

CONDUCT RISK IN THE FOCUS OF THE REGULATOR

Risk mitigation with qualitative and quantitative methods

Orsolya Szendrey – Róbert Szini – András Tomsics

Financial institutions have suffered significant losses recently due to their inappropriate conduct of business. As a result, the management of conduct risks has gradually come into the focus of regulation. Our article defines the place of conduct risk within the risk management framework. Furthermore, we illustrate with Hungarian and foreign examples for significant losses why appropriate management of conduct risks is needed. Subsequently, we demonstrate how the risk type concerned can be managed with qualitative and quantitative methods of operational risk management. By conducting a quantitative analysis, we show the effects of taking conduct risks into account in the different elements of internal models on the capital requirements.

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1 INTRODUCTION

The financial crisis shed light on the fact that the greatest losses of the institutions are typically related to credit risk. At the same time, the second most significant risk type is operational risk, which can be considered as a key element of the current changing regulatory environment.

Our definition of conduct risks is based on the guideline of the European Banking Authority (EBA, 2014). According to this document, conduct risks include current or future losses arising from the inappropriate way in which the institutions provide financial services, irrespective of whether the damage is caused deliberately or not. Based on the EBA's guideline, conduct risk belongs to the subcategory of legal risks within the category of operational risks, therefore the framework of conduct risk management should be closely aligned with operational risk management practice.

In order to support our starting point based on the definition by EBA and provide a more comprehensive picture, we would like to draw the reader's attention to further definitions. It is a challenge even for the regulatory authorities to give a general definition for conduct risks due to their appearance in a great variety of forms. The European Systemic Risk Board (ESRB) draws attention to this prob-

lem in its publication on conduct risk (ESRB, 2015), claiming that due to the wide range of forms in which conduct risk appears, it is hard to give a simple and unambiguous definition¹. In view of the above, instead of giving a concrete and clear definition, the ESRB defines conduct risk by listing its main forms of appearance.

In contrast with ESRB, the Australian financial supervisory authority (ASIC) published a concrete definition for conduct risks (ASIC, 2016) to its supervised institutions. As opposed to the definition by the EBA, according to definition by ASIC, conduct risk refers to the loss arising from deliberate procedures conducted by the employees and decision makers of a given organisation which are incorrect, unethical or illegal concerning business.

Haines (2016) emphasises the typically diverse definitions given by regulatory authorities. According to him, no uniform definition exists for conduct risk, as the form of appearance, limitability and inherent degree of conduct risk significantly differs if we approach it from a microprudential, reputational, system risk or consumer protection perspective. Haines believes that in the case of the aforementioned aspects, giving unique, area-specific definitions should be the practice to follow. In order to support his concept, he mentions that the market participants facing each other and the degree of protection achievable by means of regulation cannot be clearly defined.

In line with the definitions presented above, it is also worth mentioning *Ariane Chapelle's* interpretation (2017), according to which instead of risk, we should use the general term conduct of business, as this type of risk has a comprehensive character, overarching the whole organisation. Based on this extended definition, the appropriate practice of conducting business as well as the management of the related risks applies to the whole organisation and its operation.

In addition to the aforementioned regulations, we would like to draw the reader's attention to the Markets in Financial Instruments Directive² (MiFID II), which is a key element of our article and applies to conduct risks arising in the course of the activity of credit institutions, the provision of investment services, regulated markets and multilateral trading systems. MiFID II also contains elements aiming to reduce conduct risks. Inter alia, the directive includes stricter controls over the activity of the employees of investment service providers in order to decrease possible conflicts of interest between market players. Furthermore, for the sake of reducing and mitigating conduct risks, the directive increases the number of

¹ "...the issue is so broad in scope that a single, narrow definition neither seems possible nor desirable."

² MiFID, which has been in force as of November 2007, has been reviewed because of changes in financial markets. As a result of the review, the amended directive (MiFID II) and regulation (MiFIR) were published in the official journal of EU in 2014, however their implementation deadline was 3 January 2018.

tasks of the issuer of the investment product related to the compliance of the sales channel if the sale takes place through a third party. In addition, the directive assigns new core tasks and responsibilities to the leaders of the Compliance areas.

The identification and management of conduct risks have come into the focus of the regulators' attention over the past few years, as supervisory authorities have detected several serious irregularities in the operation of the participants of the financial system. Along with the continuous development of the IT systems, beside standardised product structures, customised product concepts have appeared, creating a new source of risk in previously standardised processes. The significance of conduct risk has also been confirmed by the results of the surveys conducted by Risk.net, based on which the risk referred to was ranked highly on the list of the 10 most important operational risk sources both in 2016 and 2017.

Table 1
The position of conduct risks among the most important risk types

	2016	2017
1	Cyber risk	Cyber risk and data security
2	Conduct risk	Risks deriving from the regulatory environment
3	Risks deriving from the regulatory environment	Outsourcing
4	AML	Geopolitical risks
5	Risks related to organisational changes	Conduct risk
6	Outsourcing	Risks related to organisational changes
7	HR (labour force recruitment, retention)	Risks arising from the regular IT errors
8	Risks arising from the regular IT errors	AML
9	Terrorism	Fraud
10	Fines imposed by regulatory authorities	Physical attacks

Source: Risk.net (2016; 2017)

The actually quantifiable and measurable losses arising from conduct risk appear in the form of fines imposed by the authorities, amounts of compensation and remedy costs to be paid to the clients, clearly indicating the gravity of the problem through press reports. At the same time, the gravity of the problems related to conduct risk is increased by the reputational losses which are difficult to quantify and arise from the loss in market confidence.

As the interpretation of ‘conduct risk’ is constantly changing, it cannot be considered as a definite term. The primary aim of our article is to collect and review potential loss types related to conduct risks and the possible ways to manage them. It should be noted that hereinafter loss types related to conduct risk will not be categorised³ in accordance with the Basel event types. On the one hand, conduct risks can practically appear in all Basel event types. On the other hand, most conduct risk events do not clearly correspond to the two high priority categories, i.e. the event types “Clients, products and business practice” and “Internal fraud”, into which they fall, as such categories may also include events which are not integrally linked to the risk concerned.

Our attempts to identify conduct risks are based on the study by *Seregdi (2016)* and the classification by the Financial Conduct Authority. In addition to classifying the events, we illustrate with several significant international and national examples the degree of losses conduct risks may generate in the course of the everyday operation of institutions, throwing light on the special importance of appropriate and integrated management of this risk type.

After identifying and reviewing loss events, we move on to the examination of the management of conduct risks and their positioning in the operational risk management framework. Before giving an overview of risk management tools, we examine the individual organisational units and control functions of institutions can be involved in the identification and management processes of conduct risks. We seek to examine the possible ways of managing conduct risks in accordance with the regulatory requirements and demonstrate how the management of this risk type can be integrated into the individual elements of the operational risk management framework.

After the description of qualitative and quantitative risk management tools, the article will end with an assessment, in which we will examine the impact of the most important domestic event, the loss arising from compliance with the laws aimed at supporting foreign currency loan borrowers, which were also published in the Management Circular of the National Bank of Hungary (MNB, 2015), on capital requirements in the case of three institutions. The impact assessment will be conducted by means of the internal operational risk models of the institutions.

3 CRR Article 324, Chart 3

We will also demonstrate why this risk type has come into the focus of the regulator's attention based on quantitative considerations.

At the end of the article, we will outline the expected regulatory changes which may raise further questions about the quantitative management of conduct risks which differs from the qualitative management of those risks and the model.

2 POSSIBLE FORMS OF CONDUCT RISKS

In order to understand the comprehensive term 'conduct risk', first, we should review the event types and business practices which need to be assessed among country risks based on the definition presented in the previous chapter. The aim of this chapter is to present the forms of conduct risks by illustrating them with examples for significant losses from the recent past. In its 2013 treatise (FCA, 2013), the Financial Conduct Authority divided conduct risks into three categories. Firstly, they described the inherent risk factors of the organisation, secondly, risks arising from the structure and culture of the financial sector, finally, risks posed by the external environment. It should be emphasised that in addition to the above-mentioned risks, there are indirect losses which are difficult to quantify, such as the deterioration of reputation of the institution or the whole financial sector and the uncertainty felt by citizens.

Internal factors include events evoking consumer dissatisfaction as a result of which clients cannot get the product they really need. According to the authors, risks arising from information asymmetry, distortion and the financial knowledge of clients belong to this category.

We can talk about information asymmetry if the client does not exactly understand the conditions of a specific product or misinterprets them. Misinterpretation of the conditions can be due to incomplete information leaflets, a mistake committed by the salesperson or the lack of some basic financial skills to be discussed later.

When selecting financial product, clients often distort available information owing to recent commercials, advice received from acquaintances (positive word-of-mouth advertising) or their own excessive self-confidence. Due to distortion, clients often set up incorrect heuristics, and in the end, take decisions on the basis of them.

In general, clients without any previous qualifications are not able to assess what kind of products they actually need, and cannot make a conscious decision when choosing from the recommended products.

The bad Hungarian loan portfolios during the crisis are good examples for losses arising from internal factors. In the period after the change of regime, due to the

lack of the necessary financial awareness and information asymmetries, a significant part of the population took out loan facilities (such as foreign currency loans with disproportionately high interest compared to their income or multiple loans at the same time) which they could not have afforded based on their financial situation. Their decision significantly contributed to loan defaults.

Risks arising from the characteristics (structure and the applied processes) of the financial sector constitute the second main group. Internal conflicts of interest, cultural effects and inefficient competitive situation fall into this category.

Internal conflicts of interest may arise if the inner motivation of the employees of financial institutions (the goals to be achieved, their remuneration) is not in line with the product or service which is the most suitable for the client. The reasons for this might be the wrongly established business processes and incentive systems as well as the lack of training of employees taking part in sales activity. The risks might be further increased if the institution is not properly prepared for the satisfaction of its clients' needs when creating its product structure, as the products sold will not be appropriate for the client or may even cause damage.

Corporate cultural impacts and processes refer to issues related to responsible company management and organisational processes. At the same time, conflicts of interest appear at the level of senior management, as well. In order to achieve its goals, the management responsible for corporate governance may take decisions which may not represent the interests of the institution in the long run.

Owing to ineffective competitive situations, clients can purchase a specific product at a higher than normal price and under worse terms and conditions. The reasons for this may be the cartel activity of financial actors and the breach of confidentiality.

In connection with responsible company management, we would like to mention the high fine (Reuters, 2015) imposed on BNP Paribas by the supervisory authorities of the United States for the bank's activity between 2002 and 2012. The institution traded with clients from countries under the embargo of the United Nations. The senior management of the bank was aware of the infringement, but decided to maintain the established business relationships and not to end them even after the start of the investigations.

As far as ineffective competitive situations are concerned an international as well as Hungarian events have taken place over the past few years. The LIBOR (London Interbank Offered Rate) scandal, which broke out in 2012, seriously damaged the reputation of the whole banking sector (*The Economist*, 2016). During the crisis, Barclay's Bank was interested in setting low reference rates. To this end, they deliberately influenced the LIBOR level by recommending interest rate estimates.

In Hungary, the operation of the “Bank Database” belongs to this category. A significant percentage of domestic financial institutions shared data from the database operated by the Hungarian Banking Association and the International Training Centre for Bankers Plc. The quarterly/annually published data were suitable for disclosing information related to the business secrets of competitors, as well as for the incorporation of such information into the process of business planning (Hungarian Competition Authority [HCA], 2016).⁴

The third group of conduct risks consists of environmental effects, including all the effects which arise outside the organisation of the financial institutions and may lead to loss. Such environmental effects are economic cycles, technological development and the change in the regulatory environment.

The change of economic cycles poses conduct risks, as during economic boom, financial institutions tend to loosen lending terms and grow too expansively in the market, which might result in loan defaults in the event of market stress.

Nowadays, technological development and digitalisation have a strong impact on the financial sector. Banking services are increasingly taking place on the Internet, the process of lending is becoming automatic and new market participants offering alternative banking services are appearing. The new areas have not been properly regulated yet, which makes them easily evadable and a source of losses.

The change of the regulatory environment might be a challenge to financial actors, as despite the fact that most future regulations are disclosed well in advance, there are some changes for which organisations cannot prepare.

In Hungary, the banking sector has suffered the greatest loss owing to legislative changes aimed at supporting foreign currency loan borrowers over the past few years. The losses arising from Act XL of 2014 on the Rules of the Settlement, the conversion of foreign currency loans into HUF and the loss of income because of Fair Bank acts were all legislative changes for which financial institutions were not prepared at the time of granting loans.

3 THE PLACE OF THE MANAGEMENT OF CONDUCT RISK IN THE OPERATIONAL RISK FRAMEWORK

The aim of the next chapter is to present the possible management of conduct risks in accordance with the requirements of the CRR and the ICAAP handbook published by the National Bank of Hungary (MNB, 2017) and place it in the op-

⁴ Financial institutions dispute the Hungarian Competition Authority’s decision. The lawsuit on the competitive nature of the BankAdat database is currently pending at the competent court (*editor*).

erational risk management framework. Conduct risk shall be assessed among operating risks, therefore its management system shall be established in line with and closely integrated into the operational risk framework. Basically, the CRR defines three possible methodologies for the calculation of operational risk capital requirements. The use of the Standardised Approach (TSA) and the Advanced Measurement Approach (AMA) require the permit of the supervisory authority, while the use of the Basic Indicator Approach (BIA) does not.⁵ In order to apply methodologies subject to licencing obligation, institutions shall fulfil quality and quantity requirements, the most outstanding of which is the establishment and operation of a comprehensive and integrated operational risk framework. As operational risks can be managed mainly by means of qualitative methods, first, we should review how the management of conduct risk can be incorporated into the system of quality requirements related to the use of the standard and the advanced measurement approaches.

3.1 Qualitative methods for the management of conduct risk

As we presented in the second chapter, the very complex definition of conduct risks has an extremely diverse source, which makes the identification and subsequent management of risks a complex task. We also pointed out that, with the exception of the advanced measurement approach, conduct risks cannot be managed by using quantitative methods. By ensuring responsible corporate governance and internal regulation, creating product structures and continuously tracking risks, qualitative tools enable institutions to assess and appropriately manage their conduct risks.

The qualitative elements of the operational risk management framework include the determination of operational risk strategy and operational risk appetite, the collection and analysis of internal loss data, the establishment and operation of key risk indicators, the process of self-assessment and scenario analysis, as well as the definition and continuous assessment of risk-reducing actions. The starting point of the operational risk management framework should be the review of the tasks and responsibilities of those who take part in the processes.

Responsible company management is considered to be the most important role, as managers have the rights and power to ensure the operation of the framework and the establishment of the commitment of other employees. As the aforementioned examples show, it is essential that the senior management of the company

⁵ The fourth methodology mentioned by the CRR is the alternative standardised approach, however, none of the Hungarian supervisory institutions uses it for the calculation of the capital requirements.

be committed and strive to achieve long-term goals instead of short-term profit. Consequently, it is indispensable that managers be aware of the sources of possible losses and be informed continuously about actual risks.

In addition to senior management, several other roles which constitute an integral part of the operational risk management framework can be identified within the organisation. The organisational unit responsible for fraud management identifies and maps internal fraud events and takes the necessary actions to mitigate the damage caused and prevent its reoccurrence.

In many cases, conduct risks can be identified on the basis of client feedback, therefore significant resources should be allocated to the continuous assessment and analysis of the complaints of dissatisfied clients. Apparently, the complaint handling process is suitable not only for the retention of clients, but by a detailed analysis of just and unjust client complaints also for the prevention of the causes of information asymmetry, as well as the resulting distrust and deterioration of client satisfaction.

We would like to emphasise the task of internal audit, as the employees responsible for this area ensure the comprehensive audit of the risk management framework by means of thematic audits and control points built in institutional processes. By conducting a well-organised internal audit, the level of losses arising from negligence, poor conduct of business and purposeful wrongdoing can be decreased. It should also be highlighted that in the organisational structure of a credit institution, the Compliance as an organisational unit and the Ethics Committee also play a key role in the mitigation of losses arising from conduct risks.

As we mentioned earlier, both inappropriately designed products and process deficiencies can pose conduct risks. When designing the products, special attention should be paid to the proper assessment of the clients' needs. The level of information asymmetry may increase if the parameters of the products are not transparent enough or have a complex cost structure. The situation is aggravated if termination of the contract or refinancing of the product is difficult or the client has to bear considerable costs. A bad financial decision could render the financial situation of the clients difficult for years. The limited possibilities of leaving such a situation owing to aggressive client retention and compulsory product tying may result in the clients' financial default. During the process of product development and sales, institutions should strive to enforce their interests without harming their clients and misusing their dominance deriving from their higher level of financial knowledge.

For the purpose of controlling the products launched by the institutions and the related sales processes, we recommend the introduction of a product inventory document. In our opinion, if decision makers and auditors wish to see the conduct risks related to certain products clearly, a list that includes the potential risks

of the products shall be prepared and continuously maintained. In line with the structure presented in Chapter 2, the product inventory should contain the following data:

- a) In order to assess inherent risks and offer the appropriate product to the client: the basic data of the product, the different individual product versions, the related products and services, parameters suitable for misleading the client, sales channels;
- b) In order to reduce risks arising from the features of financial institutions: arising conflicts of interest, remuneration structures, potential aggressive sales situations, client complaints, change of products and the condition for the termination of product contracts;
- c) In order to reduce the risks posed by the external environment: the relevant laws and draft amendments, former fines, regulations by supervisory authorities, relevant IT innovations.

Regarding conduct risks, the collection of internal loss data is important because, as we will describe in detail in Chapter 3.2., in accordance with the advanced model approach, methodologies for the calculation of capital requirements are based on validated loss data. In addition, several elements of the qualitative framework can be examined by using such information.

In the case of financial institutions, the role of key risk indicators is the measurement and tracking of the risks posed by the internal and external environment. Having regard to the fact that the identification of conduct risks is a complex task owing to the diverse sources of loss, the use of specific key risk indicators may help the institutions to measure and reduce risks. For example, the indicators can be used for monitoring internal fraud events, incoming client complaints and the efficiency of their management and the fines imposed on the institution. It should be emphasised that not only just client complaints, but also unjust claims are suitable for the prediction of losses. The increased number of complaints may reveal the inherent deficiencies of the product or process which increase the dissatisfaction of clients.

The next qualitative method of advanced methodology is the assessment of inherent uncertainties in business environment, the assessment of processes and controls, that is self-assessment. Both the analysis of loss events and the identification of future sources of loss rely on data obtained in the course of internal data collection as well as on information from external databases, press reports and key risk indicators. In order to reduce conduct risks, institutions shall strive to assess all the relevant processes, external and internal regulations and their impacts during self-assessment. The results of self-assessment serve as input during scenario analysis process and decision-making on risk-reducing actions, as well.

In the course of scenario analysis, typically low-frequency events resulting in high loss are identified, assessed and the degree of the possible loss is estimated. As our examples show, conduct risks often appear as individual events with serious loss. In view of the above, the institutions should create scenarios which estimate the impacts of incidental conduct risks and provide guidance for the reduction of the likelihood of their occurrence. With regard to the fact that scenarios are usually created in accordance with the Basel categories, conduct risks are mainly related to event types such as internal fraud, clients, products and business practice (event types 1 and 4). However, we would like to emphasise that other event types may contain relevant losses, as well, for example in the form of fines. As far as internal fraud is concerned, scenarios shall include loss events arising from control or process deficiencies. Scenarios on business practice, such as scenarios on defective products, launch and sales processes, shall assess the risks of legal compliance, aggressive sales, misinformation, impossible fines and losses arising from providing compensation to clients. It is worth involving reputational loss events through client complaints, negative press reports and the clients' loss of confidence.

The institutions need to manage risks identified in the course of self-assessment and scenario analysis by means of risk-reducing actions and action plans in order to minimise the degree of the loss and decrease the probability of the occurrence of the given event. The continuous presentation of the assessed risks and their solution to the management should be a priority task, since they need such detailed and up-to-date information to take responsible decisions.

As we have seen in this chapter, the management of conduct risks fits well into the operational risk framework. The accurate collection of internal data, the creation of specific key risk indicators, the extension of self-assessment and scenario analysis, as well as taking relevant actions enable the organisation to identify risks in time and subdue their loss effect.

3.2 The relationship between conduct risks and capital requirements

This chapter aims to assess the impact of loss events related to conduct risk on capital requirements and provide possible methods for the appropriate consideration of such impacts in the calculation of capital requirements of events related to conduct risk. The aforementioned BIA and TSA methods, which are suitable for the quantification of capital requirements, are exclusively based on the gross revenues of the institutions, therefore they are not suitable for the consideration of conduct risks.

In view of the above, we conducted our examination by using the internal models of three Hungarian banks. Due to the regular annual ICAAP reviews, all relevant

data are available⁶ for the reconstruction of the entire internal model. Having regard to the third pillar stipulating the publication requirements of the Basel regulation and the public character of the decisions on the approval of the advanced measurement approach on the website⁷ of the National Bank of Hungary, the three institutions applying AMA methodology, the models of which we have used, are the following: OTP Bank Group, FHB Bank Group and Budapest Bank Zrt. At the same time, having regard to the fact that the methodology and structure of the internal models and their quantified capital requirements are not public, we set aside the presentation and comparison of individual models. Based on this, the following analyses can be nothing more than impact analyses, therefore our results are presented as a percentage, without infringing any business or bank secrets.

One of the famous events related to conduct risks and affecting all banks, which required special treatment in accordance with the operational risk approach, was the loss arising from the compliance with the laws⁸ on supporting borrowers in foreign currency (hereinafter referred to as loss related to foreign currency loans). According to the following opinion issued by the National Bank of Hungary earlier (Management Circular, 2015), such events shall be included in the loss databases of the institutions, however, they shall be considered only indirectly, under the scenario analysis branch of the approaches used by the institutions for quantifying capital requirements. The Circular mentions two reasons for indirect consideration in the approaches: On the one hand, the loss can be considered a one-time, supposedly non-recurring event. On the other hand, its direct consideration would be unfair to banks using the advanced model as opposed those which apply the BIA or TSA methods.

In view of the above, the National Bank of Hungary considers the principle of standardised management and proportionality as a non-infringing solution in accordance with point 257 of the EBA Directive (EBA, 2014), while it regards the consideration of conduct risks appropriate in a prospective way. Based on this, the institutions shall assess the risk of events related to rare but severe conduct risks, including risks arising from foreign currency loans risks during the scenario analysis. In the case of internal models, based on the results of the scenario analysis, the institutions shall form additional capital requirements, instead of consideration at historic rates.

6 In the case of subsidiaries in foreign ownership, the group-level internal model and the capital requirements cannot be reconstructed, as no local loss database is available for the whole group and all relevant data are required for the prospective rate of the model.

7 <https://www.mnb.hu/felugylet/engedelyezes-es-intezmenyfelugyeles/hatarozatok-es-vegzesek-kerese>

8 Act XXXVIII of 2014 (the so-called Curia Act), Act XL of 2014 (the so-called Settlement Act), Act LXXVII of 2014 (the so-called Act on the Conversion of Foreign Exchange Loans to HUF) and Act LXXVIII of 2014 (the so-called Act on Fair Banking)

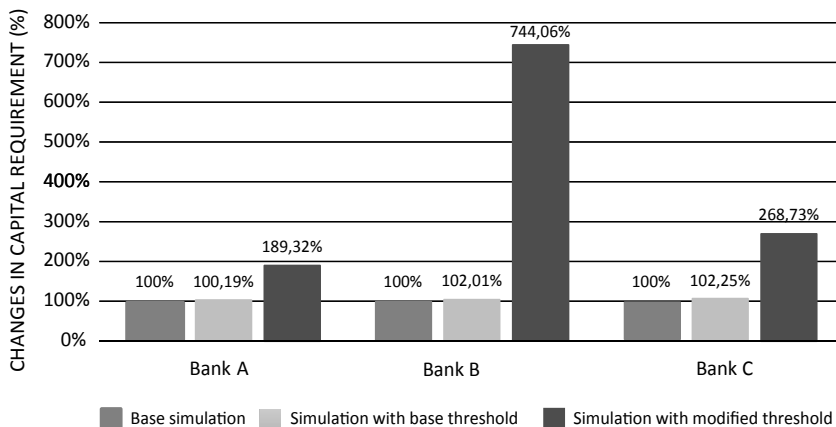
In our article, we try to answer the following question: In the case of institutions with an internal model, would the consideration of the loss related to the FX conversion event concerned at historic part of the model really have resulted in considerable capital requirement surplus? In order to answer this question, we ran the internal models of the three aforementioned banks in two different ways respectively:

- a) Taking into account the loss arising from foreign currency loans indicated by the aforementioned supervised institutions, we re-estimated the integrated distributions based on their own loss database in the case of each model segment which included the Basel branch and event categories of retail banking, clients, products and business practice, as the above-mentioned Management Circular classified the indicated loss into these categories. If the banks concerned applied an upper threshold parameter in their internal model, we kept it at the original level determined by the banks;
- b) Similarly to the previous point, we re-estimated the parameters of integrated distributions (in the case of each bank, in their own database, complemented by their own loss arising from foreign currency loans). At the same time, we determined the level of the upper threshold at the level of the loss event concerned.

Before presenting the results, we would like to clarify the role of the upper threshold as a model parameter. In AMA models, the upper threshold refers to an upper limit of simulated loss events. By means of this parameter, we can prevent the simulation of loss above an economically credible loss level. Consequently, the upper threshold keeps the individual simulated losses within an economically relevant range. In our view, the two options above are needed for our calculations, because in the case of option a. the consideration of losses related to foreign currency loans when integrating severity distribution will practically have no impact on capital requirements, as due to the upper thresholds, the loss effect of the event concerned cannot be realised during simulation. By means of the upper thresholds, we can simulate values artificially, from a range much narrower than the loss effect of the event concerned. As a result, we underestimate the real effect of the loss event concerned on capital requirements. In the case of option b., these values are corrected. By determining the level of the upper thresholds at the level of losses arising from foreign currency loans, we enabled the banks to realise an event of similar severity during simulation. The relevant results are illustrated by the following chart. The three aforementioned institutions are marked by A, B and C.

Chart 1

The change in operational risk capital requirements, taking into account the losses related to foreign currency loans



Source: own calculation

As Chart 1 shows, the consideration of losses related to foreign currency loans does not result in material capital requirements in the case of any institutions if we do not modify the upper threshold parameter, that is we consider the loss event only when determining the integrated severity distribution parameters. However, if we consider the upper threshold parameters in the individual models to be loss suffered by the institutions during the occurrence of the event concerned, the effect is obviously significant: In the case of bank “A”, capital requirements almost doubled, in the case of bank “C”, they grew by more than 250%, while in the case of bank “C”, they increased by nearly 750%. In the base of bank “B”, the significant increase compared to the other two institutions has methodological reasons. In the course of AMA modelling, the institutions often model severity distribution for loss events classified into the individual model segments in two “parts”. The less severe and frequent losses are modelled with less heavy-tailed distribution⁹, while severe and rare losses are¹⁰ modelled with heavy-tailed distribution. In the case of bank “B”, as opposed to the other two institutions, the modelling of the tail distribution was based on much more internal data, therefore, in the case of events on the edge, the estimated frequency distribution parameter is significantly higher than in the case of the two other banks. In view of the above, in the case of bank “B”, after the correction of the upper threshold, we simulate relatively

⁹ most frequently, lognormal distribution is applied

¹⁰ the most general Pareto distribution

more events from the edge of severity distribution when calculating capital requirements than in the case of other banks, therefore considerable surplus capital requirements are generated. Based on the above it is obvious that the appropriate consideration of losses arising from foreign currency loans in internal models would have resulted in a significant surplus capital requirement for those institutions which applied the internal model. On the whole, it is clear that the appropriate consideration of the event concerned by the users of the internal model in the course of the calculation of the capital requirements would have really infringed the principle of proportionality. On the other hand, in the case of those who applied the BIA and TSA methodologies, the event concerned would not have resulted in surplus capital requirements, as their capital requirement calculation is independent of the degree of the losses they suffered.

In the following part of our article, we will examine to what extent events related to conduct risks – without losses arising from foreign currency loans, in accordance with the expectations of the Management Circular of National Bank of Hungary – determine the operational risk capital requirements of the institutions and what proportion of them they represent. This question is relevant again only in the case of banks applying internal models, as the capital requirement level of those banks which apply the BIA and TSA methodologies is considered to be independent of the number and level of loss events related to conduct risks.

During the annual ICAAP reviews we observed that on the basis of the currently available non-extensive EBA interpretation (EBA, 2014), banks usually identify conduct risks based on different criteria. Out of the three institutions examined above, the conduct risk definition of bank “A” was the most in line with what we consider to be the best practice, therefore we conducted the calculations by means of the loss events of institution “A” related to its own internal conduct risk. When conducting the calculations, we did not filter out the events related to conduct risks from modelling and did not attribute the decrease in capital requirements to the effect of the event types concerned. For two reasons: On the one hand, in the case of AMA models, events related to conduct risks may belong to several segments according to the segmentation of the institution, therefore removing the events concerned from modelling could materially change the parameters of several severity and frequency distributions. On the other hand, the practice of accounting the diversification effect among model segments would stop the diversification effect accounted by the institution among events related to conduct risks, as well, therefore our results would not be comparable. For the sake of comparability, we estimated the capital requirements for the events related to the filtered-out conduct risks by means of the AMA methodology separately. The estimated capital requirements were projected on the undiversified capital requirements of the institution, having regard to the fact that in the course of

accounting diversification among model segments, even diversification among events related to conduct risks may occur. In our opinion, the capital requirements estimated for conduct risks only and the whole undiversified operational risk capital requirement are comparable. Based on their ratio, it can be concluded whether the event type concerned constitutes a significant part of the capital requirement or not.

In the case of institution “A”, concerning the events related to conduct risks, we conducted modelling in accordance with the methodology recommended by *MacDonald–Scarrot* (2012): the losses belonging to the event type concerned were divided into two groups, based on the result of the Hill estimation, then a less heavy-tailed (lognormal) distribution was applied to the event of the segment that contained less severe losses. We applied heavy-tailed distribution to the segment that contained severe losses, as the threshold indicated by the Hill estimation showed Pareto distribution in the case of events above the threshold. Those readers who are interested in the topic can find a detailed methodological description and solution related to setting the central threshold and the estimation of multi-component distributions in the works of *Wahlström* (2013) and *Shevchenko* (2010). In the case of each segment containing severe and less severe events, we also estimated frequency distribution. We used Poisson distribution due to its simple, single-parameter character. The annual loss distribution was calculated from the two-two severity and frequency distributions estimated in the aforementioned manner by applying the Monte Carlo simulation. In accordance with the Basel criteria, the capital requirements were set as the 99.9th percentile of the annual loss distribution. The rate of the capital requirements calculated in the manner above and the total undiversified operational risk capital requirements of institution “A” is 10.92%. For the sake of the better understanding of the result, we would like to note that in the internal loss database of institution “A”, conduct risks represent only 1.66% of total loss events. At the same time, if we consider severity instead of sample size, this rate is 12.44%, which means that 12.44% of the total risk suffered by institution “A” is related to conduct risks. Based on the above, it is observable that events related to conduct risks are less frequent, but they are typically severe. Consequently, these constitute a considerable 10.92% of the total operational risk capital requirement quantified by means of the internal model. In the light of the above, it is clear why the losses related to conduct risk have got into the focus of the regulators recently: from the viewpoint of the institutions, they represent the most relevant type of loss regarding operational risk management. They occur less frequently, but cause considerable loss to the institutions.

Finally, we would like to present the relationship between capital requirement calculated on the basis of the prospective scenario analysis of conduct risks, the total operational risk capital requirement and the capital requirement based on

the manner of risk management calculated at the historic rate of the model as described above. In order to achieve our goal, we quantify the extent of the capital requirement concerned based on the loss data of institution “A” again. In the course of scenario analysis, in the framework of the institutional expert workshop, three estimates are given for each risky process-product-event most of the times: an estimate on the frequency of the process-product-event, an estimate on the average level of loss and an estimate on the extreme level of loss. As there are usually three estimates at the modeller’s disposal, the simplest form of modelling is chosen: Poisson distribution is selected as frequency distribution, as the parameter of the distribution concerned is easy to quantify from the estimated frequency parameter based on expected value. Lognormal distribution is most often selected as severity distribution, as two parameters of lognormal distribution (μ , σ) are provided by the solution of an equation in two unknowns. The first equation is based on the estimate on the modus, while the second one is based on the 99% percentile. In the workshop, modus can be the relevant estimate, while the estimated level of extreme loss can be identified as the 99th percentile of the distribution. The equations to be solves are as follows:

$$\text{modus} = e^{\mu - \sigma^2} \quad (1)$$

$$\Phi^{-1} \left(\frac{\ln(\text{extreme}) - \mu}{\sigma} \right) = 0,99 \quad (2)$$

Based on the lognormal distribution received after the solution of the equation system above and the aforementioned Poisson distributions, the annual loss distribution can be calculated by means of the Monte Carlo simulation. The 99.9% percentile of the annual loss distribution equals the capital requirement. In the case of the parameter of the Poisson distribution, with regard to the fact that potential extreme losses, which have not arisen during the scenario analysis, have to be identified, our calculations were based on a 10-year time horizon set by an expert, during which the extreme event occurs once. On an annual basis, it equals 0.1% frequency, which is also used as a parameter of the Poisson distribution. In the course of the estimation of the parameters of the lognormal distribution, the modus of losses arising from conduct risk in the internal loss database of institution “A” was regarded as modus. The greatest loss related to conduct risk and used for modelling by institution “A” was regarded as the extreme value in the second equation of the equation system, which was identified as the 99th percentile of the loss distribution concerned. After the Monte Carlo simulation, taking into account the 99.9th percentile of the annual loss distribution, the extent of the received capital requirement amounts to 4.61% of the total, undiversified operational risk capital requirement of institution “A”, as opposed to the value of 10.92% received after taking into account losses arising from conduct risks at the histori-

cal rate of the model. It should be mentioned that the results of the scenario analysis are highly dependent on the extent of extreme loss established by the experts taking part in the workshop and the frequency of its occurrence, therefore, the result above shall be regarded primarily as a benchmark value.

Based on the above, we can conclude that the historical rate of the AMA models “punishes” rare but severe events with capital requirements more than the prospective scenario rate. The statement above is in line with the aims of the individual parts of the model: the historical rate assesses the risk of the events which were realised by the given credit institution in the past, while the scenario rate assesses the risk of potential events which have not occurred yet. In our view, in the light of the above, the loss arising from the compliance with the laws aiming to support foreign currency loan borrowers should be managed under the scenario rate of the models. The extent of the loss concerned does not properly reflect the operational risk profile of the credit institutions, therefore its management under the historical rate would result in disproportionate surplus capital requirement not only compared to the credit institutions applying the BIA and TSA methods, but also compared to the real risk profile. Consequently, taken into account at scenario rate, by means of sufficiently conservative parameter estimation, the loss event concerned becomes manageable in internal models, as well. As a result, the real, economically explainable capital requirement can be quantified.

Finally, we would like to draw the interested reader’s attention to the fact that in the case of the current capital requirement calculation methods (BIA, TSA), which are not based on models, it is not possible to consider loss events related to conduct risks in a quantitative way, when calculating capital requirements. Consequently, as we presented in the relevant chapter of this article, the regulator believes that the assessment and evaluation of conduct risks should basically be conducted in the qualitative framework of operational risks, especially by means of scenario analysis. The above mentioned deficiency, namely the lack of consideration of conduct risks in capital requirements, will be partly remedied by the new methodology for the calculation of operational risk capital requirements recommended by the Basel Committee on Banking Supervision (BCBS¹¹). In the future, BCBS is to replace the current methodologies with a new common methodology (SMA¹² methodology), only the draft of which has been published so far (BCBS, 2016). Based on this draft, it is clear that according to the new methodology, the extent of capital requirement depends on the successfulness of the insti-

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tution, similarly to methods which are not model-based.¹³ Based on the current draft of the regulation, in the SMA methodology, losses arising from conduct risk may appear in the so-called correction factor. If the value of the Business Indicator, which can be interpreted as the more conservative alternative of the gross revenue indicator consisting of the items of earnings of the institutions and is the basis of the BIA and TSA methods, exceeds EUR 1 billion (BCBS 2016), the institutions shall be entitled to correct the value of the capital requirement according to the extent of the losses suffered. With regard to the fact that losses arising from conduct risks affect the extent of operational risk capital requirement only through the aforementioned correction directly and correction is not possible below the very high threshold value of the Business Indicator, we believe that the SMA methodology is definite regression concerning the consideration of losses arising from conduct risks in capital requirement calculation. In Hungary, with the exception of the OTP Bank Group and Takarékbank Group, the direct consideration of losses related to conduct risks in capital requirement calculation is not expected to be possible at all, which means that such losses will have an indirect effect through the individual items of earnings.

4 SUMMARY

In our article, we presented the position of conduct risks in the risk management of commercial banks and have drawn our interested reader's attention to the fact that the EBA has not created an accurate definition for conduct risks, which belong to operational risks, yet, therefore any specific information about the interpretation of conduct risks can be found only in the EBA recommendation belonging to the supervisory review process. Several factors justify that conduct risks have got into the focus of regulators: on the one hand, over the past few years, the institutions have suffered serious losses due to their inappropriate conduct of business and the ensuing fines imposed by the authorities, on the other hand, along with the existing standardised product structures, customised products, which are more significant sources of risk, have gained ground. In our article, we pointed out that conduct risks basically arise from internal institutional factors, the structure of the financial sector and under the influence of the external environment. All of these possibilities were illustrated by detailed examples. In our article, we also dealt with the elements of the qualitative framework of operational risk management, which is regulated by CRR. We examined how conduct

¹³ The BIA and TSA methodologies are based on the gross income indicator, while the SMA is expected to be based on the so-called Business Indicator, which can basically be interpreted as the former Gross Income indicator calculated in a conservative manner.

risks can be managed, how the key risk indicator system, scenario analysis, self-assessment and risk-reducing actions can decrease the level of the risk concerned by name. Finally, we conducted impact analysis by means of the AMA models of three Hungarian institutions, on the basis of which several important conclusions were drawn. On the one hand, as it was published in the Management Circular of the National Bank of Hungary, we admitted that the appropriate consideration of losses arising from the compliance with the laws aimed at supporting foreign currency loan borrowers in internal models would have caused disproportionate surplus capital requirement for the institutions applying the model compared to the institutions the capital requirement calculation method of which is not model-based. On the other hand, we presented why the risk type concerned had got into the focus of the regulators from quantitative point of view: compared to the total number of loss events, there are relatively few events related to conduct risks in the internal loss database of an institution. At the same time, such events are typically of above-average severity, therefore a significant part of the modelled capital requirements is attributable to such loss events.

REFERENCES

- Australian Securities & Investments Commission [2016]: Market Supervision Update Issue 57. <http://asic.gov.au/about-asic/corporate-publications/newsletters/asic-market-supervision-update/asic-market-supervision-update-previous-issues/market-supervision-update-issue-57/> (downloaded: 10 September 2017).
- CHAPELLE, ARIANE [2017]: *Reflections on Operational Risk Management*. Risk Books 2017
- EBA (2014): Guidelines on Common Procedures and Methodologies for the Supervisory Review and Evaluation Process (SREP), European Banking Authority.
- The Economist (2016): The rotten heart of finance. <http://www.economist.com/node/21558281> (downloaded: 21 March 2017).
- European Systemic Risk Board (2015): Report on misconduct risk in the banking sector. https://www.esrb.europa.eu/pub/pdf/other/150625_report_misconduct_risk.en.pdf (letöltve: 2017. szeptember 10.)
- Basel Committee on Banking Supervision (2016): *Standardised Measurement Approach for operational risk*.
- FCA (2013): FCA Risk Outlook 2013. Financial Conduct Authority. <https://www.fca.org.uk/publication/business-plans/fca-risk-outlook-2013.pdf> (downloaded: 21 March 2017).
- Hungarian Competition Authority [2016]: The Hungarian Competition Authority imposed fines exceeding HUF 4 billion because of information cartel [Információs kartell miatt több, mint 4 milliárd forint bírságot szabott ki a GVH] http://www.gvh.hu/sajtoszoba/sajtokozlemenyek/2016_os_sajtokozlemenyek/informacios_kartell_miatt_tobb_mint_4_milliard_for.html (downloaded: 21 March 2017).
- HAINES, PETER (2016): *Conduct Risk: A practitioner's Guide*. Risk Books, 2016.
- LI, JIANPING – FENG, JICHUANG – CHEN, JIANMING (2009): A Piecewise-defined Severity Distribution-based Loss Distribution Approach to Estimate Operational Risk: Evidence from Chinese Nati-

- onal Commercial Banks. *International Journal of Information Technology & Decision Making*, Volume 8, Issue 4, 2009
- MACDONALD, A – SCARROT, C. (2012): A Review of Extreme Value Threshold Estimation and Uncertainty Quantification. *REVSTAT – Statistical Journal*, Volume 10, Number 1, March 2012, pp. 33–60
- National Bank of Hungary (2017): The Internal Capital Adequacy Assessment (ICAAP), the Internal Liquidity Adequacy Assessment Process (ILAAP), their supervisory review and business model analysis (BMA) [A tőke- és likviditásmegfelelés belső értékelési folyamata (ICAAP), a likviditásmegfelelés belső értékelési folyamata (ILAAP) és felügyeleti felülvizsgálatuk, valamint az üzleti modell elemzés (BMA)].
- Reuters (2015): <http://www.reuters.com/article/us-bnp-paribas-settlement-sentencing-idUSKBN0NM41K20150501> (downloaded: 21 March 2017).
- Risk.net (2016): <http://www.risk.net/risk-management/2441306/top-10-operational-risks-2016> (downloaded: 13 September 2017).
- Risk.net (2017): <http://www.risk.net/risk-management/operational-risk/2480528/top-10-operational-risks-for-2017> (downloaded: 13 September 2017).
- SEREGDI, LÁSZLÓ (2015): Conduct risks in credit institutions [Az üzletvitel kockázata a hitelintézetekben], <https://www.mnb.hu/letoltes/seregdi-laszlo-az-uzletvitel-kockazata-a-bankokban.pdf> (downloaded: 21 March 2017).
- SHEVCHENKO, PAVEL V. (2010): Implementing Loss Distribution Approach for Operational Risk. *Applied Stochastic Models in Business and Industry*, Volume 26, Issue 3, 2010.
- The Economist* (2016): The rotten heart of finance. <http://www.economist.com/node/21558281> (downloaded: 21 March 2017).
- Management Circular (National Bank of Hungary) [2015]: Warning on the guidelines issued by the National Bank of Hungary on the operational risk classification of losses arising from the compliance with the laws aiming to support foreign currency loan borrowers [Figyelemfelhívás a devizahitelesek megsegítését célzó jogszabályoknak való megfelelésből eredő veszteségek működési kockázati besorolása tárgyában kiadott MNB iránymutatásról], <https://www.mnb.hu/letoltes/vezetoi-korlevel-honlapra-vegleges.pdf> (downloaded: 21 March 2017).