirecard's supervisory board commissioned KPMG to conduct a special forensic audit to investigate allegations of balance sheet manipulation (BLZ i Reuters 2020). In the special audit report, published by Wirecard on 28 April 2020, in which KPMG presented the results of a six-month special audit in 2019 (McCrum, Storbeck 2020), the auditors complained about a lack of documentation provided by Wirecard (Hoefer, Engemann 2020). Wirecard failed to provide some of the requested documents or only provided them several months after they were requested. Numerous documents were only available in the form of copies or scans. This meant that the auditing firm was unable to assess the authenticity of these versions.

On 16 June 2020, the Philippine banks informed the auditor that the documents allegedly showing 1.9 billion Euros in funds held in escrow accounts were false. The auditor EY then refused to issue an audit opinion for 2019, after having issued unqualified audit opinions from 2009 to 2018.

The company itself announced in an ad hoc announcement on 22 June 2020 "that the balances in the bank escrow account amounting to 1.9 billion Euros (with a high degree of probability) do not exist" (Wirecard 2020a). This figure corresponds to approximately one-quarter of the balance sheet total and two-thirds of the turnover in the unaudited consolidated financial statements for 2019. As a result, the share price plummeted by more than two-thirds.

On 25 June 2020, the management filed for insolvency with the Munich Local Court due to imminent insolvency and over-indebtedness (Wirecard 2020b).

2. Wirecard's business models

Wirecard operated the so-called third-party acquiring (TPA business) through subsidiaries. It was therefore not possible to audit these business activities at the level of the parent company (Wirecard AG), but rather via the annual financial statements of these subsidiaries and at group level for the consolidated financial statements. The working papers of the group auditor has to document the extent to which their own audit measures were carried out or reliance was placed on the results of the auditors of the individual financial statements. Until the end of 2017, Wirecard was not itself a payment service provider (PSP), but used Al Alam and Senjo, which were only transferred to its platform in 2019, and PayEasy directly on its own platform from 2018 onwards. In this respect, Wirecard acted as an intermediary for merchants to (third-party) PSPs via subsidiaries without itself

engaging in acquiring. Ultimately, Wirecard's TPA partners were not acquirers in the true sense of the word, but merely PSPs.

The Wambach Report[6] concludes that the auditor had (demonstrably) dealt intensively with the TPA business model (Wambach-Report, p. 14). The contracts with the three business partners in the TPA business were available to EY. According to these contracts, Wirecard was entitled to a commission for referring customers (merchants) to the acquirers. These TPA partners were obliged to report their commission claims on a monthly basis (rather than Wirecard issuing an invoice based on the transactions referred). In addition, the TPA partners were required to pay the commissions with a time difference of six to nine months. The commission payments were to be made to accounts that the contracting parties, TPA partners and merchants, could designate, i.e. not Wirecard as the commission recipient (Wambach-Report, p. 14). These are unusual business practices that the auditor should have investigated. Commission payments have to be reported in the income statement under the appropriate heading – and not as sales revenue (IFRS 15.114 in conjunction with IFRS 15.B57-B89 and IAS 1.29, 30, IAS 1.85, 85A and IAS 1.97, 99).

According to the Wambach report, EY's working papers also discuss collateral. Wirecard deposited collateral with the third-party acquirer in the event of payment defaults (cash collateral). In the Al-Alam case, for example, this amounted to an initial one-off payment of 10 million Euros. Later, this rose to 20 million Euros. The cash collateral could be adjusted (Wambach-Report, p. 14). The collateral was provided by Wirecard, transferring commission income to which it was entitled, comparable to an abbreviated (shortened) payment method, to escrow accounts.

In addition, Wirecard had to provide further collateral. The collateral was determined as a 12-month rolling collateral based on the transaction volume of services with long-term risk exposure. Subscription models were used as an example. The rolling 12-month collateral retention amounted to 33% of the transaction volume attributable to advance payments.

Wirecard also assumed default risks for chargeback claims and indemnified third-party acquirers against liability and loss risks. Basically, this business proved to be relatively low-risk. The acquirer was allowed to retain part of its liabilities to the online merchant for future chargeback claims in advance. This effectively provided advanced protection. The merchant not only received the purchase price reduced by the commissions, but also a further partial amount that was retained to cover refund claims. In this business model, Wirecard assumed the risk that the acquirer

[6] A committee of inquiry of the German Bundestag appointed the auditing firm Rödl & Partner as investigators on March 4, 2021. Their work was conducted at the offices of the auditor, Ernst & Young (EY), in Berlin from March 15, 2021, to April 15, 2021 inclusive. The investigations culminated in a "Bericht über die Ergebnisse des Ermittlungsauftrags zur Unterstützung der Arbeit des 3. Parlamentarischen Untersuchungsausschusses (der 19. Wahlperiode) des Deutschen Bundestages", meaning "Report on the Results of the Investigation to Support the Work of the 3rd Parliamentary Committee of Inquiry (of the 19th legislative period) of the German Bundestag." The report became known as the Wambach Report, named after Rödl & Partner's Managing Director, Martin Wambach.

would have to pay the card company but would not do so because, for example, a brokered merchant did not pay. While the acquirer had essentially secured itself twice with the merchant, the Wirecard companies provided guarantees to the TPA partners for any financial losses that the TPA partners might have incurred from transactions with the referred credit card customers (merchant defaults, reversal of card payments, penalties imposed by card network organisations, etc.) (KPMG 2020, p. 15). These agreed guarantees were secured by the provision of cash collateral managed in trust (KPMG 2020, p. 15). To secure these guarantees, the TPA partners retained payments due to Wirecard companies or made these payments to accounts managed by a trustee.

Due to the multiple advanced collateralisation, the default risk for Wirecard was very low from an economic perspective. This raises the question of why Wirecard was needed as a guarantor at all, given such a low risk. It is particularly striking that Wirecard had to deposit cash collateral for this purpose, which is said to have amounted to 100 million Euros in 2015 and 1.9 billion Euros in 2020.

In this respect, the TPA agreements had specific features that differed from industry practice. Such unusual business practices should have been noticed during an audit in which the auditor had to examine the client's business model. It would have been necessary to question the reasons for deviating from standard industry practices.

However, the auditor did not further address the extent to which the collateral provided by Wirecard was in line with market conditions (KPMG 2020, p. 15). This means that although EY did examine Wirecard's business model in principle, it did not question the special features of the contracts in the TPA business, which involved an unusual transfer of (additional) collateral to Wirecard, and did not pursue the matter further. This is all the more inexplicable given that EY itself is said to have pointed out in its working papers that in 2014, 2015, 2016, 2017 and 2018,[7] "no liability risks for Wirecard were identified by management."[8] The obvious contradiction of having provided high security deposits for only very low risks was ignored during the audit.

Escrow accounts were used to process transactions in the TPA business, which is standard market practice for hedging the risk of chargebacks (Untersuchungsausschuss 2021, p. 182). However, the business model was implemented with only three different business partners, which from the outset entailed both an operational risk, namely if one of the partners had defaulted, and secondly, a credit risk relating to both the trustee and the trust bank. If one of the business partners had defaulted, Wirecard would have faced insolvency. Due to the risk that the continuation of Wirecard's business activities was dependent on these three business partners,

[7] Some verbatim quotations are used in the following. Where these originate from German examination standards or German literature, they have been translated into English to the best of knowledge and belief. Even if, strictly speaking, it is no longer a literal quotation in the academic sense, they have been retained the inverted commas.

[8] Wambach-Report, p. 16 with reference to the auditor's working papers for the relevant years.

the auditor should have paid particular attention to these three business partners and ensured that these risks were described in the risk report.

In addition, the question arises as to why Wirecard had only a minor influence on the design of this structure, because, on the one hand, the activity could have been carried out without escrow accounts and, on the other hand, the banks that managed the escrow accounts in question were selected without Wirecard's involvement.[9] Furthermore, the ratio of income from this business model to the Wirecard Group's total income should have been questioned. The involvement of TPA partners has reduced Wirecard's potential total commissions, and in addition, cash collateral had to be deposited for reversals, which at least tied up liquidity but ultimately reduced income accordingly. Nevertheless, this activity is said to have been extremely profitable.

3. Use of escrow accounts

The accounting treatment of escrow accounts raises numerous questions about the nature of the trust relationship (Löw, Heyd 2024, pp. 61–78). Under IFRS, the existence and accounting attribution of an asset is based on the Conceptual Framework (CF). According to CF 4.4(b), an asset is a resource controlled by an entity as a result of a past event and from which future economic benefits are expected to flow. The key factor in accounting for fiduciary relationships is, therefore, whether the entity can control an asset. To determine this, the legal nature of the fiduciary relationship has to be considered (Marten 2020, p. 1465; Justenhoven, Meyer 2024, § 246, para. 12–26).

Accounting is based on the specific terms of the trust agreement. If the contract and the actual circumstances are such that beneficial ownership is attributable to the settlor, the settlor is responsible for accounting, according to the view expressed in the literature (Justenhoven, Meyer 2024, § 246, para. 16). Applying this interpretation under the German Commercial Code (HGB) to financial statements prepared by IFRS requires consideration of the possibility of control, which in turn falls back on the verification of beneficial ownership.

It was therefore of decisive importance for Wirecard whether it could be assumed that Wirecard had beneficial ownership (or control under IFRS) of the escrow accounts. Given the circumstances, this is highly questionable.

Various transactions were posted to the escrow accounts. On the one hand, Wirecard was entitled to a commission from the credit card organisation, and on the other hand, Wirecard had to pay commissions to the TPA partners for their services. These payments were not processed via a freely available bank account. Furthermore, the transactions relating to the assumption of default risks for chargeback claims were

[9] See the statement of the Head of EY's policy department before the committee of inquiry. Untersuchungsausschuss, p. 378.

processed via these escrow accounts. Wirecard received a guarantee commission for the guarantees it assumed, but at the same time had to deposit cash collateral for returns and possible penalty payments.

The question of whether the fiduciary relationship has to be reported in the balance sheet depends on who the trustor is. Two scenarios are conceivable in the present case (Löw, Heyd 2024, p. 63).

- Assumption – The trustors are the Wirecard companies. In this case, the Wirecard companies have undertaken to transfer the freely disposable cash collateral (trust property) to the escrow accounts and to hold it in reserve for the occurrence of claims. The actual settlement took place insofar as the TPA companies did not transfer amounts from their net debt to the Wirecard companies (sales revenues to be forwarded (credit card processing fees) less commission income claimed) to freely disposable accounts of the Wirecard companies, but to escrow accounts that served to secure the guarantee claims of the TPA companies and the guarantee obligations of the Wirecard companies. If the Wirecard companies could have been regarded as the principal and the TPA business partners as subcontractors, the Wirecard companies would have been the beneficial owners of the trust property (cash collateral) and would have had to capitalise it in their balance sheets. This appears to be the (incorrect) interpretation on which Wirecard based its accounting.
- Alternative assumption – The TPA partners are the trustors. In this case, the TPA partners would have transferred the trust property to the trustee with the restriction that it would only be paid out to the Wirecard companies once the guarantee obligations of the Wirecard companies had been fulfilled. In this case, the payments made by the TPA partners have not (yet) passed into the control of the Wirecard companies. The payments would then have had to be capitalised by the TPA companies. The Wirecard companies would have had to capitalise a claim against the TPA companies until the trustee transferred the cash amounts to an account freely available to the Wirecard companies on the instructions of the TPA partners as trustors, if the liability risks no longer existed, or if the risks for which the Wirecard companies provided a guarantee had materialised and been covered by the cash collateral in the escrow accounts.

"The trust agreement of December 2015 stipulated that the account was not to be held in the name of Wirecard, but by the trustee."[10] Wirecard did not have any direct customer data for the TPA business; instead, the accountants received the documents from business partners, on the basis of which the bookings were made.[11] Wirecard was therefore unaware of either the transfers made by the TPA partners to the escrow accounts or the withdrawals made to cover risks. All dispositions of the escrow account balances were made by the TPA partners and subsequently communicated to the Wirecard companies via screenshot, which used the figures

[10] This was the statement by the Head of EY's policy department before the committee of inquiry. See Untersuchungsausschuss 2021, p. 378.

[11] According to the Head of EY's policy department, before the committee of inquiry. See Untersuchungsausschuss 2021, p. 215.

as a basis for their bookings. They could not be assigned to individual customers or customer groups, but were broken down into different and incomprehensible aggregations. This is already problematic in terms of generally accepted accounting principles and constitutes a violation of Section 238 (1) of the German Commercial Code (HGB).[12] The overall picture does not meet the necessary characteristics of control under IFRS, therefore, the existence of an asset belonging to Wirecard for the trust assets in the escrow account has to be denied. Wirecard was unable to exercise control over the existence or availability of the account balances.

Since Wirecard was not aware of the transfers made by the TPA partners to the escrow accounts or the withdrawals made to cover risks, but was dependent on documents provided by its business partners, there was also an extremely high risk of manipulation. The immense risk of fraudulent activity could only have been countered by obtaining meaningful audit evidence. Particular attention should have been paid to this.

Wirecard's limited influence was also evident in the fact that not only were the appointment of the trustees and the establishment of the escrow accounts initiated by the TPA business partners, but the replacement of the trustees in 2019 and the transfer of the trust assets to another bank were also initiated by the TPA partners.

4. Fundamental principles of proper auditing

In addition to accounting regulations (in Wirecard's case, IFRS at the group level), the formal legal norms relating to these regulations and the principles of proper auditing (Grundsätze ordnungsmäßiger Abschlussprüfung, GoA) are decisive for the audit (Löw, Heyd 2024, pp. 26–28).

GoA are the auditing principles established by the Institute of Public Auditors (Institut der Wirtschaftsprüfer, IDW),[13] which are specified in the auditing standards and auditing guidelines. They have to be applied when auditing financial statements, regardless of whether they have been prepared in accordance with national or international standards (Graumann 2020, p. 192).

GoA are either the German translation of the International Standards on Auditing (ISA), which are marked ISA (DE), or national modifications of the ISA on individual aspects to make them compatible with German law. Finally, they may also be independent auditing standards (IDW PS). These are published when either very extensive modifications to the ISA would be necessary, making it virtually impossible to refer to the ISA, or there is no ISA on the relevant topic.

Auditors act in the public interest and have to be aware of this – always. To this end, all relevant auditing standards have to be applied during the audit.

[12] In this sense, also agreement by the Wambach-Report, Addendum II, p. 17.

[13] About the legal position of principles of proper auditing (Grundsätzen ordnungsmäßiger Abschlussprüfung) see Marten, Quick, Ruhnke 2020, pp. 183–185.

5. Risk-oriented audit approach and principle of materiality

The main risk for the auditor is that they overlook a material error in the annual or consolidated financial statements and issue an unqualified opinion as part of the audit opinion on the financial statements (Almeling, Flick, Scharr 2020, p. 6).

The application of the risk-oriented audit approach in accordance with IDW PS 261, new version, requires the identification and assessment of the risks of error in the audit objects to obtain sufficient and appropriate audit evidence as a basis for the audit opinion (IDW PS 300, new version, para. 4). To this end, the auditor has to identify and assess the inherent risks (error susceptibility of an audit field) and control risks, which means the risk that material errors are not prevented or detected and corrected by the client's internal control system, in accordance with IDW PS 230.

This requires gaining an understanding of the company and its legal and economic environment (Marten, Quick, Ruhnke 2020, pp. 379–391, 474–477, 492). This includes the business environment, in particular the partners with whom the company under audit has business relationships, the characteristics of the company, the company's objectives and strategies, and the associated business risks. Furthermore, the auditor is obliged to deal with the measurement and monitoring of economic performance (IDW 2020, p. 1531).

Inherent risks represent the susceptibility of the financial statement information to be audited to errors that are material on their own or in combination with errors in other audit areas and are identified without taking the internal control system into account (IDW PS 261, new version, para. 6). Control risks, on the other hand, represent the risk that errors that are material in relation to an audit area are not prevented or detected and corrected by the company's internal control system. If the internal control system is ineffective or only partially effective, the control risks are high. If the internal control system is effective, the control risks are rather low (IDW PS 261, new version, para. 6). There is a strict connection that cannot be separated.[14] The business model, which relied on TPA partners in third countries, required the establishment of an internal control system, as noted by EY in its audit opinion on the 2017 annual report (Wirecard AG 2017a, p. 293). The auditor criticised the inadequate internal control system at Wirecard and, although it considered this activity to be a particularly important audit matter, did not adjust its audit procedures accordingly. This constitutes a violation of the risk-oriented audit approach according to IDW PS 261.

In order to determine whether the financial statements meet the requirements, the materiality of a possible misstatement for the overall statement of the annual or consolidated financial statements (IDW PS 250, new version) has to be reviewed (Marten, Quick, Ruhnke 2020, p. 320). According to IDW PS 250, new version, para. 5, accounting information is considered material if it can reasonably be

[14] For the importance of the internal control system, see Marten, Quick, Ruhnke 2020, pp. 397–399.

expected that its misstatement (including its omission) in detail or as a whole will influence the economic decisions made by the users of the financial statements based on the accounting information. This was undoubtedly the case with the TPA business. In the audit of financial statements, the concept of materiality according to IDW PS 250, new version, para. 6 states "that the audit of the annual financial statements and the management report … has to be designed to detect with reasonable assurance misstatements that, due to their size or significance, have an impact on the informative value of the financial statements for the users of financial statements." The audit has to be conducted in such a way "that false statements are detected with reasonable assurance if they are material due to their size (quantitative) or significance (qualitative) and thus have an impact on the informative value of the financial statements for the users of the financial statements."[15] This requires a search until there is no doubt about the authenticity of the audit evidence (genuineness, credibility, certainty, reliability, truthfulness). According to IDW PS 300 para. A5, poor quality audit evidence cannot necessarily be compensated for by increasing the quantity (Graumann 2020, p. 282).

6. Risks of inaccuracies and violations

According to Section 43 (4) WPO and IDW PS 200 para. 17, the auditor is obliged to maintain a critical attitude, precisely because he or she has to act in the public interest. According to IDW PS 210 para. 14, this critical attitude has to be adopted towards the audited company, its legal representatives, employees and the supervisory body. Although the audit does not constitute a fraud audit, the auditor is not allowed to rely on the credibility of the company's legal representatives and the accuracy of their statements. Rather, he is obliged to have their statements substantiated and assess them on his own responsibility. The audit is not usually a full audit, but a random sample audit (IDW PS 200 para. 19). However, this does not preclude the possibility of a particular audit subject being audited in full, for example, if it involves specific risks. The auditor is forced to "regardless of his previous experience with the client, always consider the possibility that violations could be committed" (Marten, Quick, Ruhnke 2020, p. 584).

The two terms used in Section 317 of the German Commercial Code (HGB), namely inaccuracy and violation, can also be described as accounting errors and fraud or fraudulent acts (Löw, Heyd 2024, pp. 33–38). In the auditing standards, both are covered by the term 'irregularity.' The difference between the two terms is that inaccuracies (errors) occur unintentionally, while violations (fraud or malicious acts) are committed intentionally (IDW 2000. PS 210 para. 6 and para. 7). Fraud

[15] IDW 2020, p. 1603, also p. 1601, explicitly contains references to both qualitative and (alternatively) quantitative characteristics. Section 317 (1) sentence 3 of the German Commercial Code (HGB) requires the auditor to conduct his audit in such a way that he can detect with sufficient certainty, through conscientious professional practice, any inaccuracies or violations that have a material impact on the presentation of the assets, financial position and results of operations.

includes deception (also or only) in the financial statements, damage to assets or violations of the law (Almeling, Flick, Scharr 2020, p. 33).

"Fraudulent acts and other violations of standards are undoubtedly one of the central problem areas in auditing" (Marten, Quick, Ruhnke 2020, p. 580). Missing or inefficient controls increase the opportunity for fraud. "For company management in particular, it can be easy to circumvent or override controls" (Almeling, Flick, Scharr 2020, p. 35).

IDW PS 210 deals exclusively with irregularities (inaccuracies and violations). IDW PS 210 para. 35 contains a detailed list of indicators that point to an increased risk of fraud, including (verbatim and in excerpts with relevance to Wirecard).

- Doubts about the integrity or competence of management
  - Control of the management board by one or a few individuals without an effective supervisory body in place
  - Opaque organisational structures
  - Unwillingness to improve the internal control system
  - Persistent understaffing of the accounting department
- Critical corporate situations
  - …overly expansive business activities,
  - high-risk sources of income…,
  - dependence on a small number of suppliers or customers.
- Unusual transactions
  - Transactions with a significant impact on profits…,
  - Complicated transactions or unusual accounting for transactions,
  - Transactions with related parties,
  - Excessive expenditure on agency commissions about the service received…
- Difficulties in obtaining audit evidence, such as
  - Inadequate recording or documentation of business transactions,
  - High number of discrepancies between the results of the accounting and the confirmations of third parties,
  - Evasive or difficult-to-understand information from management in response to inquiries from the auditor.
- Other circumstances, such as
  - Inadequate effectiveness of internal auditing.

"The auditor has a positive responsibility to search for fraud."[16] IDW PS 210 para. 38 requires: "The auditor is obliged to identify and assess the risks of material misstatement due to violations at the financial statement level and the level of individual statements relating to certain types of business transactions, account balances and financial statement information. These risks always represent significant risks. This means that the auditor has to gain an understanding of the relevant control measures."

[16] Marten, Quick, Ruhnke 2020, p. 584, with the terms "auditor" and "positive responsibility to search" being emphasised.

IDW PS 210 para. 39 explicitly refers to fraud, which often results from an excessive reporting of sales revenue, for example, through the posting of fictitious revenue. Therefore, IDW PS 210 para. 39 requires: "The auditor has to, therefore, assume that there may be risks of violations in connection with revenue recognition and determine which types of revenues and business transactions or statements in the financial statements that affect profit or loss may be susceptible to such risks. These risks of material misstatements due to violations have to also be treated as significant risks."

If there are indications of fraud, IDW 210 para. 58 requires the auditor to assess the circumstances and effects on the financial statements. "Unless there are indications to the contrary, it has to be assumed that the suspected irregularity is not a one-off occurrence. If a possible impact on the regularity of the financial statements has to be assumed, the auditor is obliged to obtain additional information" (IDW PS 210 para. 59). There is therefore an extended audit obligation.[17] Under no circumstances may the auditor be satisfied with unresolved risks, remaining doubts about the reliability of audit evidence or unverifiable information about the legality of the financial statements without these assessments having an impact on the audit opinion (the attestation). According to IDW PS 210 para. 72, "Consequences for the audit opinion… may also be necessary if the auditor is prevented by circumstances beyond the company's control from determining whether there is an inaccuracy or a violation."

7. Required audit procedures and deficiencies in the audit of the financial statements

The fiduciary relationships had to be a mandatory focus of the audit, with very intensive audit procedures. "A fiduciary relationship always carries an increased risk, as its purpose may be to conceal financial circumstances – even beyond the scope of the audit."[18] This is all the more true given that Wirecard's earnings situation depended largely on its business relationship with only three business partners.

In this regard, it is not sufficient to merely note that the auditors analysed the performance obligations that Wirecard had to fulfil, the liability risks that Wirecard had contractually assumed and the collateral that Wirecard had to provide based on the trust agreements, if no conclusions were drawn from this due to the numerous

[17] See Graumann 2020, p. 214, which also includes a reference to the involvement of legal advice or other experts.

[18] Schüttler 2020, pp. 1862–1863, here p. 1863 with emphasis on "increased risk" and "conceal of financial circumstances", which further points out that auditors are subject to increased due diligence obligations under money laundering law and have to comprehensively determine who is the beneficial owner of the trust property (§ 15 GwG, Anlage 2, Faktoren für ein potenziell höheres Risiko). Quite similar Schüttler, Die Treuhand im HGB-Abschluss, Weder Treugeber noch Abschlussprüfer müssen über Treuhandverhältnisse berichten – das muss sich nach Wirecard ändern! In: Steuer- und Bilanzpraxis (StuB), 2020, pp. 671–672, here p. 671.

anomalies. Given the importance of the TPA business for Wirecard's success (and existence), on-site visits to the "external business partners" were absolutely necessary, but in this case, not sufficient to obtain appropriate and sufficient audit evidence (IDW 2000, PS 300 new version, para. 5 and para. 7).

When auditing fiduciary relationships, the first step is to examine the (un)usual nature of establishing a fiduciary relationship in general, the structure of the fiduciary agreement, the terms of the fiduciary agreement about the respective services and their inherent risks, the trustworthiness of the trustees, the creditworthiness of the bank(s) managing the escrow accounts and, ultimately, the existence of the trust property. This includes an examination of whether the escrow accounts are fully documented in the books of the Wirecard companies, whether the amounts posted to the escrow accounts are traceable, whether the balance sheet items on which the amounts in the escrow accounts are reported comply with the regulations (in this case, the designation as cash assets) and, finally, whether the disclosures required for understanding and required by IFRS have been disclosed.

If there are indications of inaccuracies and violations, the auditor is obliged to assess, based on IDW PS 210 para. 58, which circumstances led to these fraud risks and what effects this may have on the accounting. As part of the audit, the auditor has to perform the audit procedures in such a way that he obtains sufficient and appropriate audit evidence to draw reasonable conclusions on the basis of IDW PS 300, new version, para. 5. In this respect, the auditor is required under IDW PS 300, new version, para. 7 to plan and perform the audit procedures in such a way that sufficient and appropriate audit evidence is obtained under the circumstances of the individual case. In doing so, the relevance and reliability of the information have to be taken into account in accordance with IDW PS 300, new version, para. 8. Relevance means that the audit evidence has to be appropriate to the purpose of the audit procedures. "Reliability… is influenced by the nature and source of the information and by the circumstances under which it is obtained" (Graumann 2020, p. 285).

In the case of information from the company, audit evidence regarding the accuracy and completeness of the information has to be obtained in accordance with IDW PS 300, new version, para. 10. If the auditor has doubts about the reliability of audit evidence or if doubts arise based on the overall circumstances – as in this case – IDW PS 300, new version, para. 12 requires that the adjustments or additions to the audit procedures necessary to clarify the facts be determined. IDW PS 300, new version, para. A3 states that interviews alone do not normally provide sufficient audit evidence that there are no material misstatements at the assertion level, nor do they provide reliable statements about the effectiveness of controls.

Nevertheless, no further audit evidence appears to have been obtained. This is all the more serious when the number and content of the indicators of fraud identified in accordance with IDW PS 210 para. 35 are taken into account. It appears that the auditors performed audit procedures as if the company showed no signs of fraud. To assess fraud risks, the auditors conducted a structured analysis in which members of the management board, supervisory board, head of internal audit, head

of the legal department and head of accounting were interviewed. However, this statement-based audit evidence is meaningless if, due to numerous fraud indicators, there is reason to fear that at least the most senior members of the company may be involved in such activities. This contradicts IDW PS 300, new version, para. 43. As expected, the findings obtained from this are irrelevant.

According to IDW PS 300, new version, para. A29, the reliability of information is influenced by its type and origin, as well as by the circumstances under which it is obtained. According to IDW PS 300, new version, para. A29, the reliability of copies, digitised documents or documents converted into electronic form depends on the controls over their creation and maintenance. With regard to the sufficient scope of the selection of items to be audited, IDW PS 300, new version, para. A48 explicitly mentions full audit, deliberate selection and sampling, and points out that the application of one of these forms of audit or a combination thereof is appropriate depending on the circumstances, such as the risks of material misstatements about the audited statement. In this context, a full audit in accordance with IDW PS 300, new version, para. A49 may be appropriate and necessary if there is a significant risk and other procedures do not provide sufficient and appropriate audit evidence. In this respect, the appendix to IDW 300, new version, points out that, regardless of the choice of terms, statements have to be made on account balances at the end of the period that may relate to the existence of and attribution to the company based on existing rights to assets.

In the case of fiduciary relationships, the auditor is obliged to determine in particular:

- "that the fiduciary assets reported in the balance sheet exist (existence);
- that the fiduciary assets are included in full in the balance sheet (completeness);
- the trust assets are properly presented in the financial statements (accuracy, valuation and allocation, as well as disclosure and presentation and, if applicable, notes);
- the reporting entity has beneficial ownership of the trust assets and control over them (rights and obligations)" (Marten 2020, pp. 1465–1469, here p. 1466).

Obtaining third-party confirmations can help obtain relevant and reliable audit evidence. According to IDW PS 302, new version, para. 6(a), this is audit evidence that the auditor obtains directly as a written response from a third party in paper form or using an electronic or other medium. "In such cases, the work of third parties has to be assessed to determine whether it is appropriate for the purposes of the audit" (IDW 2020, p. 1620; Marten 2020, pp. 1465–1469, here p. 1468). IDW PS 302, new version, para 8 requires that the auditor maintain control over the confirmation process. According to IDW PS 302, new version, there are no additional requirements for electronic confirmations. However, given the ease with which third-party confirmations in electronic form can be altered, it is important to "carefully observe the obligation to maintain control over the confirmation process" (IDW 2020, p. 1626).

If the legal representatives refuse to allow the auditor to send a confirmation request, the procedure is, of course, not terminated for the auditor (such a refusal can be seen indirectly in this case in the rather unusual contractual arrangements with the TPA business partners regarding the escrow accounts). Rather, according to IDW PS 302, new version, para. 11(c), he has to perform alternative audit procedures. If the auditor is unable to obtain relevant and reliable audit evidence through alternative audit procedures, the auditor is obliged to enter into discussions with the supervisory body on the basis of IDW PS 302, new version, para. 12. In addition, the auditor is required to decide on the effects on the performance of the audit and the audit opinion, applying the principles of IDW PS 250, new version, IDW PS 261, new version, and IDW PS 400. Even if the auditor has doubts about the reliability of the response to an assurance request or should have doubts based on the overall circumstances, as in the present case, he has to obtain further audit evidence in order to eliminate these doubts in accordance with IDW PS 302, new version, para 14. Furthermore, his (original) assessment of the associated risks of error, including the risk of violations, has to be reconsidered in accordance with IDW PS 302, new version, para. 15.

Special provisions apply to bank confirmations. Under IDW PS 302, new version, para. 26, these have to be obtained for all types of business relationships between a company and credit institutions. There are no exceptions under IDW PS 302, new version, in the given circumstances. Wirecard had a business relationship with the banks involved – albeit not directly in formal terms, because the trust agreements were structured in an unusual way – but indirectly. According to IDW PS 302, new version, para. 21, the information to be obtained via a bank confirmation includes, among other things, existing accounts and their balances, existing credit lines and collateral provided. "When sending bank confirmation requests, however, it is often observed (for example, in the case of foreign credit institutions or in cases where credit institutions engage external service providers to respond to confirmation requests) that the standardised information requested is not answered in whole or in part. In such cases, the auditor may, within the scope of his professional judgement and in accordance with his risk assessment, determine the extent of the alternative audit procedures required under paragraph 16 for the information not received" (IDW PS 302, new version, para. A28).

In the present case, the auditor first had to question the use of escrow accounts (Schüttler 2020b, pp. 1862–1863, here p. 1863; Löw, Heyd 2024, p. 69), as these are not necessary for the implementation of the business model, at least not to this extent.

"The security deposits in the escrow accounts were, as indicated in the contracts, retained for a total loss, i.e. a counterparty risk."[19] The amount of the security deposit was 33% of the commissions on the underlying transactions (Untersuchungsausschuss 2021, p. 376). This means that for a customer transaction involving

[19] This was the statement made by the Head of EY's policy department to the committee of inquiry. See Untersuchungsausschuss 2021, p. 376.

an amount of 100 Euros and an assumed commission of 10% of the commission amount of 10 Euros, 33%, or 3.33 Euros, was retained. In order to arrive at an amount of, for example, 1.9 billion Euros in this way, an incredibly high transaction volume would have been required, which would have had to be verified by the auditor.[20]

The retention of large amounts as security for chargeback claims and fines was incomprehensible given the very low risk for Wirecard and would have required more detailed audit procedures. The low risk was also evident from the fact that Wirecard was not actually called upon in the financial years 2015 to 2019. "In fact, the business with third-party providers does not give rise to any claims on the collateral provided, which would justify the high level of collateral provided by Wirecard over time" (Wambach-Report, p. 21). "The provision of further collateral through the reallocation of receivables until mid-2015 is contrary to the contractual provisions and business experience. The model of providing further collateral (…) means that, as business increases, Wirecard receives hardly any money from this business model due to steadily increasing collateral requirements. Wirecard, on the other hand, has to finance the steadily growing collateral volume with equity and debt capital. Such action appears very unusual against the backdrop of economic considerations" (Wambach-Report, p. 51).

Granting very high amounts as collateral for an extremely low risk is suspicious. The auditor should have investigated this. EY had also noticed that the security deposits were very high – namely in previous years, when the escrow accounts were not yet used so extensively and were reported as receivables. At that time, EY criticised that the receivable positions of the individual TPA business partners were too high and that the solvency of these TPAs did not justify the amount of the receivables.[21]

The three TPA partners, which were of central importance to this business activity and posed an existential risk to Wirecard, also appear to have been subject to little in-depth scrutiny. Based on public information, occasional (non-annual) on-site visits, and the conclusion that the three TPA business partners were independent of Wirecard's revenues, the auditor simply trusted that "there was no particular fraud risk about the existence and amount of revenues from Wirecard's TPA business." From EY's point of view, these appear to have been sufficient checks to assume that the TPA partners were independent and, based on this, to be able to trust that the reported revenues were correct.

"Despite the close relationships with the TPAs, no (audited) annual financial statements of the TPAs were obtained in the period from 2015 to 2017, as evidenced by the auditor's working papers … Analytical audit procedures, such as multi-year

[20] See the example given by the Head of EY's policy department to the Committee of Inquiry, Untersuchungsausschuss 2021, p. 376.

[21] According to a statement made by the Head of Accounting of Wirecard to the committee of inquiry. See Untersuchungsausschuss 2021, p. 216.

comparisons, post-calculations, etc. of the financial data, are not apparent in the auditor's working papers."[22]

As no sufficient evidence of customers or individual transactions could be found at Wirecard and its group companies, Wirecard was unable to verify the plausibility of the transfers to the escrow accounts by the TPA partners (Wambach-Report, p. 78 as well as Wambach-Report, Addendum II, p. 19). However, this was the audit approach taken by EY. "As far as I could see, we always audited the escrow accounts in the context of revenue recognition, as evidenced by the working papers."[23] However, a direct audit was not possible. The existence and amount of revenue thus appear to have been verified only indirectly through balance confirmations.

The basis for posting revenues, expenses and receivables from the TPA business at Wirecard was credit notes. These monthly or quarterly credit notes listed the transaction volume processed for Wirecard merchants and the fees incurred by the TPA partner for this. The sales revenues from the TPA business posted in the accounts could be verified by the auditors by inspecting the credit notes from the TPA partners. It is difficult to imagine how this could be brought into line with the principles of proper accounting in accordance with Section 238 (1) of the German Commercial Code (HGB). The collection of commissions constitutes business transactions for which individual proof has to be provided.

In terms of content, the auditors relied entirely on information provided by TPA business partners, which was only subject to rudimentary audit procedures. Given the importance of TPA partners for Wirecard's solvency, the requirements of a risk-oriented audit in accordance with IDW PS 261, new version, in conjunction with IDW PS 210, new version, were clearly violated.

The contractual partners are of particular importance in a fiduciary relationship. The trustee has a special function of trust. He is usually selected with particular care. "Lawyers, notaries or a bank are often considered as trustees" (Marten 2020, pp. 1465–1469, here p. 1465).

From 2015 to 2019, the trustee was not a German or even a European company, an international auditing firm or a renowned law firm, but a company called

[22] Wambach Report, p. 71. "The two audited financial statements of the Senjo Group for 2016 and 2017 obtained by the auditor cannot be used in the respective audits, as they will not be available to Wirecard until approximately six months after the auditor's certificate." Wambach Report, Addendum II, p. 24. In connection with its 2020 investigations into the annual financial statements of TPA business partners, KPMG states: "As part of the investigation, Wirecard provided us with audited annual financial statements of TPA Partner 1 as of December 31, 2018, as well as audited annual financial statements of TPA Partner 3 as of December 31, 2016, December 31, 2017, and December 31, 2018. Wirecard did not provide us with any annual financial statements of TPA Partner 2 until the conclusion of our investigation, although a corresponding right to information existed as of 2018 according to the contractual agreements." KPMG, p. 16. KPMG also received no evidence of a reliability assessment for the subsequent trustee during the investigation period. See KPMG, p. 17.

[23] Statement made by the Head of EY's policy department to the committee of inquiry. See Untersuchungsausschuss 2021, p. 376.

Citadelle Corporate Services Pte. Ltd. (hereinafter also referred to as Citadelle). Due to the special position of trust held by the trustee, numerous jurisdictions require a specific professional background or even a license to carry out the activity. It would have been imperative to check whether a license was required in Singapore and whether the trustee had one. According to Singapore's Trust Companies Act,[24] only those who hold the license required by this law may act as trustees. The owner of Citadelle, Rajaratnam Shanmugaratnam, did not have a license and was therefore not allowed to carry out any fiduciary activities in Singapore at all. No annual financial statements were available for Citadelle for the entire period (KPMG 2020, p. 17). It is therefore incomprehensible how any statement could have been made about the trustee, regardless of whether it was reliable or unreliable (Lenz 2020a, pp. 1465–1469, 2085–2089, here p. 2088).

With proper auditing procedures, it could not have remained hidden who was behind Citadelle, especially since a large auditing firm with an international network and offices in Singapore was commissioned to audit the financial statements, for which on-site research would therefore have been extremely easy. After all, several hundred million Euros, amounting to over a billion, were managed by the trustee. "If the auditor considers … basing his audit opinion on confirmations from the trustee, he is obliged to assess the trustee's reliability or verify the reliability assessment of the audited company as the trustor" (Lenz 2020a, pp. 1465–1469, 2085–2089, here p. 2088). "Confirmations received directly from the bank (original documents) are more reliable than confirmations received indirectly via the trustee. Only if the auditor has good reason to believe that the audit evidence obtained through the trustee is equally reliable and convincing may he obtain the confirmations through the trustee. The latter, in turn, depends on the assessment of the trustee's reliability" (Lenz 2020a, pp. 1465–1469 i 2085–2089, here p. 2088).

If, in this context, the necessity of a license was not examined, this constituted a violation of IDW PS 230 para. 14, which requires the auditor to obtain knowledge of the legal environment of the company being audited within the scope of the audit, namely of "legal provisions of material significance to the company."[25]

Despite these overall circumstances, EY only obtained audit evidence for the 2016, 2017 and 2018 financial years in the form of confirmations from the TPA partners

[24] The Trust Companies Act is available under https://sso.agc.gov.sg/Act/TCA2005.

[25] See also IDW (Ed.), WP-Handbuch, 17th edition, Düsseldorf 2020, p. 1475. Answers to the following obvious questions about the trustee should be obtained as audit evidence
- „What is their reputation?
- How long has they been in existence? How can they be contacted?
- Is there a permanent business premises, offices, etc.?
- How long has they been working for the audited company?
- Why was they selected?
- What regulations are they subject to?
- Will they also be audited? By whom?"

Schüttler, Prüfung von Treuhandkonten auf Vorhandensein, in: Der Betrieb, 2020, pp. 1862–1863, here p. 1863.

and the trustee.[26] Furthermore, TPA revenues that were only reported by the TPA partners after the balance sheet date were also included in the annual financial statements (Untersuchungsausschuss 2021, p. 215).

"The reliability of this audit evidence depends to a large extent on the trustworthiness of the TPAs" (Wambach-Report, p. 78; almost identical in Wambach-Report, Addendum II, p. 20). However, EY's working papers reveal numerous peculiarities.[27]

- The confirmations from the trustee Citadelle were not addressed directly to the auditor itself in 2015 and 2016.
- The balance confirmation from TPA business partner Al Alam, dated 28 March 2016, identifies Wirecard's subsidiary Wirecard Technologies GmbH as the beneficial owner, even though the trust agreement was concluded with Al Alam by another subsidiary, namely CardSystems Middle East FZ-LLC.
- The email addresses in the letterhead of the trustee Citadelle vary in 2016 between 'shan.citadelle@com.sg' and citadelle33@yahoo.sg.com, as do the names of the contact persons.
- The dates on the confirmations from 2015 follow the English format, while from the end of 2016 – after the letterhead was changed – they were written in the German format.
- In a balance confirmation dated 25 May 2016, a balance for the other TPA partner Al Alam is shown for 31 March 2016 on an account attributable to the TPA partner Senjo (involving no less than 41 million Euros). Wirecard UK & Ireland is named as the beneficial owner. The confirmation itself is made for Al Alam by another person who (strangely enough) also acts as secretary at Senjo. In contrast, the same account is assigned to CardSystems Middle East FZ-LLC in a confirmation dated 2 December 2016. This means that within the same year (2016), the beneficial owner of the escrow account changed.
- In December 2016, Al Alam made an unusually large payment to the escrow account (for €80 million).
- Confirmation is available for one of the escrow accounts as of 22 November 2016, while no confirmation is available for the end of the year. In the following year (2017), this account was used for other purposes and was no longer used as an escrow account for the TPA business from the end of February 2017.

With specific reference to the consolidated financial statements for the 2018 financial year, the following additional special features arise (Wambach-Report, Addendum II, p. 18).

- The balance confirmation was received on 11 April 2019, but is dated 12 April 2019.
- Once again, the date format is given in the German style.

[26] According to the statement of the Head of EY's policy department to the committee of inquiry. See Untersuchungsausschuss 2021, p. 376 and p. 377.

[27] For the following special features, see Wambach-Report, p. 77.

- In contrast to previous years, a full stop is placed after the company name and the respective legal form.
- The balance confirmation only confirms amounts, but no account numbers are given for the balances.
- The bank where the credit balances are said to have been held is not named.
- "No balance confirmation requests were made directly to the merchant" (Wambach-Report, Addendum II, p. 20).

According to EY's working papers, these special features were not investigated. The non-independent TPA partners were therefore only asked whether they were independent, and the accuracy of the trust assets was then relied upon. These appear to have been the audit measures taken to satisfy the risk-oriented audit approach. EY completely refrained from obtaining a bank confirmation during these years.

The contract with Wirecard did not provide for direct contact with the bank managing the escrow account or any right to information from the bank (Untersuchungsausschuss 2021, p. 378). "The trust agreement does not stipulate any rights to information, such as monthly sending of account statements, bank balance confirmations, proof of the establishment of escrow accounts, or similar for Wirecard" (Wambach-Report, p. 77). Precisely because the amounts involved were existential for Wirecard and the trust agreements granted Wirecard virtually no rights, the auditor should not have been satisfied with this.

Given the exceptional importance of the TPA business for Wirecard's earnings situation, the account-holding bank played a central role. In corporate practice, it is virtually impossible to conduct such a significant business activity through a single bank and take on an extreme credit risk. The economic environment in which the business activities took place was the Asian region. Nevertheless, the account was held in Euros. This should have given the auditor food for thought.

Apart from the fact that holding an account in Euros is unusual for activities in the Asian region, the question of the terms and conditions of the account arose. At least in Europe, it was common practice in a low-interest-rate environment to charge negative interest on balances of a certain size. Companies, therefore, usually endeavoured to maintain only the absolutely necessary minimum amount of credit. In this sense, it would have been necessary to check whether the account management terms and conditions were in line with market conditions. If necessary, additional audit evidence would have had to be obtained to allow for a reliable audit opinion. After all, banks would have foregone very high earnings without charging negative interest rates on balances ranging from several million to over a billion Euros.

It was therefore not sufficient to obtain confirmations from third parties, specifically only from the trustee.[28] "In connection with the audit of the balances at credit institutions, the auditor has to, at the same time, obtain an overview of the company's other business relationships with credit institutions. To this end,

[28] Agreement also by Schüttler 2020b, pp. 1862–1863, here p. 1863.

bank confirmations have to be be obtained for all types of business relationships of the company being audited with credit and financial services institutions as well as for all business relationships with financial companies within the meaning of Section 1(3) KWG" (IDW 2020, pp. 1586, 1789). "In this respect, obtaining bank confirmations is a necessary and generally appropriate measure for assessing whether the company's business relationships with credit institutions are fully recorded" (IDW 2020, p. 1789).

If a view in the literature assumes that obtaining confirmation from trustees is normally sufficient,[29] this does not apply in the present case because 'normal cases' are assumed to involve amounts of no existential significance. In the case of Wirecard, however, the facts were anything but 'normal.' And under the incorrect assumption of a 'normal' case, EY also quite obviously schematically conducted its audit of Wirecard, disregarding the risk-oriented audit approach, the numerous fraud indicators, the questionable reliability of the trustee (without a licence), the many inconsistencies in the confirmations of the TPA business partners, and the significance of the means of payment about the total balance sheet total, as well as the earnings situation and significance for Wirecard's (in) solvency. Further audit procedures were imperative in order to arrive at a reliable audit opinion in view of the very specific and conspicuous circumstances. This is precisely what IDW PS 261, new version, in conjunction with IDW PS 210, new version, requires.

If bank confirmations were not obtained under these circumstances, there could be no sufficient and appropriate audit evidence within the meaning of IDW PS 300, new version, para. 7. Due to the questionable trustworthiness of the trustee Citadelle alone, it was imperative to insist on obtaining bank confirmations directly from the account-holding bank.[30] It would therefore have been essential to have the bank released from its duty of confidentiality in this respect. After all, according to Section 320(2) of the German Commercial Code (HGB), the auditor may request all information and evidence necessary for a thorough audit. "If the trustor cannot even enforce a simple direct bank disclosure by instruction from the trustee, it is more than questionable whether a genuine trust relationship exists at all, which entitles the trustor to recognise the trust property as economic ownership in the balance sheet" (Lenz 2020a, pp. 1465–1469, 2085–2089, here p. 2087).

Given the central importance of the business activity for Wirecard, even without the special circumstances relating to the trustee and the account-holding bank, it could only be assumed in extremely exceptional cases that the auditor could be satisfied with the corresponding confirmations. This would mean that a volume of sales and earnings that was of existential importance for the business success of the entire group and could jeopardise the going concern assumption could be determined without the auditor performing their own audit procedures. "The third-party acquirer business grew very strongly and became a major source of success

[29] See Marten (2020). See also the – relevant – response by Lenz 2020, pp. 1465–1469, 2085–2089.
[30] Agreement by Lenz 2020b, pp. 546–552, here p. 552.

for the entire group" (Wambach-Report, p. 21). After all, it accounted for more than 50% of sales and more than 95% of EBTA,[31] as well as virtually the entire cash balance and 25% of the balance sheet total.[32] This was a clear violation of IDW PS 300, new version, para. 5, according to which audit procedures have to be carried out to obtain sufficient and appropriate audit evidence for reasonable conclusions to form an audit opinion. The legal obligation under Section 317 (1) of the German Commercial Code (HGB) to conduct the audit in such a way as to identify any inaccuracies and violations was thus massively disregarded.

8. Audit opinion and audit report

At the end of an audit, the auditor forms an audit opinion. For external users of the company's financial statements, the opinion is visible in the audit opinion. Until 2017, IDW PS 400 applied, which was replaced by IDW PS 400, new version, at the end of November 2017. Modifications to the audit opinion have been newly regulated in IDW PS 405 at the same time.

According to IDW PS 400 para. 8, the audit opinion is required to contain a final assessment of whether the accounting and the annual financial statements (or consolidated financial statements, if applicable) and the management report (or group management report, if applicable) comply with the legal requirements, including the principles of proper accounting or IFRS, as well as other national regulations. According to IDW PS 400 para. 14, the audit opinion may only be issued after the audit required for the assessment has been materially completed, based on the auditor's professional judgement. According to IDW PS 400 para. 41, the audit result may take the form of an unqualified or qualified audit opinion, or a disclaimer of opinion due to objections or serious audit impediments (Marten, Quick, Ruhnke 2020, pp. 718–727). IDW PS 400 para. 68a states that the prerequisite for a refusal due to audit impediments is that the auditor, after exhausting all reasonable possibilities for clarifying the facts, is unable to arrive at an audit opinion – possibly qualified – with a positive overall statement on the financial statements. Due to the importance of the audit opinion, it has to be affixed with a professional seal in accordance with IDW PS 400 para. 86.

"If, in exceptional cases, the auditor can't obtain an overall opinion within the scope of the audit (e.g. due to obstacles to the performance of audit procedures), it has to be clarified whether this is due to circumstances that constitute an important reason for terminating the audit engagement within the meaning of Section 318 (6) HGB. If an audit engagement is terminated, neither an audit opinion nor a certificate shall be issued, but a report on the results of the audit performed to date shall be

[31] According to the Global Head of Compliance of Wirecard to the committee of inquiry, see Untersuchungsausschuss 2021, p. 235.

[32] According to a statement of the Head of the Supervisory Board of Wirecard to the committee of inquiry. See Untersuchungsausschuss 2021, p. 294.

provided in accordance with section 318(6) sentence 4 HGB (see IDW PS 450 para. 150 ff)" (IDW PS 400 para. 10).

With regard to the TPA business, the auditor performed completely inadequate audit procedures to obtain sufficient and appropriate audit evidence on which to base a final opinion. In this sense, it is completely incomprehensible on what basis an unqualified audit opinion could have been issued in the TPA business (and, incidentally, not only in this business).

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RippleNet as a Tool for Handling International Transfers

Abstract

Purpose: The article aims to evaluate RippleNet as a tool for processing cross-border payments, with particular emphasis on its ability to provide fast and predictable settlement, as well as its potential role in the modernization of global payment systems.

Problem and research method: Traditional models based on the SWIFT system, which serves only as a communication network and requires settlement within domestic payment infrastructures, are associated with high costs, low transparency, and long settlement times. In response to these limitations, blockchain technology has begun to be applied in cross-border payments. This study uses data from the public XRP Ledger (XRPL) to analyze settlement time, the structure and topology of the payment network, the concentration of activity, and transaction dynamics. The empirical findings are then combined with insights from the literature and presented in the form of a SWOT analysis.

Results: RippleNet enables quasi-instant settlement. The average transaction finalization time is 3.87 seconds, with maximum delays not exceeding 9 seconds. At the same time, network activity is highly concentrated, with a small number of nodes and communities accounting for the majority of transaction volume, as confirmed by the calculated Gini coefficient (0.969). The analysis shows that RippleNet functions in practice as a scale-free network, in which institutional hubs play a dominant role. The main benefits of the system include speed, cost reduction, and transparency, while key limitations involve regulatory risks and heavy reliance on a small group of dominant participants.

Conclusions: RippleNet demonstrates characteristics that make it an innovative solution for cross-border payments and a potential technological bridge in the context of CBDC integration. However, its broader adoption will depend on regulatory adaptation, addressing the problem of activity concentration, and the readiness of financial institutions to implement distributed settlement systems.

Keywords: Ripple, Blockchain, Cryptocurrency, Cross-border payments, XRP

JEL Codes: G21, E42, M15

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Introduction

Global economic interconnections result in the intensification of cross-border exchange, including financial flows, and in particular international money transfers, which for decades have been handled primarily through the SWIFT system. Although this system is considered a standard in banking, it has been criticized for its complexity, high cost, and low efficiency in terms of settlement time and transparency (Cipriani et al. 2023).

An alternative to SWIFT is blockchain-based solutions such as Ripple. It should be emphasized, however, that SWIFT is a communication system supporting cross-border payments but does not itself transfer value, whereas RippleNet simultaneously serves as both the communication and settlement layer through the use of the XRP Ledger. The RippleNet platform, utilizing the digital currency XRP, reorganizes the existing paradigm of international payments by providing near-instant transaction finality, cost reduction, and the elimination of intermediaries (Ahmadova and Erek 2022; Kaygin et al. 2021). Although Ripple is not the only project bridging the world of finance and blockchain technology, its implementation by more than 100 financial institutions and numerous partnerships with central banks make it an interesting research case (Islam et al. 2022; Hashemi Joo et al. 2020).

The technological foundation of Ripple is a decentralized ledger (XRP Ledger), which records all transactions and is updated by a network of validators using a consensus mechanism that is neither the classical "Proof of Work" nor "Proof of Stake," but a specifically designed Ripple consensus algorithm (Ripple doc, n.d.). As a result, Ripple can achieve high scalability and energy efficiency while maintaining data integrity (Hashemi Joo et al. 2020). Transactions on the network are verified and secured through the RPCA (Ripple Protocol Consensus Algorithm) consensus mechanism. Transaction confirmation is carried out by validating nodes. Any user may set up their own node within the network, however, it is the institution using the XRPL that determines which nodes will participate in the consensus process within its system. A transaction is confirmed when all nodes on the UNL (Unique Node List) that is, only those directly selected by the institution approve and broadcast the same set of transactions to the main ledger. At that point, the transaction is confirmed and recorded on the blockchain. This design of blockchain validation processes has significantly improved performance. According to developers, RippleNet's architecture allows for processing up to 50,000 transactions per second (Ripple doc, n.d.). However, the actual network activity remains significantly lower than its declared throughput (up to 50,000 TPS). This indicates that XRPL operates with a substantial performance reserve rather than at the limits of its technical capacity. Nevertheless, this speed is sufficient for global application in the financial services sector. The Ripple system also utilizes its native cryptocurrency, XRP, which serves as a bridge asset in transactions between two different currencies. XRP eliminates the need to maintain an account in the target currency and removes the necessity of involving correspondent banks (Ahmadova and Erek 2022).

Importantly, Ripple does not aim to exclude traditional financial institutions. It assumes cooperation with banks and integration with existing systems (Rosner and Kang 2015). Ripple is used, among others, in retail payments, remittances, and as a tool for optimizing liquidity in interbank settlements. This solution has attracted the interest of numerous financial institutions worldwide, and its partner network includes commercial banks, fintech companies, and payment system operators (Ripple, n.d.-b).

The purpose of this article is to evaluate RippleNet as a tool for handling international money transfers. The study includes the measurement of transaction finalization speed, the analysis of the dynamics of volumes and the number of operations, the assessment of the topology of the payment network (including the identification of hubs and communities), and the degree of concentration of value flows between participants. The obtained results are compared with the findings from the literature review, and the entire analysis is presented in the form of a SWOT framework, which allows for a comprehensive assessment of both the strengths and weaknesses of RippleNet, as well as the external opportunities and threats to its further implementation

Research Methodology

The conducted empirical study is based on the analysis of transactional data derived from the public XRP Ledger (XRPL), which constitutes the technological foundation of RippleNet's operation. Unlike traditional payment databases, the XRPL is a distributed ledger, meaning that each block (so-called ledger) contains complete information about account balances and the set of approved transactions.

The source data were obtained directly from the XRPL using proprietary C++ code developed on the basis of the open-source GetLedger project but significantly modified to enable the automatic retrieval of a larger volume of data. While the original solution allowed for downloading only a single specified ledger, the implemented modifications made it possible to iteratively retrieve entire ledgers (based on the *complete_ledgers* value) and to save only those records that contained actual transactions. The data were stored in JSON files including ledger headers and detailed transaction information.

In the next step, the collected sample comprising 1,000 ledgers retrieved on August 29, 2025, was processed using a fully proprietary analytical script written in Python. This script enabled transaction parsing, data structure construction, and the calculation of key quantitative indicators in three main areas: payment network topology, transaction value distribution, and flow dynamics.

The first stage of the analysis involved loading raw data containing information on *Payment*-type transactions that is, actual value transfers between addresses within the network. From these data, an event table was constructed, including sender and receiver identifiers, transaction value in XRP, transaction fees, and timestamps.

The second stage of the study involved network analysis. In line with the approach of network economics, XRPL participants were treated as nodes in a directed graph, while transactions were represented as edges connecting the sender and the receiver. For each node, basic degree measures were calculated (in-degree, out-degree, and total degree). To capture the social structure of the network, the Louvain algorithm was applied, allowing for the identification of communities of nodes with stronger internal connections. The next area of analysis concerned transaction value characteristics. Particular attention was given to the concentration of activity, i.e., assessing what portion of the total payment volume was attributed to the largest participants. For this purpose, volume shares were calculated for the top-N group of nodes (N = 1, 5, 10). Additionally, the concentration distribution was visualized using the Lorenz curve and the Gini coefficient, which made it possible to assess the degree of inequality in the distribution of activity among participants. The third area of the study focused on temporal analysis. For each ledger, the number of transactions and their total volume in XRP were calculated, which enabled the construction of time series describing network activity and the identification of periods of increased load.

The results were presented in the form of a SWOT analysis, which integrated both the author's own research findings and information obtained from the literature review on RippleNet. This combination made it possible not only to provide a synthetic overview of the strengths and weaknesses of the Ripple network but also to identify the opportunities and threats arising from its development and implementation potential in the financial sector.

The analytical methods employed were selected to enable an assessment of the Ripple network from the perspective of its suitability as an infrastructure for handling international money transfers. Topological analysis allows for the identification of nodes of central importance that play a dominant role in the structure of the transactional network. The analysis of transaction values and concentration makes it possible to evaluate whether the network fosters distributed competition or exhibits monopolistic tendencies. Meanwhile, temporal analysis provides insight into the system's dynamics and its capacity to handle flows under varying load conditions.

Literature Review

In response to the limitations of the traditional cross-border payment model, blockchain-based solutions have begun to emerge. One of the most recognizable projects in this area is Ripple – a system designed to improve global financial transfers while maintaining compliance with regulatory requirements (Kaygin et al. 2021). Ripple uses its own communication protocol (Ripple Protocol, also known as RTXP – Ripple Transaction Protocol), which enables the instant transfer of value in various currencies, both fiat and digital. The RippleNet network allows transactions to be settled within a few seconds, which represents a significant advantage over systems based on SWIFT (Qiu et al. 2019; Islam et al. 2022).

One of the most frequently cited cases of RippleNet implementation is the Spanish bank Santander, which deployed the One Pay FX application enabling fast international transfers for retail customers in selected European and South American countries (Ahmadova and Erek 2022) and benefits from its advantages. In Asia, a significant role is played by the Japanese financial group SBI Holdings, which not only uses RippleNet to execute transfers but also co-founded with Ripple a joint venture SBI Ripple Asia. Within this collaboration, an interbank payment system is being implemented in Japan and South Korea (Ahmadova and Erek 2022). Another example is IndusInd Bank from India, which adopted Ripple technology to improve cross-border services for corporate and institutional clients (Kaygin et al. 2021).

The implementation of RippleNet most often takes place in a pilot form or within a limited geographical scope. Financial institutions test RippleNet in selected currency corridors, such as between Asia and Latin America, in order to assess its efficiency and compatibility with existing back-office systems (Xia and Wang 2022). In many cases, this is not a complete replacement of existing solutions but rather a complement to them, particularly in the area of high-frequency or low-value settlements. Available information suggests that the greatest benefits from implementing RippleNet are achieved by institutions operating in regions with underdeveloped payment infrastructure, as well as by companies providing remittance services, where speed and cost are key factors for competitiveness.

The literature also highlights the potential of RippleNet as a solution that could support the future integration of central bank digital currencies (CBDCs). Owing to the transparency of the XRPL and the public recording of all transactions, the system can facilitate regulatory oversight and auditing, which constitutes a significant advantage in designing financial infrastructure that complies with legal requirements. Authors also point out that the use of RippleNet is not limited solely to the banking sector. It is increasingly attracting the interest of non-bank institutions, such as money transfer companies, for which low costs and transaction speed are key factors. At the same time, the lack of a clear legal status for XRP in many jurisdictions indicates the need for close cooperation with regulators as a prerequisite for the further expansion of RippleNet (Adrian et al. 2023). Meanwhile, a World Bank report indicates that the development of cross-border applications of CBDCs may significantly reduce costs and shorten settlement times; however, its success will depend on international coordination and regulatory harmonization (World Bank 2021).

Research Results

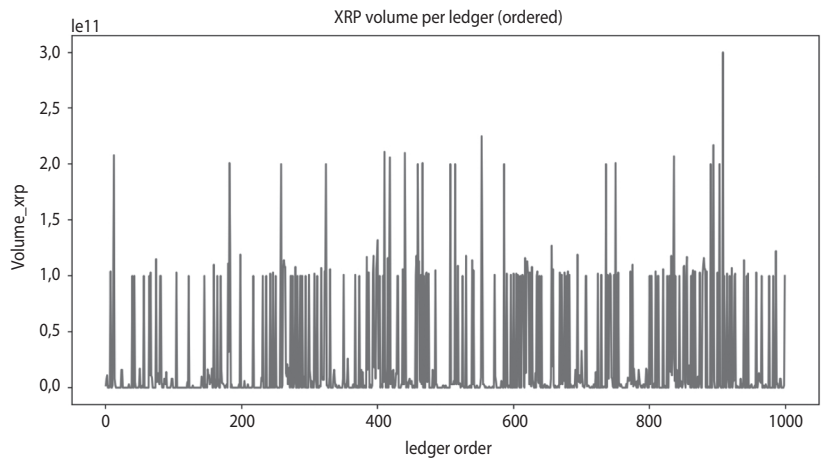
The conducted empirical analysis of the XRPL made it possible to assess the structure and dynamics of the Ripple network from three perspectives: transaction volume, payment network topology, and the distribution of value and concentration of activity. The results indicate clear centralization tendencies, an uneven distribution of activity among participants, and the occurrence of periods with significant intensity of flows.

Transaction Finalization Time

In the Ripple network, the process of closing a block (ledger close) is equivalent to transaction finalization—upon its completion, all operations recorded within it acquire a final status and cannot be reversed. Data on the rhythm of consecutive ledger closures in the XRPL show that the RippleNet network is characterized by a highly stable and predictable block finalization mechanism. In a sample of 999 observations, the average time between consecutive ledgers was 3.87 seconds, with a median of 1 second. The percentile values confirm this regularity: the 90th, 95th, and 99th percentiles all reach the same level of 9 seconds, which means that even during peak network load, the finalization time did not exceed this limit. The minimum recorded interval was 1 second, and the maximum was also 9 seconds. Such a narrow distribution of ledger closure intervals indicates high predictability and a deterministic nature of the XRPL consensus process. In the context of payment applications, this means that RippleNet provides quasi-instant transaction settlements that remain resistant to fluctuations in network load. This result represents a significant advantage compared to traditional cross-border systems, where settlement times are measured in hours or even days.

Transaction Volume Dynamics

Figure 1. XRP transaction volume recorded in the ledgers within the analyzed sample

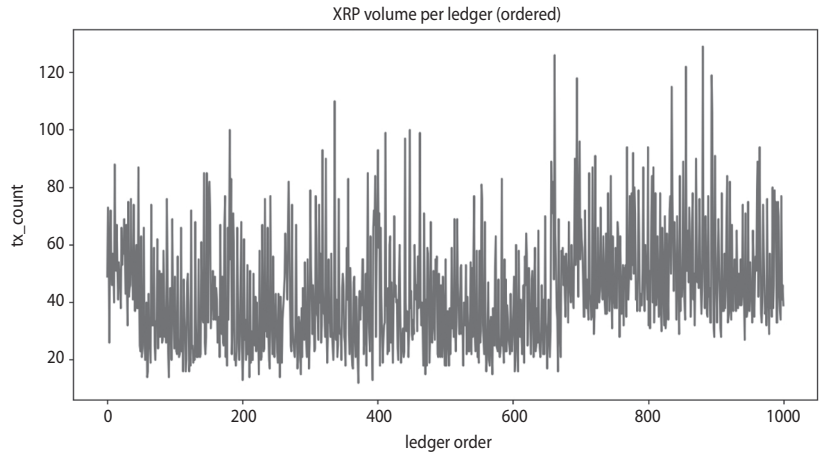


Source: author's visualization based on Ripple ledger data (August 29, 2025); created in Python using the matplotlib library.

Figure 1 presents the total transaction volume in XRP corresponding to each ledger in the analyzed sample. A significant variability in values is visible alongside periods of relative stability, there are numerous peaks reaching even above 2×10^11 XRP.

Such dispersion suggests that the network experiences irregular, very large transfers, likely associated with the activities of individual major institutional entities.

Figure 2. Number of transactions recorded in the ledgers within the analyzed sample



Source: author's visualization based on Ripple ledger data (August 29, 2025); created in Python using the matplotlib library.

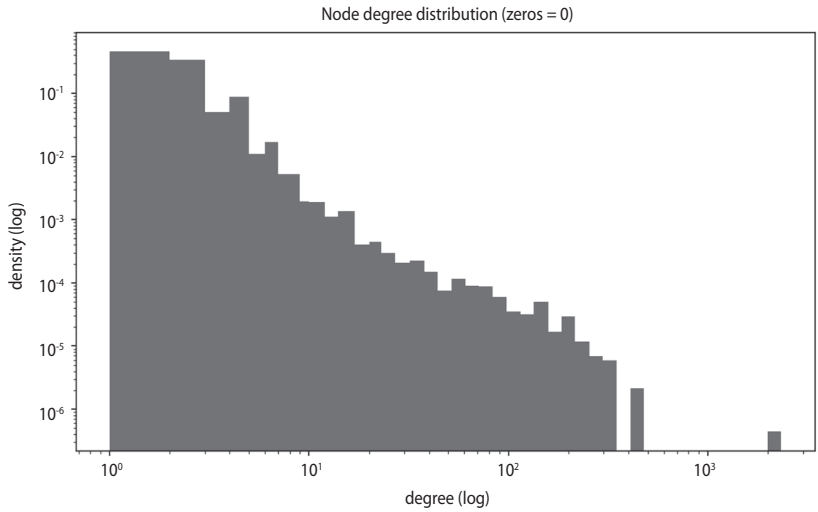
The variability in the number of transactions is presented in Figure 2. Although the average number of transactions per ledger fluctuates around 50–60, periods of increased intensity are also observed, during which the number of transactions exceeds 100. This indicates the existence of certain cycles of user activity within the network, which may be relevant for assessing RippleNet's capacity to handle increased load.

Payment Network Structure

To assess the structure of connections within RippleNet, the node degree distribution was analyzed on a log–log scale. A node represents a network participant identified by an XRPL address that took part in *Payment* transactions.

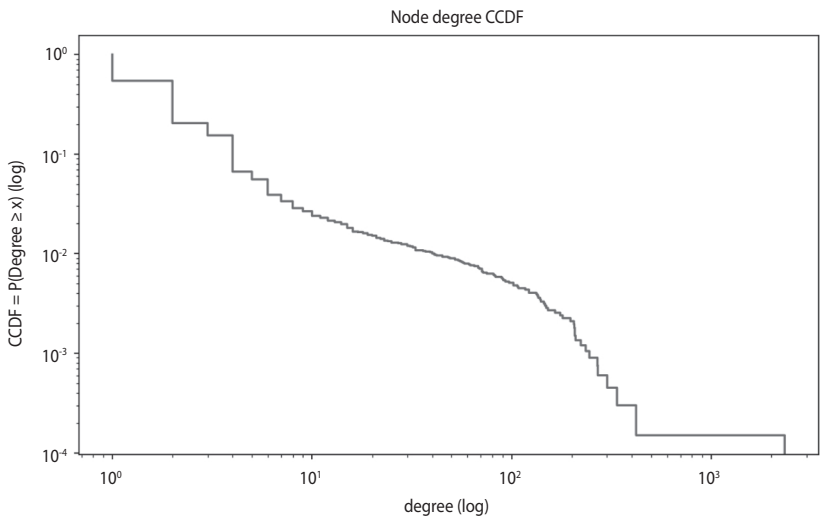
Figure 3 presents a histogram of node degrees (excluding zero-degree nodes with no transactions), which allows for a clearer illustration of the actual diversity of active participants. A characteristic asymmetry typical of financial networks is visible. Most nodes have a small number of connections, while a small group functions as hubs with very high degree values. The use of a logarithmic scale on both the X and Y axes allows for the compression of the "long tail" and the highlighting of the network's core structure.

Figure 3. Node degree distribution on a log–log scale



Source: author's visualization based on Ripple ledger data (August 29, 2025); created in Python using the matplotlib library.

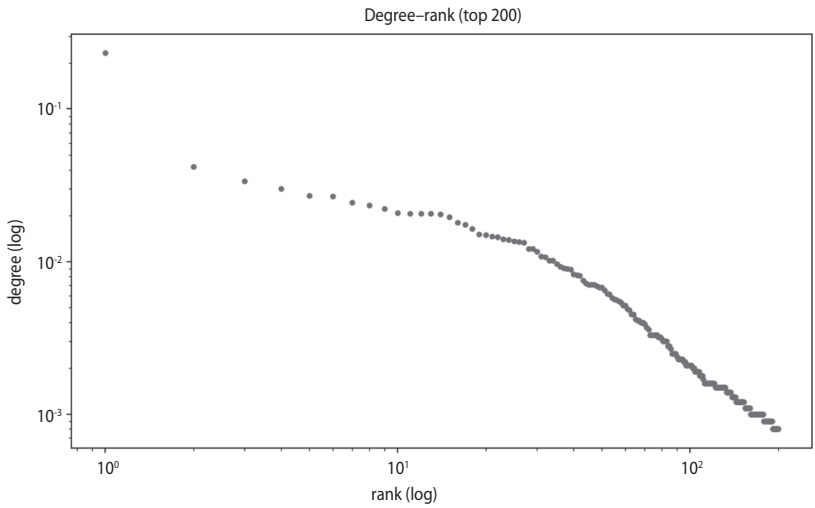
Figure 4. Complementary cumulative distribution function (CCDF) of node degrees



Source: author's visualization based on Ripple ledger data (August 29, 2025); created in Python using the matplotlib library.

An even clearer representation is provided by the complementary cumulative degree distribution (CCDF) shown in Figure 4. It illustrates the proportion of nodes with a degree greater than or equal to a given value. It is clearly visible that the probability of having a high degree decreases slowly, which suggests the presence of a few, but highly connected nodes. Such distributions are typical of scale-free systems, where most participants play a marginal role, and dominance is concentrated among a small transactional elite (Albert and Barabási 2002).

Figure 5. Node degree ranks on a log–log scale



Source: author's visualization based on Ripple ledger data (August 29, 2025); created in Python using the matplotlib library.

Figure 5 presents the degree–rank plot, also on a log–log scale. The nearly linear decline in this scale indicates an approximate fit to a power-law distribution. This means that RippleNet, similar to other economically oriented networks, exhibits strong hierarchical properties. It has a small number of addresses with exceptionally high connectivity that serve as central transactional hubs. In the context of payment applications, this suggests that value flows may be largely dependent on the stability and activity of these few dominant nodes.

Node Degree Statistics

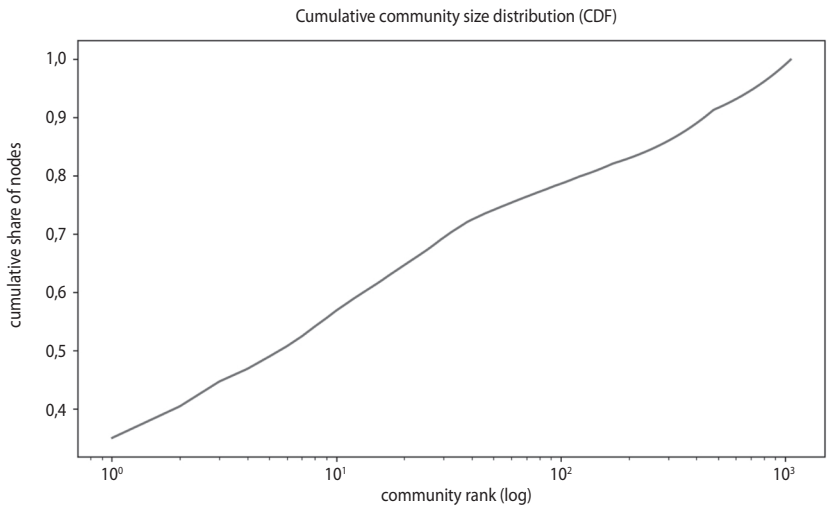
For the sample of 6,667 active addresses, the average total degree was 3.78 (median: 2), with p90 = 4, p95 = 6, and p99 ≈ 40; the maximum reached 2,329. The in-degree and out-degree distributions are highly skewed: median in-degree = 1 (p99 ≈ 13; max = 135), while median out-degree = 0 (p99 ≈ 16; max = 2,327), confirming the

presence of a small group of hubs with exceptionally high numbers of outgoing connections. These findings are consistent with the earlier charts (histogram, CCDF, degree–rank), indicating a near scale-free structure and considerable heterogeneity of roles within the network.

Communities in the Ripple Network

The identification of communities using the Louvain algorithm made it possible to distinguish groups of nodes characterized by stronger internal connections. Instead of a traditional bar chart for all communities, two forms of representation were presented: cumulative distributions and a ranking of the largest groups.

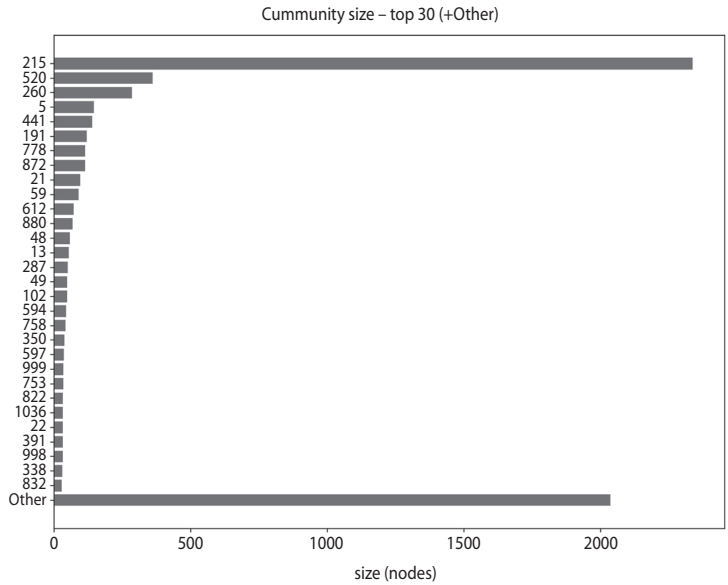
Figure 6. Cumulative distribution of community sizes



Source: author's visualization based on Ripple ledger data (August 29, 2025); created in Python using the matplotlib library.

Figure 6 presents the cumulative distribution of community sizes (CDF) plotted against logarithmic rank. It is clearly visible that a relatively small number of the largest groups encompass a significant portion of all nodes, with 50% of the population reached within just a dozen or so of the largest communities. The curve also quickly "closes" around the 80–90% range, indicating a clear hierarchy: most participants belong to a few dominant communities, while thousands of smaller groups have only a marginal share in the network structure.

Figure 7. The 30 largest communities by the number of addresses



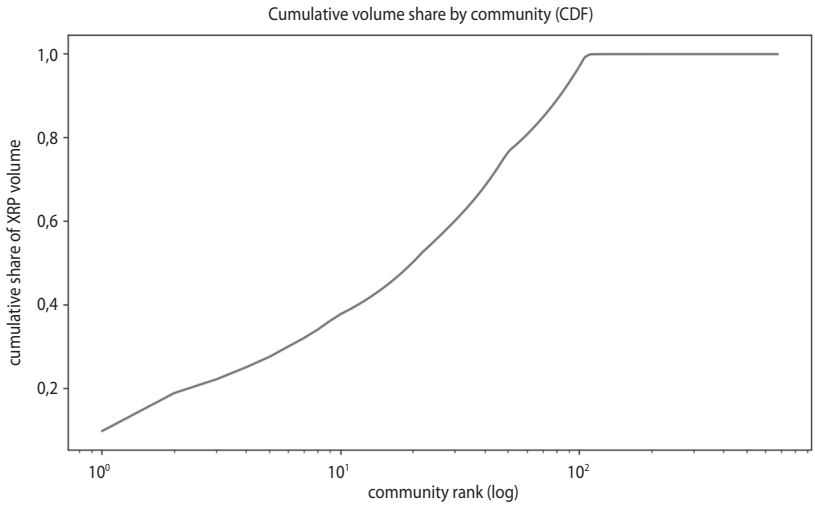
Source: author's visualization based on Ripple ledger data (August 29, 2025); created in Python using the matplotlib library.

Figure 7 presents the ranking of the thirty largest communities by size, with all remaining ones grouped under the category Other. The use of this approach eliminates the "long tail" problem and allows for an easy comparison of the dominant role of the largest groups. The largest community comprises more than 2,000 addresses, suggesting that it functions as a nodal core around which value flows are concentrated.

Similar conclusions arise from the analysis of transaction volumes attributed to communities. Figure 8 presents the cumulative distribution of shares in the total XRP volume. A very strong concentration is visible – just a few of the largest communities account for more than half of the total transaction value, while approximately 90% of the overall volume is concentrated within fewer than one hundred groups.

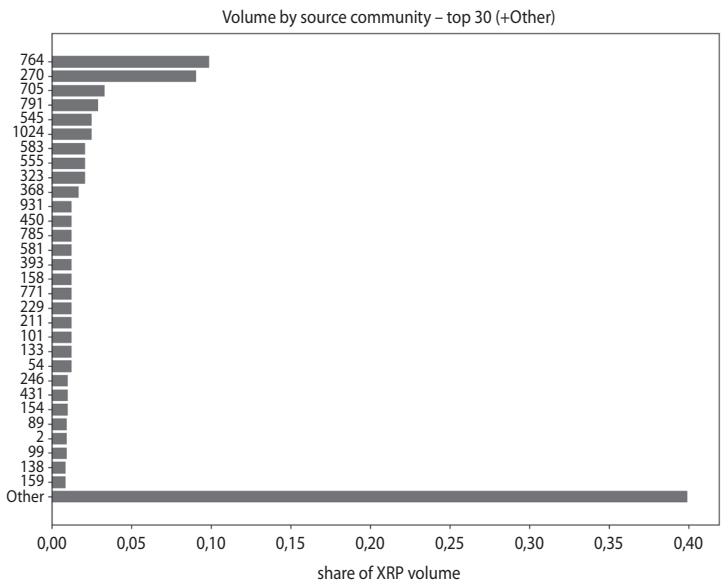
Figure 9 shows the ranking of the largest communities by their share in transaction volume (Top-30 + Other). The largest group accounts for over 15% of all flows, while the next three largest each contribute several additional percentage points. In contrast, the thousands of smaller communities grouped under Other collectively generate less than 40% of the total volume. The use of a percentage scale instead of absolute values allows for a clear assessment of the extent of this concentration and facilitates comparison.

Figure 8. Transaction volume attributed to communities



Source: author's visualization based on Ripple ledger data (August 29, 2025); created in Python using the matplotlib library.

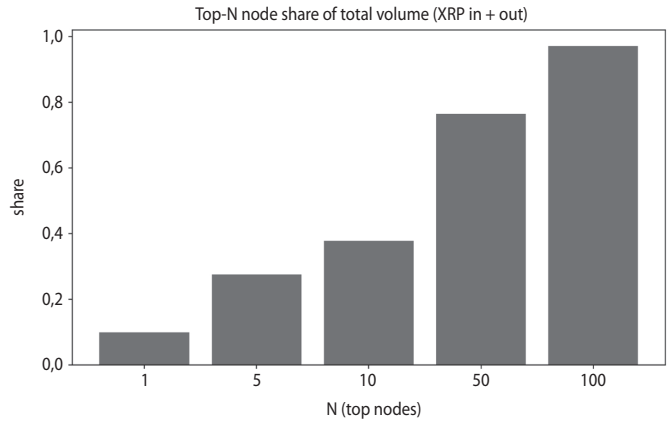
Figure 9. Ranking of the largest communities by share in transaction volume



Source: author's visualization based on Ripple ledger data (August 29, 2025); created in Python using the matplotlib library.

Value Concentration and Inequality in Distribution

Figure 10. Distribution of shares in total transaction volume among the largest network participants

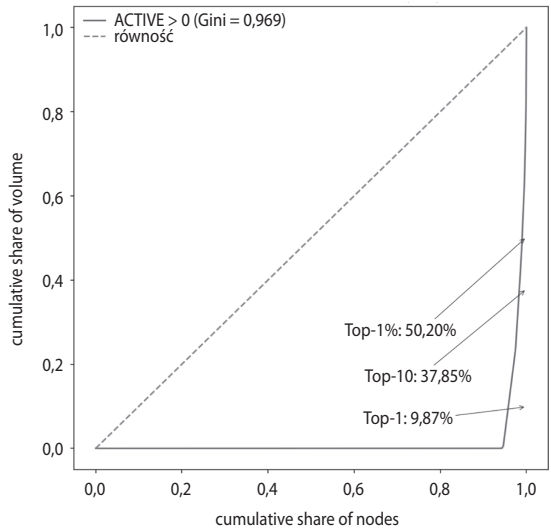


Source: author's visualization based on Ripple ledger data (August 29, 2025); created in Python using the matplotlib library.

The distribution of shares in total transaction volume among the largest participants is presented in Figure 10. The data show that the single largest node accounts for approximately 10% of all flows. The share of the five largest nodes amounts to about 27%, while the top one hundred account for nearly 97%. This indicates that network activity is extremely concentrated and remains under the control of a small number of addresses.

These results are consistent with the Lorenz curve presented in Figure 11, which exhibits a strongly convex shape relative to the line of equality (dashed line). The calculated Gini coefficient equals 0.969, indicating an extreme level of inequality in the distribution of XRP flows among participants. Additionally, the chart highlights the shares of the largest nodes: the single largest address accounts for 9.87% of the total volume, the ten largest collectively control 37.85%, and just 1% of all active nodes concentrate over 50% of the total volume. Such a high degree of concentration demonstrates that activity within the RippleNet network is dominated by a narrow elite of addresses, while the vast majority of participants account for only a marginal fraction of the flows.

Figure 11. Lorenz curve for node transaction volumes



Source: author's visualization based on Ripple ledger data (August 29, 2025); created in Python using the matplotlib library.

Ripple SWOT Analysis

Strengths

Ripple offers instant settlement of cross-border transactions, which significantly outperforms traditional banking systems, including SWIFT (Qiu, Zhang, and Gao 2019). This is also confirmed by the results of the conducted study – the average ledger closing time in the XRPL was 3.87 seconds, with a median of one second, and the maximum observed finalization time did not exceed 9 seconds. Such a stable and predictable consensus mechanism ensures quasi-instant settlements regardless of network load. Additionally, low operational costs and the ability to operate 24/7, independent of local time constraints, make RippleNet an attractive solution for financial institutions (Islam et al. 2022). Another important advantage is transparency. Transactions in the XRP Ledger network are available for real-time tracking, which increases trust and enables continuous monitoring of fund flows (Kaygin et al. 2021). The results also indicate that the network is capable of handling periods of increased activity, in which the number of transactions exceeded 100 per single ledger, without any loss of settlement stability.

Weaknesses

Ripple remains relatively centralized, although it is based on blockchain technology, a significant portion of the XRP supply is controlled by Ripple Labs, which raises concerns regarding the actual decentralization and independence of the network (Martin 2020). Additionally, despite its dynamic growth, the adoption of RippleNet is still limited compared to the global reach of SWIFT, and the implementation of this technology requires integration with existing banking systems, which can be time-consuming and costly (Qiu et al. 2019). The results of the author's own research indicate a very high level of activity concentration: the largest single node accounted for nearly 10% of the total volume, while 1% of participants controlled more than half of all flows, resulting in a Gini coefficient of 0.969. This means that activity within the RippleNet network is dominated by a small group of addresses, which may reduce its perceived decentralization and increase its vulnerability to disruptions in the activity of these key entities.

Opportunities

The growing demand for efficient, fast, and low-cost international transfers in the B2B and remittance segments creates room for the expansion of RippleNet, particularly in regions with underdeveloped banking infrastructure (Ahmadova and Erek 2022). Global trends in the digitalization of finance, including the development of CBDCs and the increasing openness of institutions to collaboration with fintech companies, may facilitate Ripple's further integration with regulated markets. Cooperation between Ripple and central banks is also possible – for example, in the area of facilitating the issuance or transfer of digital currencies (Ahmadova and Erek 2022).

Threats

Ripple operates in a high regulatory risk environment. The legal status of XRP as a financial asset remains ambiguous in many jurisdictions, which may affect the pace of implementation and discourage potential institutional partners (Spindler 2024). Ripple also faces competition from other blockchain-based initiatives, such as Stellar and stablecoin systems, which offer similar functionalities but with alternative governance structures. There is also a risk that the development of new, more advanced payment systems (e.g., ISO 20022) could reduce RippleNet's competitiveness (Constantino et al. 2024). It should be noted that ISO 20022 is a communication standard rather than a settlement system; however, its implementation may enhance SWIFT's competitiveness, thereby limiting RippleNet's advantages. Additionally, the strong concentration of flows identified in the author's own research, where only a small number of nodes account for the majority of activity, may be perceived by regulators and financial institutions as an additional threat to the system's stability and credibility.

Synthesis of the Author's Own Research Findings

The obtained results allow for the formulation of several key conclusions. First, the Ripple network is characterized by high variability in both the number of transactions and transaction volumes, indicating the presence of large, irregular transfers. Second, the topological structure and centrality metrics confirm the existence of a small number of key nodes dominating the rest of the participants. Third, community identification revealed the presence of core groups that generate the majority of network activity. Fourth, the distribution of transaction values and the concentration among top-N nodes clearly indicate an extreme inequality in the distribution of flows. As a result, although RippleNet is technologically decentralized, in practice it operates in a highly centralized manner, which has significant implications for its potential role as infrastructure for cross-border payments.

The literature review shows that RippleNet implementations are carried out primarily in pilot form, while full-scale global deployment faces regulatory, technological, and institutional barriers. Attention is drawn to the opportunities associated with integration with CBDC projects, as well as to the threats arising from competition and regulatory uncertainty.

Table 1. Summary of the SWOT analysis

Strengths	Weaknesses	Opportunities	Threats
Instant settlements (average 3.87 s, median 1 s, max 9 s)	Partial centralization (a significant portion of XRP supply controlled by Ripple Labs)	Growing importance of fintechs and CBDCs	Regulatory risk
Low transaction costs	Limited market adoption	Expansion into emerging markets	Competition from other technologies (e.g., Stellar)
Transaction transparency	Integration challenges with legacy systems	Potential cooperation with central banks	Modernization of SWIFT or the development of alternatives (e.g., gpi, ISO 20022, CIPS in China, SPFS in Russia)
24/7 operation	Ambiguous legal status of XRP	RippleNet as a bridge for CBDCs	Uncertainty regarding crypto assets
Ability to handle increased activity (over 100 transactions per ledger without loss of stability)	Extreme activity concentration (1% of participants control >50% of volume; Gini coefficient = 0.969)		Excessive dependence on a small number of key nodes and communities

Source: author's own elaboration based on the conducted research and the literature review presented in the article.

In the interpretation of results, regulatory issues must be taken into account. Due to the ambiguous legal status of XRP in many jurisdictions, and in particular the ongoing proceedings before the U.S. SEC, the implementation of RippleNet is subject to legal risk (Goforth 2024). The lack of a unified legal classification of XRP, whether as a digital currency, a commodity, or a security, creates uncertainty among financial institutions and may limit their willingness to adopt this technology. On the other hand, empirical studies indicate that while the implementation of RippleNet does not bring banks immediate improvements in efficiency and liquidity, in the longer term, some operational indicators show enhancement (Marisetty et al. 2024). The conducted analyses indicate the need for further examination of systemic risks associated with activity concentration and node centralization, as well as for careful monitoring of legislative developments. In the context of potential cooperation with central banks and integration with CBDC projects, RippleNet may serve as a technological bridge; however, its structural and regulatory limitations should constitute an integral part of assessing the network's credibility and resilience.

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Miscellanea

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A Model Mortgage Agreement as a Win-Win Way to End the Chaos on the Mortgage Market (and Beyond)

Abstract

In the discussions concerning the consequences of the invalidation of mortgage contracts in Poland and how to reduce them, legal risk management is mentioned in the first place. Hence, the paper focuses on this risk and ways of mitigating it.

The article characterises undertakings aimed at developing and introducing into economic circulation a model mortgage credit agreement, with the intention of popularising its use in credit transactions, which should reduce the legal risk of the parties to such transactions. The starting point for this work was the recommendation of the Responsible Finance Club of 2022 postulating the elimination of prohibited contractual terms ex ante, and not, as is currently the case, ex post. The model mortgage contract and its relevance for state financial stability are also discussed.

Keywords: mortgage loans, legal risk, model credit agreement, abusive clauses

JEL Codes: K12, K15, K22

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Introduction

On 24 July, at the headquarters of the Financial Ombudsman, at the initiative of the Responsible Finance Club of the European Financial Congress (EFC), a presentation was held of a draft model mortgage credit agreement developed by a Chapter of Legal Experts consisting of academics and practitioners in civil law, particularly in the area of the consumer financial market. The work of the Chapter was headed by Prof. Michał Romanowski.

For several years, the Responsible Finance Club had been making efforts to introduce a mortgage contract template into economic circulation that would reduce the legal risks faced by the parties to loan transactions. In November 2022, a group of 63 European financial Congress (EKF) experts participating in the project for a new concept of home loans recommended "***Implementation of a uniform model home loan contract, which would aim to eliminate prohibited conditions ex ante, rather than – what was becoming a practice of everyday life – ex post***". This recommendation was a reaction to the domination of the mortgage market by "foreign currency loans".[1]

Synthetic characterisation of the process of shaping the portfolio of housing foreign currency loans in banks in Poland

Foreign currency loans were very popular mainly for two reasons:

- First, because of the interest rate disparity. Interest rates for loans in zloty (PLN) have been relatively very high since the system transformation and, although they have been decreasing quite systematically, interest rates for the Swiss franc (CHF), the euro and the dollar have been much lower.
- Secondly, due to the appreciation of the PLN against the CHF between April 2004 and July 2008, the exchange rate of the Swiss currency decreased almost linearly from over 3 to 2 PLN. For "franc" borrowers, the instalment of a specific franc loan was getting lower and lower from month to month. The trend of appreciation of the zloty was disrupted by the global financial crisis that emerged in 2007.

It is noteworthy that in the conditions of a favourable relationship and a trend of changes in the PLN/CHF exchange rate, borrowers did not question the provisions of loan agreements, regardless of their competence. This was the case both for persons, who may not have been aware of the risk of exchange rate fluctuations or the legal

[1] **In particular, these were denominated loans, in which the** loan **amount** was stated in a foreign currency, but disbursed in PLN at the exchange rate of the day of disbursement of the loan, while the amount of the instalment depended on the current exchange rate, and **indexed loans**, **in which** the loan amount was stated in PLN, but converted into the foreign currency at the current exchange rate on the day of disbursement and at each instalment repayment, while instalments were repaid in PLN.

risk of loan agreement provisions, and for professionals, who cannot be attributed to a lack of competence in understanding the provisions or the consequences of the materialisation of legal risk. Gradually, the attitudes of borrowers and various persons or entities representing them changed, in particular, as a result of the possibility of obtaining extraordinary benefits from the emerging practice of interpreting consumer regulations and court decisions in litigation brought against banks by borrowers.

Initially, incidental litigation gradually took on a mass character in connection with court decisions on the invalidity of foreign currency housing loan contracts due to the presence of abusive (illicit) clauses therein, primarily in the light of European consumer legislation. In the initial period of litigation, common courts in Poland ruled in favour of banks. However, the situation changed dramatically after the Court of Justice of the European Union (CJEU) ruling in the so-called Dziubaks case. The CJEU, responding to a preliminary question from one of the Polish courts, stated that if there is an abusive condition in a contract, it should be removed and the contract should be performed without this condition. If this was impossible, the contract could be annulled. This ruling sparked a massive lawsuit by borrowers against banks, usually with the help of law firms, in the name of restoring the disturbed balance of the parties.[2]

The emergence of such a lucrative loophole has been a threat to the stability of some banks in Poland. The scale of the problem is due, inter alia, to the fact that the institutions of the state, despite warning signals, both from the banks' economic chamber (the „White book of franking credits in Poland" ZBP, 2015) and the undertakings of the Polish Financial Supervision Authority (KNB) and the Polish Financial Supervision Authority (KNF), did not take advantage of the opportunity to enact regulations limiting the materialisation of legal risks.[3]

When, as a result of market processes, prudential regulations and the maturation of granted foreign currency loans, the sale of new loans became marginal, the sale of mortgages in PLN increased. Homebuyers, no longer able to take foreign currency loans, turned to zloty loans, which were slowly cheapening due to interest rate cuts. The colloquial perception tends to treat foreign currency loans and loans in zloty as two different products. However, they have, at least, one thing in common – they are difficult to hedge against the effects of external events affecting the financial market as a whole and, consequently, each borrower.

[2] It quickly became apparent that a very lucrative loophole had been created in the market for law firms representing borrowers. Law firms and organisations of francophone borrowers claim to have filed in the courts on behalf of their clients in the region of 300,000 lawsuits against banks, and 98% of the cases end with the loan agreement being declared legally invalid. The total costs of the banks in the form of compensation paid to date and provisions set up already amount to PLN 100 billion, or almost 3% of Polish GDP.

[3] The most common reason for invalidation of foreign currency loan agreements by courts was the lending bank's use of its own exchange rate table, which was not questioned at the stage of signing the agreements or for several years of repayment of instalments.

Foreign currency loans and PLN loans also have in common that they are long-term obligations with a fixed maturity, but the individual instalments depend on at least two market parameters:

- on the interest rate in the case of a PLN loan;
- on the interest rate for the currency of the obligation and on the exchange rate between the currency of the obligation and the currency of settlement.

Comparison of conditions and parameters of foreign currency and PLN housing loans

A comparison of the conditions and parameters of foreign currency loans and loans in PLN in the long term shows similarities with a time lag. Examples are included in Table 1.

Table 1. Comparison of selected features and processes associated with foreign currency and PLN loans

Foreign currency loans	Zloty loans
Systematic weakening of the Swiss franc against the zloty, from a level of more than 3 zloty per franc in April 2004 to the historical minimum CHF/PLN rate of 2 zloty in July 2008.	A multi-year decline in interest rates since the systemic transformation, with short-lived periods of increases until the historical minimum of the NBP reference rate of 0.1% in 2021.
In 2008, the number of new foreign currency loans granted during the year reached a historical maximum of almost 164,000 loans.	In 2021, the number of new PLN loans granted during the year reached a historical maximum of over 256,000 loans.
Despite the fact that supervision warned against currency risk, demand for 'cheap' foreign currency loans, above all in CHF, grew ever faster.	Despite the fact that supervisors warned against interest rate risks, demand for 'cheap' loans in zloty grew ever faster.
The media, politicians and the public defended the availability of foreign currency loans, seeing them as cheap money for less affluent consumers.	The media, politicians and the public encouraged borrowing by pointing out that it had never been so cheap.
After the collapse of Lehman Brothers in September 2008, the zloty weakened sharply and a prolonged period of high volatility began. At the beginning of 2015, the franc strengthened by leaps and bounds and the CHF/PLN exchange rate stabilised at more than PLN 4 per franc.	As a result of rapidly rising inflation, the NBP's reference rate began to rise monotonically, reaching 6.5 per cent, which greatly reduced demand in 2022. As a result, loan sales in relation to 2021 halved to 126,000.

Table 1. (cont.)

Foreign currency loans	Zloty loans
The instalments on foreign currency loans granted, especially from mid-2007 to mid-2008, increased strongly, causing great dissatisfaction among borrowers.	The instalments of loans, especially those granted between spring 2020 and spring 2021, increased strongly, causing great dissatisfaction among borrowers.
The materialisation of currency risk led to a large increase in loan instalments and borrowers sought a way out of the trap by challenging contracts on the grounds that the clauses contained therein were abusive under EU consumer legislation.	The materialisation of interest rate risk has led to a large increase in loan instalments and borrowers, supported by law firms with a financial interest in this, have started to seek the annulment of loan agreements, citing terms not permitted in them.
In almost all cases, borrowers allege: the banks' use of their own exchange rate tables and their failure to comply with their information obligations.	In almost all cases, borrowers or their representatives allege: defects in the banks' setting of the WIBOR index (although there are compelling reasons for the CJEU to reject such a complaint) and their failure to comply with their information obligations.

Source: own elaboration.

A comparison of the market processes in the segment of PLN and foreign currency mortgages shows a very high similarity in borrower behaviour. At the same time, it is characteristic that these processes are shifted in time, with a similar interval. When the zloty strengthened sharply and strongly against the CHF, foreign currency borrowers did not care about the risk of its strong weakening, which could cancel out their speculative gains. In a similar regime, a reversal of the trend and a strong rise in interest rates could have been expected. It was only a matter of innovative interpretations to raise flawed provisions in loan agreements. Therefore, as early as 2020–2021, it was necessary to take action as soon as possible to protect the gold loan market from the invalidation of newly concluded contracts and to start working on a model contract that would be free of reasonable legal defects and protect both parties to the contract from conflicts ending in disputes.

Under these circumstances, it should be clear to all stakeholders in the credit market that the complexity and, in particular, the ambiguity of contractual provisions, especially in the context of the European Union's pro-consumer legislation, may generate legal risks affecting the stability of banking sector entities in Poland. In general, one of two options could have been used to eliminate this risk. Firstly, to obtain a binding opinion of the relevant state institutions or authorities on the compliance of the applied provisions with the applicable law. Secondly, to bring about the elimination of any shortcomings pointed out by these entities. The second option corresponds to the concept of the Responsible Finance Club at the EKF promoted since the end of 2022. Unfortunately, the opportunity to avoid

ex ante problems has not been properly exploited even though KNF initiated work to develop a uniform model mortgage contract. These started in spring 2023 and led to such a draft, which was discussed at the 15th European Financial Congress on 4 June 2025 with the participation of the Chairman of the Financial Supervision Commission, the President of the Office of Competition and Consumer Protection, the Financial Ombudsman, Members of the Financial Stability Committee, the banking community, as well as representatives of the Civil Law Codification Committee under the Minister of Justice and the academic community. In the discussion, legal experts and representatives of supervisory authorities discussed the benefits for consumers and the financial market of adopting a model mortgage contract. In conclusion, they all agreed that the implementation of the model mortgage contract could contribute to the stability of the financial market and also reduce the costs of credit intermediation. The KOF immediately undertook intensive efforts aimed at its acceptance by regulators.

The rationale for drafting and certifying a model mortgage contract

The desirability, or even necessity, of developing and certifying a mortgage contract in Polish currency is not in doubt. KOF has gathered stakeholder opinions in various forms and environments, with unequivocal support for the idea of implementing such a template.

The interests of consumers and businesses should be based on the win-win principle. Both sides win. However, the example of foreign currency lending proves that there is no shortage of those willing to break this principle and any contract between a trader and a consumer can be invalidated. If this practice were extended to the PLN loan market, everyone loses:

- The state loses, as the instability of Polish law, manifested by court invalidations of almost all long-term contracts between trader and consumer after many years of trouble-free performance, effectively deters investors so necessary to the state. Understandably, they may fear that their contracts concluded with Polish entities will also be invalidated when this is in favour of the Polish side. With a sufficiently large scale of this phenomenon and a lack of reaction from the relevant institutions or state authorities, Poland's rating, followed by the rating of Polish treasury bonds, will deteriorate significantly, increasing the already high cost of servicing Polish public debt.
- Consumers lose, as borrowers' benefits from winning disputes with banks result in worse credit conditions for consumers of credit intermediaries (higher fees and commissions etc.) and even in a reduction of credit availability. At some point, perhaps sooner than expected, the scale of legal risk will increase the price of credit to such an extent that only those who do not need credit to buy a flat will be able to afford it.

- The banks lose, as every litigation loss has a measurable financial dimension and generates losses, reducing the banks' ability to finance projects of vital importance to the economy or the population.
- The public loses because winning disputes with banks antagonises consumers of financial services into those who get rich (some borrowers) at the expense of others (depositors, taxpayers, investors).

These considerations underline the importance of drafting and implementing into banking practice an agreement, whose framework provisions will comply with both the law and the laws of economics. This is not an easy task, as controversial interpretations of consumer protection laws, the risk of biased interpretations against entrepreneurs and the harmful practice of retroactivity have led to a situation where there is uncertainty about the stability of contractual provisions between consumers and entrepreneurs.

For example, suits against banks allege that contractual provisions were not agreed with the borrower, which violates the principle of equality of parties (e.g. the methodology for calculating the exchange rate or WIBOR 3m). The fact that the transaction involves a non-professional consumer and a professional business entity (e.g. a bank) is also used tendentiously, even in situations where the consumer is a person with the highest professional competence to assess the provisions or understand the risk.

There are repeated allegations against banks that the customer was not properly informed about the risks involved in taking out a foreign currency loan, especially when the explanations given were not documented. And what is worse, in court disputes, even the validity of the customer's signed declarations that he or she understood and took note of the information provided is questioned. And this is done under the pretext that they did not understand the signed documents, but realised that signing the declaration was a prerequisite for receiving credit. This raises the issue of misrepresentation in order to obtain material benefits in the form of credit. Moreover, there is an inverted principle of equality of parties.

All this demonstrates the necessity to bring about a consensual position/understanding (consensus) not only between the borrower and the lender, but also the acceptance of the framework conditions by the state representatives. In the case of consumer mortgages, the proposal around which such a consensus would be built is the draft model mortgage contract by the EKF Chapter of Experts, which received positive feedback in the surveys. Similarly, the draft presented at the Financial Ombudsman's office in Warsaw on 24 July 2025 received positive opinions from representatives of the financial safety net or financial market players, and finally in the specialist media.

It should be noted that between 2022 and 2025, there were also a few opinions against the very idea of a model contract that would comply with all the provisions of current law, under the pretext of treating banks as professional entities with a duty to prepare a legally compliant contract. These opinions came from the consumer community, compensation law firms and some media.

Nevertheless, it is important to reflect on the consequences of the courts, the government, the market, overruling their support for this document. In one discussion, it was stated that a contract drawn up on the basis of the model contract will have to face a judicial test of abusiveness anyway, so that acceptance by the relevant state institutions changes nothing and the legal risk remains. This statement is a good starting point for an empirical analysis of the situation in the foreign currency lending segment.

First and foremost, it must be taken into account that the so-called old foreign currency loan portfolio is almost exclusively traded and new foreign currency loans – with marginal exceptions[4] are not granted. The knowledge of this old portfolio is quite complete (number, value, quality, conversions, settlements, disputes, etc.) as are the cost estimates, taking into account court decisions in relation to the lawsuits filed. This can serve as a basis for estimating the cost of materialised legal risk for this type of claim. And at the same time it can serve as a premise for estimating the cost of legal risk for gold loans.

If one were to compare the dynamics of disputes between borrowers and banks, mainly the so-called ‚franking' borrowers, separately for the portfolio of housing loans in foreign currency and separately for those in PLN, the situation for loans in PLN would correspond to foreign currency loans from about seven to eight years ago, with the exception that loans in PLN are still being granted. Consequently, the portfolio is growing and is already incomparably larger than it was in the case of foreign currency lending and lender banks have extensive databases on borrowers and can estimate the cost of legal risk associated with each new loan.

Model estimate of the cost of legal risk for the home loan portfolio in the 2025 environment

The cost of legal risk is a component of the margin. Despite the lack of precise estimates, one can be tempted to make a rough estimate of this cost. Without knowing what this cost would be, one can calculate what would be the increase in the instalment of a typical loan if the margin for legal risk increased by one percentage point. For a loan with currently quite typical parameters: capital of PLN 500 thousand, variable interest rate Wibor 3M plus margin, margin of 2.2%, current Wibor 3M 5.0%, term of the loan 25 years, the instalment is almost exactly PLN 3600. Including the cost of legal risk of 1 percentage point in the margin would increase the instalment to over PLN 3,900 and the cost of servicing the loan would increase by almost PLN 100 thousand. At lower interest rates, with lower capital, these differences will be smaller. When Wibor 3M falls to 3%, the instalment will be almost PLN 3,000, and at 1% legal risk it will rise to almost PLN 3,300. If the cost of legal risk were to increase to 2 percentage points, the cost of risk would be just over 2 times greater.

[4] Loans in the currency in which the borrower receives the largest part of his or her salary.

The actual cost of legal risk will depend on the share of disputed loans in the bank's entire housing loan portfolio, on the percentage of cases won by borrowers and, finally, on the cost of the bank losing the case. They will probably be lower than in the case of foreign currency loans, but the portfolio of PLN loans is incomparably larger. There is therefore no doubt that, in the event of legal risks materialising, the costs for banks will be much higher than in the case of foreign currency loans.

About the work on the draft model mortgage credit agreement

The development of a draft model mortgage credit agreement by lawyers with no institutional links to either the banking or the consumer community has had a significant impact on its design and can be expected to contribute to the introduction into legal trading of such a framework model, which should, above all, be free of legal defects, minimise legal risk and, finally, be free of conflicts of interest for the representatives of the parties to the credit transaction.[5]

Its application by banks can reduce the legal risks associated with long-term mortgages to a capital degree. It is now important for institutions and state authorities to confirm that loans made using the model contract are free of such risks. Without such a solution, uncertainty in the credit market may generate the risk of destabilisation, if not of the entire banking sector then, at least, of some banks and the opportunities to assist development using financial intermediary institutions will be significantly reduced.

[5] On 28 March 2023, i.e. shortly after the start of work on the draft agreement, an interview with Professor Waldemar Rogowski of the Warsaw School of Economics (SGH), and at the same time chief analyst at the BIK, appeared on the BANK.PL portal on the creation of mortgage loan agreement templates that are safe for banks and their customers.
Robert Lidke: *How do you assess the proposal put forward by the experts of the Centre for Strategic Thought, who suggest creating a model contract for a mortgage loan in zloty that would be accepted by the FSA or the Supreme Court, which would guarantee the inviolability of the provisions of such a contract?*
Waldemar Rogowski: *I appreciate this proposal. But in order for it to work, first of all there would have to be an appropriate legal culture and institutional culture in our country, which would mean that no one would try to question such a standard in the future. That is, if we were to reach a consensus today among all the stakeholders in such an agreement, we would have to have legal certainty that no one would challenge such a standard agreement. It is not just a matter of declaring a given contractual provision correct today, but of ensuring that in 5, 10, 15 or even 20 years' time no one would challenge it. Unfortunately, no one today can guarantee that this standard developed now and even accepted by all stakeholders will not be challenged in the future.*

Reasons for working on a model mortgage contract

In recent years, the Polish financial sector has been facing a growing problem of disputes over the validity of credit agreements concluded by banks with consumers.

While this problem originally concerned mortgage loan agreements denominated/indexed to the Swiss franc, it is now affecting an increasingly broader spectrum of financial products – for example mortgage loan agreements based on reference indices, consumer credit agreements where the sanction of free credit can be applied, or loan and lease agreements concluded not only with consumers, but also with entrepreneurs.

The above observation is confirmed by court proceedings before both national courts and the Court of Justice. Suffice it to point out that recently the Court of Justice has been leaning on the issue of the fairness of reference indices in force in the European Union under the Benchmark Regulation (BMR)[6] in case C-471/24[7] – the first Polish case concerning the WIBOR reference index. There are also three Polish cases before the Court of Justice[8] concerning the problem of credited costs in consumer loans, the resolution of which will also be important from the perspective of mortgage lending. In turn, in March 2025, the District Court in Warsaw[9] issued a ruling favourable to the borrower (entrepreneur), taking into account the aspect of transparency of contractual terms contained in a loan agreement with a variable interest rate.

The examples indicated confirm the diagnosis that the Polish financial sector faces the challenge of arranging relations between financial institutions and consumers in a way that will be transparent, fair and based not only on legal regulations, but also on best market practices.

The lack of legal stability in the relationship between a consumer and a trader, i.e. a situation in which almost any contract can be undermined, contradicts the essence of civil law trading based on the principle of balance of interests and stability. The market economy and the law are not a zero-sum game. The interests of traders and consumers are not conflicting, but common. Trader and consumer need each other. This is the foundation of commercial law understood as the law of exchange of goods. The law of exchange states that a voluntary exchange benefits

6 Regulation (EU) 2016/1011 of the European Parliament and of the Council of 8 June 2016 on indices to be used as benchmarks in financial instruments and financial contracts or to measure the performance of investment funds and amending Directives 2008/48/EC and 2014/17/EU and Regulation (EU) No 596/2014 (OJ EU. L. 2016 No. 171, p. 1 as amended) (the "BMR Regulation").

7 Proceedings before the Court of Justice of the European Union, J.J. v PKO BP S.A., reference C-471/24, ECLI:EU:C:2025:705.

8 Proceedings before the Court of Justice of the European Union, Helpfind Recovery sp. z o.o. v Santander Bank Polska S.A.; reference C-566/24; Proceedings before the Court of Justice of the European Union, P.W. v Bank Polskiej Kasie Opieki S.A., reference C-744/24; Proceedings before the Court of Justice of the European Union, LG v Powszechna Kasa Oszczędności Bank Polski S.A., reference C-473/25.

9 Judgment of the Regional Court in Warsaw of 14 March 2025, case file no. XXIII Ga 763/24.

both parties to it. *Do ut des*, i.e. I give so that you may give. The law of voluntary exchange understood in this way is guarded by the authority of the law understood not only as a rule, but also as a good custom. Behaviour contrary to good morals is unlawful behaviour.

Short-term benefits gained by selected stakeholders as a result of mass questioning and invalidation of contracts lead to long-term losses for the entire market – both for consumers and businesses. Such a situation undermines the credibility of the Polish financial sector and the legal and judicial culture.

An attempt to respond to these challenges is the work on the preparation of a model mortgage credit agreement, the aim of which is to standardise the contractual process and thus mitigate conflicts and risks in relations between banks and consumers.

Nature of the model mortgage credit contract

The model mortgage credit agreement is a legal instrument that draws on the sources of civilisation and the idea of cooperation and dialogue, which can become good practice in the banking sector and a real support for financial market stability. The model mortgage loan agreement refers to the idea of typical contracts in the Code of Obligations (Article 72 of the Polish Civil Code) of 1933[10].

The political changes in Poland after World War II broke the direction of the development of legislation based on contractual practice. To this day, the importance – due to the excessive attachment to legal positivism accepting conflict – of legal forms in the form of codes of good practice, intended to protect, inter alia, the mass consumer of goods and services, including in the financial market, is underestimated.

Model contracts or, more broadly, model law come close to uzans (customs), which are treated as facts with legal significance. They are quite common in international law. Their universality means that they cease to be private in nature and take on a *quasi-public* character. This means that they are considered as good practices that become good custom and, consequently, law.

The model mortgage loan agreement is not a model contract within the meaning of Article 384 par. 1 of the Civil Code[11]. Its concept is close to model law and model commercial contracts used in international trade. Examples of such legal instruments can be found, inter alia, in the work of UNIDROIT, which aims to study the needs and methods of modernisation, harmonisation and coordination of private law between countries and the formulation of uniform legal instruments[12].

[10] Ordinance of the President of the Republic of Poland of 27 October 1933, Code of Obligations (Journal of Laws No. 82, item 598, as amended) ("Code of Obligations").

[11] Act of 23 April 1964 Civil Code (Journal of Laws 2025, item 1071) ("Civil Code").

[12] Official website of UNIDROIT, https://www.unidroit.org/about-unidroit/overview/ (accessed 22.09.2025).

The model mortgage contract is inspired by the work of the US Fannie Mae and Freddie Mac – institutions created by the US Congress to support the mortgage market by ensuring its liquidity, stability and accessibility. These companies have developed a standardised *Uniform Residential Loan Application* (pl. *Uniform Residential Loan Application*)[13] and educational materials for borrowers that promote transparency and security in trading and ensure proper information for both parties to the transaction.

The draft Model Mortgage Loan Agreement is not being prepared in opposition to other drafts operating in the public mind, in particular the consumer and banking community. The aim of the work is to prepare a document that will provide specific material for the discussion on how to implement the contract and on the further development of model contracts in the financial market. The concept of model contracts is to implement the postulate of consumer protection and fairness of contracting on the one hand, and to support the development and competitiveness of the Polish financial sector on the other.

Course of work on the model mortgage credit contract

The commencement of work on the model mortgage credit agreement was preceded by an analysis of the legal areas that currently pose the greatest challenges in relation to mortgage lending in Poland. Among the issues analysed were:

1) the type of interest rate available to the consumer;
2) the construction of a periodically fixed interest rate;
3) the extent of information on the interest rate of the loan indicated in the contract;
4) the need to introduce a compensation mechanism to remove a barrier to the development of fixed interest rate loans;
5) the possibility of granting credit to the consumer for non-interest credit costs;
6) reimbursement in the event of early partial or full repayment of the credit;
7) the possibility for the bank to offer ancillary services;
8) the valorisation of fees charged by the bank.

The above issues were assessed in terms of legal (at European and national law level) and business considerations. Naturally, a central issue raised during the work was the question of ensuring that the model mortgage credit contract complies with the case law of the Court of Justice on consumer protection and mortgages and with the principle of substantive and formal transparency, as required by Directive 93/13[14] and recalled by the Court of Justice on several occasions, e.g. in cases C-609/19, C-125/18, C-186/16[15].

[13] The form can be found on the Fannie Mae website: Uniform Residential Loan Application.

[14] Council Directive 93/13/EEC of 5 April 1993 on unfair terms in consumer contracts (OJ EU. L. 1993 No. 95, p. 29 as amended) ("Directive 93/13").

[15] Judgment of the Court of Justice of the European Union of 10 June 2021, BNP PARIBAS PERSONAL FINANCE SA v VE, Case C-609/19, ECLI:EU:C:2021:469; Judgment of the Court of Justice of the Euro-

However, it should be emphasised that in order to create a legal instrument that ensures a real balance between the parties and, at the same time, promotes fairness of contracting and competitiveness of the Polish financial sector, it is necessary to take into account also other, equally important areas. These areas – for various reasons – are not as strongly emphasised in the public debate as the case law of the Court of Justice in the Polish mortgage cases.

Firstly, it must be emphasised that the freedom to conduct business activities, including banking activities, cannot be restricted without a valid legal basis – orders and prohibitions introduced otherwise than on the basis of a law (Article 22 of the Constitution of the Republic of Poland[16]). According to Article 20 of the Constitution of the Republic of Poland, this freedom constitutes the basis of the economic system of Poland. In turn, in accordance with Article 76 of the Constitution of the Republic of Poland, the public authority is obliged to protect consumers, inter alia, against unfair market practices – the scope of this protection is determined by the relevant acts. Thus, the model mortgage loan agreement cannot limit the scope of banking activities in relation to mortgage loans to a greater extent than the relevant European and national regulations, primarily the Mortgage Credit Directive[17], Mortgage Credit Act[18], Banking Law[19] or the BMR Regulation. In addition to the issue of ensuring full consumer protection, it is crucial that the above principles and values included in the Polish Constitution are also addressed. The model credit agreement has been prepared with the above contexts in mind.

Secondly, consumer protection should take into account the interests of all consumers using banking services, e.g. borrowers, depositors and other customers – consumers. The interests of individual consumers, as well as different groups of consumers, are different, and it is therefore necessary to apply mechanisms that do not protect the interests of one group at the expense of ignoring the needs of other consumers. An example of such an action could be an attempt to limit the availability of loans with a certain type of interest rate for consumers. Therefore, the model mortgage contract must not restrict access to certain types of mortgage products that may be desired by some consumers.

Thirdly, the financial market should be viewed as part of the critical infrastructure of the state. The banking system plays a key role in it. Supervision of banks and,

pean Union of 3 March 2020, MARC GÓMEZ DEL MORAL GUASCH v BANKIA SA, reference C-125/18, ECLI:EU:C:2020:138; Judgment of the Court of Justice of the European Union of 20 September 2017, RUXANDRA PAULA ANDRICIUC and Others v BANCA ROMÂNEASCÃ SA, reference C-186/16, ECLI:EU:C:2017:703.

16 Constitution of the Republic of Poland of 2 April 1997, (Journal of Laws 1997 No. 78, item 483) ("Constitution of the Republic of Poland").

17 Directive 2014/17/EU of the European Parliament and of the Council of 4 February 2014 on consumer credit agreements relating to residential immovable property and amending Directives 2008/48/EC and 2013/36/EU and Regulation (EU) No 1093/2010 (the "Mortgage Credit Directive").

18 Act of 23 March 2017 on mortgage credit and the supervision of mortgage credit intermediaries and agents (i.e. Journal of Laws 2025, item 720) (the "Mortgage Credit Act").

19 Act of 29 August 1997 Banking Law (i.e., Journal of Laws 2024, item 1646) (the "Banking Law").

in particular, of the implementation of the prudent and stable bank management directive referred to in Article 22aa(1) of the Banking Act and of meeting capital adequacy requirements (which directly translates into sector stability) is carried out by the Financial Supervision Commission. In the course of the work, it is crucial to address the recommendations and positions of the FSC and to gain supervisory approval for the concept of a model mortgage loan agreement, which will be discussed in more detail in the section on possible ways to implement the agreement.

A separate, but important issue raised by stakeholders in the course of work on the model mortgage agreement is the desirability of creating uniform educational materials for consumers, which would be an additional element supporting the understanding of mortgage issues. Such materials would complement the implementation of the principle of substantive transparency. This issue, because of its practical benefits for consumers, deserves a separate discussion once the drafting of the contract itself has been completed.

Consultations are currently underway with those who submitted comments on the first draft of the model mortgage contract presented on 24 July 2025 during the announcement of the EFC Recommendation at the Financial Ombudsman's office[20]. Once this stage has been completed, the EKF Expert Group will prepare a final draft of the agreement, which is expected to be developed by the end of October 2025.

A summary of the key mechanisms envisaged in the model mortgage agreement is presented below. It should be noted that due to the ongoing stakeholder consultation, the final wording of some of the provisions may be subject to minor modifications.

Plain language directive

The model mortgage contract is written in simple and non-legal language using direct phrases to identify the consumer and the bank. The model mortgage credit agreement shall, as far as possible, move away from formalised terms, the meaning of which may not be understood by an attentive and interested consumer. Where it is necessary to use a formal concept with a specific legal or economic meaning, explanations and examples are provided in the body of the contract to facilitate understanding of the concept.

The model mortgage credit contract is intended, among other things, to give effect to the principle of formal transparency by ensuring that the provisions are comprehensible. And the unambiguity of its provisions is intended to have a positive impact on the substantive aspect of this principle.

[20] The draft is available at: https://www.efcongress.com/aktualnosci/wzor-umowy-modelowej-dla-kredytow-hipotecznych/ (accessed 22.09.2025).

The form of the model mortgage credit agreement is part of a broader trend of businesses preparing materials that '*speak to the customer*'. In June 2025, the provisions of the Accessibility Act came into force[21], which requires financial sector entities, among other things, to use language that facilitates understanding of the nature of products and services. According to the Accessibility Act, plain language should resemble spoken language. The model mortgage contract *'speaks to the customer*'.

The interest rate of the loan

The model mortgage contract provides for two interest rate options: variable interest rates and periodic fixed interest rates. It is up to the consumer to choose which type of interest rate to use. The model mortgage contract does not provide for a fixed interest rate for the entire duration of the loan. This is due to the fact that such a mortgage loan is currently not offered by banks in Poland due to the macroeconomic and legal conditions (at this point unclear as to the possibility of collecting compensation in the case of early repayment of the loan due to the drafting of Article 40 of the Mortgage Credit Act).

European law provides for the possibility of offering consumers loans based on three types of interest rates: fixed, variable and a combination of both – periodically fixed. In doing so, European law does not indicate a preferred form of interest rate for the consumer, leaving both consumers and businesses free to do so. It must be emphasised that the Court of Justice has not questioned in its case law the possibility of offering mortgage loans with a specific interest rate. The possibility to offer loans with indicated types of interest rates is reflected in Article 29(2) of the Mortgage Credit Act.

For the above reasons, limiting the model mortgage contract to one form of interest rate is not justified and could be challenged as incompatible with European and national law.

Variable interest rate

The variable interest rate is defined contractually as the sum of a reference index and a margin. The reference index is subject to objective changes resulting from changes in the reference rate of the National Bank of Poland. The value of the margin is fixed. The model mortgage credit agreement contains information on the variable interest rate, the reference index and the administrator of this index as provided for by the BMR Regulation and the Mortgage Credit Act. The model mortgage

[21] Act of 26 April 2024 on ensuring compliance with the accessibility requirements of certain products and services by business entities (Journal of Laws of 2024, item 731) (the "Accessibility Act").

credit agreement does not provide for the provision of detailed information on the methodology for determining the respective reference index. This approach is in line with the Advocate General's opinion of 11 September 2025 in Case C-471/24[22].

Fallback clause

The model mortgage agreement provides for the introduction of a so-called 'fallback clause', setting out the rules for determining the interest rate of the loan in the event of a material change, the non-publication of a reference index or the occurrence of an event that makes it impossible to determine the variable interest rate on the basis of the originally indicated. reference index This clause should be completed on a case-by-case basis by the bank applying the model mortgage credit agreement.

This solution was chosen so as not to create barriers to the implementation of the model mortgage contract. Indeed, banks' fallback clauses are generally prepared in a comprehensive manner – covering a variety of financial products and not just the mortgage contract with consumers. Requiring them to be separately tailored in detail could make the implementation of a model mortgage credit agreement significantly more difficult and, in extreme cases, even impossible.

Given the novelty of the model contract in the Polish financial sector, it is crucial that the process of its introduction does not encounter excessive barriers. If this project is successful, further work could be undertaken to standardise further legal areas in banking activities.

Periodically fixed interest rates

A periodically fixed interest rate is fixed in the contract for the first fixed interest period. In the contract, the consumer and the bank agree on the length of the fixed interest period and the value of the fixed interest rate. It is possible to gradually extend the fixed interest periods depending on the stage of development of the fixed interest loan market.

Before the end of the fixed interest period, the customer is offered a new fixed interest rate for the next fixed interest period. If the customer does not accept the new interest rate (this is an autonomous decision of the customer), the loan will bear a variable interest rate calculated as the sum of the reference index and the margin.

The model mortgage contract does not provide for so-called transfer period – a mechanism that allows for a change of lender if the customer does not accept the new fixed interest rate. In order to change lender, the customer can refinance the loan at market terms.

[22] Opinion of Advocate General Laila Medina delivered on 11 September 2025, in Case C-471/24, ECLI:EU:C:2025:705.

Compensation

The implementation of an effective compensation mechanism is crucial for the development of fixed-rate loans in Poland.

The model mortgage agreement provides for the possibility for the bank to collect compensation in the case of a loan with a periodically fixed interest rate. The bank does not have the possibility to collect compensation in the case of a loan with a variable interest rate.

Compensation may only be charged if the NBP reference rate on the date of the earlier partial or full repayment of the loan is lower than on the date of the fixed interest rate applicable to the fixed interest period. The compensation is calculated with reference to the current fixed interest rate period. The compensation may not exceed 1.5% of the amount of the early repayment for each year remaining until the end of the fixed interest rate period in question. The compensation depends on the amount of the early repayment, the NBP reference rate at the early repayment date and the number of years remaining to the end of the relevant fixed interest period.

Both the Mortgage Credit Directive (Article 25(3)) and the Mortgage Credit Act (Article 40) provide for the possibility of collecting compensation in connection with early repayment of the loan by the consumer. According to these regulations, the compensation must not be a punishment to the consumer for the early repayment of the loan, it should be objective and fair and related to the costs and loss incurred by the bank.

The issue of compensation was decided by the Court of Justice in Case C-536/22[23], in which the CJEU confirmed that the mechanism for its calculation is not limited to determining the costs incurred by the bank in connection with the early repayment of the loan.

A key problem in Poland in determining compensation is the wording of Article 40 of the Mortgage Credit Act, which does not fully implement Article 25(3) of the Mortgage Credit Directive. The provision omits the requirement that the compensation must be „*fair and objective*", and moreover limits it only to the costs incurred directly by the lender, without taking into account that the compensation may relate to the loss incurred by the lender.

As a consequence of the inaccurate construction of Article 40 of the Mortgage Loan Act, banks are abandoning the compensation mechanism for fear of challenging the correctness of the calculations.

Such a situation is undesirable and unfavourable both: from the perspective of the consumer and the bank. The lack of an effective compensation mechanism hampers the development of the offer of loans with fixed or periodically fixed interest rates and leads to higher credit costs for all consumers, not only for those who repay the loan early.

[23] Judgment of the Court of Justice of the European Union of 14 March 2024, MW, CY v VR Bank Ravensburg-Weingarten eG, Case C-536/22, ECLI:EU:C:2024:234.

It should be clarified that when granting loans with fixed or periodically fixed interest rates, the bank hedges the interest rate risk by entering into hedging transactions e.g. in the IRS market[24]. The bank does not hedge individual loan receivables, but the entire portfolio of receivables. The bank's main and direct costs associated with the early repayment of periodically fixed (or fixed-rate) loans arise from the need to hedge the bank's exposure to interest rate risk. The aforementioned circumstance is the source of the practical difficulty of determining the amount of costs directly related to securing of a specific individually designated loan and thus addressing the premise of Article 40(7) of the Mortgage Loan Act.

It should be pointed out that it should be the task of the legal doctrine and the competent authorities to interpret Article 40 of the Mortgage Credit Act in line with the Mortgage Credit Directive and the CJEU ruling in Case C-536/22. At the same time, it would be desirable to introduce legislative amendments that would unambiguously align the content of this provision with the requirements of EU law.

Credit costs

The model mortgage contract provides for the possibility of granting credit to the consumer for non-interest costs of the loan such as commission or insurance premiums. The exercise of the option to credit costs is an autonomous decision by the customer.

The possibility of crediting costs has attracted considerable interest in the doctrine. It is also the subject of rulings by national courts, including the Supreme Court e.g. in the case I CSK 4175/22[25], in which the Supreme Court confirmed the possibility of crediting costs and charging interest on the capital made available to the consumer to cover these costs (as remuneration for the use of capital). The issue of crediting of costs (in relation to consumer credit) also concerns three Polish cases pending before the Court of Justice: C-744/24-1, C-566/ 24-1, C-473/25[26].

The resolution of the above cases will certainly affect market practice in both consumer and mortgage lending.

Notwithstanding the above, it should be emphasised that, at least in the case of mortgage credit, the possibility of crediting costs should be regarded as a solution for increasing the availability of housing credit and thus intrinsically serving the consumer. The above statement refers to a situation in which the consumer, knowingly and having been properly informed of the economic consequences of the cost-credit mechanism, is willing to make use of it.

This is due to the fact that, in the absence of own funds to cover non-interest credit costs, the consumer would be placed in one of the following two situations:

[24] IRS (interest rate swap) transactions.
[25] Order of the Supreme Court – Civil Chamber of 15 June 2023, reference I CSK 4175/22.
[26] See footnote 3 above.

1) the consumer would not be able to obtain a mortgageor;
2) the consumer would be forced to use other credit products to finance the no-n-interest costs of the credit, e.g. a consumer credit with a less favourable interest rate due to the lack of security in the form of a mortgage on the property.

Such a situation would prevent or prolong the process of granting the mortgage credit and would require the consumer to do the same thing twice. Furthermore, it would expose the consumer to unjustified double non-interest charges on the loan. Such a situation would be economically disadvantageous for the consumer. Thus, the crediting by the bank, within a single mortgage credit agreement, of both the primary purpose of the agreement and the costs associated with the granting of the credit significantly simplifies trading and is in fact a pro-consumer solution.

Additional services

The model mortgage contract provides for the possibility of offering additional services to the consumer as part of a combined sale, as referred to in the Mortgage Credit Act (Article 9(4)–(6)) and the Mortgage Credit Directive (Article 12(1)). Before the contract is signed, the loan offer, in particular the margin, with and without additional services, is presented to the customer. The costs arising from the additional services are also presented to the customer. It is up to the customer to decide which credit offer is more attractive to him.

Modification clause

The model mortgage contract provides for the possibility of valorisation of the fees charged by the bank during the term of the loan. Fees and commissions may be updated once a year, and their change depends solely on the Inflation Index. The bank may choose not to update the fees and commissions.

The mechanism proposed in the model mortgage credit agreement regarding the possibility to change fees and commissions addresses the CJEU ruling of 13 February 2025 in Case C-472/23 (Lexitor)[27]. The CJEU, on the basis of the consumer credit legislation (of some relevance in the case of mortgage credit), indicated that the conditions for changing the fees associated with the performance of a credit agreement should be set out in the agreement in a clear and concise manner, so that the average, properly informed and reasonable consumer is not in doubt as to the events that may give rise to a change in fees or as to the relationship between those events and the change in fees itself. The proposed mechanism meets the conditions indicated.

[27] Judgment of the CJEU of 13.02.2025, C-472/23, paras 44, 45 and 47.

Possible methods for implementing the model mortgage credit agreement

An important issue that arises in the discussions on the model mortgage agreement is how it should be implemented by credit institutions, in particular whether banks should be obliged to apply it or whether its application should be voluntary. This circumstance is important in view of at least five factors.

1) Compatibility with the Polish Constitution in terms of the principles of freedom of economic activity and the duty to protect consumers;
2) Potential to stabilise contractual relationships and thus reduce legal risks in the form of massive contract invalidation;
3) Creation of a framework to support the development of the competitiveness of the banking sector (issue of regulatory flexibility);
4) Exclusion of ex post control of abusive contract terms under Directive 93/13;
5) Timing and difficulty of implementation.

Several solutions for implementing a model mortgage contract are possible, each with its own legal and business considerations. When discussing the best way to implement a model mortgage contract, it is important to bear in mind not only the desire to address the most pressing issues affecting consumers and the banking industry, but also the long-term implications for all stakeholders.

Among the options for the implementation of the model mortgage contract discussed at the 15th European Financial Congress, among others, were:

1) a recommendation to use the model mortgage contract issued by the Experts of the European Financial Congress;
2) the adoption of a model mortgage credit agreement in the form of good practice by an industry organisation;
3) certification of the model mortgage credit agreement through the position or recommendations of state bodies e.g. the Financial Stability Committee;
4) adoption of a model mortgage credit agreement by means of an annex to an "opt-in" regulation of the competent minister;
5) making the use of the model mortgage credit agreement mandatory in the form of an annex to the law.

The model mortgage credit agreement is primarily intended to serve the function of ordering and stabilising the contractual relationship between the consumer and the bank. In order for the model mortgage contract to fulfil this function, it is necessary to give it the appropriate certification, optimally coming from the authority of the (broadly defined) state and state bodies. Nevertheless, it should be emphasised that, in the current situation of ever-worsening chaos, any form of adoption of a model mortgage contract will be a good step towards restoring order and balance to the parties – stemming the further spread of the crisis. A brief discussion of the various implementation methods follows.

Good practice

The adoption of a model mortgage contract as a good practice being a result of an EKF Recommendation or, going one step further, a recommendation from an industry organisation, e.g. the Polish Banks Association, is the solution that is operationally simplest and can be implemented in a short period of time compared to the other options, as it does not require legislative changes or the involvement of state authorities.

In such an option, the use of the model mortgage contract would be completely voluntary for all banks. As presented above in the article, the importance of good practice in stabilising and reducing legal risks should not be overlooked. Given that model contracts are a new instrument for the financial sector and are not widespread in the Polish legal system, it may be beneficial to integrate them into market practice and trading in a way that allows a gradual uptake of this solution. As indicated above, good practices that are widely used in trading become good practice and consequently law. However, this is a process that takes place gradually and is stretched over time.

Certification of the competent authority

A desirable way to implement the model mortgage contract would be to obtain certification from the competent authorities dealing with the security and stability of the financial sector: Financial Stability Committee or a state-owned bank – Bank Gospodarstwa Krajowego. Such a pathway could involve the authority issuing a position or recommendation on the voluntary application of the model mortgage contract, or it could involve the use of a "*comply or explain*" formula.

The application of such a solution requires more time, as well as the involvement of state authorities. However, certification by a state authority will significantly strengthen the authority of the solutions indicated in the model mortgage contract, confirming their fairness.

Importantly, certification of the model mortgage agreement in the above formula, leaves credit institutions with considerable flexibility to adapt its provisions to changing market conditions or new business needs, without unduly restricting business opportunities.

Certification by a state authority is a moderate and compromise alternative to other options – it does not significantly restrict the freedom to conduct business, while at the same time enhance trading certainty and provide an additional element of the consumer protection regime. Implementing the model mortgage contract in this way should be the "*minimum goal*" for further action.

Annex to the "*opt-in*" regulation

The introduction of a model mortgage credit agreement by way of an annex to a regulation of the competent minister in an "*opt-in*" formula, i.e. assuming voluntary application, is gaining more and more supporters.

Naturally, this is a longer and more complicated process than certification by a state authority, but nevertheless brings tangible benefits. It guarantees legal stability and reduces legal risk, while not raising constitutional concerns (as in the case of a law) and retaining sufficient flexibility in the event that changes need to be made to the content of the model mortgage contract. The model mortgage credit contract is subject to a presumption of fairness enjoyed by the laws and regulations in accordance with Article 1(2) of Directive 93/13.

It is necessary to emphasise that the presumption of fairness pursuant to Article 1(2) of Directive 93/13 and in light of recital 13 of the preamble covers both mandatory and dispositive provisions. According to recital 13 of the preamble to Directive 93/13: "*the expression 'mandatory provisions' used in Article 1(2) also includes rules which, according to law, are to be applied between the contracting parties provided that no other arrangements have been made;*". The wording "*applicable laws or regulations*" should be interpreted in the context of the meaning given to it by Directive 93/13. It follows from recital 13 that this wording also includes dispositive provisions, so that the implementation of the model mortgage credit agreement as an annex to the implementing regulation in an *opt-in* format (i.e. in the form of a dispositive provision) enjoys a presumption of fairness.

Doubts about the possibility of the presumption of fairness of dispositive provisions arise from the mistranslation of some Court of Justice rulings. In some rulings, the English word "*mandatory*" referring to statutory or regulatory provisions has been translated as "*mandatory*" instead of "*binding*". These include, for example, cases: C – 125/18[28], C-779/18[29] or Case C-192/20[30].

The judgment in Case C-192/20 confirms the above conclusions on mistranslation – in para. 31[31] of the judgment, the CJEU indicates that „*mandatory rules*" are excluded from the scope of review under Directive 93/13. Then, in para. 32[32] of this

[28] Judgment of the Court of Justice of the European Union of 3 March 2020, Marc Gómez del Moral Guasch v Bankia SA, C-125/18, ECLI:EU:C:2020:138.

[29] Judgment of the Court of Justice of the European Union of 26 March 2020, Mikrokasa S.A. and Revenue Niestandaryzowany Sekurytyzacyjny Fundusz Inwestycyjny Zamknięty v XO, C-779/18, ECLI:EU:C:2020:236.

[30] Judgment of the Court of Justice of the European Union of 10 June 2021, Prima banka Slovensko a.s. v HD, C-192/20, ECLI:EU:C:2021:480.

[31] "*Furthermore, according to Article 1(2) of that Directive, contractual terms reflecting mandatory statutory or regulatory provisions will not be subject to the provisions of that Directive*" – CJEU judgment in Case 192/20, paragraph 31.

[32] "*In that regard, the Court has stated on several occasions that, as is apparent from the thirteenth recital in the preamble to Directive 93/13, the exclusion from the scope of that directive provided for in the said Article 1(2) covers both the provisions of national law applicable between the contracting parties*

judgment, the CJEU confirms that, in accordance with recital 13 of Directive 93/13, dispositive provisions are also excluded from the scope of control.

In addition to the judgments of the Court of Justice containing a mistranslation, there are a number of judgments which confirm the exclusion of the dispositive provisions from the scope of control under Directive 93/13 e.g. Case 81/19, paragraphs 34 and 35[33].

The introduction of a model mortgage contract by way of an annex to an "*opt-in*" regulation of the competent minister should be the target method of implementation.

Obligation to apply the Act

The implementation of the model mortgage contract through a statutory obligation to apply it raises significant constitutional concerns. The choice of such a method leads to a significant restriction of the freedom of economic activity referred to in Article 20 of the Polish Constitution. It is, in fact, the imposition by the state of a method of carrying out the entrepreneur's operational activity, which is unacceptable.

In addition to the above issue, it should be pointed out that this method also has other significant disadvantages:

1) the unpredictability of the outcome of the legislative process – the final content of the agreement may differ significantly from the proposed draft;
2) the very limited possibility to change the content of the model mortgage agreement if necessary due to business or legal factors.
3) long implementation period.

Given the above considerations, it is important to point out that the choice of a statutory route to implement the model mortgage contract is not expedient or desirable and, in the long term, may significantly impede access to mortgage credit for consumers.

irrespective of their choice and those applicable in the absence of a provision to the contrary, that is to say, in the absence of other agreements between the parties. This exclusion is justified by the fact that it must rightly be presumed that the national legislature has established a balance between the total rights and obligations of the parties to certain contracts, which the Union legislature clearly intended to preserve (Banco Santander and Escobedo Cortés judgment, paragraph 43 and case law cited therein)." CJEU judgment in Case 192/20, paragraph 32.

[33] "*As pointed out in paragraph 25 of this judgment, the expression 'applicable laws or regulations' within the meaning of Article 1(2) of Directive 93/13 also includes, in the light of recital thirteen in the preamble to that directive, rules which are relatively binding, that is, rules which will lawfully be applied between the contracting parties where no other arrangements have been made. However, from that point of view, that provision does not make any distinction between, on the one hand, rules which apply irrespective of the choice of the contracting parties and, on the other hand, dispositive rules.*" [para 34] and "*In that regard, on the one hand, the fact that a national dispositive provision may be derogated from is irrelevant for the purposes of verifying whether a contractual term reflecting such a provision is excluded by Article 1(2) of Directive 93/13 from the scope of that directive.*" [paragraph 35] Judgment of the Court of Justice of the European Union of 9 July 2020, NG and OH v SC Banca Transilvania SA, C-81/19, ECLI:EU:C:2020:532.

It is high time to put an end to the legal chaos in the credit market

In recent years, the Polish financial sector has been facing a growing problem of disputes over the validity of credit agreements concluded by banks with consumers. The reality has become abnormal, as it is difficult to consider as a natural state of permanent legal warfare, a permanent state of legal epidemic infecting the stability of the financial system and destroying individual credit relations.

The purpose of this article was not to assess the legal cause of such a state of affairs, but to indicate a way to put a definitive end to similar wars for the future in the interests of everyone, i.e. bank customers on the asset side (borrowers), bank customers on the liability side (depositors who are also customers of the Bank Guarantee Fund), credit institutions, and more broadly financial institutions, supervisors and regulators, legislators, the executive, courts, consumer protection ombudsmen, the stock exchange, the economy as a whole, etc.

The financial market infrastructure is becoming – irrespective of the technical and legal approaches – one of the key elements of the modern critical infrastructure threatened by cyber-attacks by cyber criminals, including from the direction of Russia. One cannot ignore the geopolitics in which we find ourselves, and the fact that Poland is a frontline country already targeted by direct attacks from Russia.

Let us remember that chaos meant in Greek mythology the personification of the primordial state before the elements of the universe were ordered. It was the primordial state of existence from which the first gods (Earth(Gaia) and Heaven(Uranos)) originated. Chaos had three characteristics:

1) it was a bottomless abyss into which everything continually falls; it is the opposite of an earth with a stable foundation;
2) was a place without fixed directions, where everything falls apart in different directions;
3) was a sphere separating heaven and earth, with chaos remaining between them.

All three of these characteristics of chaos fit into the already long-standing legal war in the mortgage market, which, after the so-called franking credits, has entered the area of gold credits and is ‚testing' the possibility of invading further areas of the financial market. War is destruction, which only serves those who want the war to continue, never to end. However, such a reality is not the norm, cannot be the norm, because it is abnormal and leads to disaster, sooner or later.

We have high hopes for the results of the consultation on the already finished draft model mortgage contract presented to all stakeholders at the meeting at the Financial Ombudsman as a recommendation of the European Financial Congress (Responsible Finance Club). Particular hopes should also be pinned on the Financial Stability Committee as a kind of guardian of the critical infrastructure for the stability of the State, i.e. all its citizens, which is the financial market. The model

mortgage contract can and should become a template for mass contracts concluded by financial institutions with consumers of financial services and products, not only in the banking sector, but also in the insurance and investment sectors. It also represents an opportunity for the development of the mortgage bond market in Poland.

Calling a spade a spade, we have been dealing for years with legal chaos, which it is high time to put an end to. Vestigia terrent! Let us not tread in footsteps that deter, because we will never get out of it. Let us remember that, above all, time is of the essence.

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EKF Investor Relations Rating – an index of bank investor relations proposed by the European Financial Congress

Abstract

This paper discusses the concept and initial results of the EKF Investor Relations Rating (RIR EKF), a new index assessing the quality of banks' communications with the market. The RIR EKF aims to narrow the gap between broad corporate governance indicators and the need for systematic assessment of investor relations effectiveness, especially important in the banking sector. The index covers six areas: IR website content, sustainability/ESG, technical aspects, online communication, quality of disclosures, and industry awards. Its scale follows credit ratings (AAA–D). In a 2025 pilot study, 20 banks from Poland, Western Europe, and CEE were assessed. Domestic banks achieved results comparable to Western institutions and outperformed CEE peers, particularly in ESG. Although the project requires further methodological refinement and greater transparency, it holds the potential to become a benchmark for investor relations quality and a tool for mitigating information risk.

Keywords: banking sector, corporate governance, index, investor relations

JEL Codes: G21, G28, I-15, O16

Introduction

Investor relations – as defined by the National Investor Relations Institute, is a strategic management responsibility that integrates finance, communications, marketing and securities compliance to enable effective communication between the company, the financial community and other stakeholders, resulting in the fair valuation of

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securities by the market[1]. In practice, this means fair and understandable presentation of company information, transparent communication with investors (current and potential) and an active presence on the capital market: publication of reports, result conferences, meetings with investors, and modern investor information websites.

The literature indicates that good corporate governance practices are associated with lower insolvency risk and better company performance, although the strength of these relationships varies by country and by the indicators used (Satrio 2022; Black et al. 2017). Transparency in a company's relationship with the market is fundamental to trust and a key element in informed investment decision-making.

Although there are many initiatives assessing investor relations as part of corporate governance, there are no indicators synthetically measuring the effectiveness of companies' communication with the market. This is particularly the case in the banking sector, where investor relations – understood as the systematic disclosure of information and the clarification of complex risk issues into comprehensible messages – remains one of the least standardised areas of corporate governance. Recommendations issued after 2008[2] pointed, among other things, to corporate governance weaknesses in banks – including ineffective supervisory and communication processes. Studies have linked good practices to lower insolvency risk, higher productivity and better performance (El-Abiad et al. 2023). Although these correlations are not always linear in the short term, it is the information channel – in which the investor relations (IR) index plays a key role – that determines whether market players understand a bank's risks and believe in its strategy.

1. Corporate governance indices and investor relations initiatives

The history of the construction of generic *corporate governance* (CG) indices is relatively short. CG indices, ratings and rankings developed after the corporate confidence crises of the early 21st century (Enron, WorldCom scandals) and then gained prominence after the global financial crisis of 2008. Corporate Governance indices – covering largely qualitative and subjective issues, which makes objective measurement and comparison difficult – are mainly created by academics, independent industry organisations or independent analysts (Gruszczyński 2014, pp. 343–352). These include:

[1] Investor relations is a strategic management responsibility that integrates finance, communication, marketing and securities law compliance to enable the most effective two-way communication between a company, the financial community, and other constituencies, which ultimately contributes to a company's securities achieving fair valuation. NIRI, https://www.niri.org/about-niri/who-we-are/ (accessed 20.09.2025).

[2] The 2008 financial crisis revealed weaknesses in corporate governance – including supervisory and communication mechanisms – that contributed to the collapse and bankruptcy of many large banks (e.g. Lehman Brothers, Washington Mutual Bank, Glitnir, Landsbanki). In response, international institutions (Basel Committee, European Commission, IMF, OECD) have recommended reviewing and strengthening governance, monitoring and transparency mechanisms in the financial sector

- G – Index (Gompers, Ishii and Metrick) – consisting of 24 counterbalanced components related to takeover protection mechanisms; indicating links to company performance and valuation, although criticised for the selection of components and interpretation (Gompers et al. 2001),
- American Corporate Governance Index (ACGI) – the only index providing information on how US listed companies are performing in key areas, in line with the Guiding Principles of Corporate Governance(Neel Corporate Governance Cente, *American Corporate…*),
- SAHA Corporate Governance Rating – an extensive ranking with some 330 sub -criteria; applying its own scoring methodology with weights for each section and for the criteria within it, including optional criteria (SAHA, https://saharating.com…);
- Corporate Governance Perception Index (CGPI) – an indicator based on stakeholder perceptions; compiled with measures of company performance (ROE, ROA) and company valuation (CGPI, https://iicg.org…).

A weakness of research and practice for a long time was the lack of transparent Corporate Governance indicators for banks. In 2023, a new international corporate governance index for the banking sector – GIB.X62 – was proposed. The index was based on 62 criteria grouped into 7 internal areas (board of directors, internal audit, remuneration, risk management, nominations, compliance and ethics, transparency and disclosure). Previously, the 2021 index was tested in various banks from 7 countries (United States, France, Spain, Italy, Lebanon, Egypt and Jordan). Data was obtained from annual reports, websites and complementary email responses (El-Abiad et al. 2023).

In Poland, there is no single universally recognised corporate governance index. For many years, this role was fulfilled by the Respect Index, which was the first index of socially responsible companies in Central and Eastern Europe. The index included companies listed on the WSE that stood out in terms of corporate governance, information governance and investor relations[3]. After ten years of operation, the Respect Index was replaced by the WIG-ESG index, whose publication was launched by the WSE on 3 September 2019 (WSE Benchmark, https://gpwbenchmark.pl…). The index is based on Sustainalytics reports[4], and aims to promote companies that meet the highest environmental, social and corporate governance (ESG) standards.

[3] The Respect Index was a unique index on the Polish capital market of the Warsaw Stock Exchange (WSE), which was published from 19 November 2009 to 1 January 2020. It included companies that undergo a three-stage verification process conducted by the WSE and the Polish Association of Listed Companies (Stowarzyszenie Emitentów Giełdowych) and have impeccable communication with the market through current and periodic reports and their websites. WSE, https://www.gpw.pl/aktualnosc?cmn_id=107753&title=Nowy+composition+RESPECT+Index (accessed 15.09.2025).

[4] The Sustainalytics methodology is based on measuring an industry's exposure to specific risks related to ESG criteria. It also assesses how an entity manages ESG risks. Risk factors are determined based on an analysis of 20 factors specific to each industry. The assessment is based on an analysis of information posted on the companies' websites, their annual reports, reports containing non-financial data, as well as data provided directly by the companies. Sustainalytics conducts continuous monitoring and once a year carries out a detailed analysis.

Indexes in this issue area most often focus on governance in the broadest sense and rarely on communication practices. The investor relations area is dominated by awards or industry rankings that flexibly assess the quality of communication and allow best practices to be recognised, such as:

- IR Magazine Awards (Global) international awards given to companies for excellence in investor relations; evaluation criteria: quality of investor communication, transparency of information, innovation in IR activities; although not an index in the traditional sense, these awards recognise companies with the highest standards in investor relations (IR Magazine 2024),
- Deutschen Investor Relations Preis – award recognises excellence in investor relations in Germany in seven categories; awarded on the basis of the annual Extel survey, which takes place regularly in spring(DIRK, https://www.dirk.org…),
- Investor Relations Society Best Practice Awards (UK) – annual awards presented by the UK IR Society for best practice in investor relations; judging criteria: effectiveness of communications, quality of annual reports, innovation in investor engagement; awards promote excellence in investor relations in the UK market (IR Society, https://irsocietyawards.org.uk),
- Best Practice Investor Relations Awards – awarded to companies in the Asia-Pacific region for excellence in investor relations; judging criteria: transparency, accessibility of information, proactive approach to investor communications; awards encourage companies in the region to raise standards in investor relations (AIRA, https://www.australasianir.com.au…).

In Poland, investor relations rankings are created by business magazines and organisations, and the most popular ones include (EKF 2025b):

- Stock Exchange Company of the Year – a prestigious ranking organised by the daily newspaper "Puls Biznesu", evaluating companies listed on the Warsaw Stock Exchange; the ranking is based on the assessments of around 100 analysts and fund managers, who evaluate companies in five categories: management competence, investor relations, product and service innovation, growth prospects and success of the year; it is a valuable source of information for investors, indicating companies that stand out on the Polish capital market in terms of management, innovation and investor relations (GSR PB, *About the ranking*);
- Investor Sentiment Index (INI) run by the Association of Individual Investors (SII), which measures the sentiment of Polish individual investors towards the stock market; the survey is conducted weekly and consists in asking investors about their predictions for the stock market trend in the next six months: upward, sideways or downward; the results are published on the SII website and are a valuable source of information on market sentiment; thanks to regular INI surveys, investors can follow changes in market sentiment, which may be helpful in making investment decisions[5].

[5] The SII Investor Sentiment Index is used as an indicator of sentiment among Polish investors and can also be treated as a contrarian indicator. It is sometimes juxtaposed with both the WIG broad market index and the sWIG80 index, which is dominated by smaller investors. The index is the Polish equiva-

And although the above initiatives are not stock indices in the strict sense of the word, they serve a similar role: they promote transparency, set standards and create benchmarks. With the banking sector requiring special attention due to the systemic nature of risk, liquidity and capital adequacy information.

2. Characteristics of the substantive scope of the EKF Bank Investor Relations Index

The aim of the project initiated by the European Financial Congress (EFC) was to develop a classification tool that assesses the quality of banks' investor relations and assigns them an appropriate rating called the Investor Relations Rating (RIR). And while there are several groups of indices and ratings around the world that address market communication issues to varying degrees, none of them directly measure the quality and effectiveness of investor relations in the banking sector. In addition to promoting and rewarding as much transparency as possible, the project aims to raise the quality of the information provided and set standards beyond the minimum required by law.

Research on investor interest in the investor relations index has confirmed particular interest in environments where access to reliable and transparent information about listed companies plays a key role in investment decisions. The level of interest varies across investor groups and market specificities and is linked to factors such as (EKF 2025b):

- transparency and trust: indices help to assess which companies are the most transparent and open in their communication with investors; they value companies that care about the clarity of their reports and provide easily accessible financial data,
- investment risk: investors see well-developed investor relations as an element that minimises investment risk; companies that openly communicate their activities are less likely to generate unexpected negative events,
- type of investor: retail investors are more dependent on the quality of information provided by companies, as they often have limited access to sophisticated analytical tools; institutional investors, on the other hand, may use indices as an additional tool to evaluate companies, although they usually use their own analysis,
- corporate social responsibility (ESG): interest in investor relations indices is growing along with the popularity of investing based on ESG criteria.

lent of the AAII – Investor Sentiment Survey – assessing investor sentiment, created by the American Association of Individual Investors. The SII Investor Sentiment Index is based on the opinions of stock market investors who share their feelings about the market situation. It is a composite of many subjective opinions, which can help to identify market trends in the near future. The INI results are published in the nationwide media (including dispatches from the Polish Press Agency) and are an interesting source of information on market sentiment for analysts and investors themselves. SII, https://www.sii.org.pl/3438/analizy/nastroje-inwestorow.html (accessed 15.09.2025).

The index proposed by the EKF focuses on the effectiveness of investor relations –that is, the ability of banks to clearly present strategy and risk in a way that is consistent, understandable and useful to investors and other stakeholders. Unlike general corporate governance ratings, which aggregate a spectrum of different areas, it focuses on what directly shapes investors' decisions, i.e. information and interaction (the effectiveness of communication with the market). Six areas are assessed: website content, sustainability/ESG, technical aspects of the IR service, online communication, quality and depth of disclosure, industry awards (Table 1).

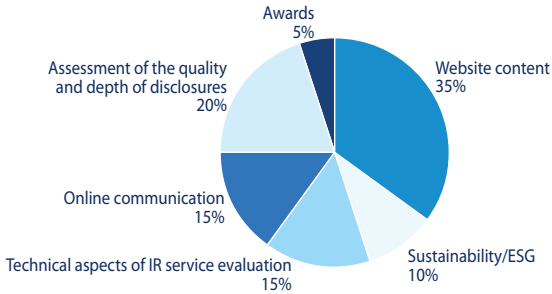
Table 1. Synthetic summary of evaluation criteria

Lp.	Area	Scope of assessment
1.	Website content	38 items in areas: Corporate Governance Financial reporting Shareholding and capital policy AGM Multimedia Analyst coverage
2.	Sustainability/ESG	Strategy Reporting Targets
3.	Technical aspects of RI service evaluation	Service security Navigation and mobility Design and aesthetics Innovation of solutions
4.	Online communication	Email communication (hidden investor) Multi-channel dialogue with investors
5.	Assessment of quality and depth of disclosure	Accessibility Timeliness Depth of financial information Non-financial disclosures Additional material
6.	Industry awards	National International

Source: compiled on the basis of: EKF (2025), *EKF Survey and Rating. Investor Relations of banks*, Academy of Corporate Governance at EKF, https://www.efcongress.com/wp-content/uploads/2025/06/ACG-Investor-Relations-2025_FIN.pdf (accessed 30.08.2025).

The share of each criterion in the index varies, ranging from 5% (reward criterion) to 35% (website content criterion) (Chart 1).

Figure 1. Index structure



Source: compiled on the basis of: EKF (2025), *EKF survey and rating*, op. cit.

The rating scale refers to credit ratings – from AAA (very good) – to D (not trustworthy) (Table 2).

Table 2. Rating scale

Rating	Description	Score
AAA	very good	score above 90
AA	very good with reservations	score above 85 and below or equal to 90
A	good	score greater than or equal to 80 and less than or equal to 85
BBB	good with reservations	score greater than or equal to 75 and less than or equal to 80
BB	good	score greater than or equal to 70 and less than or equal to 75
B	correct with reservations	score greater than or equal to 65 and less than or equal to 70
CCC	sufficient	score greater than 60 and less than or equal to 65
CC	sufficient with reservations	score greater than 55 and less than or equal to 60
C	very poor	score greater than 50 and less than or equal to 55
D	not inspiring confidence	score below or equal to 50

Source: compiled on the basis of: EKF (2025), *EKF Survey and Rating,* op. cit.

The project adopts an annual publication of the ranking and individual reports for institutions (with a gap map and recommendations). Unlike general corporate governance ratings, which lack transparency, the proposed index has a more practical approach. It focuses on investor relations activities and effects, shows

where information or market contact is lacking and uses publicly available data and indicators that stakeholders or investor relations teams can quickly use in their daily work. In principle, the index is more relevant to the companies themselves (benchmarking, pressure to improve communication) and less relevant to institutional investors, who conduct their own analysis.

3. Results of the first empirical study of the RIR EKF

The survey was conducted in May 2025 and included twenty banks: five from Poland, five from Central and Eastern Europe and ten from Western Europe (Table 2)[6].

Table 2. Group of banks surveyed

Name of the bank	Country of origin of the bank
CEE countries	
1. Komerční Banka	Czech Republic
2. OTB Bank	Hungary
3. Moneta Money Bank	Czech Republic
4. Nova Ljubljanska Banka (NLB) 4.	Slovenia
5. Banca Transilvania	Romania
Western European countries	
6. Deutsche Bank	Germany
7. Nordea	Finland (Norway, Sweden, Denmark)
8. Raiffeisen Bank International	Austria
9. Erste Group Bank	Austria
10. Société Générale	France
11. KBC Group	Belgium
12. Commerzbank	Germany
13. BNP Paribas	France
14. Credit Agricole	France
15. UniCredit	Italy

[6] The results of a project carried out by a team of EKF analysts in cooperation with capital market practitioners and concerning the study and rating of banks' investor relations were presented during the 15th European Financial Congress (EFC) held in Sopot on 2–4 June 2025. The panel was hosted by the Academy of Corporate Governance at the EFC (ACG), which aims to improve the quality of management and supervision of the activities of capital companies in Poland, with particular emphasis on the financial sector. The ACG operates under the honorary patronage of the Minister of State Assets and its business partners include Bank Pekao SA, Orlen SA, PKO BP SA and PZU SA. ACG, https://www.efcongress.com/acg/partnerzy/ (accessed 20.09.2025).

Table 2. (cont.)

Name of the bank	Country of origin of the bank
Poland	
16. ING Bank Śląski 17. mBank 18. Santander Polska 19. PKO BP 20. Pekao	

Source: compiled on the basis of: EKF (2025), *EKF Rating Survey and Assessment,* op. cit.

The analysis was conducted from the perspective of an international investor, using approximately 90 criteria in six categories. Amongst others, the assessed criteria were:

- website content – the most comprehensive part, covering 38 criteria (corporate governance information, financial reports, dividend policy, materials from meetings, innovative multimedia tools),
- ESG and sustainability issues – strategies, objectives and their reporting,
- technical aspects of IR services – security, navigation, aesthetics, innovation, including the use of artificial intelligence,
- online communications – including Q&A sessions, Capital Market Days, and the 'hidden investor' test, which involves sending email queries and evaluating banks' responses,
- quality and depth of disclosures – availability, timeliness and comprehensiveness of financial and non-financial material,
- awards and prizes – a symbolic element with less importance in the evaluation.

The result was a pioneering comparative study of banks' investor relations in the Polish capital market, the synthetic result of which is the ratings assigned to 20 banks (Table 3).

The maximum number of points possible was 100. No bank in the surveyed group came close to this figure – the highest score was 88.04 points. The best score was achieved by Nordea Bank and the weakest by one of the banks in the CEE region Komerční Banka (Czech Republic). The average for the group of domestic and Western European banks was slightly above 79.5 points, while the average for CEE banks was 70.43 points. The highest rankings were held by the large Western European banks Nordea, Unicredit and BNP Paribas. Domestic banks ranked only slightly lower, clearly distancing the CEE institutions. They scored particularly well in the area of ESG, where performance was comparable to their Western competitors. The relatively small difference in results between banks in Poland and institutions from Western Europe is due to the fact that among the 5 domestic banks analysed, as many as 3 operate within international banking groups, and their majority shareholders are institutions from Western Europe (ING Bank Śląski,

mBank, Santander Polska). This is conducive to the unification of standards – also in the area of investor relations. On the other hand, greater differences were noted in online communication and in the technical aspects of IR services. The main descriptive statistics of the results for the 20 banks were as follows:

- median: 77.39 points
- arithmetic mean: 77.32 points.
- minimum value: 62.35 points.
- maximum value: 88.04 points.
- standard deviation: 6.87 points,
- range: 25.69 points.

Table 3. Ratings by region

Lp.	Name of bank	Points	Rating	Region
1.	Coin Money Bank	81.45	A	Central and Eastern Europe 70,43
2.	Nova Ljubljanska Banka (NLB)	75.30	BBB	
3.	Banca Transilvania	67.29	B	
4.	OTB Bank	65.75	B	
5.	Komerční Banka	62.35	CCC	
6.	Nordea	88.04	AA	Western Europe 79,55
7.	UniCredit	84.85	A	
8.	BNP Paribas	84.19	A	
9.	Erste Group Bank	82.22	A	
10.	Commerzbank	81.56	A	
11.	Deutsche Bank	78.16	BBB	
12.	KBC Group	76.62	BBB	
13.	Société Générale	75.74	BBB	
14.	Credit Agricole	74.09	BB	
15.	Raiffeisen Bank International	70.03	BB	
16.	mBank	83.75	A	Poland 79,76
17.	PKO BP	82.22	A	
18.	ING Bank Śląski	81.45	A	
19.	Santander Polska	76.29	BBB	
20.	Pekao	75.08	BBB	

Source: compiled on the basis of: EKF (2025), *EKF survey and rating,* op. cit.

The survey showed that banks in Poland present a relatively high level of investor relations, comparable to Western European banks and clearly above institutions from other Central and Eastern European countries. The conclusions of the survey are generally positive for banks in Poland, but also indicate areas for further improvement. The majority of banks achieved a similar score of 80 points, which may be due to statistical errors, overly narrow criteria or suboptimal calibration of weights in the assessment model, among other reasons. Such weaknesses may hinder the popularisation of the index and lower its profile in the eyes of potential stakeholders, and would therefore require further refinement, especially with regard to the transparency of the classification rules.

The first critical comments on the index were made by Wiesław Rozłucki[7], who acted as a reviewer of the study. He appreciated the innovativeness of the project, stressing that it was the first such initiative in Poland and if a methodology could be developed that would be considered reliable and replicable, it could become a reference point also outside Poland. His critical remarks focused on:

- ESG – lack of differentiation of results in this category, which raises the question of its real value in the assessment,
- impact on valuation – doubt whether IR ranking will translate into stock market value of banks,
- risk of manipulation – knowledge of the criteria may induce banks to take actions focused on improving the result without a real change in quality,
- small differences in points (most institutions received similar scores, which makes it difficult to rank them or single out leaders) – this raises the question of whether small improvements (e.g. by 1 point) are of practical significance.

The authors of the study emphasised that the convergence of ESG ratings is due to the widespread implementation of basic standards in this area. They also pointed out that even if it is difficult to prove statistically the impact of investor relations on valuations, poor communication can cause banks' stock prices to fall sharply in crisis situations. Therefore, the aim of rating is primarily to reduce information risk and improve the quality of communication. In contrast, the risk of manipulation is countered by qualitative components and the hidden investor test. Although methodologically and practically there are some limitations, the proposed rating can be an impetus to further improve the quality of communication with investors.

Summary

A properly constructed investor relations index should combine global comparability with local specificity, be based on transparent criteria, and take into account both quantitative and qualitative aspects of communication (Black et al. 2017). The EKF's

[7] Wiesław Rozłucki – thePolish economist, Ph. D. h.c. of the Warsaw School of Economics, co-founder of the Warsaw Stock Exchange and first chairman of its board (1991–2006).

proposed bank investor relations index has the potential to become a valuable initiative for the market. However, at this stage, the project needs further development – both in the methodological, empirical and communication layers – to fully realise its potential. In order to strengthen the credibility and increase the impact of the indicator, it is worth considering: making the full methodology public, setting up an independent expert board of market experts, gradually expanding the scope of analysis (ultimately also beyond the banking sector), cyclical publication geared towards open debate with a wide range of stakeholders. Such a direction could help translate the index idea into a sustainable, practical market standard. At present, however, there is no formal structure (institutional cooperation) that would allow for systematic evaluation and development of the index. Without this, the index will remain an internal project of a narrow group, devoid of wider public and market perception. A well-designed index can become a selection tool for investors and analysts, a benchmark for banks, and a market impetus for regulators and exchanges to promote best practice standards without additional formal burdens. However, its global standardisation may be difficult due to the diversity of market practices, languages and regulatory requirements.

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