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PRMIA HUNGARY CHAPTER AND THE 2023 RESEARCH CONFERENCE

Barbara Dömötör – Krisztina Megyeri[1]

ABSTRACT

Financial risks are a constant challenge for business organizations, and failure to manage them properly often has unforeseen consequences, as many crises have shown. In recent years, the regulation of risk management in financial institutions has increasingly focused on optimizing specific metrics, while a holistic approach, a classic risk management attitude, is necessary to understand and address the challenges of the operation on time. This paper describes the main activities of the Hungarian Chapter of the Professional Risk Managers' International Association (PRMIA), through the events of the past years. The focus is on the annual research conference of PRMIA Hungary, a selection of articles from which are included in this issue. In recent years, the spectrum of programs offered by the organization has developed and become more colorful, thanks to the voluntary work of the steering committee and the support of corporate partners and sponsors. Our aim is to connect and develop the risk management community, and we welcome all contributions.

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1 PRMIA'S GOALS AND THE HUNGARY CHAPTER

The Professional Risk Managers' International Association (PRMIA) was established in 2002 to promote the international financial risk management community as an independent, international association. The 28 founding professionals aim to formulate global ethical guidelines, ensure transparency in risk management, develop, and disseminate testing standards, and provide training courses,

1 *Barbara Dömötör*, associate professor, Corvinus University of Budapest, Insititurte of Finance, corresponding author. E-mail: barbara.domotor@uni-corvinus.hu.
Krisztina Megyeri, assistant professor, Corvinus University of Budapest, Institute of Data Analysis and Information Systems. E-mail: krisztina.megyeri@uni-corvinus.hu.

exams, and publications. PRMIA is working to build a world in which risk management is an integral part of financial services, and has made it a priority to develop, improve, and disseminate best practices. The association operates on a non-profit basis, with more than 45 member organizations worldwide. In addition to linking and integrating practitioners, students, and other interested parties, it is also keen to cooperate with other professional organizations.

The Hungary Chapter was founded in 2003, and after trying to find its mission, it was re-established in 2009 in the form in which it operates today. Imre Kondor, one of the leading experts in the Hungarian risk management profession with an academic background, was involved in the founding of the chapter and, in addition to his professional and practical work, he has also given a number of lectures on the subject (Kondor, 2004).

The members of the steering committee are active risk managers from financial institutions, academia, companies and professional supervisory bodies (PRMIA website, https://www.prmia.org), who carry out this activity in a socially engaged way. After 2009, the Hungarian organization was led by *Keve Müller*, *Anikó Szombati*, *Tamás Tóth* and *Barbara Dömötör*.

Initially, the Hungary Chapter focused on connecting the risk management community of practitioners, understanding the growing risks and associated regulatory responsibilities, and the challenges of implementing risk management techniques and expectations. Accordingly, the membership was largely composed of risk management professionals from the National Bank of Hungary (NBH) and commercial banks, therefore events organized by PRMIA were also aimed at their needs and interests.

The majority of the annual events were short, topical events consisting of a few presentations and panel discussions. In the early 2010s, risk managers focused on the impacts and consequences of the crisis and regulatory responses, later on the challenges of artificial intelligence and more recently on sustainability issues, and we organized presentations and workshops on these topics. The closures due to the pandemic also affected the operation of the organization. We successfully transitioned to online events in 2020, and this practice has been partially maintained after the opening, allowing events to be available internationally. Last autumn, at the initiative of the Polish chapter, we organized a joint online workshop on the practical experience of the NBH's Mortgage Funding Adequacy Ratio to help Polish colleagues consider the use of a similar indicator.

The three levels of PRMIA membership offer different benefits. Those who join PRMIA without a financial contribution can participate in free events, as well as webinars and courses offered at a higher fee than contributing members. Contributing members have access to more online materials and paid content at a discounted price, while sustaining members have even more favorable conditions and access to all content.

The next section describes the activities of the PRMIA, the international case study competition, the examination system, and the publications, followed by the annual risk management conference, and the scientific event of the Hungary Chapter, in section 3.

2 PRMIA'S MAIN ACTIVITY

To develop the risk management profession and meet the ever-changing challenges, PRMIA places great emphasis on working with the academic community. The international case study competition for university students and the university PRM accreditation aim to stimulate students' interest in the profession from the very beginning of their education. The PRMIA research conference provides a forum for PhD students to present their related research.

2.1 PRMIA's Risk Management Challenge

The Hungary chapter has been participating in the PRMIA Risk Management Challenge, the PRMIA international case study competition, since 2017. The challenge is open to university teams of undergraduate and master students. The topic of the competition is always a current risk management failure, which the contestants have to deal with based on the questions provided. The questions measure the understanding of the case, but creativity also plays an important role, and the thoughtfulness and feasibility of the students' proposals are also assessed by professional judges. This year's topic was an analysis of the bank failures of last year (Silicon Valley Bank and Credit Suisse).

Every year, around 35-50 teams, 150 to 200 students in total, take part in the competition. Based on the preliminary solutions submitted electronically, teams qualify for the regional round, which is organized by 6-8 PRMIA chapters, and the top 10-12 teams qualify for the international final. In the final round, the teams present their solutions in two streams in front of a professional jury, and the two group winners compete for first place in the second round. In recent years, 3-4 teams have competed in the Hungarian regional round, but when fewer teams have qualified for the oral round, they have competed in the regional round of another chapter. In previous years, teams from the Babes-Bolyai University, Corvinus University of Budapest, Budapest Business University, and Széchenyi

István University participated, and in the pandemic years, a team from Italy also attended because of online presentation opportunities.

The purpose of the competition is to give students the chance to put their skills to the test in a real-life situation, and while each team aims to win the regional round and then progress to the final, participation provides everyone with useful experience and valuable networking opportunities. The Hungarian regional winners came 3rd in the 2018 final, won a special prize in the 2021 final (Best dashboard) and this year won the stream and came second behind the Hong Kong team. We are very proud of the students who participated in the Hungarian regional, and the positive feedback from the local and international judges is a testament to the high quality of the Hungarian risk management profession.

2.2 PRM Designation

The Professional Risk Manager (PRM) Designation is a globally recognized, graduate-level risk management credential. The PRM Program is a series of certification exams, designed to measure the knowledge of professional risk managers and ensure they meet a specific performance standard in their profession. Endorsed by leading university programs and industry firms, it is the global standard for risk management professionals.

To become a PRM candidate, applicants must hold a current Sustaining membership in PRMIA, and have the necessary professional experience. A Master's degree or CFA certificate is a prerequisite, which can be replaced by 2 years of professional experience (for a bachelor's degree) or 4 years of professional experience in the absence of a degree.

Once the pre-requisite is met, the program can start, with two PRM exams to be completed within 2 years. The PRM 1 exam measures general financial markets, financial theory, and basic mathematical knowledge, while the PRM 2 exam covers specific knowledge related to the risk management framework, asset-liability management, operational, credit, and market risk, as shown in *Table 1*.

Table 1
Major domain areas of the PRM program

I	Finance Theory	
II	Financial Instruments	
III	Financial Markets	PRM 1
IV	Mathematical Foundations of Risk Measurement	
V	Risk Management Frameworks and Operational Risk	
VI	Credit Risk and Counterparty Credit Risk	
VII	Market risk, Asset Liability Management, and Funds Transfer Pricing	PRM 2
VIII	Case Study Practicum	
IX	PRMIA Standards and Governance	

Note: Major domain areas of the PRM study program. Exam 2 assesses all areas of the PRM curriculum and even includes practice-oriented questions.

PRMIA members who currently hold the CFA (Chartered Financial Analyst) or CIIA (Certified International Investment Analysts) certification may be exempted from PRM Exam 1. In addition, graduates of PRMIA-accredited university programs may be eligible to exempt themselves from Exam 1. Several university programs in Hungary are in the process of preparing for PRM accreditation.

To maintain the PRM Designation, holders must maintain a Sustaining membership and complete 20 CLR (Continued Risk Learning) credits each calendar year. Credits can be earned by attending events, webinars, publications, and presentations.

As well as the PRM title, which certifies professional risk management skills, there are several certificates available that focus on a specific area or additional professional knowledge, with separate requirements and examination systems. The Associate Professional Risk Manager (Associate PRM) is a PRMIA certificate program intended for staff entering the risk management profession, or those who interface with risk management disciplines on a regular basis, such as auditing, accounting, legal, and systems personnel who want to understand fundamental risk management methods and practices. In addition, certificates can also be obtained for parts of the full PRM and Associate PRMs, for example for operational risk or crisis risk management.

2.3 PRMIA publications

PRMIA provides several comprehensive publications that are used as a part of the PRMIA exam preparation process or that highlight PRMIA standards. Besides the handbooks, a free quarterly publication, Intelligent Risk, features articles by risk management experts on a variety of topics and introduces the PRMIA network. PRMIA Institute Publications contain high-quality white papers from risk management professionals on any matter that is of professional interest to fellow practitioners, and they are available free of charge to PRMIA sustaining members.

Research conferences to present and discuss research on risk management and the publication opportunities provided by PRMIA contribute to the production of scientific publications. Many research papers presented at PRMIA research conferences in recent years have since been published in international and national scientific journals.

3 PRMIA RISK MANAGEMENT RESEARCH CONFERENCE

PRMIA Hungary has been organizing its annual research conference every year since 2016, where mainly academic research is presented by national and international experts. The conference aims to provide both a platform to present basic research issues and to engage the scientific community in the practice of risk management. *Table 2* shows the main topics and venues of the conferences held over the last 8 years. Until 2018, the conference was held in Hungarian, from 2019 in English, with 10-15 presentations in 3-4 sessions per year.

Table 2
Venues and main topics of the PRMIA Risk Management Research Conference (2016–2023)

Year	Venue	Main topics
2016	Széchenyi István University	Path dependent risk-taking, Risk management literature review
2017	Corvinus University of Budapest	Risk measures; Optimization, deregularization
2018	Eötvös Loránd University	Operational risk; Optimal margin setting; Borrowing networks
2019	Central-European University	Cyber risk; ESG factors; Wrong-way risk
2020	online	Effects of COVID19; Peer-to-peer lending; Overdue debt
2021	online	Green central banking; ESG and resilience; Alternative information in credit risk
2022	Corvinus University of Budapest	ESG; Public procurements; Cryptocurrency markets
2023	Corvinus University of Budapest	ESG disagreements, Biodiversity risk; Compliance risk assessment

Note: Venues and the main research topics of the last 8 years' research conferences of PRMIA.

3.1 PRMIA Research Conference 2023

The 8th PRMIA Research Conference was held on 19 October 2023, with 13 presentations in 3 sessions. The first session, on the behavioral effects in finance, was chaired by *Erika Jáki*, Associate Professor at the Budapest Business University.

In the first presentation, *Péter Juhász* presented his joint research with *Tünde Tátrai*, in which the ethical characteristics and integrity of the Hungarian public procurement market were examined based on questionnaire data collected in 2009, 2011, 2013, 2019, and 2021. The questionnaire was filled in by 91-100 respondents each year, representing bidders, contracting authorities, and legislative and advisory market participants. The results show that during the period under review, market players identified the reduction of corruption as a very important factor that could improve the efficiency of public procurement. For most of the years, tenderers perceived the problem as significantly more serious than other actors. Respondents agreed that the level of legal regulation in eliminating various unfair competitive elements is at best moderate and has at best stagnated since 2009. Based on the panel regressions run on the aggregate variables of the different ethics and corruption variables, the authors conclude that the perceived overall level of ethics of market participants stagnated in the period 2009-2021, with only the Bidder segment perceiving an improvement in 2021. The perceived overall corruption risk, on the other hand, showed an inverted U-shaped curve: the value increased until 2018, then fell below the 2011 level in 2021, but still exceeded the 2009 value.

Gergely Fazakas presented an example of „gamification", which is becoming increasingly important in university education, in which students can experience the psychology of financial market investment decisions in the context of a stock market game. The knowledge acquired in such a gamified form is more effectively retained through experience, and the experience helps to link the theory of economic decisions to practice. In addition, the analysis of the results of each game can also be used to examine the decisions of the uninformed players. The author analyzed the investment decisions of 44 groups of 136 students, some of whom had a degree in economics and some had other degrees. Several behavioral effects such as herding (following the majority decision) overconfidence, and overestimation of one's own abilities were more strongly present in the decisions of the postgraduate students, who persisted in their bad decisions in the long run and were more risk-averse.

The third presentation also investigated, on a sample of university students, whether certain aspects of financial literacy (knowledge, behavior, attitude) differ by gender and whether specific university talent management programs improve financial literacy. The results show that significant gender differences disappear or diminish with the inclusion of additional explanatory variables, with differences being driven primarily by the aspiration variable defined by the authors. Among students enrolled in a finance bachelor's degree, a talent management program is associated with greater financial literacy, but there is no significant relation with behavior and attitude. Based on these results, the authors (*Edina Berlinger*, Barbara Dömötör, Krisztina Megyeri, *György Walter*) suggest that it may be worthwhile to increase female aspirations.

In the last presentation of the panel, *Fanni Dudás* presented her joint research with *Helena Naffa*, which investigated the dispersion of ESG (Environmental, Social, Governance) ratings measuring corporate sustainability and their relation to corporate performance. Based on panel regression analysis of MSCI data from 2018 to 2022, the authors found that the financial performance of companies is positively correlated with the dispersion of ESG ratings across rating firms, i.e. the less the analysts agree, the better the company's performance. Looking separately at the environmental, social, and corporate governance elements of ESG, a negative relation was found for environmental ratings in developed market companies, and social ratings in emerging markets, so diversity of peer opinions was associated with poorer performance in these markets.

The second session focused on research on financial markets, with a particular focus on the emergence of sustainability in finance. The session was chaired by Helena Naffa, Associate Professor at BCE.

Li Jinlong, using data from Chinese A-share listed companies, showed that a good ESG score improves banks' risk exposure and contribution to systemic risk. For this reason, sustainability improvements have a significant risk-mitigating effect and regulatory intervention in this area is worth pursuing.

The next two presentations of the panel focused on biodiversity. *Li Xinglin* gave an introductory presentation, stressing the complexity and importance of the topic and highlighting the undue attention that the academy has paid to this issue in recent years. In addition to the negative impacts of global warming caused by human activities, the problem of biodiversity loss is increasingly coming to the fore, with unforeseeable economic costs. The presenter's joint research with Helena Naffa is a literature review, with the following findings: there is typically little empirical analysis in the available literature, given the lack of a uniformly accepted metric for measurement. Given the topicality of the issue and the urgency of the intervention, most publications have appeared in political journals and tourism publications. The studies generally deal only with very specific topics, so no broader recommendations can be derived from them. Measuring biodiversity, and assessing the effectiveness of initiatives to conserve it and halt its loss, is seen by the authors as one of the most important future research directions.

Biodiversity was also the topic of *Gergely Czupy*'s presentation. He presented his joint research with his thesis supervisor Helena Naffa on the costs of investment strategies defined as sustainable. The risk-adjusted returns of investment portfolios with constraints scoring biodiversity loss are necessarily lower than those of investment strategies without such constraints, but the cost is relatively small when looking at data for firms in the MSCI All Country Index between 2013 and 2022. This suggests that regulatory measures to strengthen sustainability considerations, even with negative prescriptions, are worthwhile and necessary.

In the last presentation of the session, participants could listen to the research of *Sándor Misik*. Predicting correlations between different assets is essential when making investment and hedging decisions. The author investigated the correlations between the Central and Eastern European currencies (HUF, CKK, PLN) and the two major currencies (EUR, USD), comparing the predictive ability of the implied correlation in option prices with the correlation calculated from historical data. Based on daily currency data from 2006 to 2023, the models performed differently across currency pairs and time periods, but correlations calculated from exponentially weighted historical averages proved to be the most accurate in most cases.

The third session of the conference was chaired by *Zsolt Bihary*, Associate Professor at the Corvinus University of Budapest, on the topic of financial infrastructure and modeling.

Petra Benedek presented a theoretical approach to regulatory compliance risk in financial institutions. Joint research with *Ferenc Bognár* explores several risk assessment frameworks, extending the assessment to cultural and organizational dimensions. In addition to the importance of compliance culture, risk appetite, and sound risk management principles, the authors emphasize the critical role of leadership and communication, sustainability expectations, and social responsibility. The research suggests how future studies can integrate emerging technologies such as artificial intelligence and machine learning into compliance risk assessment frameworks.

The next presentation was on peer-to-peer (P2P) lending, a platform-based form of financial intermediation where lenders and borrowers meet directly. Alternative financing solutions became widespread after the great financial crisis and the literature has largely examined their characteristics during the economic boom. *Tímea Ölvedi* has used data from 61 countries to examine how P2P lending between different types of country groups evolves during a pandemic, i.e. an economic crisis. Using a machine learning methodology, the author identified three groups based on their economic profile before COVID and examined their reaction to the crisis. The growth rate of P2P lending was higher in the more economically unstable countries, and regions with weak banking systems experienced higher demand growth. The results support the hypothesis that P2P lending is a substitute for traditional financial intermediation in markets with weak intermediation infrastructure.

In his presentation, *Balázs Králik* analyzed the cryptocurrency market, one of the most important new financial investment products in recent years. Together with *Kata Váradi* and *Nóra Felföldi-Szűcs*, he examined the efficiency of the market using high-frequency (per second) data of Ethereum options quotes. Based on Binance exchange options quotes, put-call parity was not met, leaving significant arbitrage opportunities even after accounting for bid-ask spreads and other trading costs. However, as naked short positions are prohibited for retail investors, this arbitrage opportunity is only available to market makers. The authors also introduce a measure of arbitrage profit, which can be interpreted as a measure of market inefficiency.

Gábor Kürthy presented his joint research with *Ágnes Vidovics-Dancs*, which models the consequences of the introduction of the Central Bank Digital Currency (CBDC). This form of money, which is a claim on the central bank and can only be stored and used in electronic form, is treated as an extension of the payments portfolio, which reflects the optimal choices of economic agents. The framework presented can be used for both static and dynamic analysis, allowing the effects of the introduction of CBDCs, such as the reduction of cash holdings or disintermediation processes, to be examined. The advantages of the approach include that it does not require the identification of individual preferences and allows the simultaneous assessment of different impacts. The authors illustrate the model with simulations and estimates based on real data.

In the last presentation of the session and the conference, Zsolt Bihary presented his joint research with Edina Berlinger and Barbara Dömötör on modeling the impact of anti-cyclical margin determination. Risk-sensitive margin requirements necessarily increase cyclical volatility, as in a crisis, increased margin requirements following increased volatility force market participants to sell additional assets, which further pushes down prices. To prevent this, the regulator has introduced a rule requiring clearing institutions to hold a margin buffer in calm market conditions, which they can release in times of stress. This will undoubtedly reduce the pressure on market participants, but it is not at all clear how this will affect the losses of central clearing houses. The authors derive the optimal size of the margin requirement in a multi-period theoretical model and show through realistic simulations under which market conditions the expected loss of a clearing house can be minimized by an anti-cyclical margin requirement.

The varied themes of the conference generated a lively debate. The audience was largely drawn from the academic community (lecturers, researchers, students), but the conference also provided useful insights for practitioners.

4 SUMMARY

PRMIA Hungary aims to connect risk management professionals and provide a platform for the profession and academia to exchange experience and knowledge addressing the latest challenges, and for academic debate. The organization operates on a non-profit basis, with membership fees paid by the membership and sponsorship funding to finance events, conferences, and student case study competitions. In addition to expanding professional membership, our aim is to build a stable student base at universities and to integrate and accredit Hungarian universities into the PRM program.

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