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# FINANCIAL AND ECONOMIC REVIEW

March 2016  
Vol. 15. Issue 1.

Methodological issues of credit rating –  
Are sovereign credit rating actions reconstructible?

*Imre Ligeti – Zsolt Szórfi*

Revision of the quantification of market risk in  
the Basel III regulatory framework

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The Pénzügyi Központ  
was established 100 years ago

*Bence Varga*

# Financial and Economic Review

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## Preface to the March Issue

The March issue of the Financial and Economic Review would like to contribute to the Pénz7 (Money Week) – organised in Hungary for the second time this year – with the studies published in the journal.

The European Money Week, a series of events launched on the initiative of the European Banking Federation in 2015, aims to draw attention to the importance of financial education and awareness-raising for school-age students through the pan-European cooperation of countries joining the event. The countries participating in the week-long programme reach out to students with the help of special lessons and playful, interactive competitions based on group involvement. Thanks to the joint efforts of the Hungarian Banking Association and the Pénziránytű Alapítvány (Money Compass Foundation), the Hungarian organisers of the events, within the framework of this financial-themed week more and more Hungarian primary and secondary school students are able to acquire the practical knowledge and skills necessary for responsibly managing day-to-day financial matters.

Ninety thousand students from 660 primary and secondary schools – almost one-third of all the students in Europe reached by the programme – and more than 1,000 teachers participated in the first Hungarian Pénz7 held in the spring of 2015. The interest substantially exceeded the anticipated level and continued to increase this year as well: in 2016 more than 102,000 students from almost 800 schools are participating in the special financial lessons organised within the framework of the Pénz7.

The thematic week will take place between 7 and 11 March and focus on financial awareness and savings. This will be the central message of the playful, interactive competitions of the event series, and the special lessons organised specifically for the Pénz7 will also be based around this theme. This year, the organisers provide four different sets of financial and economic study material appropriate for four different age groups and specifically designed for the Pénz7. The high quality of the materials is guaranteed by the author team consisting of experienced teachers working in cooperation with the Hungarian Institute for Educational Research and Development.

The Pénziránytű Alapítvány offers teachers from participating schools comprehensive support in the form of free access to teaching materials and special training opportunities which facilitate instruction of the material. Thanks to the cooperation of the Hungarian Banking Association, approximately 250 financial experts will be taking part in teaching the lessons on a volunteer basis, contributing to the advancement of students' knowledge through their experiences and expertise.

The editorial office of the Financial and Economic Review highly recommends the studies in the current and previous issues, in the hopes of raising the financial awareness and thriftiness of coming generations.

*Szabolcs Pásztor*  
*Editor-in-charge*



# **Methodological issues of credit rating – Are sovereign credit rating actions reconstructible?**

*Imre Ligeti – Zsolt Szórfi*

*Credit rating agencies formulate publicly available opinions on the capacity and willingness of debtors to repay debts. By doing so, they reduce the information asymmetry between creditors and borrowers. Owing to regulatory efforts commenced in recent years, credit rating processes have become increasingly more transparent as credit rating agencies publish their methodology and make available the values calculated for the most important key variables. This study is intended to examine the extent to which the indicative rating range resulting from the methodology at the current level of transparency explains the empirically observed credit rating of sovereigns. The authors calculated a rating range of three notches and found that in the case of S&P, a higher ratio of observed credit ratings fell within this range and allowed for the reconstruction of individual steps, while Moody's and Fitch's currently available methodologies proved to be less suited for such a reconstruction.*

**Journal of Economic Literature (JEL) Classification:** G14, G24

**Keywords:** credit rating agency, credit rating, case study

## **1. The role of credit rating agencies in sovereign risk assessment**

### **1.1. Key functions of credit rating agencies in financial markets**

In performing their core activity, credit rating agencies formulate publicly available opinions on the capacity and willingness of the reviewed entities to repay debt. They do so by condensing available public and non-public information into indicators which can be easily interpreted by market participants. According to their primary role in financial markets, credit rating agencies attempt to eliminate the information asymmetry between the two sides of the debt, which benefits borrowers and creditors alike. The borrower sends to a broad range of market players a sign of its creditworthiness, ascertained through an independent assessment recognised as credible by the market, while investors can obtain the same information at minimal

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cost. As a result of the intermediation of credit rating agencies, it is easier and cheaper for borrowers to gain access to funding from the capital market, while creditors can form an informed view on the credit risk before making an investment (*Fennel and Medvedev 2011*).

In addition to their role as information providers, acting as an agent of the investor, credit rating agencies also undertake a monitoring function. By issuing warnings of potential downgrades (e.g. negative outlook, watch list), they can encourage the borrower to take corrective steps. The third key function of credit rating agencies is the issuing of certificates, as rating categories have become organic parts of countless regulatory requirements and financial contracts in recent decades. Rules on rating-dependent capital requirements, central bank collateral requirements or benchmark indices constructed on the basis of various credit ratings are only a few of the numerous examples. Indeed, some of the regulatory efforts of recent years have been aimed at the removal of excessive reliance of financial contracts and regulations on credit rating actions in order to reduce the potential negative spillover effects of rating actions (*Kiff et al. 2012*).

The primary users of credit ratings are market participants without the means to establish the creditworthiness of the borrower. In addition, there is greater reliance on credit ratings in cases where non-public information represents a relatively significant part of the inputs manifested in the credit rating of the given entity. Moreover, in consideration of regulatory capital requirements, banks are consistent users of credit ratings and, in general, larger market participants also use rating agency evaluations as supplementary information or as a benchmark for comparing against results obtained by their own internal rating systems (*Mattarocci 2014*).

## **1.2. Business model and market structure of credit rating agencies**

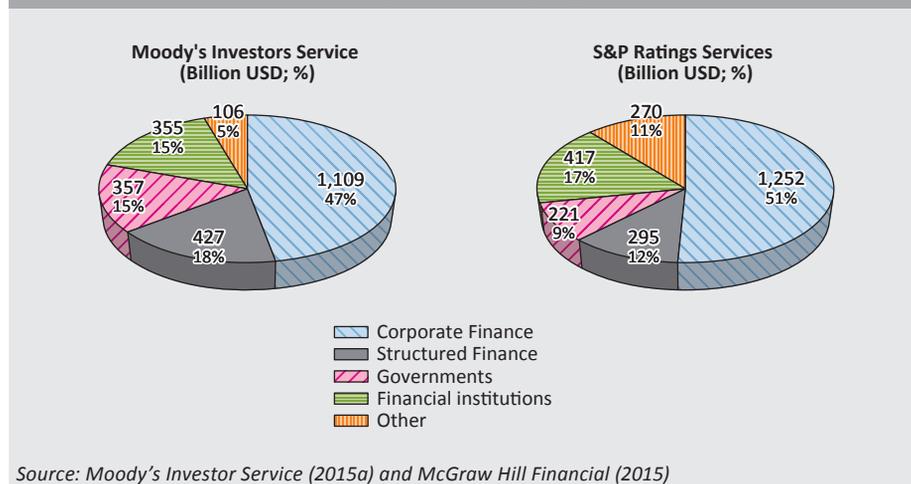
The origins of the ratings agency industry go back to the period between the second half of the 19<sup>th</sup> century and the beginning of the 20<sup>th</sup> century with the increasingly strong presence of the corporate sector of the United States in the capital market. However, as opposed to the United States as a sovereign issuer, investors faced significant risks with respect to corporations, which created a need for reliable, professional credit risk assessments. Initially, the market grew slowly. The real breakthrough arrived in 1975 with the adoption of the Securities and Exchange Commission's (SEC) regulation, which adjusted the level of capital requirements applicable to instruments held by brokers/dealers to the credit rating of the given instrument. Subsequently, the development of the market was given a further boost, as an increasing number of regulations began to cite the ratings of credit rating agencies (*Mattarocci 2014*).

Dominated by the three leading agencies (Fitch, Moody's, S&P), the current market structure is highly concentrated. These three market leaders issue around 60 per

cent of the ratings available, while about 73 per cent of the rated issuers have at least one rating from the three leading agencies. Although the appearance of smaller rating agencies has somewhat reduced the concentration<sup>1</sup> in the last decade, the dominance of the three market leaders is still unquestionable. This can be mainly attributed to the high fixed costs of market entry, stemming from the fact that the acquisition of reputation is a time-consuming process, and agencies with more than a hundred years of history naturally enjoy an advantage in this regard. Although the high degree of concentration does not point to the existence of a competitive market, the desire to preserve reputation creates an incentive for existing raters to increase the quality of the service they provide continuously (Mattarocci 2014).

The primary source of income of credit rating agencies derives from their core activity, the rating of issuers and the securities issued. This is supplemented by ancillary activities associated with the core activity, such as the provision of analysis services, risk management models, and information technology solutions. Ancillary services are typically separated from main services even in the organisational structure of the institutions; for example, in the case of Moody's, credit ratings are provided by Moody's Investors Service, while Moody's Analytics is responsible for ancillary services. The revenues of the latter amounted to around USD 1 billion in 2014, while revenues from credit ratings exceeded USD 2.3 billion. The breakdown of rated issuers and securities by segment indicate that non-financial

**Figure 1.**  
2014 revenue breakdown of Moody's and S&P by segment



<sup>1</sup>In a global sense, less prominent credit rating agencies have appeared at the regional level. Noteworthy institutions include the European Rating Agency in Europe, the Japan Credit Rating Agency in Japan and the Dagong Global Credit Rating Agency in China.

institutions account for nearly half of the revenue, with the rest distributed nearly equally between financial institutions, the rating of structured finance products and the government sector (*Moody's Investor Service 2015a*). The latter includes sovereigns and the rating of the securities issued by them, as well as the rating of local government bonds and securities issued by other public institutions. The revenue structure of the other two major credit rating agencies corresponds to that of Moody's in magnitude (*McGraw Hill Financial 2015; Fimalac 2015*).

As regards pricing policy, two main types can be distinguished. In the case of the "user fee" approach, the rating agencies obtain their fees from the users, while the issuers themselves pay for the credit rating under the "issuer fee" model. Since the information reflected in the credit rating is for the public good, it is difficult to prevent market participants from using the service free of charge. In order to exclude free riders from the service, the business model of credit rating agencies is typically based on the "issuer fee" approach (*Fennel and Medvedev 2011*).

In an attempt to resolve the conflict of interest between the objectivity of credit rating and customers' need for the best possible rating, credit rating agencies responded (partly as a result of regulatory provisions and partly on their own initiative) by setting up internal information firewalls and by adopting a code of conduct. On the one hand, the organisational unit responsible for the analysis preceding the credit rating review and the rating committee responsible for the rating action are separated from each other within the organisation; on the other hand, in operative processes, firewalls are set up between marketing areas (including the pricing of the service) and the credit rating activity itself (*Mattarocci 2014*).

### **1.3. Regulation of the sector**

The need for crafting regulations for the industry dates back to the pre-crisis period: the US Congress enacted regulation aimed at the reform of credit rating agencies in 2006.<sup>2</sup> Its objective was to improve ratings quality by fostering accountability, transparency and competition in the credit rating agency industry. The Act defined the requirements that all SEC-registered credit rating agencies were expected to meet and bestowed statutory authority on the SEC to oversee the credit rating industry with respect to internal controls and conflicts of interest. With a view to increasing transparency, the Act required credit rating agencies to disclose their credit rating methodologies and performance measurement statistics. Adopted in 2010, the Dodd-Frank Act<sup>3</sup> strengthened the regulatory and supervisory powers of the SEC and imposed further requirements on credit rating agencies (*IMF 2010*). In addition to increasing methodological transparency and tightening internal controls,

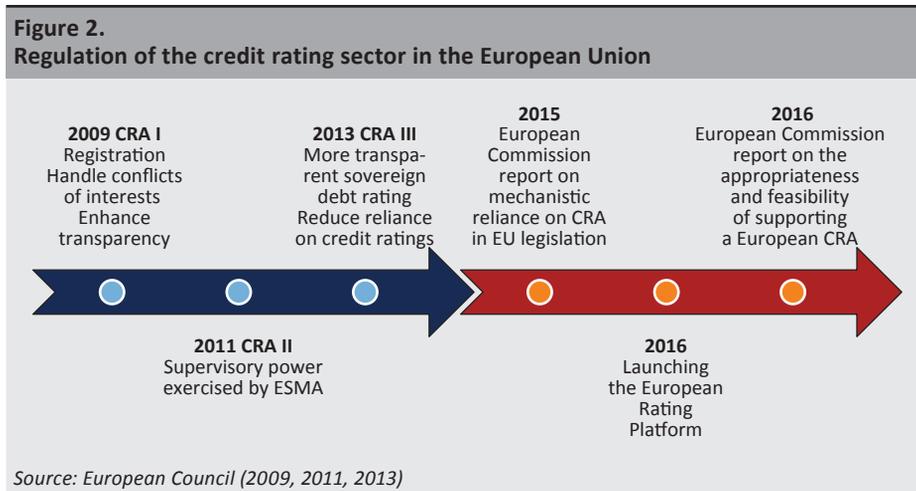
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<sup>2</sup> Credit Rating Agency Reform Act of 2006

<sup>3</sup> Dodd-Frank Wall Street Reform and Consumer Protection Act

the flagship initiative of the Act was to require all federal agencies to review their credit risk regulations in order to remove, wherever possible, references to or reliance on credit ratings and substitute them with an alternative standard of creditworthiness (*Biedermann and Orosz 2015*).

In the European Union, regulation of the sector began with the extension of the regulation of financial markets and products at the G20 summit of 2008. The legislation adopted in 2009 and its subsequent amendment (CRA I–II Regulation) after the establishment of the European Securities and Markets Authority (ESMA) – the body responsible for the registration and supervision of credit rating agencies – declared the requirements for obtaining credit rating agency status (essentially similar to the US practice) and regulated conflict of interest issues arising during the performance of credit rating activity (*European Council 2009; 2011*). The third amendment of the legislation (CRA III) in 2013 clarified and tightened certain already regulated issues and defined the reduction of over-reliance on credit ratings as a general guideline. Accordingly, it encouraged supervisory authorities and financial market participants to put internal procedures in order to make their own credit risk assessment (*Bábosik 2014*) and prohibited the European Systemic Risk Board from using direct references to the ratings provided by credit rating agencies. The goal was to avoid entrance into financial contracts where parties rely on credit ratings provided by an external agency as the only parameter to assess the creditworthiness of an entity.



However, with respect to sovereign credit rating, the new elements included in the amendment primarily affected transparency. Under CRA III, credit rating agencies are required to review sovereign ratings every six months and schedule their announcements on the basis of a pre-defined calendar in such a manner that the

rating decision is announced on a Friday one hour after the close of the business hours of EU -regulated markets and at least one hour before their next opening. Credit rating agencies are required to justify any deviation from this procedure. The biannual review does not necessarily need to be followed by a credit rating action; this requirement is only applicable to the frequency of internal assessment. Moreover, in order to facilitate users' understanding, the credit rating decision must be explained by disclosing the factors and underlying assumptions that may have had an impact on the decision (*European Council 2013*).

The new regulation also offers guidelines in relation to future steps. After the establishment of the European Rating Platform in 2016, users will have access to up-to-date rating information on a central website under the business models of all registered credit rating agencies. In addition, the European Commission is to prepare a report by the end of 2016 regarding the feasibility of an EU-wide sovereign credit rating agency. In the spirit of reducing over-reliance on credit ratings, by the end of 2015 the Commission will examine the extent to which EU-level regulations include references which may trigger mechanistic reliance on credit ratings and identify possible alternatives for their replacement. In part, this is related to the implementation of the aforementioned uniform, community-level rating system. The regulation aims to phase out all references to credit ratings in European Union law for regulatory purposes by 2020, provided that appropriate alternatives have been identified and implemented (*European Council 2013*). Minimising mechanistic reliance on credit ratings would not lead to the obliteration of the sector. On the one hand, this is a slow process; on the other hand, market participants continue to demand the services of credit rating agencies, as, lacking adequate capacity, some participants will still rely on the professional expertise of credit rating agencies in assessing the credit risk associated with a borrower.

## **2. Methodology of sovereign credit rating**

### **2.1. General features of the methodology**

In rating sovereign issuers, credit rating agencies assess the sovereign issuer's capacity and willingness to meet its debt obligations to private entities upon maturity. As such, the assessment does not affect liabilities toward authorities (IMF, Paris Club, World Bank, etc.). At the same time, refusal to honour obligations toward an authority can signal a sovereign's questionable willingness to pay, which may worsen the rating of the given sovereign. Credit rating agencies rank the relative default<sup>4</sup> risk on an ordinal scale of 21–22 notches,<sup>5</sup> where the bonds issued by

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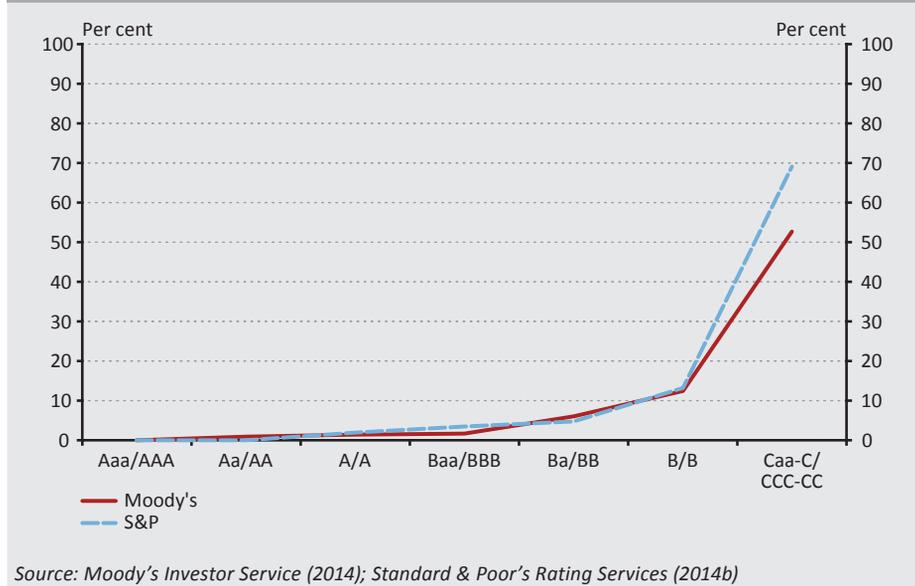
<sup>4</sup> Due to the fluctuation of business cycles, measuring absolute default risk would force the agencies to adjust credit ratings on a continuous basis.

<sup>5</sup> The scale from 1 to 20–21 refers to the rating of the issuer's long-term foreign currency debt. For short-term foreign currency debt, credit rating agencies typically apply a shorter scale with fewer notches.

sovereigns classified in the same category represent nearly identical credit risk. The ordinal nature of the scale suggests that it is the sequence of the credit risks associated with adjacent rating categories that is of primary concern; the difference between them is not permanent. Empirical evidence shows that countries with a lower credit rating tend to be associated with proportionately higher credit risk, compared to countries with better ratings.

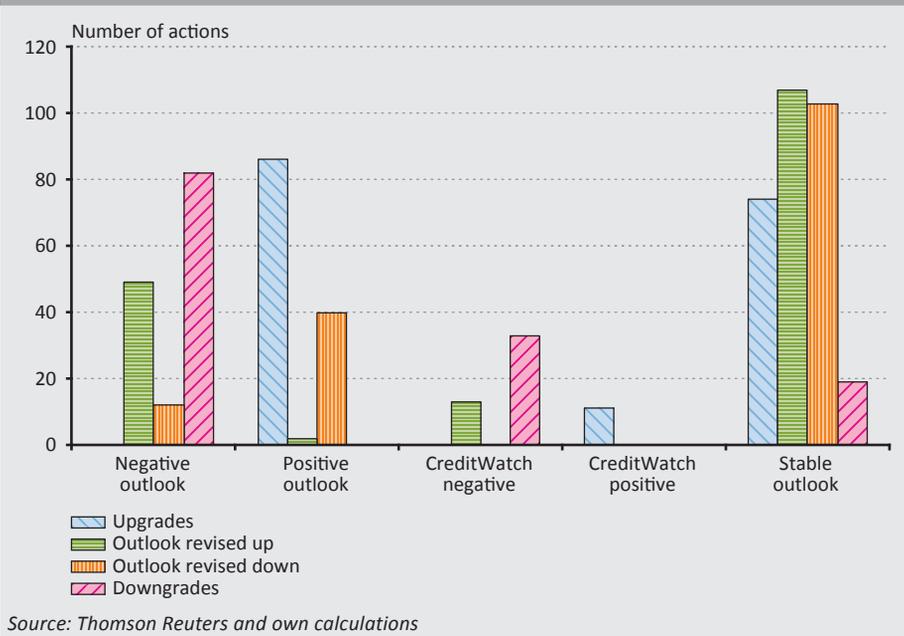
**Figure 3.**

**Average cumulative default rates on a 5-year horizon by initial rating category by Moody's (1983–2013) and by S&P (1975–2013)**



The probability of modifying the current rating is indicated by the (negative, stable, positive) outlook and the watchlist (review) categories, which are also used to fine-tune the discrete scale. By definition, a stable outlook means that the rating of the given sovereign is not expected to change over the medium term (i.e. typically within the next 0.5–2 years). In the case of Moody's, after the initial assignment of a stable outlook, about 90 per cent of ratings experience no change during the following year (*Moody's Investor Service 2015b*). According to empirical evidence, an initial positive or negative outlook is followed by a corresponding decision in nearly two thirds of the cases. However, in the case of a positive outlook, the relative probability of an upgrade (in comparison to cases other than an upgrade) is higher than the relative probability of a downgrade following the assignment of a negative outlook, which confirms the presence of credit rating agencies' monitoring function. Therefore, in the case of a negative outlook, sovereigns strive to avoid a potential downgrade.

**Figure 4.**  
**Distribution of credit rating actions in light of Fitch’s rating outlook prior to the rating action**



In addition to rating sovereigns as issuers, credit rating agencies also rate the securities issued by the sovereigns. Given that these securities generally represent senior, unsecured debt, they typically receive the same rating as the sovereign itself. Moreover, the rating of both sovereign and issued securities may differ according to their currency denomination (i.e. whether the debt is denominated in local or foreign currency). Since sovereigns can meet local currency commitments more easily, local currency debts may be rated a few categories higher than those denominated in foreign currency (for example, in 17 cases out of 128 at the end of 2014 in the case of S&P) (*Standard & Poor’s Rating Services 2015*). In addition, there are separate ratings for short-term and long-term debt, where the foreign currency/ local currency dimensions are equally applicable. In general, the sovereign credit rating of an emerging market sovereign means the credit rating of the sovereign’s long-term, foreign currency-denominated debt. Since the debt of developed countries is typically denominated in local currency, the foreign currency and local currency ratings are identical in their case.

An important difference between corporate and sovereign credit rating methodologies is the inclusion of willingness to repay in the case of sovereigns. Indeed, as opposed to corporations, the repayment of sovereign debt typically

cannot be enforced by way of international courts. In view of high political costs, sovereigns sometimes opt for default, even if capable of repaying the debt. With that in mind, credit rating agencies consider qualitative elements as well, which are primarily captured by the strength of political institutions.

There are usually three basic expectations with respect to credit ratings: they should be accurate predictors of defaults, timely and, as far as possible, stable. However, there is a tradeoff between stability and timeliness, as both conditions cannot be fully met at the same time. When stability is violated (i.e. when ratings change too frequently), market participants may incur unwanted transactions costs as the mechanistic reliance on credit ratings forces them to re-allocate their portfolios far more frequently than would be desirable (*Kiff 2013*).

In order to maintain stability, credit rating agencies apply the TTC (through -the -cycle) approach, which is intended to capture the entire business cycle when determining a sovereign's capacity and willingness to repay debts. This means that agencies typically consider multiannual averages in the case of certain indicators, which are constructed on the basis of historical values on the one hand and on predicted values estimated by the agency on the other hand. This ensures that once the rating is set, it is changed only in response to fundamental factors, without being affected by changes in the business cycle (*IMF 2010*). Credit rating agencies apply their own methodologies to define the magnitude of this smoothing exercise. The difference between the credit ratings of the same entity can be partly attributed to the different assumptions, time horizons and methodologies applied by individual credit rating agencies as they prepare their projections.

Given these methodological considerations and the fact that market participants assign higher weights to cyclical factors, credit ratings show significantly less volatility than other financial market indicators capturing credit risk (e.g. CDS spreads). The more noisy nature of financial market indicators is obviously influenced by a number of other factors. First, to use the example above, in the liquid CDS market information is processed by numerous participants simultaneously. Accordingly, CDS prices respond faster to new information published on the economy of a certain issuer than credit ratings. Secondly, as mentioned above, credit rating actions can only be announced on pre-defined days under the currently effective EU regulation. Finally, like any other market instrument, CDS prices are subject to bias, and the distorting factors may be independent of the credit risk of the sovereign (market liquidity, regulatory changes affecting the given product). Consequently, there may be persisting differences between credit ratings and CDS prices, and due to the factors listed above, the direction of the subsequent alignment of the two indicators is not straightforward.

*Pennartz and Snoeij (2012)* examined the practice of the three market leader credit rating agencies with respect to the three qualitative dimensions mentioned above: stability, timing and accuracy. They examined the accuracy of sovereign credit ratings with “cumulative accuracy profiles”, the most common method in the literature. This approach approximates the accuracy of each agency by assessing the predictive power of the ratings with respect to default, which is a practical approach, given that a default is the only event where the level of the credit risk is understood with perfect precision. Similarly, the authors analysed timeliness in relation to default, approximating the dimension with two factors: which credit rating agency was the first to downgrade preceding a sovereign default and which agency was the first to issue a default rating. As regards stability, they examined the frequency of rating changes, the frequency of cliff-effects (rating changes of 3 or more notches) and the frequency of rating reversals.

According to the empirical analysis, S&P proved to be the most accurate predictor within a year of default. Over longer time horizons, Moody’s rating accuracy outperformed the other agencies. S&P performed the best in terms of timeliness, although that is partly because S&P was the most aggressive in rating actions during the review period; this may have come at the expense of stability. In other words, S&P was the first to signal the deterioration of an issuer’s credit risk before the default in the short term and was the first to classify the issuer into the worst rating category. This meant, however, that it had to adjust its rating more frequently in the case of sovereigns avoiding default, which in general worsened the stability of its ratings. In terms of stability, Moody’s performed the best; it had the lowest frequency of cliff -effects and reversals and, in general, it changed its ratings less frequently in a year than Fitch or S&P.

<b>Table 1.</b>		
<b>Best scoring agency in each area</b>		
<b>Quality Dimension</b>		<b>Best scoring Agency</b>
Accuracy	Short-term	S&P
	Long-term	Moody's
Timing		S&P
Stability		Moody's
<i>Source: Pennartz and Snoeij (2012:18)</i>		

## **2.2. Overview of the factors included in the methodological models**

Owing to the regulatory efforts commenced in recent years, credit rating agencies have rendered credit rating processes increasingly more transparent. They publish their analytical framework (methodology), and announcements accompanying their credit rating actions provide an increasingly broader view of the criteria assessed and the calculations considered in their decisions. Although – for understandable reasons – the level of this transparency is less than a hundred per cent, the methodological explanations are certainly suitable for allowing a rough reconstruction of the decision process, increasing the ability of users to understand the reasons behind the rating actions.

The methodology can be best described as a scorecard designed to evaluate, depending on the strength of the transparency, the variables on a pre-defined scale which, after the systematic aggregation of the values received, results in an indicative rating range encompassing three notches. According to official methodological notes, actual credit ratings are within the three-notch rating range calculated by the credit rating agencies. At the same time, users are warned that the rating range calculated from the scorecard does not guarantee an accurate final rating; as a matter of fact, in the case of certain countries credit rating agencies maintain ratings outside of the range proposed by the model in practice. The need for this room for manoeuvre can be primarily attributed to the reduced ability of standard models to capture certain country-specific developments; consequently, the use of expert judgement is unavoidable in these areas (*Moody's Investor Service 2013; Standard & Poor's Rating Services 2013*).

Based on the publicly available methodologies, we found that all three credit rating agencies evaluate sovereigns on the basis of 4–5 different dimensions. Typically, the evaluation of each dimension begins with the estimation of an initial score based on the value of certain key variables, and the score arrived at in this way is subsequently adjusted by using additional variables. The rating range proposed by the model is received from the scores of each dimension by using a pre-determined sequence of weighting or a scorecard. Obviously, each credit rating agency applies different variables, different variable computation methodologies, different indicator classifications within and between the individual dimensions, and different time horizons. Nevertheless, the factors examined are essentially the same.

**Table 2.**  
**Indicators considered by the three dominant credit rating agencies**

<b>Fitch</b>				
<b>Economic assessment</b>	<b>Fiscal assessment</b>	<b>Structural features</b>	<b>External finances</b>	
Real GDP growth Real GDP growth volatility Inflation	Fiscal deficit Public debt Interest payments Public foreign currency debt	Money supply GDP per capita Government effectiveness Status of reserve currency Years since last default	Commodity dependence Current account balance plus net foreign direct investment Gross external debt of the general government External interest service Foreign exchange reserve	
<b>Moody's</b>				
<b>Economic assessment</b>	<b>Fiscal assessment</b>	<b>Institutional assessment</b>	<b>„Event” risk</b>	
Real GDP growth Real GDP growth volatility WEF Global Competitiveness Index Nominal GDP GDP per capita <i>Diversification</i> <i>Credit boom</i>	Public debt Debt burden Debt trend <i>General government FX debt/General government debt</i> <i>Other public sector debt</i> <i>Public sector financial assets</i>	Government effectiveness Inflation Inflation volatility <i>Track record of default</i>	Domestic political risk Geopolitical risk Gross borrowing requirements Non-resident share of general government debt Market implied ratings Baseline Credit Assessment (BCA) Total domestic bank assets/GDP Banking system loan-to-deposit ratio Current account balance + FDI External vulnerability indicator Net international investment position	
<b>S&amp;P</b>				
<b>Economic assessment</b>	<b>Fiscal assessment</b>	<b>Institutional effectiveness</b>	<b>External assessment</b>	<b>Monetary assessment</b>
GDP per capita <i>GDP per capita trend</i> <i>growth</i> <i>Diversification</i> <i>Credit boom</i>	Change in general government debt Net general government debt Interest payment <i>General government liquid financial assets, volatility of revenues</i> <i>Foreign currency government debt, remaining maturity</i> <i>Non-resident share of general government debt</i> <i>Flexibility of tax regime</i> <i>UN development index</i> <i>Demography</i> <i>Other public sector debt</i> <i>Sovereign exposure of banking sector</i>	Effectiveness, stability, predictability and transparency of policymaking and political institutions <i>Geopolitical and external security risk</i> <i>Debt payment culture</i>	Status of reserve currency Local currency in circulation <i>Current account balance</i> <i>Net international investment position</i> <i>International terms of trade</i>	Exchange rate regime Credibility and effectiveness of monetary policy Inflation Real exchange rate stability Level of financial intermediation credit market

*Note: Indicators not in italics denote key variables, while those in italics denote adjustment variables.*  
*Source: Fitch Ratings (2014); Moody's Investor Service (2013); Standard & Poor's Rating Services (2013)*

One of the most consistent and common dimensions is the combination of economic structure and the factors capturing the growth outlook. Key variables include realised and expected real GDP growth and its volatility, as well as the size of the economy in absolute terms and relative to the population. Empirical experience proves that large economies and those with better growth prospects can bear heavier debt burdens or outgrow existing burdens faster. During the fine-tuning process, credit rating agencies typically examine the extent of diversification in the given economic structure: in other words, the extent to which growth fundamentals can be considered broad-based. If the drivers of growth are only a few sectors producing exports, this will be considered as a negative adjustment factor in the evaluation of the dimension. Likewise, it will be a negative adjustment factor if a “credit boom” (i.e. an overheated economic structure) is behind the growth.

The second distinct dimension involves variables grouped around fiscal policy and debt burden (general government dimension). Key variables include the expected fiscal deficit, gross and net general government debt-to-GDP ratios, and the interest burden relative to government revenues or GDP. Credit rating agencies perform adjustments by examining the structure of the debt, focusing on the following factors: ratio of foreign currency debt to general government debt, average remaining maturity, share of non-residents and banking sector exposure to government securities.

The third key dimension classifies the features of institutional efficiency. This dimension is less often cited by the specialised press than external vulnerability, fiscal burden or growth prospects. Nevertheless, during the evaluation it represents the same weight as the other dimensions and is also a significant factor in the explanation of credit rating actions. The lesser publicity given to this dimension might be the reason why it is harder to quantify than the rest of the key indicators; indeed, it is generally described by quantitative features. According to the methodological notes, a somewhat lower weight is assigned to this dimension by Moody’s and S&P than by Fitch. Moody’s and Fitch provide a clear explanation of the variables considered, and both agencies rely primarily on World Bank indicators.<sup>6</sup> In terms of substance, S&P examines the same elements; opposed to the other two agencies, however, it relies on internally generated indicators.

The fourth common aspect captures external balance processes. Key variables typically include net external debt, current account balance and FDI balance relative to GDP, and gross external borrowing requirement. S&P includes the status of a sovereign’s currency in international transactions. If the currency of a sovereign is globally considered a reserve currency or an actively traded currency, it will be used as a positive adjustment factor.

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<sup>6</sup> World Bank Government Effectiveness Index, World Bank Rule of Law Index, World Bank Control of Corruption Index, World Bank Voice & Accountability Index

As opposed to the other two agencies, S&P assesses the effectiveness, flexibility and institutional features of monetary policy in a separate dimension and assigns a higher weight to this variable compared to its peers. With respect to the exchange rate regime, S&P gives a high score for flexible and/or actively traded currencies. The initial score given to the dimension of monetary policy credibility and effectiveness is shaped by several factors concurrently (institutional independence, clear monetary policy target and instruments, price stability, functioning as lender of last resort). In addition, the agencies consider the level of development of the financial intermediary system and the credit market, the strength of the transmission mechanism, the potential presence of capital controls and the degree of dollarization.

Based on the available methodological notes of the three market leader credit rating agencies and additional information included in the announcements accompanying the review of credit ratings, we found that S&P and Moody's perform better in terms of transparency<sup>7</sup> than Fitch. The current methodological notes of Fitch merely provide a list of the indicators considered without elaborating on their evaluation and the weights applied. In the absence of this information, however, it is not possible to provide an estimate about the indicative range; therefore, in the following section we present the features of Moody's and S&P's methodologies. Similarly, we limit our examination of the methodologies' applicability to these two agencies.

### **2.3. Special features of Moody's methodology**

In addition to the indicators determining the basic score of each dimension, Moody's makes available the absolute scales serving as a basis for the evaluation, as well as the weighting of individual indicators within the given dimension. At the same time, some of the adjustment factors responsible for the fine-tuning of the basic score of each dimension do not have an evaluation scale, or the factor to be captured is not measured explicitly by a specific indicator. This indicates that the indicative rating range calculated on the basis of the scorecard can only be reproduced with significant uncertainty.

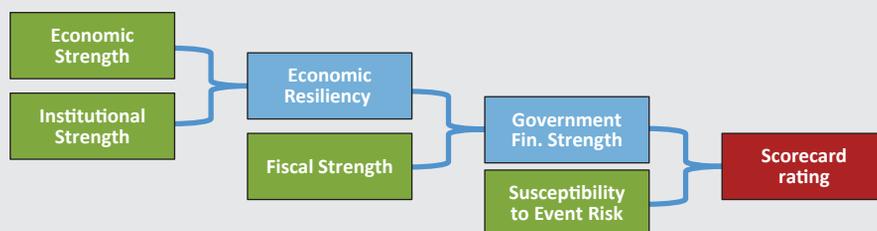
In the first round, Moody's combines the macroeconomic and institutional strength dimensions with equal weight into a single construct. The only exception is the case where a sovereign receives a lower or a higher score in one of the dimensions, in which case Moody's assigns a weight of 2/3. The score constructed from the combined weighting of the two dimensions above is then compared

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<sup>7</sup> We examined the level of transparency on the basis of the following criteria: the extent to which the indicators considered are explicitly explained; availability of scales applied for the evaluation of the indicators; availability of the weighting assigned to individual dimensions; the extent to which the values calculated for individual indicators are available; availability of an indication by the agency regarding the current evaluation of individual dimensions.

to fiscal strength, with a special grid providing the weighting. The weight of the score received from the combination of economic and institutional strength (i.e. economic resiliency) is higher in the case of a high score, moderate in the case of medium performance, and also high in the case of a low score. This means that the value received for the fiscal strength dimension is less relevant for sovereigns characterised by a very strong or very weak macroeconomic environment and institutional strength (economic resiliency). Finally, based on yet another weighting grid, the methodology compares the score value attained in this way with the “event risk” dimension, where the first three dimensions (government financial strength) dominate; however, the strength of this dominance can only lower the preliminary rating range as given by the score received for government financial strength (*Moody’s Investor Service 2013*).

**Figure 5.**  
Schematic diagram of the aggregation of the dimensions included in Moody’s methodology



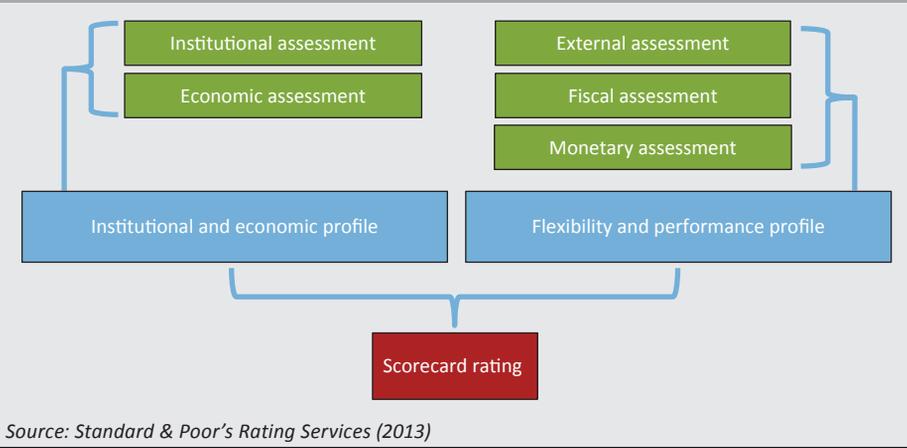
Source: *Moody’s Investor Service (2013)*:

External balance processes are presented by Moody’s in a different manner than by its two peers. In the last dimension, Moody’s examines susceptibility to event risk. External risk, however, is only part of this factor, presented alongside political risk, government liquidity risk and banking sector risk. In addition, even the weighting is different in the case of this dimension, as the score received by the dimension is determined by the factor that is considered the riskiest.

#### 2.4. Special features of S&P’s methodology

The weighting process is somewhat simpler in the case of S&P. In the first round, the methodology calculates a simple arithmetic average separately for the macroeconomy and the institutional effectiveness dimensions and separately for the combination of fiscal performance, external balance and monetary policy. It then calculates an indicative rating range from these two profiles based on a special weighting grid. It should be noted, however, that this indicative rating can be adjusted by as much as two notches based on a comparison to other factors, such as benchmark countries (*Standard & Poor’s Rating Services 2013*).

**Figure 6.**  
Schematic diagram of the aggregation of the dimensions included in S&P's methodology



The methodology published by S&P includes explicit indicators and the relevant scales in about half of the cases; in the rest of the cases the agency provides a description of the given dimension along with the evaluation criteria. The analysis of the aforementioned institutional effectiveness dimension is fully based on internally generated indicators and expert estimates.

### 3. Questions regarding the applicability of the methodology

Next we examine the extent to which we can draw conclusions regarding the actual credit rating by using the respective methodologies of Moody's and S&P. It is important to note at the outset that the gap between the actual rating and the rating calculated by us based on the methodology can be attributed to two factors. On the one hand, as the methodological notes emphasise, the rating actually maintained might be outside of the range calculated by the credit rating agencies. We are unable to verify this statement based on the information that is available free of charge. The second uncertainty factor arises from the reproduction of the range calculated by the credit rating agencies, which primarily depends on the transparency of the methodology and the data available (the extent to which the statistics used by the credit rating agencies and those used by us are consistent with each other). The extent to which we can explain the actual rating based on the models can be attributed to the combined presence of the two uncertainty factors, which, under the current circumstances, are impossible to separate.

We used the data sources specified in the methodological notes in the case of both credit rating agencies, and we tried to rely on the data disclosed by the two agencies to the greatest possible extent. The countries reviewed by Moody's are limited to member states of the European Union, while the sample used by S&P is far more

diverse geographically. We calculated the model for the end of 2014, as this was the first year when the respective methodologies suitable for the construction of the model were simultaneously available both in the case of Moody's and S&P. Since Moody's provides rather limited information on the individual variables in the announcements accompanying rating actions, we relied on the IMF's estimates in the case of indicators that include projections. By contrast, since S&P discloses its calculations regarding the key variables that determine the basic score for each quantitative dimension (three out of five), in the relevant calculations we relied on the values provided by S&P. The differences between the two country samples are explained by the broader range of data disclosed by S&P.

Beyond publishing the methodological notes, both S&P and Moody's provide guidelines on the evaluation of each dimension in the given credit rating action. With respect to transparency, S&P performs better overall: besides the values calculated for the key variables, the agency also discloses which third of the six-point numerical scale the scores assigned to the five reviewed dimensions fall into. Moody's discloses in which fifth of the scale it places the dimension constructed from the combination of the first two dimensions. Accordingly, we performed our own model calculations in two different ways: without or with consideration to the dimension evaluations of the credit rating agencies. Thus, the second approach reduces the uncertainty of the reproduction of the range calculated by the credit rating agencies.

### **3.1. Applicability of Moody's model**

In the case of Moody's – in the absence of values calculated by the institution – we relied solely on publicly available information in the first approach. The gap between the midpoint of the indicative rating range calculated by the model and the rating maintained by the credit rating agency demonstrates the great uncertainty surrounding the extent to which we can infer the actual rating. The actual ratings fell into the range calculated by us only in the case of eight countries out of the 28 EU member states. In the second approach, we also used the information provided by the agency regarding its evaluation of the dimension constructed from the combined weighting of the first two dimensions for the countries under review. As expected, the descriptive statistics improved and the distribution around the actual rating became more symmetrical; however, the explanatory power of the model remained weak. Although in this case the actual ratings fell into the midpoint of the range in the case of ten countries out of the 28 Member States, this does not imply that we reconstructed the range calculated by Moody's, given that there might even be a two-notch gap between the midpoints (assuming that Moody's maintains the actual rating within the range derived from its own calculations). In our view, the weak explanatory power of the model can be attributed to the following:

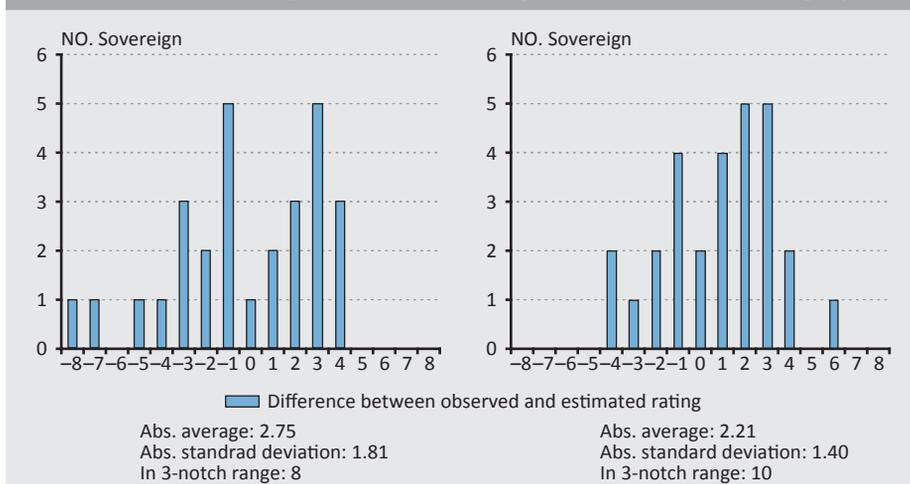
- i.* As mentioned above, the currently available methodology of Moody's provides no information about the weightings and scales applied in the case of the adjustment factors that modify the basic score of the respective dimensions.

In our calculations, this may render the reconstruction of the ratings problematic for euro area core countries primarily, given that – based on the announcements – we assume that the variable capturing the degree of diversification may result in a positive adjustment of the estimated range. This view is also supported by the fact that the midpoint calculated by us was consistently 3 to 4 notches lower than the actual rating for countries holding an “Aaa” rating.

- ii. Combined with the problems surrounding the adjustment factors, the calibration of the scales and weights applied by the methodology reduced the model’s ability to capture the ratings of countries in the periphery of the euro area. The midpoint calculated by us consistently points to higher credit ratings for these countries. In this case, we cannot rule out that Moody’s itself calculates a higher range, and thus country-specific factors causing diversions from the range might play a relevant role in the case of the countries most affected by the debt crisis of the euro area.
- iii. Finally, we should also consider that the IMF and Moody’s use somewhat different paths in the case of projected values. In view of the modest number of the relevant indicators, this factor may play only a minor role.

Based on the results of the model reconstruction, we concluded that at the current level of transparency the explanatory power of Moody’s methodology can be considered weak. While it can provide insight into certain credit rating actions ex

**Figure 7.**  
**Gap between the actual credit rating maintained by Moody’s at the end of 2014 and the midpoint of the rating range calculated from the model without Moody’s dimension evaluation (left panel) and with Moody’s dimension evaluation (right panel)**



Note: Negative values indicate that the midpoint of the rating range calculated by us points to a better rating than the actual rating maintained by Moody’s at the end of 2014.

Source: Moody’s and own calculations

*post*, it appears to be less suitable for determining the rating level. While we cannot rule out that the model is better suited to capture rating changes, given the lack of the relevant time series this cannot be verified. This topic may become the subject of subsequent research.

### **3.2. Applicability of S&P's model**

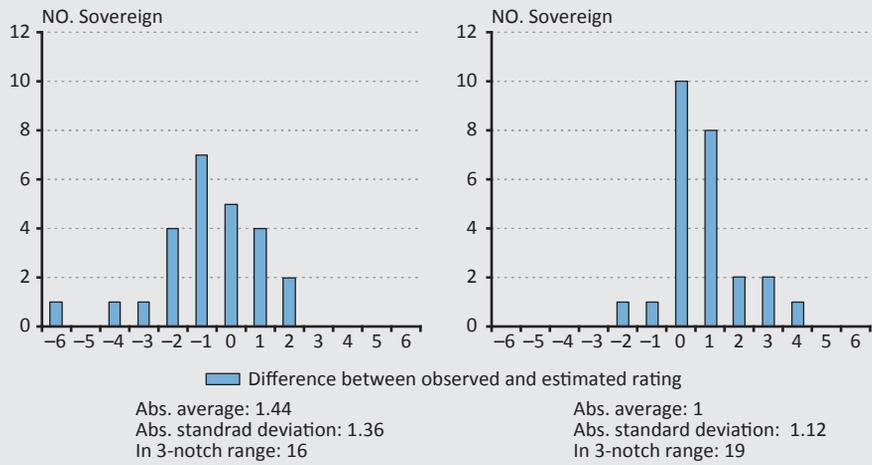
In the case of S&P, in the first approach we evaluated the individual dimensions based on the latest indicators disclosed by the credit rating agency supplemented by publicly available data provided by third parties. Accordingly (similar to Moody's methodology), we determined the qualitative dimensions of institutional and political effectiveness by using the Worldwide Governance Indicators published by the World Bank and by the Corruption Perception Index of Transparency International. In calculating the monetary policy dimension, we relied on, among other things, inflation and real exchange rate data and the exchange rate classification of the IMF.

For the purposes of the second approach, we also used information pertaining to the dimension evaluations of S&P. In the case of the monetary dimension, we considered the average of the two-category range provided by S&P, while consistently using the worse value of the range in the case of the institutional and political effectiveness dimension for the sake of the consistency of the model. In addition, we applied another change in relation to the macroeconomy, external balance and fiscal flexibility dimensions. Where the two-category range provided by S&P did not include the score calculated in the first approach, we adjusted the relevant dimension score to the nearest value of the range provided by S&P.

Even in the first approach, the explanatory power of the methodology appears to be strong. For 16 out of the 25 sovereigns under review, the actual credit ratings maintained by S&P at the end of 2014 fell into the 3-notch range calculated by us. This suggests that even without S&P's dimension evaluation, we could approximate the actual rating fairly well solely by using the values provided for the key variables and the indicators capturing qualitative dimensions. Once we included the information on dimension evaluations, the number of states falling into our calculated range increased to 19; in other words, the explanatory power improved further. As expected, average deviation and dispersion also improved in the second approach. The dispersion of the deviations observed in the first approach indicates that the ratings calculated from the model tend to be slightly better. Once we included the information provided on the dimension evaluations, this difference disappeared, which makes us assume that country-specific factors – which are hard to capture by the methodology – may point to a worse credit rating. This was actually observed in the case of the PIGS countries.

We may conclude overall, that the model constructed on the basis of S&P’s methodology has a rather strong explanatory power, which – besides supporting the reconstruction of the relevant rating actions – also enables us to make forward-looking estimates about expected ratings.

**Figure 8.**  
**Gap between the actual credit rating maintained by S&P at the end of 2014 and the midpoint of the rating range calculated from the model without S&P’s dimension evaluation (left panel) and with S&P’s dimension evaluation (right panel)**



*Note: Negative values indicate that the midpoint of the rating range calculated by us points to a better rating than the actual rating maintained by S&P at the end of 2014.*  
*Source: S&P's and own calculations*

**Case study**  
**Reconstruction of S&P’s last three rating actions regarding Hungary, based on the methodology provided by S&P**

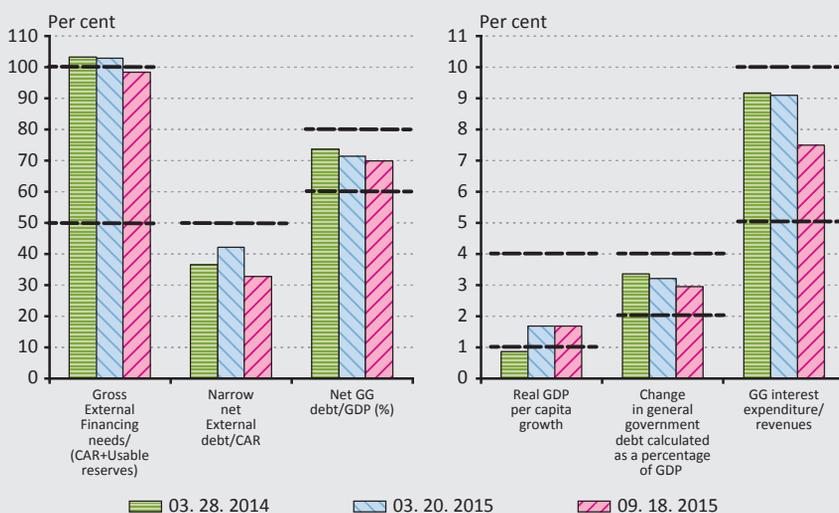
The purpose of the case study presented below is to shed light on the applicability of the information shared by S&P at the current level of transparency with respect to the processes of sovereign credit rating and the background of specific rating actions. Based on S&P’s methodology and by using the numbers and dimension evaluations provided in the announcements, we

1. present changes for the past 1.5 years in the key variables pertaining to Hungary, according to S&P’s calculations;
2. reconstruct the way in which Hungary may have been evaluated based on the five dimensions and the resulting rating range calculated by the model; and

3. estimate the possible direction of the indicative credit rating in 2016, according to the model.

The presented key variables capture the three most easily quantifiable dimensions (macroeconomy, fiscal flexibility, external balance) of the five. We present the evaluation of institutional effectiveness and monetary policy as we describe the result grid. We performed calculations for three dates, in the following order: Hungary's negative outlook assigned to its "BB" rating is adjusted to stable (28 March 2014); Hungary's credit rating is upgraded to "BB+" with a stable outlook (20 March 2015); S&P affirms the last rating on 18 September 2015.

**Figure 9.**  
Values of the key variables included in S&P's methodology calculated for Hungary for the past 1.5 years



Note: Dotted lines indicate value thresholds which, once exceeded, may alter the score of the relevant dimensions. For the purposes of credit rating, a higher value is more favourable for real GDP per capita, while lower values are more favourable in the case of the rest of the variables. Besides fiscal deficit, changes in nominal general government debt-to-GDP are also influenced by other factors, such as the exchange rate.

Source: S&P's and own calculations

- The first, most prominent conclusion about the indicators is the fact that Hungary showed significant improvement with respect to each indicator, according to S&P, which may not only reflect the improvement of actual data, but also the improving expectations of the credit rating agency.

- It is also clear that the improvement not only affected flow-type indicators (such as the fiscal deficit), but also stock indicators (such as net general government debt), which remain high relative to benchmark countries.
- Some of these results were already reflected in S&P's decision to upgrade Hungary's credit rating from "BB" stable to "BB+" stable on 20 March 2015. At the same time, a substantial part of the favourable trend observed for the past 1.5 years can be linked to the last half year of the review period.
- For two of the six key variables, the improvement exceeded the critical threshold. The upgrade in March 2015 was largely driven by the acceleration of average real per capita GDP growth in excess of 1 per cent. The fact that the indicator capturing external vulnerability dropped below 100 per cent has a forward-looking significance.

For the reconstruction of individual rating actions, besides evaluating the qualitative dimensions (institutional effectiveness and monetary policy), we need to reproduce the entire model calculation. We know that S&P's evaluation of institutional effectiveness placed Hungary in the medium third for the past 1.5 years. In our view, it may have been assigned a score of 4 to this day, based on the evaluation of the dimension. Based on the GDP per capita data, at the time of the March 2014 decision the initial score of the macroeconomy dimension was 4. This was worsened to 5 by the sluggish recovery of the post-crisis years and by the lingering of the average per capita real GDP growth rate below 1 per cent as a result of the less robust growth outlook. This is how the institutional and macroeconomy profile received a value of 4.5, calculated as the average of 5 and 4. In our estimate, the value of the other profile, calculated as the average of the evaluation of the three remaining dimensions (external balance, fiscal and monetary policy) may have been 3.6. Based on the result matrix, the two profiles marked the "BB" midpoint, which was identical with the credit rating maintained by S&P in March 2014.

Calculated for March 2015, the average per capita real GDP growth rate must have been over 1.7 per cent, thanks to the significant improvement in Hungary's growth outlook. This value already returned to the 1–4 per cent growth range assigned to our category calculated on the basis of nominal per capita GDP; in other words, the negative adjustment factor lost its relevance. For that reason, the institutional and macroeconomy profile improved to 4 from the previous value of 4.5. In our estimate, the evaluation of the other profile was adjusted to 3.37, mainly as a result of the improving monetary policy dimension (which, based on the announcements, may have been driven

by S&P's view that the conversion of household foreign currency loans to forint loans strengthened the channel of monetary policy transmission). The matrix marked the midpoint of "BB+" in March 2015, and this is identical with the level to which S&P upgraded Hungary.

**Figure 10.**

**Changes in Hungary's estimated indicative credit rating for the past 1.5 years based on S&P's methodology and projections, and possible future trends**

Flexibility and performance profile	Institutional and economic profile											
	Category	1	1,5	2	2,5	3	3,5	4	4,5	5	5,5	6
1 – 1,7	aaa	aaa	aaa	aa+	aa	a+	a	a-	bbb+	N/A	N/A	
1,8 – 2,2	aaa	aaa	aa+	aa	aa-	a	a-	bbb+	bbb	bb+	bb-	
2,3 – 2,7	aaa	aa+	aa	aa-	a	a-	bbb+	bbb	bb+	bb+	b+	
2,8 – 3,2	aa+	aa	aa-	a+	a-	bbb	bbb-	bb+	bb	bb-	b+	
3,3 – 3,7	aa	aa-	a+	a	bbb+	bbb-	bb+	bb	bb-	b+	b	
3,8 – 4,2	aa-	a+	a	bbb+	bbb	bb+	bb	bb-	b+	b	b	
4,3 – 4,7	a	a-	bbb+	bbb	bb+	bb	bb-	b+	b	b-	b-	
4,8 – 5,2	N/A	bbb	bbb-	bb+	bb	bb-	b+	b	b	b-	b-	
5,3 – 6	N/A	bb+	bb	bb-	b+	b	b	b-	b-	<=b-	<=b-	

Source: Standard & Poor's Rating Services (2014a) and own calculations

For the evaluation of future prospects, the numbers disclosed upon the affirmation of Hungary's rating in September 2015 provide a realistic starting point. With respect to the key variables, as mentioned above, the value of the indicator capturing the external vulnerability of the country dropped below the critical threshold of 100 per cent. This favourable outcome may improve the score of the external balance dimension to 2 (from the previous 3). In our estimate, this would reduce the score of the profile calculated from the combination of this value and the remaining two dimensions to 3.03. Based on the result matrix, this would raise the midpoint of the indicative rating range to "BBB-". In our view, this process did not take place during the September 2015 review because, based on the methodology, S&P has an option to decide which score to apply in the case of external vulnerability indicators with borderline scores. It is highly probable that the indicator remains below 100 per cent in 2016 as well, which would reconfirm the upward trend. S&P might be more willing to opt for the better score which, *ceteris paribus*, may lead to the indicative range of "BBB-" and ultimately to an upgrade.

## 4. Conclusions

Owing to the regulatory efforts commenced in recent years, credit rating agencies have rendered credit rating processes increasingly more transparent. They publish their analytical framework (methodology), and the announcements accompanying their credit rating actions provide an increasingly broader view of the criteria assessed and the calculations considered in their decisions. In general, the methodology enables users to interpret the textual or calculation-supported justifications of rating actions in a uniform framework. We found that at the current level of transparency, in the case of S&P the methodology and the information included in the announcements constitute an adequate basis for an estimation of the indicative rating range and, ultimately, a reconstruction of individual rating actions. In the case of Moody's, the estimation of the indicative rating range is surrounded by a high degree of uncertainty. As regards Fitch, on the basis of the current methodology and given the lack of weighting and scale information, no estimate can be performed for the time being.

Although with respect to Moody's actually observed credit ratings typically fell outside of the calculated rating range, we cannot rule out that the currently available methodology is better suited to explain rating changes. In the absence of the required time series, however, the verification of this assumption must be the subject of future research. Similarly, the rating changes executed by S&P could also be examined, and estimates could be provided even for shifts within the range. For this exercise, however, the analytical framework needs to be enhanced. Using outlook data and the textual analysis of the announcements may point to possible future directions in this regard.

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# Revision of the quantification of market risk in the Basel III regulatory framework

*Gyöngyi Bugár – Anita Rattig*

*The purpose of our study is to provide an overview of the revisions made to the Basel III regulatory framework in the aftermath of the 2007 crisis, with regard to measuring the risk associated with positions included in the trading book. The calculation of the regulatory capital requirement (i.e. the capital to be earmarked for covering the losses of trading book portfolios exposed to market risk) is based on the value-at-risk (VaR) to date. The literature pointed out the weaknesses of VaR as early as the turn of the millennium, and the financial crisis of 2007 only confirmed the inadequacy of the previous system. Nevertheless, moving the Basel regulatory framework to a new system of risk measurement was only put on the agenda after a significant delay. Formulating the details of the changes affecting the trading book has gained momentum in recent months, resulting in a series of consultative documents, issued by the Committee, which constitute the foundation for the impending new recommendations.*

**Journal of Economic Literature (JEL) Classification:** D81, G21, G28

**Keywords:** market risk, Basel regulatory framework, Value-at- Risk (VaR), expected shortfall (ES)

## 1. Introduction and the definition of value-at-risk

Market risk reflects the possibility of losses arising from exchange-rate and interest-rate movements. This type of risk is related to investment activity and, accordingly, it affects the positions held in banks' trading books.

The Basel II regulatory framework prescribed the use of value-at-risk (VaR) for banks to calculate the capital requirement intended to cover exposure to market risk. The popularity of the VaR approach is probably due to its ability to capture risk directly through losses.

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VaR indicates maximum loss at a given confidence level ( $\alpha$ ) at a given time horizon. If the loss distribution ( $L$ ) is known, then VaR is the  $\alpha$ -quantile of loss distribution at the  $\alpha$  confidence level (Dowd-Blake 2006), that is:

$$P(L \leq VaR_\alpha) = F(VaR_\alpha) = \alpha. \quad (1)$$

In the equation above,  $P$  is the probability of the event shown in parentheses, and  $F$  is the related loss distribution function. If the confidence level is 95 percent, the risk measurement period is one day and the VaR value calculated as shown above is HUF 200 million, the maximum loss we are likely to suffer is HUF 200 million for 95 days of the next 100 days. Out of the 100 days there will be five days when our losses will exceed HUF 200 million. However, we have no information on the actual – possibly even excessive – extent of these losses, which is considered one of the most serious limitations of the VaR system.

For lack of an optimal method of measuring risk, mainstream scientific research turned its focus to a precise mathematical definition of the properties that can be expected of risk measures. One of the most well known and academically recognised sets of axioms is a criteria system proposed by Artzner *et al.* (1999), which defines the properties of a coherent risk measure. The system of translation invariance, sub-additivity, positive homogeneity and monotonicity has become known in the literature as ADEH, after the initials of the authors' (Artzner, Delbaen, Eber, and Heath) last names. These criteria revealed another notable deficiency of the VaR system; namely, that it violates the principle of subadditivity. This means that, when measured by VaR, the risk calculated for a portfolio made up of sub-portfolios can be more than the sum of the risks of the sub-portfolios. From a risk management perspective, another shortcoming of VaR models is the fact that they can lead to non-convex optimisation tasks, which are technically difficult to handle (Ágoston 2012).

Expected Shortfall (ES) – which is counted among the coherent risk measures – offers a solution for eliminating the weaknesses of the VaR.

## 2. Definition and properties of ES

Expected Shortfall (ES) expresses the expected value (weighted average) of the losses in excess of the VaR at a given confidence level ( $\alpha$ ) and at a given time horizon.

$$ES_\alpha = E[L | L > VaR_\alpha] \quad (2)$$

For continuous distributions, it can be defined (Embrechts 2014) as follows:

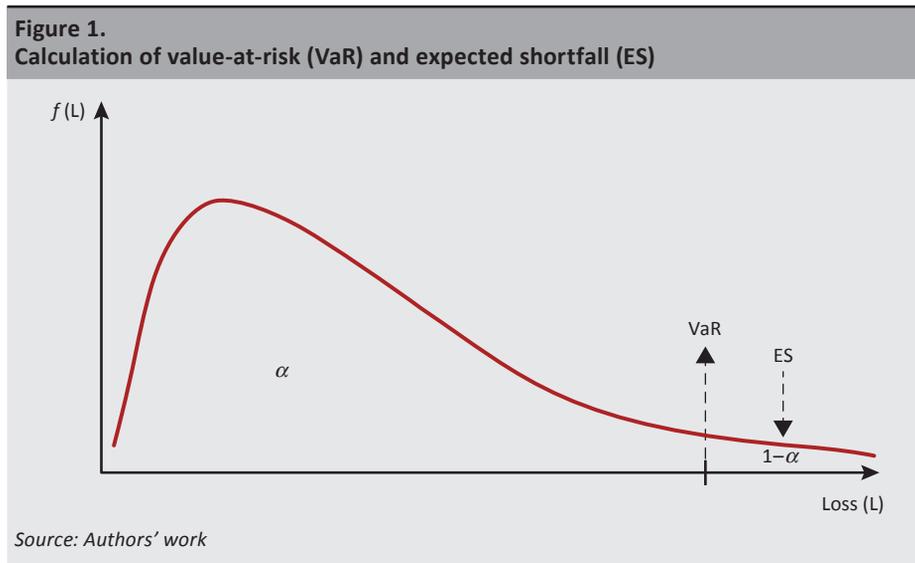
$$ES_\alpha = \frac{1}{1-\alpha} \int VaR_x dx \quad (3)$$

In the case of a sample containing an empirically observed finite set of  $n$  loss outcomes ( $L_i$ ) (i.e. discrete probability distribution), it is calculated as follows:

$$ES_{\alpha} = \frac{1}{1-\alpha} \sum_{i=k}^n L_i \cdot p_i \quad (4)$$

This calculation only needs to be performed for losses exceeding VaR  $L_i > VaR_{\alpha}$ . In order to do this, the losses should be arranged in ascending order, and the calculation should begin with the loss outcome that first exceeds the VaR (in formula [4], the  $k$ th outcome).

Returning to our previous example, suppose that there are only three loss outcomes that exceed the HUF 200 million VaR value. Their values are HUF 250, 350 and 380 million, with a probability of 1%, 2% and 2%, respectively. Based on equation (4), the value of the Expected Shortfall (ES) will be HUF 342 million, which significantly exceeds the VaR value. Obviously, in practice even more extreme losses can be expected, which the VaR is unable to capture. The relationship between VaR and ES is illustrated by the density function included in *Figure 1*. The area under the curve stretching up to the VaR value equals the confidence level. The ES is determined on the basis of losses falling into the range denoted by  $1 - \alpha$ .



By definition, the risk estimated with ES is always higher than that estimated with VaR. From a regulatory perspective, the ES method will yield a higher capital requirement value than the VaR. Obviously, it is not in the interest of any bank to hold a higher regulatory capital amount than required. At the same time, holding a lower amount than required jeopardises the safety of the financial system; in other

words, it creates a systemic risk. It is the responsibility of policymakers to reach and maintain a balance between longer and shorter-term interests.

In principle, ES resolves the deficiencies of VaR, but it raises a number of new problems. It should be stressed that the quantification of risk always means an estimation in the statistical sense of the word. In order to determine both VaR and ES, we need to estimate the future loss distribution of the reviewed portfolio. Loss distribution can be predicted based on historical data or by means of the Monte Carlo simulation. While the former evaluates the future risk of the portfolio based upon losses realised in the past, the Monte Carlo simulation can be used to model any “projected” future scenario.

Whichever method is used to calculate the loss distribution function, estimating the ES requires the “plotting” of the range of losses at the tail of the curve shown above. Although the probability of these extreme losses is low, they can create enormous problems if they do materialise, as demonstrated by the latest crisis. An adequate estimation of extreme losses requires a large number of loss outcome estimates. Suppose that the available sample pertaining to the possible values of future losses and their respective probabilities is composed of 1,000 data items. If the ES is to be estimated with a probability of 95 (99) percent, then we can only calculate with 5 (1) percent of the data at the tail of the distribution; in other words, the ES value must be calculated on the basis of 50 (10) data items. It is a commonly known fact that estimates based on a small sample size yield questionable results. In modelling, the small number of sample elements renders the use of simulation nearly inevitable, and the fact that the type of the distribution needs to be specified poses a further challenge. This process typically involves randomly selected parameters and subjective elements.

It can be stated, therefore, that modelling the tails of distribution curves plays a prominent role in the precision of ES estimates. In the case of an inadequate model, the ES may be rather misleading, as it is far more sensitive to estimation errors (*Sarykalin et al. 2008*). At a given confidence level, VaR estimates tend to be more stable than ES estimates. The difference is most pronounced for heavy-tailed distributions and negligible in the case of near-normal distributions. According to *Yamai and Yoshihara (2002)*, a larger sample size increases the accuracy of ES estimation. However, in general, no adequate sample size can be provided for estimates relying on historical data.

The most important properties of the VaR and the ES risk measures are summarised in *Table 1*.

<b>Table 1.</b>		
<b>VaR versus ES: a comparison</b>		
<b>Criterion</b>	<b>VaR</b>	<b>ES</b>
Basic characteristics	Loss-based, absolute downside risk measure	
Definition	The highest possible loss	The expected value of losses exceeding VaR
	at a given confidence level and time interval.	
Compliance with ADEH axioms	non-coherent	coherent
Treatment of extreme losses	It does not account for losses exceeding VaR (it disregards extreme losses).	It accounts for losses beyond VaR (it takes extreme losses into account).
Application to portfolios	It may hurt	It complies with
	the principle of diversification, i. e. the risk of a portfolio measured by VaR / ES	
	may be higher	cannot be higher
	than the sum of the risk of its components.	
<i>Source: Authors' work</i>		

### 3. Inadequacy of the VaR in the Basel regulatory framework

Researchers and risk specialists have voiced concerns about the application of VaR as a reliable risk measure since the beginning of the 2000s. Numerous studies have pointed out the problems of the VaR; indeed, in 2002 the *Journal of Banking and Finance* dedicated a special issue to the statistical and computational problems in risk management. Szegő (2002) provocatively entitled the editorial to the issue “No more VaR (this is not a typo)”.

The Basel Committee on Banking Supervision (BCBS) made continuous efforts to revise the original recommendations, in view of the experience gained with respect to the Basel II regulatory framework. As a result of these efforts, numerous revisions were made to the calculation method of market risk, including, in particular, the requirement of subjecting the VaR calculation to stress testing (BCBS 2006).<sup>1</sup> These, however, did not yet entail a radical revision of the VaR methodology.

Stress testing incorporates methods that focus on changes in the value of bank portfolios under extreme conditions. Sensitivity analysis and scenario analysis are two basic types of stress testing. Large banks are required to perform both, while small banks need only perform the former. Sensitivity analysis examines the effect caused by a change in a selected factor, leaving the remaining factors unchanged.

<sup>1</sup> This document is the comprehensive, revised version of the Basel II recommendations published in 2004.

Drawing on past (historical) or expected future (hypothetical) time series, scenario analysis is used to examine changes in bank portfolios resulting from an unexpected market event (*Madar 2010*).

Numerous studies have been devoted to the frequent adaptation of the trading book revisions proposed by the new Basel II regulatory framework, including *Kane (2006)*, *Dardac and Grigore (2011)*, *Alexander et al. (2012)*, *Rossignolo et al. (2013)*.

There is general consensus among the authors of these papers that the VaR-based calculation of the regulatory capital requirement severely understates the needed level of the capital buffer and would not provide an adequate safety net in the event of unexpected losses. This confirmed that, rather than “tinkering around the edges” of the VaR-based risk calculation, market risk estimation in the Basel regulation should be based on a different risk measure altogether.

The studies of *Lucas (2001)* and *Kane (2006)* confirmed that regulatory gaps allow banks – especially those estimating their regulatory capital on the basis of internally developed models – to under-report their VaR-based capital requirements to the regulatory authority. They can do this because the backtesting procedures prescribed by the supervisory authorities are unfit to detect “bad” models. The purpose of these procedures is to evaluate the performance of the models (i.e. whether the risk arising from the use of the specific model remains below the acceptable level) (*BCBS 1996*).

In addition to the evaluation difficulties of the models, *Lucas (2001)* pointed out that even when there is clear evidence of purposeful under-reporting of VaR, the sanctions typically applied by the Basel regulatory framework are not severe enough to dissuade banks from intentionally understating VaR.

## **4. Changes envisaged in the Basel regulation of market risk measurement**

### **4.1 Antecedents to the replacement of the risk measure**

Below we present an overview of the changes envisaged in the Basel regulatory framework in the aftermath of the 2007 crisis. In keeping with the purpose of this study, we focus on the definition of the market risk capital requirement related to the trading book. *Table 2* provides an overview of the main milestones leading to the new regulation.

<b>Table 2.</b>		
<b>Main milestones of the Basel regulation related to market risk</b>		
	<b>Year of publication</b>	<b>Document name</b>
Basel I	1988	International Convergence of Capital Measurement and Capital Standards
Basel I consultative proposal	1993	The Supervisory Treatment of Market Risks
Basel I revised proposal	1995	An Internal Model-Based Approach to Market Risk Capital Requirements
Basel II revised framework	2004	International Convergence of Capital Measurement and Capital Standards: A Revised Framework
Basel II revised framework, comprehensive version	2006	International Convergence of Capital Measurement and Capital Standards: A Revised Framework - Comprehensive Version
Basel II revision	2009	Revisions to the Basel II market risk framework
Basel III	2010	Basel III: A global regulatory framework for more resilient banks and banking systems
Basel III consultative document	2012	Fundamental review of the trading book - Consultative document
Basel III revised framework	2013	Fundamental review of the trading book: A revised market risk framework - Consultative document
Basel III consultative document	2014	Fundamental review of the trading book: Outstanding issues - Consultative document

*Source: Authors' work based on the BCBS website*

Table 2 presents a list of the titles and publication dates of the documents relevant to the regulation of market risk. In the following, we address the most important elements concerning the new Basel III regulation.

Although in July 2009 – in response to the sub-prime mortgage market crisis – the Basel Committee on Banking Supervision admitted the need to review the models proposed for the measurement of market risk calculation in the Basel II recommendations, it still recommended the use of VaR as a risk measure (BCBS 2009b). In 2010, the need for revision of the recommendations of Basel II was expressed under the name Basel III (BCBS 2010). In relation to the implementation of Basel III, Nout Wellink (2011), Chairman of the Basel Committee on Banking Supervision, alluded to the necessity of a potential revision of the VaR method.

Prospective revisions to the trade book – as envisaged in the 2012 consultative document – represented an important breakthrough compared to the events

listed above. “A number of weaknesses have been identified with using value-at-risk (VaR) for determining regulatory capital requirements, including its inability to capture ‘tail risk’. For this reason, the Committee has considered alternative risk metrics, in particular expected shortfall (ES)” (*BCBS 2012:3*). Besides recognition of the necessity of the move, the years of procrastination can be attributed to the serious difficulties arising in connection with implementation of changes. These included, for example, containing model risks through robust backtesting of the ES model’s performance, which is expected to pose a challenge for the financial mathematicians and statisticians whose input has been requested (*BCBS 2012; Embrechts et al. 2014*).

Despite doubts about the introduction of the ES system, the Basel Committee on Banking Supervision expressed optimism regarding the future, as confirmed by the following statement in the 2012 consultative document: “The Committee recognises that moving to ES could entail certain operational challenges; nonetheless it believes that these are outweighed by the benefits of replacing VaR with a measure that better captures tail risk” (*BCBS 2012:3*).

#### **4.2 Main elements of the proposed recommendations and consultative documents discussing the switch to ES**

The consultative document issued in 2013 (*BCBS 2013*) discusses in detail the technical parameters related to the application of ES as the new risk measure. Instead of the 99 percent confidence level applied previously for calculating VaR, the draft proposes a confidence level of 97.5 percent for estimating the ES measure. It was verified that, for certain distribution types, ES provides more reliable results at the 97.5 percent confidence level than VaR at the 99 percent confidence level. In the case of heavy-tailed distributions, the use of ES gives more conservative results and, hence, prescribes higher regulatory capital requirements. For light-tailed and near-normal distributions, ES yields equivalent results (*Embrechts 2014*).

The Basel Committee took a firm stand on calibrating the ES model according to a stress-based methodology. This is intended to ensure the sufficiency of regulatory capital to hedge risk positions, not only under normal market conditions but also under extreme scenarios (e.g. crises, significant price fluctuations). The correct definition of the stress period entails further challenges in the case of products included in the investment portfolio but having different liquidity characteristics. The expectation regarding the application of the stress methodology is in line with the previous findings of *Embrechts et al. (1999)* and the risk management practice of large banks in that possible losses are classified into three categories: expected loss, unexpected loss and stress loss. While the traditional risk management framework was prepared to tackle the first two loss categories, which are incurred under normal business operations, the third category – highly improbable, extreme loss incurred under extraordinary conditions – proved to be devastating for numerous institutions in the banking sector, occasionally resulting in defaults.

The 2014 consultative document (*BCBS 2014a*) published in response to the previous one focused on three outstanding issues in relation to the trading book. These are the following: ensuring a more objective regulatory boundary between the trading book and banking book; developing a sensitivity-based methodology in the revised standardised approach; and incorporating the concept of liquidity horizons in market risk measures.

In accordance with previous recommendations and practices, in identifying the regulatory capital requirement for market risk the Basel Committee allows the use of two methods: the standard model and the internal model. The standard model defines the capital requirement on the basis of detailed guidelines, thereby providing a fallback in the event that a bank's internal model is deemed inadequate. Banks relying on internal models are allowed to develop and apply their own risk evaluation methods with a view towards calculating their respective capital requirements. This more flexible option is only available if the methods developed internally comply with the relevant Committee criteria and are also approved by the regulatory authorities. One of the concerns voiced even in relation to the VaR-based risk measurement framework was that, owing to significant additional infrastructure and the need to set up an independent risk management division, the resulting regulatory capital requirement tended to be higher than the values yielded by the standard model, which called into question the justification of selecting the more sophisticated methodology (*Kondor 2004*).

Regarding the enhancement of the standard model, two possible options were considered: the aforementioned sensitivity-based approach and the so-called cash flow-based method. Based on the feedback received in response to the consultative documents and recognising the complexity of the latter, as well as its cost and time implications, policymakers rejected the use of the cash flow-based method, and at present they are concentrated on working out the details of the sensitivity-based regulation.<sup>2</sup>

As regards the use of internal models, the 2014 consultative document introduced a significant change: consideration of the liquidity horizon for the purposes of measuring market risk has changed. The Committee defined five different liquidity horizons (10, 20, 60, 120 and 250 days) for individual risk factors (interest rate, equity price and foreign exchange rate volatility, price changes of commodities). The draft requires institutions to identify the risk factors affecting individual portfolio elements and to classify them into corresponding liquidity categories. Institutions subject to the regulation are expected to treat the specified liquidity horizons as a

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<sup>2</sup> Details of the draft recommendation regarding the standard model are beyond the scope of this study; however, they are available in *BCBS (2014a)*.

floor (lower threshold), but they are permitted to use longer liquidity horizons at their discretion, subject to approval by the supervisory authority.

For compliance with the regulatory criteria, bank-level ES values must be calculated on a daily basis. Similarly, ES should be calculated with a daily frequency for all trading desks included in the internal model. In line with previous plans, ES is to be calculated at a confidence level of 97.5 percent. As a first step, ES is to be defined over a 10-day base horizon in consideration of all relevant risk factors. The aforementioned different liquidity horizons will be considered for the purposes of ES calculation in such a way that the ES value calculated for the base horizon is scaled to the corresponding time horizon. The final, liquidity-adjusted regulatory ES value is calculated from the components above by using a formula defined by the Committee. It should be emphasised that the calculation of the ES should be based on a sample containing loss/profit profiles realised in stress periods.

Instead of simply adding up the ES components, estimated as described above, the draft proposes the aggregation of ES measures by using the square root of the sum of squares to calculate the ES value of the entire trading book. By doing so, not only does the draft disregard the risk-reducing effect of diversification; in fact, it exhibits an even more prudent attitude. This attitude may reflect the fact that the experiences of the crisis demonstrated that certain risk types may not only weaken, but also strengthen each other's effects. In the latter case, the regulatory capital requirement calculated by simply adding up the risk components corresponding to individual portfolio elements – as suggested by the method that does not recognise the risk-reducing effect of diversification and, hence, was originally deemed conservative – could prove to be insufficient (*BCBS 2009a; BCBS 2011*).

Financial institutions relying on internal models can flexibly select or develop the models used for the estimation of the ES; the Committee does not specify any regulations in this regard. Supervisory authorities may approve the application of both historical methods and the Monte Carlo simulation, as long as the backtesting and P&L analyses used for the evaluation of the models verify the accuracy of the risk calculation.

#### **4.3 Significance of market risk, expected effects of the regulation**

For the purposes of this study, we performed an estimate to determine the regulatory capital requirement for market risk, based on the audited data of the MNB pertaining to credit institutions at the end of 2014 (*MNB 2015*). We limited the entire credit institution sector to large banks operating as companies limited by shares. This category includes institutions whose balance sheet total is at least 3 percent of the consolidated balance sheet total of credit institutions operating in the form of companies limited by shares. This reduction of the sample size was primarily justified by data availability difficulties; however, it was also confirmed

by the fact that, based on the MNB's data at the end of 2014, the eight banks under review represented 73.5 percent of the regulatory capital of the entire credit institution sector and 72.5 percent of the sector's total risk exposure. Under these circumstances, capturing the large banks operating in the form of companies limited by shares appeared to be an adequate approach.<sup>3</sup>

The analysis of the composition of the regulatory capital requirement was hindered by the fact that those entities subject to submitting individual supervisory reports regarding the capital requirement calculation to the MNB compile their reports in accordance with Hungarian accounting regulations. However, detailed data could be accessed, primarily from consolidated reports prepared according to IFRS and risk reports. Consequently, our further calculations were based on the consolidated reports of the eight large banks (*Budapest Bank 2015; CIB Bank 2015; Erste Bank 2015; K&H Bank 2015; MKB Bank 2015; OTP Bank 2015; Raiffeisen Bank 2015; UniCredit Bank 2015*).

Our calculations showed that the regulatory capital requirement held for market risks by the eight large banks accounted for 0–5 percent of the total regulatory capital requirement. On average, 83 percent of the total capital requirement of the eight banks under review served credit risk purposes, while 14 percent and 3 percent were earmarked for operational risks and market risks, respectively. Domestic banks' typical focus on lending plays a role in the modest share of regulatory capital held for market risk purposes. As regards foreign institutions, the share of the capital buffer held for market risk purposes may well exceed 10 percent of the total regulatory capital (see, for example, *Deutsche Bank 2015, Credit Suisse 2015*). Consequently, stakeholders are looking forward to the revision of the standards.

The Basel Committee on Banking Supervision strived to gauge the impact of the scheduled changes from the start of the consultations, and in its 2013 consultative document it pledged to perform two quantitative impact studies (QIS). The studies were intended to perform an impact analysis of the proposed revision to the market risk regulation relative to the regulation currently in effect.

The first quantitative study performed in early 2014 was based on 35 hypothetical portfolios created specifically for this purpose with the voluntary participation of 41 banks from 13 countries. The analysis found that moving from VaR to ES was expected to increase the calculated risk measure by 62 percent. We wish to

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<sup>3</sup> As of 31 December 2014, the regulatory capital (own funds) of the eight large banks amounted to HUF 2,357 billion and the total risk exposure amount (RWA) stood at HUF 12,055 billion. Accordingly, the banks' Pillar I total capital adequacy ratio based on the CRR/CRD IV regulation in effect from 1 January 2014 was 19.6 percent (*MNB 2015*).

emphasise that the study was based on portfolios created specifically for testing purposes (*BCBS 2014b*).

The results of the quantitative impact analysis performed in relation to the trading book revision on the basis of real portfolio data were published in November 2015 (*BCBS 2015*). The analysis was conducted on a sample of 44 banks (the sample did not include Hungarian banks). Participating banks performed a simulation to examine what would have happened if the proposed regulatory framework for market risk had been in full effect on 31 December 2014.

The impact analysis found that changes in the regulatory capital requirement for market risks would have generated a 4.7 percent increase in the consolidated Basel III capital requirement (including credit, operational and market risks). Focusing exclusively on market risk, the proposed market risk framework would result in a weighted average increase of 74 percent<sup>4</sup> in aggregate market risk capital charge. When measured as a simple average, this increase in the total market risk capital requirement is 41 percent. For the median bank in the same sample, the capital increase is 18 percent.

Upon examining the two alternative models for market risk separately, as a simple average the capital requirement under the internal model approach is 54 percent higher compared to the internal model currently in use. For the median bank, the corresponding increase is 13 percent. The differences were far more striking in the case of the standard model: the capital requirement under the proposed standardised approach is 128 percent higher on average, compared to the 51 percent observed for the median bank (*BCBS 2015*).

It is important to note in relation to the results that all changes envisaged in the market risk regulation were considered collectively for the purposes of the impact analysis. The substantial increase, therefore, cannot be attributed solely to the shift to ES; indeed, the analysis examines the consequences of certain changes that are outside of the scope of this paper. It is clear, however, that institutions applying the standard model should expect a higher increase in their capital requirement.

#### **4.4 Feedback related to the revision**

In our opinion, the development and selection of the correct backtesting methods are still problematic, and all the more so as supervisory authorities assess the adequacy and accuracy of internally developed and applied risk analysis models on this basis. Although some studies have recently been devoted to this topic (for example, *Acerbi-Székely 2014; Du-Escanciano 2015*), the enhancement and evaluation of these methods continue to pose significant challenges.

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<sup>4</sup> The weighting was based on market risk-weighted assets.

It remains to be seen whether the positive expectations about ES prove to be justified. Indeed, the latest piece of academic literature cited in this study presents efforts aimed at the identification and practical interpretation of an alternative which eliminates the flaws of the ES system (*Embrechts 2014*).

Even though *Stefan Ingves (2014)*, chairman of the BCBS, recognised the aforementioned revisions to the trading book to be of strategic importance, final consultations in this regard are still in progress. Consultations on the recommendation proved to be a protracted process, which may be attributed to the fact that the feedback of market participants was requested in relation to three consultative documents published in the period of 2012–2014. The processing of the feedback led to a revision of the original ideas and timelines and, accordingly, in his speech in May 2015 (*Ingves 2015*) Ingves announced that the final text of the recommendations would be published by the end of the year. Yet, the publication was still not released by the time of this study. Implementation of the Basel III regulatory package is a gradual process, and is expected to be fully completed by 2019.

It should be borne in mind that the fundamental revision of a complete framework involves a substantial amount of responsibility, requiring not only the fine-tuning of technical details, but also the continuous consultation of stakeholders. In our view, this implies considerable work and poses serious challenges for the future.

## 5. Summary

The purpose of this study was to examine the revisions necessitated by the 2007 crisis to the Basel regulatory framework in terms of the trading book positions exposed to market risk. Critical considerations regarding the inadequacy of the VaR-based risk measurement approach constituted the starting point of the overview.

The literature alerted to the flaws of VaR as early as the turn of the millennium, and the crisis only confirmed the inadequacy of the previous system. Nevertheless, the issue of moving the Basel regulatory framework to a new risk measure was put on the agenda after a lag of 10 years. In recent years, a series of consultative documents have been dedicated to exploring the possibility of moving from the value-at-risk methodology to an expected shortfall framework. These efforts are aimed at the reduction of systemic risks in the banking sector.

The study also discussed problems arising in relation to the application of the proposed new risk measure, with special regard to the testing difficulties of the new model. Although the fundamental reform of the regulation is a daunting task, the steps taken so far – as well as those envisaged – are undoubtedly commendable.

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# Transformation of the international and European project finance market as a result of the crisis

Ágnes Csiszárík-Kocsir

*Project financing is not a new form of funding in Hungary or in other countries. Many consider it as a product of the pre-crisis abundance of money, when relatively ample liquidity encouraged banks to enter into transactions where safe repayment could not always be seen clearly. In many cases, this excessive risk-taking resulted in defaults on project financing loans, which was also exacerbated by lack of prudence in the evaluation of transactions. The objective of this article is to present the history of project financing between 2005 and 2014 on the basis of the amounts of loan mobilised by mandated lead arrangers (MLAs) and the project bond amounts subscribed by the organisations involved in the bond issue, with special regard to Europe. The study also aims to highlight those milestones and factors that sometimes reduced and sometimes increased the project value implemented through project financing. The analysis is based on the official database of IJGlobal, using fundamental statistical methods, ratios and rates. The analysis pays special attention to the financial institutions that played the main roles before, in and after the crisis.*

**Journal of Economic Literature (JEL) Classification:** E59, G20,

**Keywords:** project finance, MLA, project bond, crisis, Europe

## 1. Literature review

### 1.1. Project financing as a loan product

The concept of project financing has already been defined by various authors. *Newitt and Fabozzi (1997)* emphasised in connection with project financing that the novelty of this form of funding compared to traditional corporate lending is that the security for the amount of the loan is not the assets of the financed entity, but rather the future cash flow of the financed project, and this cash flow is received by an entity separately established for this purpose. *Finnerty (2007)* mentions project financing as funding based on limited resources or funding without resources,

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where the return of the invested amount can be determined on the basis of the future cash flow of the project. *Yescombe (2008)* follows *Newitt and Fabozzi*, but also emphasises the long time span of projects. The wording by *Nádasy, Horváth and Koltai (2011)* (similar to *Finnerty's* definition) defines the concept of project financing according to the basis of the return on the projects (i.e. upon project owners and backers making the decision on the investment, the cash flow and asset value of the future project are taken into account).

On the basis of the above definitions and authors, the essential features of project financing as a special credit facility can be summarised as follows. (i) It is received by an entity which is created especially for the given project (SPV<sup>1</sup>) and which has a special economic or financial relationship with the sponsor/owner. (ii) It is financing with high leverage (sometimes it may reach as much as 80–90%). (iii) Because of the independent project company, the amount of loan does not burden the balance sheet of the sponsor/owner company<sup>3</sup> directly, and it does not undermine its creditworthiness.<sup>4</sup> (iv) In the case of the non-recourse type loan, only the cash flow of the project and not the assets of the sponsor/owner may serve as cover for the loan.<sup>5</sup> (v) The transaction is basically built by two actors, the sponsor and the financial institutions, which are mainly the creditor banks and the bond issuers. (vi) The provider of the loan capital does not become an owner in the project company. (vii) Due to the above features it is a highly risky credit facility, and this risk can only be reduced by a base of competent and qualified advisers.

The key target areas of project financing are summarised by *Fight (2006)*: (i) energy sector, (ii) gas and oil industry, (iii) mining, (iv) motorway construction, (v) telecommunications, (vi) other projects (paper manufacturing, chemical industry, construction of hospitals, airports and prisons).

The above list needs to include real estate financing as well, which also represents a considerable share within the project finance market.

From a corporate perspective, project finance is a form of funding with a number of advantages. One argument for it is that it offers off-balance-sheet financing

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<sup>1</sup> Special Purpose Vehicle.

<sup>2</sup> However, the crisis significantly overwrote this ratio, as the expectation concerning own capital increased, mainly in the case of projects in the oil and gas industry, those relying on renewable energy sources, and water conservancy and mining projects.

<sup>3</sup> Sponsors are the ones who provide the resources necessary for the implementation of the project, plan and organise its implementation, formulate the main objectives of the project and help to achieve them.

<sup>4</sup> The loan amount is stated only in the consolidated accounts.

<sup>5</sup> Based on the stipulation of the right of recourse, project financing can be classified as three types: (i) non-recourse financing, where the sponsor/owner does not take responsibility for the obligations of the project company, (ii) full-recourse financing, where full responsibility is taken and (iii) limited-recourse financing, where the sponsor/owner has limited responsibility.

with exceptionally high leverage, and therefore a borrowed large amount does not burden the project owner's balance sheet directly (as it appears only in the consolidated balance sheet) or lower the project owner's creditworthiness (Yescombe 2008), as the loan is received by a separate project company set up for the purpose of the project. According to Esty (2007), a legally independent company established for implementing the project is funded with its own capital raised by one or more sponsors and from borrowing for the purpose of the project. Beyond that, the owner of the project company does not even have to undertake a guarantee for the loan; according to the agreement with the bank (Nádasdy et al. 2011), the transaction can be non-recourse or limited-recourse financing (naturally, right of full recourse may also be stipulated). Accordingly, the loan is mainly secured by the contracts concluded (for example, without attempting to be exhaustive, general contractor, supplier, sales and operating contracts),<sup>6</sup> based on which the providers of funding can form an opinion of the relevance and viability of the project. Another advantage is that project finance in most cases results in better capital allocation than traditional corporate finance (John-John 1991), as, in view of compliance with the strict conditions, the deeper monitoring automatically eliminates projects whose return is uncertain or which are not well-founded.

The repayment of loans is ensured by the cash flow originating from the operation of the project, which removes further burdens from the shoulders of the project owner, compared to traditional corporate finance (Gáldi 2002). Due to the high credit demand of the project and the significant information asymmetry of the initial phase, banks that participate in project financing usually undertake lending in a syndicate and not alone, in view of the prohibition concerning large exposures and customer risk. Mandated lead arrangers<sup>7</sup> become internal actors of the project, as they are present with the sponsors from the initial, planning phase of the project, and they involve further partners (banks) in the financing (Gatti et al. 2008). Therefore, mandated lead arrangers have a better understanding of the background of the project, and they become acquainted with the contracts on the basis of which they decide on financing. If the loans cannot cover the planned funding requirement, they can be complemented with project bonds as well; consequently, other forms of funding (e.g. financial leasing, supplier financing, mezzanine financing) are tertiary during the transaction. Creditors and providers of funding have to take into account the risk due to the long-term nature of the project, as well as interest rate and exchange rate risks, but market and operational risks also have a significant impact (Szalai 2011). Major project financing transactions often cross national boundaries as well. Due to the volume, complexity and capital requirement

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<sup>6</sup> In addition to the contracts, other elements of guarantee also exist: without attempting to be exhaustive, these include liens, option rights, security interests, commitments and various assignments.

<sup>7</sup> The leading organiser financial institutions are called MLAs (mandated lead arrangers). They are also known as lead banks, lead arrangers or lead managers.

of projects, as well as to ensure a well-founded background for banks' decisions and to reduce the risk taken by them, it is necessary to also involve external experts and advisers, who may (inter alia) be legal, financial, sectoral or insurance experts (Kónya 2009). These advisers (if the project also has international aspects) can be employees of major (also international) consulting firms with many years of experience in the field of similar projects.<sup>8</sup>

As with any other financing transaction, project financing can be successful in countries where the economy is transparent, contracts are respected, and one does not need to fear market failures that may break the budget of the project or otherwise sabotage it (Ahmed 1999).

## 1.2. Project finance and the principal-agent problem

The classical principal-agent problem, which is precisely defined by *Williamson (1998)*, is often encountered in traditional corporate finance. According to this theory, the principal (owner) delegates certain decisions to the agent (manager), who is better supplied with information and has a better overview of certain issues. This makes operational decisions easier, but it may also give rise to corrupt practices. Funding decisions are also included here. Having medium-term interest, the agent may not always necessarily choose the funding alternative that is the most optimal for the business.

The principal-agent problem is present at many large companies, where various actors have different and often contrasting interests.<sup>9</sup> The success of the company depends on whether these actors are able to cooperate and come to an agreement for the common good (i.e. profit). At first glance, the problem seems to be bridgeable with an appropriate contract, in which the principal obliges the agent to represent the interest of the company according to his best knowledge in any situation. However, it is impossible to completely define these situations, and as it is difficult to comply with something that cannot even be defined, the written contract in this form becomes pointless. Even if it could be defined, in the vast majority of cases, monitoring the observance of the contracts would be a very costly procedure, which in turn would bring into question the observance of the cost–benefit principle. The involvement of the agent in the circle of owners seems to be a good solution. In this way, he does not handle other people's assets, but also has personal interest to achieve the most efficient operation possible.

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<sup>8</sup> There are legal and financial advisers in each project finance transaction; no transaction can be launched without them, or only with a high risk.

<sup>9</sup> The owner of a company thinks over the long term and seeks to facilitate permanent growth, while managers, who handle the capital of the owner, tend to think over the medium term, keeping annual bonuses in mind.

The project finance model reduces this problem, which can be considered classical (*Esty 2003*), and it does not have to be taken into account upon investment in assets (*Myers 1977*) and in the case of optimal choice or substitution of assets (*Jensen–Meckling 1976*). The complicated contractual structure of project financing distributes risks and forces the actors to engage in continuous monitoring. This form of funding keeps the management focused in a very narrow channel, as the project company may only deal with the project. As a result, information cannot be ‘hidden’, as it is continuously requested and demanded by the creditors as well. *Brealey et al. (1996)* prove this beneficial feature of project finance through the example of infrastructure projects. Consequently, project finance represents a much more transparent and clearer decision-making structure than traditional corporate finance (*Byoun et al. 2013*). Based on the above, the main advantages and disadvantages of project finance can be summarised as follows:

<b>Table 1.</b>	
<b>Advantages and disadvantages of project financing</b>	
Project financing is advantageous:	
Management of the principal-agent problem:	<ul style="list-style-type: none"> <li>– Specialised and decentralised management.</li> <li>– Allows separate motivation of project managers.</li> <li>– Excludes squandering of free cash flow.</li> <li>– Increases the possibility of external checking of the project.</li> <li>– Encourages the dissemination of information.</li> </ul>
Impacts on ownership structure:	<ul style="list-style-type: none"> <li>– A project company can be set up even without a complete assessment of creditworthiness of the sponsors.</li> <li>– Limits project sponsors’ commitment.</li> <li>– Reduces creditors’ exposure to project risks.</li> <li>– Allows project-specific debt ratios.</li> </ul>
Other effects:	<ul style="list-style-type: none"> <li>– Costs spent on individual purposes become transparent.</li> <li>– Allows the provision of services for several companies, not only for the sponsor.</li> <li>– Partly alters the role of the sponsor; he becomes not only a capital owner, but also a supplier.</li> <li>– Avoids double taxation.</li> </ul>
Project financing is disadvantageous:	
<ul style="list-style-type: none"> <li>– If there are complicated interactions and relations between the project and the other companies.</li> <li>– If a delay in the project entails high costs.</li> <li>– The optimum capital gearing is low.</li> <li>– The costs of contracts are high.</li> </ul>	
Source: own compilation based on <i>Brealey et al. (1966)</i>	

## 2. Project finance and the crisis

The largest financial bubble of the 21st century until now (and also since the 1929–1933 crisis), followed by the largest crisis, left its mark on all economies and thus on all financial instruments (*Lentner et al. 2010*). Project finance was greatly affected

by the 2008 economic crisis, which also changed the attitude of banks (*Borzán et al. 2011*). In view of the drastic fall in available funds and banks' unprecedented losses, providers of funding and those looking for funding completely retailored their practices. Investors and borrowers became sensitive to risks, prompting more cautious behaviour on the part of actors (*Gatti 2008*). This change was perceived at the domestic and international levels as well. In view of tightening resources and economic uncertainty, the providers of funding also required an increasing number of guarantee elements, including a clause concerning some form of recourse.

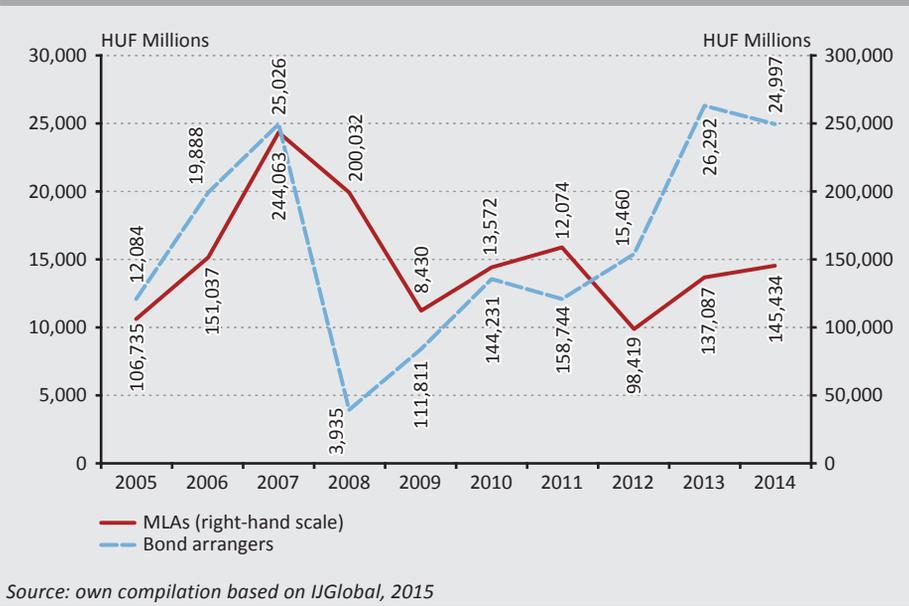
Following a period of ample liquidity (*Király 2008*), due to the 'skeletons' hidden in banks' closets, defaulting loans and irresolvable bond packages, banks experienced liquidity shortages for years, but there were also institutions that struggled to survive. The large bond issuers playing a role in project finance (e.g. Citigroup, Merrill Lynch, HSBC, the Royal Bank of Scotland, Morgan Stanley, Credit Suisse, JP Morgan, Bank of America, Goldman Sachs and Lehman Brothers)<sup>10</sup> all struggled with major financial difficulties, and some of them could not even survive the crisis.

Various organisations have undertaken to keep records of project financing transactions. Among others, the Thomson Reuters Project Finance International, the International Financing Review and the IJGlobal database operated by Euromoney contain an abundance of data and information on the transactions in various breakdowns. This article presents the changes in project finance before and after the crisis using the IJGlobal database. The IJGlobal database was chosen because it examines all international projects, and it contains, inter alia, detailed data on the target area of projects, their leverage and their locations. The study contains only those transactions with their values that were implemented with international participation and that needed a syndicated loan subscribed by mandated lead arrangers (MLAs) and bond issue organised by bond issuers. Based on financially closed transactions, prior to the crisis in 2005 the aforementioned financial institutions accounted for nearly 53% of the whole project bond market. In 10 years, this has fallen to 26%. One must not disregard the fact that these figures are related to completed transactions begun several years earlier, but the declining trend is still clearly visible.

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<sup>10</sup> Hereafter these ten financial enterprises which were significantly involved in the outbreak of the crisis are called the 'V10' group.

**Figure 1.**  
**Value of financially closed projects of bond issuers and mandated lead arrangers**  
 (USD million)

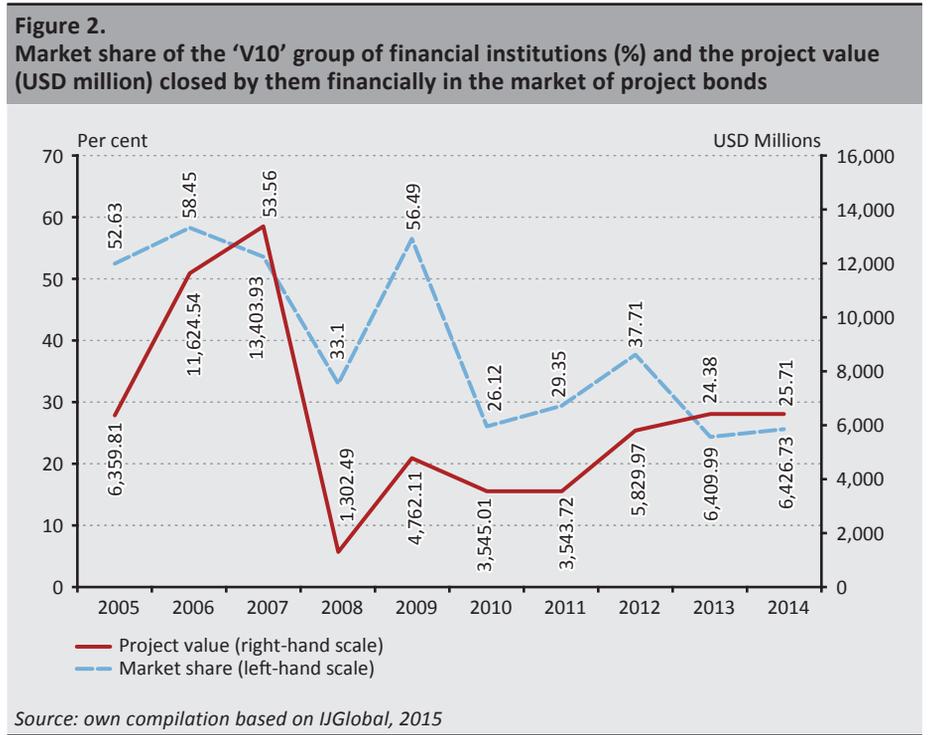


The above figure shows that the bond market of project financing was very hectic in the 10 years under review, but still showed outstanding annual average growth of 29%. The onset of the crisis in 2008 resulted in an unprecedented decline in the market of project bonds: a fall of 84% as an average of the previous year, and a fall of 66% compared to the base year (i.e. 2005). All of this proves that due to high leverage, project finance is especially sensitive to market uncertainties and to crises in particular. Following the first major shock of the crisis, the market started to return to the pre-crisis level. This continued until 2011, when a slight decline was observed again, due to the euro crisis caused by the crisis in Greece. The decline in 2011 was not as significant as the one experienced in 2008, because the volume of bond financing did not go below the 2005 level. Actually, the decline was only 11%, compared to the previous year's figures.

However, the MLA market shows different pictures before and after the crisis. Following the base year of 2005, the MLA market started to grow dramatically. Compared to the value of the base year, by 2007 the market had grown by 129%, and its value did not decline even with the outbreak of the crisis in 2008 (compared to the base year, it was still 87% higher), as opposed to the major fall of the bond market. Comparing the 2008 data with the previous year's figure, the fall is still not as significant (18%) as in the case of the bond market. The MLA market was less affected by the sub-prime crisis than by the aforementioned Greek crisis, which had a huge impact in the market of mandated lead arrangers one year later (i.e.

2012). In 2012, the market fell sharply compared to the base year and was 8% lower compared to the 2005 figure. This value shows a considerable decline (38%) with regard to the previous year’s data as well. The underlying reason is several banks in the MLA market involved in financing Greek debt. The fear of default of the Greek state and the ensuing uncertainty resulted in a considerable increase in these creditors’ risk, and at the same time they urged financial market participants to accumulate reserves.

Considering all of this, it is also expedient to examine the role in the project finance of the players most frequently mentioned and best known in connection with the crisis.

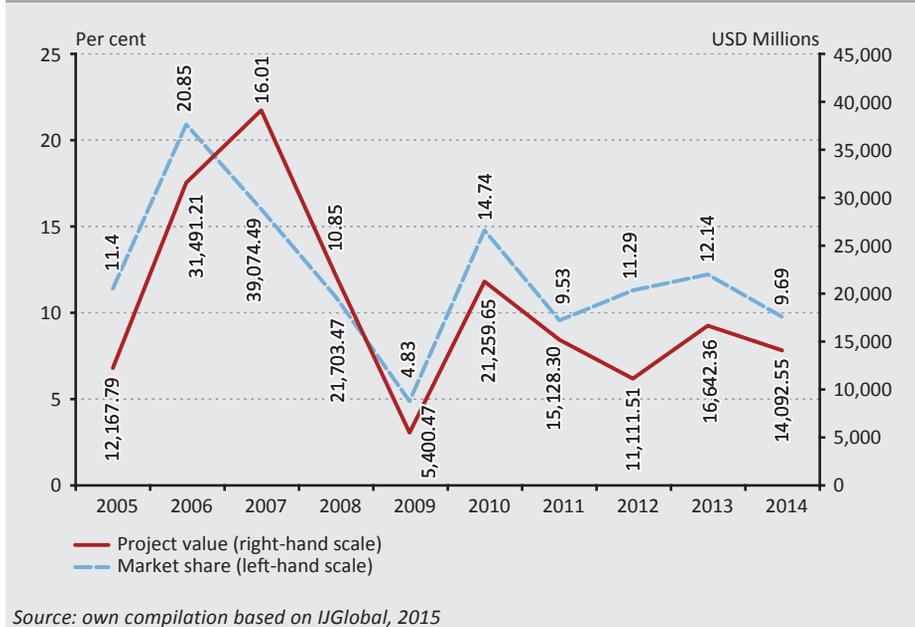


The institutions listed above account for 40% of the project bond market as an average of the ten years under review. The above figure shows that this group of institutions had a more than 50% share in the bond market in the initial phase of project finance, with an immediate decline as the first signs of the crisis appeared. These institutions’ market share shrank to 33% in 2008, although it exceeded 50% in the following year. As shown by the project value as well, the reason for this surge was not an increase in the funds of the bond market that could be mobilised or the institutions under review, but the narrowing of the market. Following that, the

market share of the 'V10' fluctuated between 25% and 38%, standing at 25.71% in 2014, which is the last year under review.

The value of the project bonds of the 10 institutions under review shows even more dramatically the impact of the crisis in terms of their resources. On a 10-year average, project bonds were financed in the amount of USD 6,321 million. In 2005, the institutions arranged project bonds issues with a value of USD 6,360 million, and this amount increased significantly until 2008. By 2007, compared to the 2005 base, the value was already 111% higher than the figure for the base year. As a result of the fall due to the 2008 crisis, the institutions under review accounted for one fifth of the figure for the base year. Following the outbreak of the crisis, the value of the project bonds of the institutions increased slowly, and the 2005 level was only reached again by 2013; even in 2014, the value was hardly 2% higher than the figure for the base year. It is worth examining the values as a proportion of the previous year as well. The 2008 fall, which was enormous on the basis of the data of the base year as well, is even more drastic as a proportion of the previous year, amounting to a mere 9.72% of the 2007 project bond value. The 2011 decline is not that visible in the 'V10' values, compared to the project bond issue as a whole, since it went below the 2010 value only slightly (99.96%). In terms of the bonds issued by the 'V10' group of institutions, another significant surge is observed in 2012, when the increase was 64.52% compared to the figure for 2011 (this value is

**Figure 3.**  
Market share of the 'V10' group of financial institutions (%) and the project value (USD million) closed by them financially in the MLA market



Source: own compilation based on IJGlobal, 2015

91.67% of the base year figure, as opposed to the previous year's 55.72%). In the following two years, this segment of the project bond market was characterised by stagnation.

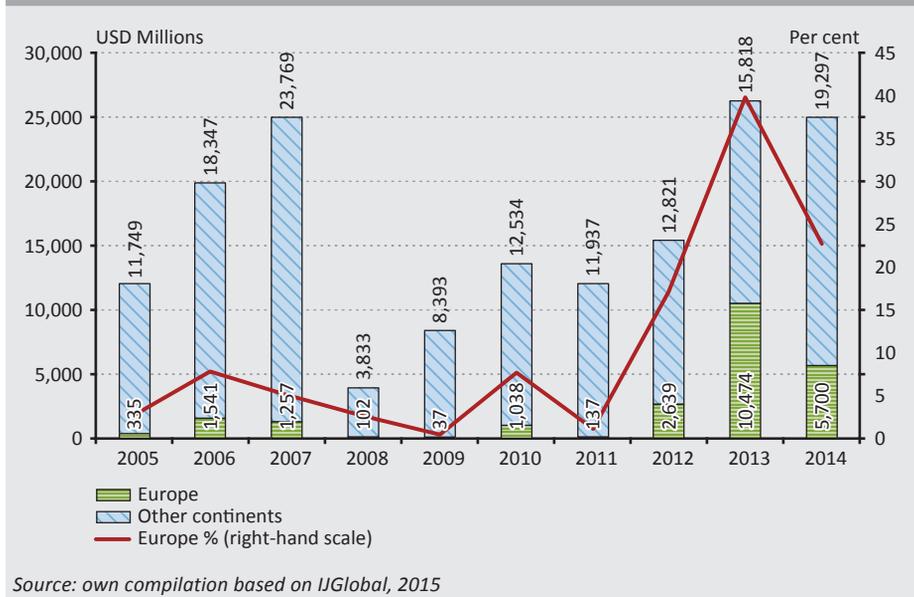
The 10 institutions under review show hectic fluctuations in the MLA market of project finance as well. As opposed to the 40% share in the project bond market, they had a mere 12% share in the MLA market as an average of the 10 years under review. In terms of their market share, compared to the base year (11.40%) they significantly increased their share by 2006, when they accounted for one fifth of the market. It is interesting that their market share started to decline well before the crisis, as they stood at only 16% by 2007. The underlying reason was not the approaching recession, but an upswing in the market and the entry of new players, which resulted in a significant decline in the share of the 'V10' group. They hit a bottom in 2009, when their share shrank to 4.83%. This was clearly attributable to the effect of the sub-prime crisis. The next year, this low was followed by a swift recovery, and the share of the group increased by nearly 10 percentage points. This surge in market share is attributable to the weakening of the MLA market participants as well as the recapitalisation through state or private channels of many of the institutions under review. The market share declined again in 2011. Then, following slow growth, by 2014 it remained close to the 2011 level, not even reaching the base year ratio (it was 1.71 percentage points lower).

Examining the amounts contracted by the 'V10', compared to the initial value (USD 12,168 million) they succeeded in mobilising nearly two and a half times more the following year, making an increase of 159%. By 2007, the value related to this group of institutions continued to increase in the MLA market, by 24% and 221%, compared to the previous year and the base year, respectively. The outbreak of the crisis resulted in a major fall in 2008, but the value was still 78% higher than in 2005. The fall in 2008 is also clearly demonstrated by the decline of 44.46% measured in relation to the previous year. However, the drop in the amounts tied up in the MLA market did not stop in 2008 and reached its low in 2009 (in the case of bonds it had taken place a year earlier), as seen in market share as well. This value was 44.38% of the figure for 2005, and it amounted to a mere 24.88% of the data for the previous year. It was the lowest value concerning the ten years and ten institutions under review. In 2010, the MLA market started to recover, with the value reaching the level of two years prior, taking 2005 as the base (meaning a 294% increase compared to the previous year!), followed by a slow decline again. The next low (which was much less serious than the one in 2009) was reached in 2012, when the amount fell below the 2005 level again (being 8.68% less than that). The decline is spectacular compared to the previous year as well; the amount tied up in the MLA market was 26.55% lower. The amounts subscribed by these institutions increased slowly in 2013 and declined again in 2014. As a result, the indicator for 2014 exceeds the 2005 value by only 15.82%.

### 3. Europe in the global project finance market

The European project bond market accounts for only a small slice of the whole market as an average of the ten years under review, with its share amounting to an annual average of 10.71%. Between 2005 and 2014, the value of the project bond market as a whole corresponded to a turnover of USD 161,758 million, of which the share of Europe was only 14.38% (i.e. USD 23,260 million) in the years under review.

**Figure 4.**  
Value of the total and the European project bond markets between 2005 and 2014  
(financially closed project value, USD million)



An examination of the changes in the project bond value that can be linked to Europe reveals that it represents a very small slice in the pre-crisis years, as it was below 10% until the end of 2012. Compared to the initial value of USD 335 million, the bond value that can be linked to Europe surged by 360% the next year, also increasing the ratio considerably (from 2.77% to 7.75%). As shown by the figure as well, in 2007 the total bond market was still able to grow, but the European segment had already started to decline, and it was 18.43% lower compared to the figure for the previous year. Therefore, it can be established that signs of the crisis were already visible in the European market in 2007. This value continued to decline in 2008 (to a mere 30.45% of the 2005 figure and only 8.11% of the previous year's value), but the real low for the 'old world' was experienced in 2009. Expressed in figures, it represents a mere 11.04%, compared to the base year, and 36.27%

compared to the previous, otherwise very low, data. Europe's share in that year amounted to 0.44% of the total bond market. Based on the aforementioned data and the figure, the European segment follows the movements of the total project bond market only with significant distortions. Compared to the previous years, the available data show a significant improvement in 2010, but this improvement was very short-lived. In 2011 – due to the Greek debt crisis, which impacted Europe the most – the value fell again, although it did not reach the lows of 2008 and 2009 (the share of Europe within the whole market was 1.13%). The decline in 2011 was greatly attributable to the surge in CDS spreads of European countries as well, which started in the summer of 2011. The approximate 25,000 basis point value of the Greek CDS was certainly not beneficial to the project finance market – neither in the bond market, nor in the credit market. In view of the European sovereign debt crisis caused by the Greek crisis, the risk of the continent as a whole increased, which reduced project finance providers' long-term confidence in the region.<sup>11</sup> Compared to the base year, it was 40.90%. However, 2012 can be considered a milestone for Europe, as the value of the market surged considerably. While the market as a whole grew by a total of 27.94% compared to the base year, Europe surged by 687.76%. This unbelievable growth is even better demonstrated by the growth calculated on the basis of the previous year, amounting to 1,926.28%. This growth reached its peak in 2013, as the total market also reached its highest level then. Compared to the base year, it was 3,126.57% (i.e. quadruple the figure for the previous year). Accordingly, the European segment accounted for 39.84% of the whole market, and thus the other continents were spread out across the remaining 60%. In 2014 the value was halved, but it still amounted to 1,701.49% of the base year (the total market stopped at 206.86% of the base year), accounting for 22.8% of the total market.

Based on the low European figures of the bond market, it can be stated that the attitude of the continental financial culture can be strongly perceived here as well. While the US market accepts bond financing, European players – with the exception of some countries – are averse to it. The eastern part of the continent, which is still learning the rules of the market economy, does not easily accept bond financing as an alternative or supplement to loans. With the exception of some western countries, this mode of funding is not really accepted even as a supplement to project loans.

It is also worth examining the Top 10 list of the European project bond market, which shows the primary rearrangements and exchanges of roles as an average of the years under review. The table scrutinises the beginning and the end of the period under review as well as the periods of the two lows, 2008 and 2011.

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<sup>11</sup> The CDS spread of Central East European countries improved significantly after the crisis (Szórfi 2015), but it still proved to be insufficient for an improvement in European indicators.

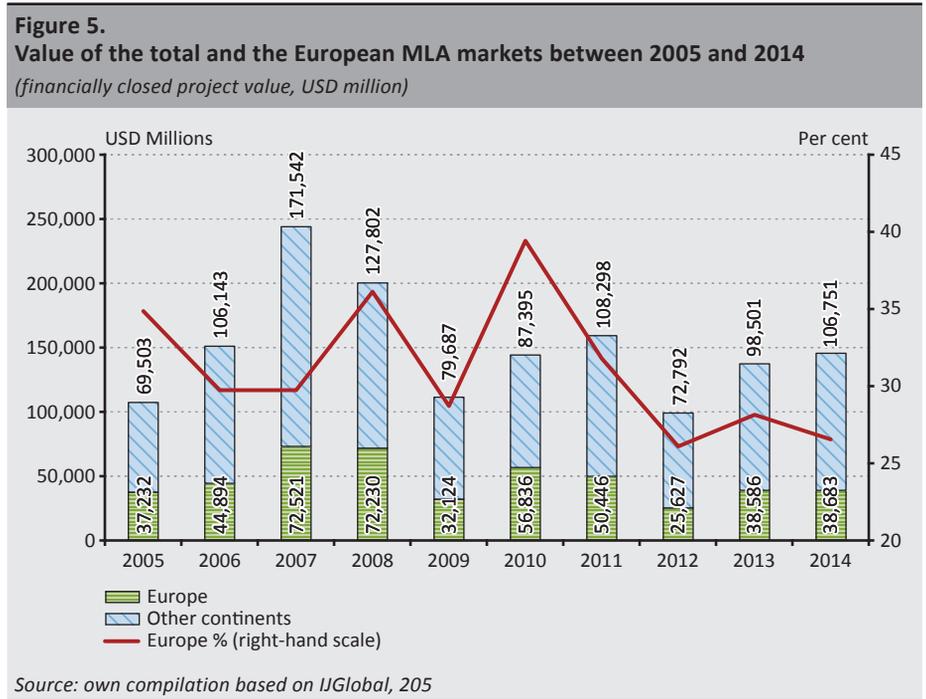
2005				2008		
		Value (USD million)	Share (%)		Value (USD million)	Share (%)
1	Banco Sabadell	167,50	50.00	Grupo Santander	31,34	30.77
2	Grupo Santander	167,50	50.00	Banca March	14,24	13.98
3				Caixa Geral de Depósitos	13,67	13.42
4				Royal Bank of Scotland	13,67	13.42
5				Espirito Santo Investment	6,30	6.18
6				Caja Madrid	3,46	3.39
7				Milleneum BCP	3,32	3.26
8				BBVA	3,27	3.21
9				Banco BPI	2,81	2.76
10				La Caixa	2,81	2.76
Σ		335,00	100.00		94,89	93.15
2011				2014		
		Value (USD million)	Share (%)		Value (USD million)	Share (%)
1	Dexia Group	55,89	40.84	Credit Agricole Group	654,00	11.48
2	Isbank	27,00	19.72	Bayern LB	470,00	8.25
3	TSKB	27,00	19.72	Belfius Bank	401,00	7.40
4	Vakifbank	27,00	19.72	Deutsche Bank	401,00	7.40
5				Trade Risks	350,00	6.15
6				Barclays	350,00	6.13
7				Royal Bank of Canada	341,00	5.98
8				ING Group	265,00	4.65
9				Royal Bank of Scotland	262,00	4.60
10				HSBC	252,00	4.43
Σ		136,89	100.00		3 746,00	66.47

*Source: own compilation based on IJGlobal, 2015*

The above table demonstrates the hectic nature of the European project bond market. In 2005, at the beginning of the period under review, only two players ruled the market, issuing project bonds with a total value of USD 335 million. By 2008, their number increased, although the amount tied up by the first 10 players shrank to less than one third. There were again four market players in 2011. Another

increase took place in the circle of participants by 2014, and thus the first 10 players issued project bonds with a higher amount than before, covering 66.47% of the whole market.

Below is an analysis of the credit market of project finance by examining the amounts tied up by mandated lead arrangers.



The situation is better in the MLA market than in the bond market. Mandated lead arrangers offer and grant credit, which means more safety and predictability, both in planning and repayment for those who need financing. Loan financing is an accepted form of funding, so the demand for it is also higher. At the beginning of the period under review, when project finance was not yet that significant, Europe’s share in the total MLA market was 35%, which can be considered a remarkable ratio. In the following years, with an increase in the value of investment implemented through project finance, a gradual decline in Europe’s share was observed, with other continents, such as Africa and Asia, on the rise. Accordingly, the ratio stabilised at 30% in 2006 and 2007, although in 2007, due to ample liquidity prior to the crisis, the value related to the continent was 94.78% higher compared to the base year and 61.54% higher compared to the previous year. It is interesting that while the value of the MLA market declined by 18.04% in 2008, compared to the previous

year, this decline was hardly felt in Europe (0.4%). As a result of the crisis, there was a major fall in the total value in 2009, although in global terms it was still above the base year (4.76%). In view of the scarcity of funds due to the crisis, in that year the continent dropped significantly, in terms of both share and value. Unprecedentedly, the European value amounted to 28.73% of the total value, falling short of the base year and the previous year by 13.72% and 55.53%, respectively. In 2010, compared to the surge in the total market, Europe improved considerably. While compared to the previous year the total market improved by 29%, the continent improved by 76.93%, exceeding the base year as well by 52.65% (the total market was 35.13% higher than in 2005). In that year, the market share was also close to 40%, which is the highest value in the average of the 10 years under review. Following the crisis, the financing of renewable energy sources, as well as the development of transport and social infrastructure, was more typical in Europe. In 2011, the share of Europe (32%) declined slightly, which was also perceived in terms of the amounts (11.24% compared to the previous year). The European MLA market hit a bottom in 2012, with the share shrinking to 26% and the value falling to half of the previous year's figure. The amount is a record low (68.83%) compared to the base year as well, to such a degree that even the sub-prime crisis could not exceed it. The underlying reason is that the Greek crisis mostly affected the continent, dragging not only Greece but the whole euro area into danger. Each country that was more or less linked to the Greek economy was deemed a dangerous area by finance providers. Moreover, the fluctuations in CDS spreads and country ratings did not facilitate the flourishing of the project finance market. The value of the base year was reached again in 2013, and an improvement was seen compared to the previous year as well. In 2014, however, the European MLA market did not grow and the market share declined (from 28.15% to 26.6%), keeping the value that can be linked to the continent at the 2005 level.

As in the case of the project bond market, it is also worth examining the role of the first ten players in four selected years for the MLA market. Following the logic of the previous table, 2005, 2008, 2011 and 2014 are examined in this case. As the lows in the MLA market were not in 2008 and 2011, but one year later, these two years are also examined in the table.

**Table 3.**  
**Top 10 participants in the European MLA market**

	2005			2008		
		Value (USD million)	Share (%)		Value (USD million)	Share (%)
1	BNP Paribas	3 885,87	10.44	Dexia Group	5 407,02	7.49
2	UniCredit	3 546,38	9.53	Royal Bank of Scotland	4 471,90	6.19
3	Société Générale	3 020,68	8.11	West LB	3 230,63	4.47
4	Crédit Agricole Group	2 396,84	6.44	Grupo Santander	3 003,53	4.16
5	Caja Madrid	2 036,89	5.47	BNP Paribas	2 724,80	3.77
6	Dexia Group	1 780,46	4.78	BBVA	2 671,97	3.70
7	West LB	1 771,07	4.76	Caja Madrid	2 665,37	3.69
8	Royal Bank of Scotland	1 361,24	3.66	Caixa Geral de Depósitos	2 659,78	3.68
9	BBVA	1 135,22	3.50	Fortis Bank	2 655,78	3.68
10	Rothschild	1 066,50	2.86	Crédit Agricole Group	2 314,32	3.20
Σ		22 001,15	59.55		31 805,10	44.03
	2009			2011		
		Value (USD million)	Share (%)		Value (USD million)	Share (%)
1	Grupo Santander	1 960,70	6.10	BBVA	3 183,22	6.31
2	Caixa Geral de Depósitos	1 960,67	6.10	Société Générale	2 946,56	5.84
3	BBVA	1 875,38	5.84	BNP Paribas	2 394,52	4.75
4	BNP Paribas	1 404,46	4.37	Crédit Agricole Group	2 319,97	4.60
5	Crédit Agricole Group	1 306,97	4.70	Grupo Santander	2 231,63	4.42
6	UniCredit	1 236,10	3.85	KfW	2 048,75	4.60
7	La Caixa	1 186,32	3.69	UniCredit	1 995,23	3.96
8	Caja Madrid	1 146,16	3.57	Garanti Bank	1 609,41	3.19
9	Société Générale	1 075,32	3.35	Dexia Group	1 492,88	2.96
10	Banesto	1 032,86	3.22	ING Bank	1 395,52	2.77
Σ		14 184,94	44.79		21 617,69	43.40

	2012			2014		
		Value (USD million)	Share (%)		Value (USD million)	Share (%)
1	UniCredit	1 388,23	5.42	Garanti Bank	2 588,00	6.69
2	Bank of Tokyo- Mitsubishi UFJ	1 323,82	5.17	ING Bank	1 830,00	4.73
3	Société Générale	1 300,77	5.08	Société Générale	1 629,00	4.21
4	BBVA	1 004,02	3.92	BNP Paribas	1 484,00	3.84
5	Crédit Agricole Group	927,00	3.62	Yapi Kredi	1 483,00	3.83
6	Natixis	918,11	3.58	CréditAgricole Group	1 450,00	3.75
7	Deutsche Bank	872,94	3.41	Mitsubishi UFJ Financial Group	1 443,00	3.73
8	SMBC	803,14	3.13	Sumitomo Mitsubishi Financial Group	1 312,00	3.39
9	BNP Paribas	781,31	3.05	Isbank	1 294,00	3.35
10	HSN Nordbank	751,36	2.93	Natixis	1 276,00	3.30
Σ		10 070,70	39.31		15 789,00	40.82

Source: own compilation based on IJGlobal, 2015

As described above and shown in the table, the MLA market is much larger than the project bond market, entailing a high number of participants. Based on analysis of the first 10 participants of the MLA market, it can be established that in the six years under review their share declined steadily, although with brief interruptions, suggesting that the market expanded continuously. There were significant changes not only the participants but in the amounts as well, which corroborates the hectic nature of the market.

#### 4. Summary

As shown in the above figures, the credit and bond markets of project financing are important for Europe as well as all other continents and countries. Given its high leverage, project finance is able to implement investment which could not be financed within the framework of traditional corporate lending. Because high leverage also means high risk, this form of funding is extremely sensitive to crisis situations and movements in the market. It can be concluded that the mortgage market crisis and the Greek crisis left a significant mark on both the credit and bond markets. The institutions affected the most by the mortgage market crisis were important market players prior to the crisis, which made the restoration following the crisis even more difficult. It could be expected that in the case of

such a special form of funding, bond financing will play a role that is at least close to that of loan financing, as it has numerous advantages compared to the credit terms dictated by banks. As shown above, bond financing can only be interpreted as a complementary mode of financing, which is expressly sensitive to hectic fluctuations in the markets. In the 10 years under review, the project finance market survived two crises. Therefore, unless another major crisis shakes the world and Europe, we can trust that with the help of this product Europe and all the other continents will be able to implement even more investment of strategic importance from social and economic aspects as well.

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# Before and after acquisition in Hungary: focus on working capital management

*László Zoltán Kucséber*

*The European mergers and acquisitions (M&A) market saw a pronounced upswing in 2014, as attested by the 40.5 per cent increase relative to 2013. In the period between 1997 and 2014, 861 acquiring companies took part in M&A transactions subject to authorisation based on the threshold value defined by the Hungarian Competition Authority in Hungary. Were the dynamic tendencies linked to the improvement in the efficiency of working capital management? In this paper, I seek an answer to this question using the findings based on data from balance sheets and profit and loss accounts and their analysis: turnover time, financing time, average working capital, the maturity indicator, ROA and ROE and their components in the framework of the DuPont model.*

**Journal of Economics Literature (JEL) Classification:** G34, G38

**Keywords:** mergers, acquisitions, working capital management

## Introduction

My objective is to investigate how acquisitions impact the efficiency of working capital management. I have created two databases for this analysis, using the balance sheets and profit and loss accounts of the acquiring and target corporations established in Hungary.

First, an overview of the definitions of the topic and the link between M&A transactions and working capital management is provided. Then, the due diligence method, which is less familiar in the Hungarian literature, is presented. Applying the (operational) due diligence method enables acquiring corporations to analyse the working capital management of target corporations prior to the conclusion of the transaction. Subsequently, the findings of foreign papers on the topic are discussed, along with the applied methodology and databases used. In the second half of this article, the findings of the analysis of the databases which were created are presented. Both acquiring and target corporations are looked at, based on the

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database created using their balance sheets and profit and loss accounts.<sup>1</sup> In order to obtain comparable results, the calculations stated for target companies in respect of the acquiring firms are also performed. The findings of the examination of target companies may provide an explanation for the changes occurring after merger, as the earnings in the years following acquisition are shaped by whether the target corporation prospers, stagnates or flounders. In order to do this, one year preceding the acquisition and two years following the acquisition during the 2007–2011 period is examined. It should be noted that during this period, the 2006–2013 period thus obtained was marked by two economic downturns (2009 and 2012).

In this paper, it was not possible to distinguish the impact of the crisis from that of acquisitions, and thus one must bear in mind that a significant portion of the negative trends may very well stem from the crisis.

## 1. Theoretical overview

### 1.1. The impact of M&A transactions on (operational) efficiency

First, it is necessary to address the relevant terms of the subject matter in the context of an overview of the literature, and in terms of how acquisition impacts the operative efficiency of both the acquiring company and the target company.

The currently effective *Act LVII of 1996 on the Prohibition of Unfair and Restrictive Market Practices*<sup>2</sup> defines mergers as follows: “A concentration shall be deemed to arise where two or more previously independent companies merge, or one merges into another, or a part of a company becomes a part of another company which is independent of the first company.” The entity acquiring control over the other entity is called the acquiring company, while the entity chosen for acquisition is called the target company. The two forms of unification are called acquisitions and mergers. In case of an acquisition, the acquiring company retains its original form, while in case of a merger, a new legal entity is created.<sup>3</sup> In business parlance, we often hear the term “corporate mergers and acquisitions”. In this paper, I will use the terms “M&A deal”, “M&A transaction” and “acquisition” synonymously. The literature also uses the term “*combination*” (*Moyer et al. 2003*).

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<sup>1</sup> The calculation of the weighted average balance sheet and profit and loss account items of the acquiring and target companies does not carry more information than summarising the individual balance sheet and profit and loss account items separately for the acquiring and the target corporations. We did not calculate weighted average values for the year preceding the acquisitions, as I use the year of conclusion of the M&A transaction as the basis of comparison when assessing the financial impact of the acquisition.)

<sup>2</sup> Last modified: Article 63 of Act CI of 2014, Article 210(1) of Act XCIX, Article 210(2) of Act XCIX. Effective: From 1 January 2015.

<sup>3</sup> Act CLXXVI of 2013 on the Transformation, Merger and Demerger of Certain Legal Entities.

One of the advantages of M&A transactions is improved business operation efficiency. The following opinions corroborate this finding: “As a result of acquisition, the cost of products and services decreases due to savings on fixed unit costs enabled by larger production and service volumes” (*Sinkovics 2010:70*). The cost efficiency of production is improved by combining the means of production, as the available technologies are restructured and resources reallocated. In addition to efficiency gains, the synergistic effect of mergers is also reflected in rising corporate value: the total value of the companies is greater than the sum of the value of the individual companies (*Bélyácz 2009*).

Following an M&A transaction, organisational and governance costs may rise instead of shrinking as expected, as the larger corporation may be more difficult to govern and supervise, and incentivisation issues may be exacerbated, thereby increasing the operational risk of the unified company. Along with transactions that improve efficiency, some acquisitions decrease operational efficiency and profitability (*Bárczy et al. 2008*). In these cases, the management of the unified company strives to take advantage of tax law opportunities and/or expand market or political power. This means that while the shareholders of the unified company derive a benefit, society incurs a loss (*Carlton–Perloff 2003*).

## **1.2. The (operational) due diligence procedure**

Before looking at the working capital management of acquiring companies, I briefly present the valuation and due diligence methods applied to target companies, as these procedures are fundamentally needed for these types of transactions.

To date, the Hungarian literature has not dealt in depth with the due diligence procedure, despite the fact that this procedure can shed light on the operational strengths and weaknesses of the target company to be acquired prior to the purchase. The following section therefore presents this due diligence procedure.

Due diligence is a review procedure conducted by the acquirer aimed at valuing the target company (*Howson 2003*). Due diligence decreases the risk of the acquirer overvaluing the target company and thus paying a higher price.

Who is responsible for overseeing the due diligence procedure? The review is conducted by a due diligence team, the size of which changes as a function of the transaction cycle and also depends on the size of the target company. In extreme cases, the due diligence team may include hundreds of members. The due diligence team includes financial analysts and operational managers, lending it far greater efficiency than if it were comprised solely of financial experts. The acquirer’s operational managers prepare due diligence interviews with the operational managers of the target company (*Wessels et al. 2010*).

The due diligence process starts with the identification of the acquisition prospect. The acquirer first compiles the information easily available on the target company. The acquirer then continues reviewing the acquisition process after answering the following three questions: In the long run, is it worthwhile for shareholders to own and operate the target company? How much is the target company worth? Is the acquiring company capable of financing the transaction? (*Reed et al. 2007*).

The due diligence procedure is not mandatory under any legislation, and is different from the mandatory draft balance sheet and the corroborating draft asset inventory required under Act CLXXVI of 2013 on the Civil Code. Due diligence covers all organisational units of the target company, its entire operating process and the external factors influencing operation. *Snow (2011)* and *Bruner (2010)* distinguish the following areas of due diligence: (i) law, (ii) information technology process, (iii) accounting, taxation, (iv) operating activities (production, service), (v) human resource management, (vi) marketing.

In accordance with my chosen topic, this paper only focuses on due diligence assessing the operating activities of the target company.

The due diligence procedure includes the on-site assessment of operating processes, as well as interviews with operational managers. It sheds light on bottlenecks affecting the target company's operations, the quality of its production/service (for instance the ratio of faulty products), its inventory usage and operating and corporate culture (*Bruner 2010*). In the due diligence process, the acquiring company compiles the following information in order to analyse operations (*Snow 2011:217*): (i) the products and services manufactured/sold by the target company. (ii) the products and services in development. (iii) informal and formal supplier and buyer contracts and agreements. (iv) product/service quality standards and procedures.

### **1.3. International empirical findings, the method of analysis and the databases used**

I would like to highlight two papers that provide guidance for research on M&A in Hungary and for devising my analytical methodology. Along with the findings of the research, we can also gain insight into the financial methods used by the researchers and the number of years examined by them prior to and after acquisition.

*Köke (2001)* examined the operational performance of 1,700 German medium and large enterprises over the period 1986-1995, using their ROA (Return on Assets) and ROE (Return on Equity), and found that companies exhibiting poor operational performance were the targets of acquisitions. *Alexandridis et al. (2011)* looked at the average and median ROA values of M&A transactions carried out in the US between 1990 and 2007, in the three years preceding and following acquisition.

The firms under review were classified as either small, medium or large enterprises based on their market share. The study revealed that ROA decreased across all three categories in the years following acquisition, with the greatest decline affecting medium and large enterprises.

*Selcuk and Yilmaz (2011)* analysed the ROA, ROE and ROS (Return on Sales = Net Income/Net Sales) values of 62 Turkish acquiring companies in the two years preceding and following the M&A transactions between 2003 and 2007. According to the results, the transactions had a negative impact on the acquiring companies' performance. *Carline et al. (2009)* looked at the impact on operational cash flow of acquisitions completed in the United Kingdom between 1985 and 1994. The researchers analysed the one year preceding and the five years following the M&A transactions. The value of operational cash flow only increased for 34.7 per cent of the small enterprises and 23.4 per cent of the large enterprises under review. *Kwoka–Pollitt (2010)* scrutinised the impact of M&A transactions completed in the US electronics sector between 1994 and 2003 on operating costs. The authors looked at the two years preceding and the two years following the acquisitions, concluding that operating costs did not decrease in the electronics sector following the acquisitions. *Tsung-ming and Yasuo (2002)* looked at to the impact of 86 acquisitions completed in Japan based on ROA, ROE, sales revenue and the employee growth rate, focusing on the four years preceding and the four years following the M&A transactions. The authors concluded that Japanese M&A transactions did not improve rates of return or the profitability indicators. In his dissertation, *Balogh (2006)* compiled the financial attributes of M&A transaction based on the international literature. The authors of the 14 papers based on accounting data observed a decrease in the acquiring companies' ROE and ROA values after the acquisitions. The samples examined during the 1948–1995 period covered 200 M&A transactions on average (*Balogh 2006*).

The following section presents the financial toolset used for analysing the selected area. Working capital is the difference between current assets and current liabilities (*Brealey–Myers 2003:121; Copeland–Weston 1992:41*), used synonymously with net working capital (*Brealey–Myers 2011:906; Bélyácz 2007:360; Szabó–Pálinkó 2004:330; Fazekas et al. 2003:548*). Positive working capital is when a corporation has working capital in excess of its current liabilities. This is considered positive if the working capital is liquid, i.e. the amount of liquid assets and liquid securities exceeds the amount of non-liquid or less liquid current assets, that is, inventories and receivables. Positive working capital is not regarded as a liquid asset if the amount of inventories and receivables exceeds the amount of liquid current assets (*Katits–Szalka 2015*). This is problematic because current assets do not cover current liabilities, and therefore the company is not only funding its current assets with current liabilities, but also its fixed assets.

Working capital management analysis includes calculation of the turnover time, the cash conversion cycle and the operational cash cycle (Mathur 2007; Bhattacharya 2009). The rapidity of return of working capital elements from sales revenue shapes and also determines the operational efficiency of every company. I begin the analysis by calculating the turnover period of current assets directly linked to operational activities.<sup>4,5</sup> The length of the turnover period is obtained by adding inventory storage and processing time, the collection time of trade receivables and the deposit time of liquid assets. Companies should strive to decrease this time span.

The operational cash cycle is the period when the company's financial resources are tied up in its purchased and own-produced warehouse inventories, and in trade receivables before the influx of funds following a sale or supply of service (Katits-Szalka 2015; Hofmann et al. 2011).

To calculate to the cash conversion cycle, we add up the storage period, the processing time and the collection time of trade receivables, and then deduct the settlement period of trade payables period (Sagner 2010:15; McLaney 2009:381) This is identical to the calculation of the financing period, which expresses the number of days for which the company requires liquid working capital. If the storage time and the trade receivables collection time add up to less than the settlement period for trade payables, the financing time is negative, which is positive because it means that the company has excess financing resources.

ROA and ROE can be calculated similarly to the studies published in the international body of literature. Using the DuPont model to break apart ROA and ROE we can glean more information on firms' operational efficiency.

My research looks at all acquiring and target companies established in Hungary and parties to transactions authorised by the Hungarian Competition Authority (GVH). The GVH's authorisation must be sought for the merger of companies *if the net sales revenue of the members of the affected corporate groups jointly exceeded HUF 15 billion in the previous business year* and if the affected corporate groups include *at least two corporate groups posting net sales revenue of over HUF 500 million (GVH resolution no. Vj/85-13/2014).*

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<sup>4</sup> Processing time is not calculated for companies in the trade and service sectors as they do not engage in production activities, therefore the value of work in progress and semi-finished goods is not stated in their balance sheets.

<sup>5</sup> The deposit time of liquid assets reflects the number of days it takes for a company to be able to use the sums received from customers for purchasing new inventories. Based on Katits-Szalka (2015), I removed dealing and liquid securities from the analysis, as they may be used by corporations to fund their business operations if monetary assets run scarce.

Similarly to the above international M&A analyses, I look at the impact of acquisition in the two years preceding and the two years following acquisition and then compare the trends. Accordingly, in 2007–2011, I look at the balance sheets<sup>6</sup> and profit and loss accounts for the 56 companies established in Hungary and kept on record by the GVH for the period 2006–2013. The starting date of the study is fundamentally determined by the fact that the electronic reporting websites ([www.e-beszámolo.hu](http://www.e-beszámolo.hu)) only contains publicly accessible annual reports starting from 2006.

The companies' operating conditions diverge across the various sectors and segments, and thus I have classified the 56 acquiring companies listed in the database by economic sector – agriculture, industry, construction industry, trade and service – and perform the analysis according to this classification. A total of 11 acquisitions were concluded in the industrial sector, 10 in the trade sector and 29 in the service sector. As during the period under review only two acquisitions were concluded in the construction industry and four in the agricultural sector, I ignored these sectors and performed the calculations in respect of the above three sectors.

## **2. Analysis of the working capital management of acquiring companies in Hungary – Empirical findings**

In this section, I look at the findings obtained using the database that I compiled and then state my conclusions and recommendations in the summary. The (!) in the table indicates adverse changes. For each result, I state whether an increase or decrease represents adverse change.

*Table 1* shows how the turnover time, which includes the operational cash cycle, rose in all three sectors in the first and second year following acquisition. Which components of turnover time reflect deterioration in efficiency? In the industrial sector, in the years following acquisition, the efficiency of inventory management did not improve as storage periods grew somewhat longer. Following acquisition, the collection period of trade receivables increased moderately. The deposit time of liquid assets rose by 80 per cent (12 days) in the second year following acquisition relative to the year of acquisition. In the second year following acquisition, the settlement of trade payables rose to 54 days relative to 41 days during the year preceding acquisition.

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<sup>6</sup> The average opening and closing values for balance sheet items were computed.

**Table 1.**

**Developments in turnover time components and the settlement period for trade payables in industry, trade, and the service sector before and after concluded acquisitions (in days)**

Name	t-1	t 0	t+1	t+2
<b>INDUSTRY</b>				
1. Storage period	19	19	(!)24	(!)23
2. Processing time	18	16	18	18
3. Collection period for trade receivables	45	34	36	38
4. Operational cash cycle (1 + 2 + 3)	82	69	(!)78	(!)79
5. Deposit time of liquid assets	14	15	(!)19	(!)27
6. Turnover period (4 + 5)	96	84	(!)97	(!)106
7. Settlement time of trade payables	41	45	(!)50	(!)54
<b>TRADE</b>				
1. Storage period	23	36	34	36
2. Processing time	-	-	-	-
3. Collection period for trade receivables	34	35	31	29
4. Operational cash cycle (1 + 2 + 3)	57	71	65	65
5. Deposit time of liquid assets	3	2	(!)4	(!)7
6. Turnover period (4 + 5)	60	73	69	72
7. Settlement time of trade payables	40	43	44	44
<b>SERVICES</b>				
1. Storage period	8	16	(!)35	(!)51
2. Processing time	-	-	-	-
3. Collection period for trade receivables	32	32	30	33
4. Operational cash cycle (1 + 2 + 3)	40	48	(!)65	(!)84
5. Deposit time of liquid assets	26	28	(!)35	(!)45
6. Turnover period (4 + 5)	66	76	(!)100	(!)129
7. Settlement time of trade payables	42	50	45	(!)58

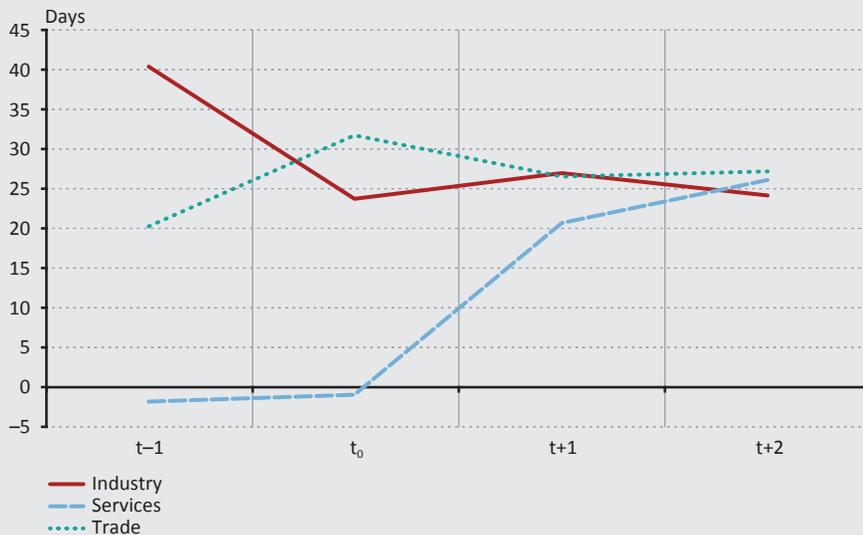
Source: Data based on own calculations based on data contained in e-reports

Although the collection period for trade receivables decreased by four days in the first year following acquisition in the trade sector, working capital management efficiency did not improve in either the first or second year following the M&A transactions, as the storage time of purchased inventories, the deposit time of liquid assets and the settlement period of trade payables all increased. Contrary to industry and trade, every element of turnover time showed a deteriorating tendency following M&A transactions in the service sector.

In the event that the operational cash cycle exceeds the settlement period of trade payables, liquid assets are needed to finance operations. As shown in *Figure 1*, the acquiring companies did not have excess financing resources prior to or after the transactions in the three sectors under review. After completion of acquisitions in the industrial sector, the affected companies requested operational sources of finance for one month on average to ensure smooth operation. In the trade sector, the financing time shrank moderately in the years following acquisition, meaning that the companies required liquid sources of finance for increasingly shorter periods. The companies in the service sector under review required liquid sources of finance for increasingly longer periods in the years following acquisition.

**Figure 1.**  
Developments in financing time in industry, trade, and the service sector before and after concluded M&A transactions

(in days)



Source: Data based on own calculations based on data contained in e-reports

Using *Table 1*, we can check whether the acquiring companies used trade receivables to finance their trade payables. The collection period for trade receivables is shorter in every sector compared to the settlement period for trade payables, meaning that the acquiring companies used trade receivables to finance their trade payables both before and after the M&A transactions (except in the year preceding acquisition in the industrial sector).

According to *Table 2*, the working capital value of M&A transactions in trade exhibited a moderately declining trend in the years following acquisition. In the industrial sector, after the completion of M&A transactions, the average working capital values, although positive, decreased substantially. The negative values in the service sector signal that current assets were insufficient to cover current liabilities both before and after the M&A transactions.

**Table 2.****Developments in working capital in industry, trade, and the service sector before and after concluded M&A transactions***(HUF thousand)*

Sector	t-1	t0	t+1	t+2
INDUSTRY	41 170 931	32 186 969	(!)9 043 532	(!)1 662 491
TRADE	15 086 093	12 548 847	12 418 549	15 353 865
SERVICES	-129 908 748	-150 064 527	(!)-162 946 744	(!)-86 346 634

*Source: Data based on own calculations based on data contained in e-reports*

*Table 3* shows the composition of current assets in the period under review. In the industrial sector, the value of inventory and receivables accounts for over 80 per cent of current assets, both before and after M&A transactions. This means that working capital is not liquid. In the trade sector, this value is even higher, at 90 per cent for both pre-acquisition and post-acquisition.

By calculating the duration indicator, we can draw conclusions regarding funding risk, as the calculation provides answers to the following questions: How long could companies operate without the influx of any revenues while funding operational expenditures using their monetary assets, liquid and trading securities, and the collection of their trade receivables? To determine this, we add up trade receivables, liquid securities and monetary assets, then divide this figure by the degree of daily operating expenditures (material costs, personnel costs and other expenditures) (*Katits 2002*).

**Table 3.**

**Developments in the ratio of liquid and non-liquid assets in industry, trade, and the service sector before and after concluded M&A transactions**

(%)

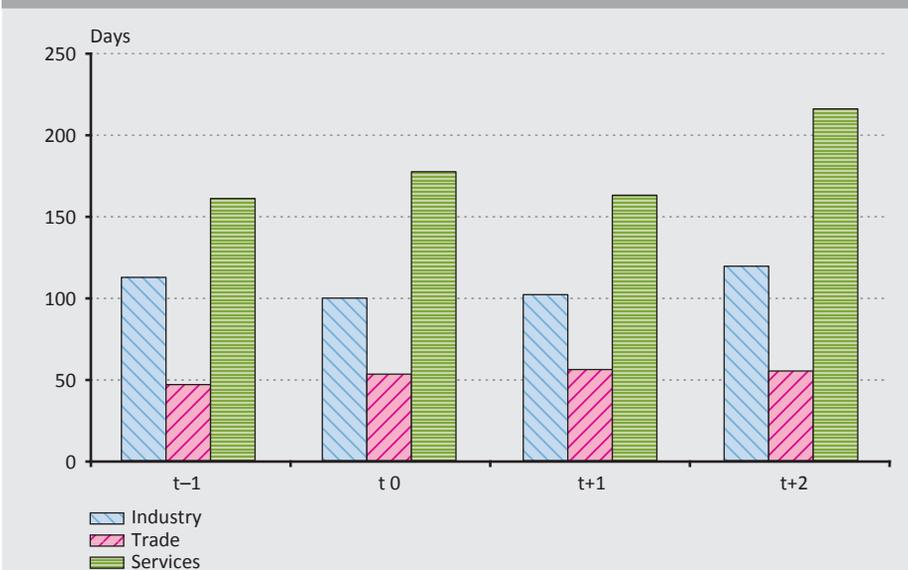
Name	t-1	t0	t+1	t+2
<b>INDUSTRY</b>				
Liquid current assets ratio	14.6	12.9	15.9	19.5
Non-liquid current assets ratio	85.4	87.1	84.1	80.5
Total	100	100	100	100
<b>TRADE</b>				
Liquid current assets ratio	2.7	3.4	6.2	9.5
Non-liquid current assets ratio	97.3	96.6	93.8	90.5
Total	100	100	100	100
<b>SERVICES</b>				
Liquid current assets ratio	22	16.8	24.6	18.7
Non-liquid current assets ratio	78	83.2	75.4	81.3
Total	100	100	100	100

Source: Data based on own calculations based on data contained in e-reports

**Figure 2.**

**Developments in duration in industry, trade, and the service sector before and after concluded M&A transactions**

(in days)



Source: Data based on own calculations based on data contained in e-reports

According to *Figure 2*, the duration indicator increased in all three sectors in the second year following acquisition. This allows us to conclude that the companies would have been able to finance their operation using liquid working capital even if they did not have any revenue both before and after the acquisitions. Companies affected by acquisitions in the service sector exhibited the highest values, 169 days on average in the years under review.

In the industrial sector, the average value of the duration indicators of the companies created in the wake of acquisitions is 108 days in the period under review, and 52 days in the trade sector.

The following section looks at the rates of return<sup>7</sup> both before and after acquisitions. The DuPont model, developed by the DuPont company in the early 1920s, allows ROA and ROE to be broken down into distinct elements (partial indicators), providing more information on corporate profitability and efficiency. ROA can be broken down into two factors, asset turnover and the net profit margin (formula 2), while ROE can be broken down into five elements (formula 4): the tax burden ratio, the interest burden ratio, the operational profit margin, asset turnover and the equity multiplier (*Jae 2012*).

$$ROA = \frac{\text{Net Profit}}{\text{Total Assets}} \quad (1)$$

$$ROA = \left( \frac{\text{Net Sales}}{\text{Total Assets}} \right) \times \left( \frac{\text{Net Sales}}{\text{Total Sales}} \right) \quad (2)$$

$$ROE = \frac{\text{Net Profit}}{\text{Equity}} \quad (3)$$

$$ROE = \left( \frac{\text{Net Profit}}{\text{EBT}} \right) \times \left( \frac{\text{EBT}}{\text{EBIT}} \right) \times \left( \frac{\text{EBIT}}{\text{Net Sales}} \right) \times \left( \frac{\text{Net Sales}}{\text{Total Assets}} \right) \times \left( \frac{\text{Total Assets}}{\text{Equity}} \right) \quad (4)$$

$$ROE = ROA \times \left( \frac{\text{Total Assets}}{\text{Equity}} \right) \quad (5)$$

$$EBIT = \text{Pre-tax profits} + \text{Interest and interest type expenditures paid} \quad (6)$$

<sup>7</sup> I did not calculate ROI (Return on Investments), as it carries information on the efficiency of fixed assets rather than current assets, and is therefore not directly linked to the area under review.

*Table 4* shows that in the industrial sector, ROA and ROE are negative both before and after the M&A transactions and decreased sharply in the first year following the acquisitions. The negative ROA stems partly from the net profit margin and deteriorating asset turnover. Increases in the tax burden and interest burden ratios are deemed as being positive, reflecting a decrease in the company's tax liability and the value of interest payable and interest type expenditures. In this sector, in the years preceding and following the M&As, quantifying the tax burden and interest burden ratios is meaningless due to losses before and after taxes and balance sheet loss. The equity multipliers, reflecting financial leverage, were greater than 1 during all years under review. In the second year following acquisition, the value of total assets is nearly the triple of equity value, which means that the financing of assets – relative to equity – was achieved using greater leverage.

In the trade sector, in the years following acquisition, ROA and ROE values are lower relative to before the acquisition. After the transactions, neither the operational margin nor the net profit margin significantly improved ROA and ROE values. After acquisition, the positive developments in ROE were shaped by rising tax burden and interest burden ratios, i.e. a decline in tax and interest liabilities.

Asset turnover had a negative impact on the increase in ROE, as these values deteriorated in the years following the transactions. Based on the values reflecting leverage, we can conclude that acquisitions were funded using a high level of leverage.

The assessment of the service sector based on the results of *Table 4* is yet to be completed. In this sector, ROA and ROE values after the acquisitions, although positive, exhibit decreasing tendencies, shaped by shrinking profit margins, and asset turnover and financial leverage did not improve either. The tax burden ratio reached 1 in the years following acquisition, that is the decline in the tax liability boosted net profit. The moderately declining trend in the interest burden ratio indicates an increase in companies' interest liability, which also led to a moderate decline in ROE.

**Table 4.**

**Developments in the ROA and ROE of acquisitions in the industrial, trade and service sector and their components in the framework of the DuPont model before and after the M&A transactions under review**

Name	t-1	t 0	t+1	t+2
<b>INDUSTRY</b>				
ROA (%)	-1.6	-0.5	(!)-5.2	(!)-4.5
Asset turnover	1.1	1.2	(!)1.0	(!)0.9
Net profit margin (%)	-1.5	-0.4	(!)-5.2	(!)-5.0
ROE (%)	-3.3	-1.0	(!)-12.0	(!)-12.4
Tax burden ratio	N/A*	N/A	N/A	N/A
Interest burden ratio	N/A	N/A	N/A	N/A
Operating profit margin (%)	0.3	1.3	(!)-3.2	(!)-3.1
Asset turnover	1.1	1.2	(!)1.0	(!)0.9
Equity multiplier	2.0	2.0	(!)2.5	(!)2.7
<b>TRADE</b>				
ROA (%)	6.2	3.1	4.0	4.7
Asset turnover	3.1	2.8	(!)2.7	(!)2.6
Net profit margin (%)	2.0	1.1	1.5	1.8
ROE (%)	16	8.2	11.8	13.8
Tax burden ratio	0.8	0.7	0.8	0.9
Interest burden ratio	0.8	0.6	0.7	0.7
Operating profit margin (%)	3.1	2.1	2.6	2.8
Asset turnover	3.1	3.1	(!)2.7	(!)2.6
Equity multiplier	2.6	3.0	3.0	3.0
<b>SERVICES</b>				
ROA (%)	4.9	4.5	(!)3.5	(!)2.8
Asset turnover	0.4	0.3	0.3	0.3
Net profit margin (%)	12.3	14.9	(!)11.8	(!)9.6
ROE (%)	11	10.1	(!)7.6	(!)6.3
Tax burden ratio	0.9	1.0	1.0	1.0
Interest burden ratio	0.6	0.7	(!)0.6	(!)0.5
Operating profit margin (%)	22.1	23	(!)20.0	(!)19.0
Asset turnover	0.4	0.3	0.3	0.3
Equity multiplier	2.3	2.1	2.1	2.2

\* Not applicable.

Source: Data based on own calculations based on data contained in e-reports

### 3. Analysis of target companies' working capital management in the year preceding acquisition

In this section, I present the results gleaned from the examination of the years preceding the acquisition of target companies.

As shown in *Table 5*, the turnover time is lowest in the trade sector, while the industrial and service sectors exhibit figures nearly twice as high due to processing times (in the industrial sector) and the long collection periods for trade receivables. Preceding the M&A transactions, in the industrial and trade sectors, the target companies exhibited turnover times 4 and 9 days shorter relative to the turnover times of the acquiring companies, while in the service sector, target companies exhibited turnover times 28 days longer compared to the acquiring companies.

**Table 5.**  
Developments in target companies' turnover time and components, and the settlement period for trade payables in industry, trade, and the service sector before the concluded acquisitions

(in days)

Name	INDUSTRY	TRADE	SERVICES
1. Storage period	18	32	32
2. Processing time	27	–	–
3. Collection period for trade receivables	41	9	46
4. Operational cash cycle (1 + 2 + 3)	86	41	78
5. Deposit time of liquid assets	6	10	16
6. TURNOVER PERIOD (4 + 5)	92	51	94
7. Settlement time of trade payables	41	44	32

Source: Data based on own calculations based on data contained in e-reports

The financing time is positive in the industrial and service sectors due to the high volume of trade receivables: for industrial sector target companies, the financing times are 45 days, and 46 days for service sector companies. As a result, in the industrial and service sectors, the target companies tend to fund their operations using short-term loans. The calculation of average working capital corroborates this conclusion. In the industrial sector, the average working capital of target companies is HUF –5,299,604 000, and HUF –6,376,760,000 in the service sector, suggesting that their current assets do not provide sufficient coverage for their current liabilities. In the trade sector, target companies' average working capital, albeit positive, was HUF 124,532,000, only a fraction of the average working capital of the acquiring companies.

Target companies would have been able to operate without the influx of any revenues while funding operational expenditures using their monetary assets, liquid and dealing securities, and the collection of their trade receivables for 76 days in the industrial sector, 77 days in the service sector and nearly 32 days in the trade sector.

Table 6 shows that among the three sectors under review only industrial sector target companies exhibited positive ROA and ROE values. Compared to the values of the acquiring companies, target company values were positive and acquiring company values were negative prior to the M&A transactions in the industrial sector. Conversely, acquiring company values were positive and target company values were negative prior to the M&A transactions in the trade and service sectors. By applying the DuPont model, we can conclude that the negative ROA and ROE values in the trade and service sectors were shaped by operational and net loss. Asset turnover was extraordinarily low in the industrial and service sectors: in the service sector, net sales even fell short of total asset value. In the trade sector, the situation was somewhat better, as the return on total assets from net sales revenue was almost three times as high. The equity multipliers target and acquiring companies exceeded 1 in all three sectors in the year preceding the M&A transactions. In the industrial sector, target companies' tax burden and interest burden ratios exhibited positive values, with figures approaching 1. In the trade and service sectors, we do not quantify tax burden and interest burden ratios due to the operational, pre- and after-tax losses.

**Table 6.**  
**Developments in the ROA and ROE of target companies in the industrial, trade and service sector and their components in the framework of the DuPont model before and after the M&A transactions under review**

Name	INDUSTRY	TRADE	SERVICES
ROA (%)	2.8	-2.5	-4.9
Asset turnover	1.4	2.8	0.8
Net profit margin (%)	2.0	-0.9	-6.2
ROE (%)	9.5	-8.1	-22.2
Tax burden ratio	0.7	N/A*	N/A*
Interest burden ratio	0.6	N/A*	N/A*
Operating profit margin (%)	4.6	-0.5	-1.4
Asset turnover	1.4	2.8	0.8
Equity multiplier	3.5	3.1	4.3

\* Not Applicable

Source: Data based on own calculations based on data contained in e-reports

Summarising the findings of the investigations, we can conclude that in the industrial and service sectors, the working capital management of target companies was poorer relative to the acquiring company in the year preceding the acquisitions. In the trade sector, target companies' operational efficiency was better compared to the acquiring companies, as the turnover period for the latter was 60 days compared to 51 days for the former. In other words, the target companies saw a deterioration in their working capital management in the wake of the acquisitions.

#### **4. Summary, conclusions and recommendations**

To date, no paper has dealt with the efficiency of the working capital management of acquiring companies within the Hungarian body of research on M&A. This study aims to fill this void, and is representative in terms of the acquisitions subject to authorisation based on the threshold value defined by the GVH. In this paper, I examined the impact of M&A transactions completed in Hungary on the efficiency of working capital management of the acquiring companies. The analysis of the impact of acquisitions covers the years preceding and following acquisitions. I also looked at target companies' working capital management in the year preceding acquisition.

*Turnover time and its components, storage time (in the trade and service sectors), processing time (in the industrial sector), the collection time of trade receivables and the deposit time of liquid assets exhibited a rising tendency in the three economic sectors hosting the acquisitions under review, particularly in the second year following the acquisitions.* The following measures can improve these elements: (i) Liquid assets (materials purchased, goods and finished products) should not be held in inventory. In order to achieve this, logistics processes must be reviewed, over and above inventory policy, in an effort to minimise inventory costs. The integration phase following acquisition can be linked to the transformation of existing production and inventory systems. (ii) In the industrial and service sectors, it is worth looking at or reviewing customer qualification systems and risk management policies in an effort to reduce the collection period of trade receivables. (iii) In the three sectors under review, the deposit time of liquid assets increased, a positive shift in terms of the companies' liquidity, however, holding (cash) liquid assets is not profitable in and of itself, therefore companies should strive to utilise the sums received from customers for purchasing materials and goods as soon as possible.

The settlement period of trade payables increased in the industrial and service sectors in the years following the acquisitions. *We can conclude that the companies acquiring the target companies strove to resolve the financing of their operations, in addition to reinforcing their negotiating positions, by increasing the settlement period of trade payables due to the slow collection of trade receivables.* The

acquiring companies should negotiate with their suppliers, making the most of their negotiating position stemming from the concluded M&A transactions, in order to establish longer payment deadlines and obtain discounts and rebates.

The calculation of financing time reveals that *in all three sectors, the companies acquiring the target companies have to ensure liquid working capital and leverage in order to maintain smooth operations.*

By calculating ROA and ROE and applying the DuPont model, we can conclude that in the three sectors under review, the deterioration in these two indicators stemmed from *deteriorating operational and net profitability ratios, coupled with the inability of companies to improve the sales revenue generating capacity of assets in the years following acquisition.*

Summing up the findings, I conclude that in the *industrial and service sectors, the working capital management of the acquiring companies exhibited a deterioration, rather than an improvement in efficiency in the wake of the M&A transactions. In the trade sector, acquisitions neither deteriorated nor improved the efficiency of working capital management to a significant degree. Target companies' working capital management in the years preceding the acquisitions was not efficient in any sector relative to that of the acquiring companies (due to lengthy storage times and long collection periods for trade receivables, and higher current liabilities compared to current assets).*

The results for Hungary are similar to the findings of the foreign empirical studies presented in the theoretical section, which identified a decline in efficiency in the wake of the M&A transactions. The period under review in this paper coincides with the years of the economic crisis, the signs of which were apparent not only in the years following the acquisitions, but also in the values of the year preceding them. As the research was conducted from the “perspective of an external analyst”, the time series under review reflects the trends and signs of declining earnings potential and efficiency, but not the specific causes thereof.

In my view, even if efforts were made to reallocate and streamline resources, they did not yield any improvement in (working capital) management. The root causes of failed acquisitions should not only be sought in the years following acquisition, that is the integration period: Prior to making an acquisition decision, I recommend *applying the due diligence procedure including a value analysis of the target companies, which could form one of the methodological bases of M&A finance in Hungary – in a targeted and customised manner.*

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# **Volatility capital buffer to prevent the breach of the Solvency II capital requirements**

*Zoltán Zubor*

*The Solvency II regulation prescribes continuous capital adequacy, despite the fact that insurance companies only determine their capital adequacy in a reliable manner once annually. The volatility capital buffer<sup>1</sup> (VCB) is meant to guarantee that, despite the higher volatility arising from the market valuation, at a given  $\alpha$  confidence level the solvency capital of insurers meets the capital requirement on a continuous basis. This paper reduces the problem to the search of the probability distribution quantile belonging to the  $\alpha$  confidence level ( $\text{VaR}_\alpha$ ), the 99.5 per cent quantile of which is the solvency capital requirement (SCR) specified in the Solvency II Capital Regulation, and thus the VCB can be expressed as a percentage of the SCR. Without the assumptions related to the distribution, any value may be obtained for the VCB ratio, but it can be squeezed into a relatively narrow band even under natural assumptions. On the one hand, the analysis of these distribution groups may further narrow the possible values, and on the other hand it points out that in the case of fatter-tailed distributions (when major, extreme losses may also occur more frequently) and positive skewness (when the probability of the loss is smaller than that of the profit, but the value thereof is expected to be higher), we obtain a lower VCB ratio.*

**Journal of Economic Literature (JEL) Classification:** C13, C46, G22

**Keywords:** Solvency II, volatility, capital buffer, loss distribution, quantile, confidence level

## **1. Introduction**

The two most important quantitative elements of the Solvency II regime, which entered into force on 1 January 2016, is the changeover to market valuation and the capital requirements covering all risks of insurers. Insurance liabilities have no market and hence they also have no market price. The new regime models the value at which another insurer would accept the liabilities. In the case of the solvency capital requirement, the value to be defined is the one under which the

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<sup>1</sup> The notion of volatility capital buffer appeared in the communication of the Magyar Nemzeti Bank for the first time in 2014.

maximum probability of the decrease in the insurer's solvency capital to a greater degree than this is 0.5 per cent.

The changeover to market valuation implies greater short-term volatility of the solvency capital and capital adequacy (*EIOPA 2011; EIOPA 2013*). The short-term high volatility of capital adequacy, and through that of the insurers' financial position is not in line with the typically long-term nature of the business (*Insurance Europe 2013*). There were several ideas for the elimination of artificial volatility, which were tested by the European Insurance and Occupational Pensions Authority (EIOPA) in the LTGA<sup>2</sup> impact study in 2013 (*EIOPA 2013*). In the present regulation, the smoothing of artificial volatility is served by the volatility adjustment, the matching adjustment and – in the initial period – the transitional measures (LTG measures).

According to the EIOPA 2014 stress test, the impact of the LTG measures is ambiguous. Although the individual elements may exert a significant impact on the capital adequacy,<sup>3</sup> only a few insurers made or could make use of the opportunity: the volatility adjustment, the matching adjustment and the various transitional measures were applied by 31, 7 and 2–10 per cent of the participants, respectively (*EIOPA 2014*).

The higher volatility of the Solvency II capital adequacy also impacts the Hungarian market (*MNB 2015a*), which was confirmed by the impact studies as well (*MNB 2015b, Bora et al. 2015*). Based on the data of 11 insurers<sup>4</sup> that participated in each of the last five impact studies,<sup>5</sup> the average of the relative standard deviation<sup>6</sup> of their Solvency I capital adequacy ratios is 0.179, while it is 0.260 in the case of the Solvency II ratios, which clearly reflects that capital adequacy in the new regime is substantially more volatile.

The LTG measures have a modest impact in the Hungarian market. According to the quantitative impact studies performed by the Magyar Nemzeti Bank in 2014, none of the participating insurers<sup>7</sup> have applied matching adjustment or wish to apply it in the future. All of them presented the impact of the volatility adjustment, but this resulted in a mere 4.1 per cent improvement in the capital level, i.e. the LTG measures are able to absorb the high artificial volatility of the Solvency II capital

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<sup>2</sup> Long-Term Guarantee Assessment

<sup>3</sup> For example, the capital level of those that applied the volatility adjustment increased on average by almost 30 per cent.

<sup>4</sup> Capital-proportional coverage: 64–75%.

<sup>5</sup> QIS5 (*EIOPA 2009*); QIS5bis (*HFSA 2010*); QIS\_2012 (*HFSA 2012*); QIS\_2014 (*MNB 2014*); RIGL (*data supply for preparation purposes 2015*) – in each case on the data of the end of the year preceding the year of the implementation of the impact analysis.

<sup>6</sup> The quotient of the variance and the expected value.

<sup>7</sup> 23 insurers – 80% coverage in proportion to capital.

adequacy only to a small degree, and do not eliminate the risks arising from the high volatility.

Article 100 of Directive 138/2009/EC (hereinafter: Directive) and (in accordance with this) Section 99 of Act 88/2014 (hereinafter: Insurance Act) prescribe continuous capital adequacy as a general rule, while insurers are only obliged to determine and report their compliance with the prescribed capital requirement periodically: the solvency capital requirement is to be presented annually, while the solvency capital is to be reported quarterly. How can this compliance be guaranteed in the interim periods? The regulation offers an ambiguous solution for this. The insurer need only comply with the last reported solvency capital requirement, which must be recalculated during the year as well, if the risk profile of the insurer changes materially. Although the trends in solvency capital must be monitored continuously and reported quarterly, the review based on exhaustive, audited data is usually performed only annually; i.e. due to the high volatility it may easily occur that an insurer with adequate, e.g. 120 per cent, capital level becomes short of capital even within a year, thereby violating the law.

If the insurer or the supervisory authority wishes to reduce the risk of capital shortfall in the interim period that lasts until the next reliable calculation of the insurer's capital position, it is practicable to hold slightly higher capital than the capital requirement (capital buffer) or to prescribe this for the insurers.

So far we have no example of management of the risks arising from the higher volatility using a capital buffer (volatility capital buffer), and thus there is also no literature on this. The topic and notion of the volatility capital buffer was first raised in November 2014 by Koppány Nagy (MNB) at the MABISZ (Association of Hungarian Insurance Companies) conference. One of the most important objectives of this paper is to determine and introduce the purpose<sup>8</sup> and exact content of the volatility capital buffer (VCB).

The second most important purpose of the paper is to present an approach that permits the reduction of the VCB (through the probability distribution underlying the SCR, as discussed later) to the SCR value. It is shown that in the absence of an assumption with regard to said distribution any value may be obtained for the VCB, but subject to various natural assumptions the possible buffer rates can be reasonably limited. The analysis of different distribution families may serve as a basis to determine the capital buffer to be maintained or which is worth maintaining, when the risk profile of the insurers corresponds to the given distribution family

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<sup>8</sup> The volatility of the capital adequacy may be attributable to several factors the volatility capital buffer does not have to respond to all factors, as in certain cases – e.g. when the portfolio changes substantially or contrary to the preliminary expectations, or the insurer changes its internal procedures or calculation models in a way that may significantly impact the capital adequacy – the insurer can be expected to perform an extraordinary determination and presentation of its capital position.

the most. On the other hand, it highlights the fact that we obtain a smaller capital buffer in the case of those insurers where there is a higher probability of extreme losses,<sup>9</sup> or where the value of the expected loss is likely to exceed the value of the expected profit, i.e. the assumption of normal distribution usually results in an upper estimate for the VCB value.

## 2. Purpose of the volatility capital buffer

The purpose of the volatility capital buffer is to reduce the risk of the insurer experiencing a capital shortfall in the interim period between the reliable calculations and presentations of the capital adequacy.

The capital adequacy of an insurer may change due to several factors. These factors can be grouped based on three criteria:

- i.* By portfolio: Whether the change occurred due to the change in the existing portfolio, in the new portfolio that developed in accordance with the preliminary expectations or due to change in the portfolio that significantly departs from the expectations. The existing and new portfolio means the portfolio that already existed on the reference date of the last reliable capital adequacy report or acquired thereafter – until the next calculation – also bearing in mind the contract boundaries.
- ii.* By core components: Whether the improvement/deterioration occurred due to the change in the capital requirement or in the eligible solvency capital.
- iii.* By type of trigger: Whether the change in the capital level occurred due to external or internal causes. Internal factors include all events that are attributable to the insurer or the owners, such as changing the models, assumptions or processes used for the determination of certain balance sheet items, capital elements or the SCR, payment of dividends or capital replenishment.

According to Section 268(1) of the Insurance Act and Section 27 of Government Decree 43/2015 (hereinafter: Decree 43), the insurer must perform the extraordinary calculation of its capital requirement if its risk profile has changed significantly, e.g. if its portfolio has changed in a significantly different manner and degree than expected. In this case (also bearing in mind Section 27(5) of Decree 43<sup>10</sup>), the insurer is expected to recalculate its entire capital adequacy and report it to the supervisory authority. The insurer may also be expected to recalculate and report its capital adequacy, if it introduces such new models or assumptions that substantially influence the capital adequacy.

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<sup>9</sup> So-called fat-tailed distributions, or right-skewed distributions.

<sup>10</sup> Based on which the supervisory authority may oblige the insurer to recalculate its capital requirement or (to accumulate solvency capital of sufficient volume), if there is a good reason to assume that the risk profile of the insurer has changed.

Based on the foregoing, the volatility capital buffer must respond only to the existing and the expected new portfolio, and it needs to absorb only the risks arising from those changes in the solvency capital that occurred due to a change in the external factor (environmental changes).

The solvency capital is the sum of the basic and the ancillary own funds. Basic own funds comprise the assets exceeding the liabilities (net asset value) and the subordinated liabilities. In Hungary, the role of the ancillary capital is marginal. On the other hand, it is distinct and not exposed to random volatility. The latter statement is also valid for the subordinated liabilities, i.e. of the solvency capital only the change in the net asset value has relevance for the VCB.

In avoiding the capital shortfall, it is not recommended – and usually also not possible – to aim for 100 per cent certainty. The volatility capital buffer means the surplus capital that over the given horizon (according to the above: one year) provides protection against the volatility of the basic own funds at the  $\alpha$  confidence level ( $0\% < \alpha < 100\%$ ) and ensures permanent capital adequacy in accordance with the laws. To be more precise,  $VCB_\alpha$  is the value, where (1)

$$P(X < VCB_\alpha) = \alpha, \quad (1)$$

where the  $X$  probability variable is the *decrease* in the value of the basic own funds within a given time horizon, due to external factors, in respect of the existing and expected to be acquired new insurance portfolio.<sup>11</sup>  $VCB_\alpha$  is the quantile of the  $X$  probability variable belonging to level  $\alpha$ , or – with the term also used in the Insurance Act – its value-at-risk (2)

$$VCB_\alpha = VaR_\alpha(X). \quad (2)$$

According to Article 101(3) of the Directive, “The Solvency Capital Requirement shall be calibrated so as to ensure that all quantifiable risks to which an insurance or reinsurance company is exposed are taken into account. *It shall cover existing business, as well as the new business expected to be written over the following 12 months. With respect to existing business, it shall cover only unexpected losses.* It shall correspond to the value-at-risk of the core solvency capital of an insurance or reinsurance company subject to a confidence level of 99.5 % over a one-year period.” According to this formulation the  $X$  probability variable included in the definition of the VCB of a one-year horizon corresponds to the probability variable that is also included in the definition of the solvency capital requirement, the value belonging to the 99.5 per cent quantile (VaR) of which is the SCR, i.e. (3)

$$VCB_{99.5\%} = SRC. \quad (3)$$

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<sup>11</sup> Equation (1) has a solution for all  $\alpha$ , if the  $X$  probability variable is absolutely continuous. In our case this may be assumed.

With this, we reduced the task to the search for the quantile belonging to a given confidence level of such a probability variable, the 99.5 per cent quantile of which is known to us (at least in theory; see below). In order to see clearly what this approach really means and the type of risks managed by the VCB thus obtained, it must be clarified that the SCR (in theory) is the 99.5 per cent value-at-risk of what kind of  $X$  probability variable.

According to the Solvency II regulation,  $X$  means the loss incurred on the existing portfolio and on the portfolio expected to be acquired in the next 12 months. By calculating technical provisions, all possible future cash flows (with their own probability) arising from the existing portfolio (within the contract boundaries) must be taken into consideration. Based on this,  $X$  means the *unexpected loss* in respect of the existing portfolio. This is also confirmed by Article 101(3) of the Directive. However, no such condition is included in the laws in respect of the portfolio to be acquired in the next 12 month, and thus in this respect the expected loss (which in fact is a profit in the case of most insurers) must be also taken into consideration. However, there is no trace of this in the standard formula; therefore in the following let us assume that the solvency capital requirement provides cover for the *unexpected losses* in respect of the new portfolio as well, i.e. the expected value of the loss (of the  $X$  probability variable) underlying the definition of the SCR (with the standard formula) is zero.

The question is whether we want to consider the expected profitability of the new portfolio, and if so, how to do so. Based on the outlined objectives, the volatility capital buffer needs to respond only to the unexpected part; however, upon its application it must be borne in mind that the expected profit/loss is not at all accidental. For example, a home insurance contract should be typically treated as one that will be terminated on the next renewal date. However, the majority of the contracts are automatically renewed (which, according to the contract boundaries, qualifies as new contract), thus in the case of a profitable portfolio the new portfolio to be acquired in the next 12 months presumably will be also profitable.

*Hereafter, the unexpected loss serves as the basis for the volatility capital buffer, i.e.  $VCB_{\alpha} = VaR_{\alpha}(X)$ , where  $X$  is the unexpected decrease in basic own funds due to changes in the environment, in respect of the existing portfolio and the new insurance portfolio to be acquired in the next 12 months, similarly to the conceptual definition of the standard formula of SCR.*

Accordingly, we look for the  $\alpha$  quantile of such a probability variable ( $VCB_{\alpha}$ ), the 99.5 per cent quantile of which is known to us (SCR). However, does the SCR defined with the standard formula indeed correspond to the 99.5 per cent quantile of the given insurer's actual  $X$  probability variable? For this each of the following conditions should be satisfied: (i) the standard formula is well-calibrated, (ii) the standard formula describes the risk profile of the given insurance undertaking accurately,

(iii) the insurer calculated its capital requirement precisely, in accordance with the standard formula, based on real, reliable data.

Of these, the first two conditions are definitely not satisfied: let us merely consider the correlation coefficients defined as the multiples of 0.25, or the flood risk factors defined identically within a county. It can be, and is perhaps worth disputing how well the standard formula measures the risks, but not in connection with the volatility capital buffer; hence, in the following I assume that the SCR calculated and reported by the insurer is the 99.5 per cent quantile of exactly that probability variable the  $\alpha$  quantile of which we are looking for.

The Solvency II regime prescribes a two-tier capital requirement. The breach of the minimum capital requirement (MCR) – which is usually of lower degree,<sup>12</sup> can easily be calculated and must be determined quarterly – entails substantially stricter supervisory measures. The more stringent (higher) solvency capital requirement (SCR) must be defined by a complex model, which wishes to respond to all possible risks, annually. It is worth mapping the volatility capital buffer with this two-tier system, with different confidence levels: a higher level should be targeted in the case of the MCR.

### **3. Possible approaches for the calculation of the volatility capital buffer**

#### **3.1. Based on the distribution of the total unexpected loss**

As outlined in Section 1  $VCB_{\alpha} = VaR_{\alpha}(X)$ , where  $X$  – the unexpected decrease in basic own funds – is the same probability variance, the 99.5 per cent quantile of which is the SCR.

If we knew the distribution of  $X$ , it would be easy to define the  $VCB_{\alpha}$ . However, the unexpected loss occurs as a result of various shocks, under dependency relations, and thus it is not possible to determine the distribution accurately. Moreover, in the case of insurers with contracts of different claim distribution, different reinsurance coverage, different asset portfolio, etc., the attributes of the unexpected loss distribution may fundamentally differ from each other.

Approximation of the capital buffer may be performed by using different assumptions for the type of distribution (distribution family), estimating the necessary parameters. Here we may rely on the fact that the SCR is the value-at-risk of the same distribution belonging to the 99.5 per cent level, on a one-year horizon.

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<sup>12</sup> The MCR can be defined by a relatively simple formula, but it must not exceed 45 per cent of the SCR (i.e. it is lower than the SCR), but an absolute threshold depending on the activity must be reached, e.g. in the case of life insurers EUR 3.7 million (i.e. in the case of smaller insurers this lower threshold may be higher than the SCR).

Setting out from the  $VCB_{99,5\%}=SCR$  fundamental assumption, lower and upper estimates for the VCB may be performed based on more general assumptions for the distribution, which may help assess the result obtained with assumptions for the various distribution families.

### 3.2. Based on the modular decomposition of the unexpected loss

It can be seen that the value of the capital buffer to be obtained on the basis of the total unexpected loss depends significantly on the distribution of the loss. Due to the different business models of the individual insurers, this distribution may be distinctly different, and this difference may also substantially influence the estimation of the VCB; there are also such artificial business models in the case of which the different distributions generate extremely different capital buffers (see Section 4.2.1).

We may try to remedy this problem – with substantial extra work – by decomposing the loss function into components corresponding to the modules of the SCR standard formula, defining the appropriate volatility capital buffer part for the individual components and aggregating them by applying the appropriate correlations.

This method will return a more accurate and reliable result only if we know the distribution of the unexpected loss belonging to the individual modules. But let us just look at the non-life insurance catastrophe risk module as a basis: the loss distribution essentially varies depending whether it has a proportional or non-proportional reinsurance coverage.

Thus, the problem discussed in the first half of this section – which we tried to solve with the modular approach – may also occur in the case of the individual modules. And, although it is possible that for certain modules there is a better foundation for assuming the distribution of the unexpected loss, and thereby the VCB can be estimated with a lower error margin in the case of the individual modules, the aggregation of the sub-results is problematic. Although there are given correlations necessary for the aggregation in the SCR standard formula, those belong to the 99.5 per cent confidence level (99.5 per cent VaR), but nothing guarantees that the same correlations are suitable in the case of a confidence level of 75 per cent, for example. The different diversification impact may significantly distort the final result.

Let us take, for example, the  $X$  and  $Y$  marginal distributions of the bivariate  $(X; Y)$  uniform distribution on  $[-0.5; 0.5] \times [-0.5; 0.5]$ . These are independent probability variables, of uniform distribution on the  $[-0.5; 0.5]$  interval, with expected value of zero, the quartile of which belonging to  $\alpha$  equals to  $\alpha - 0.5$ . It is easy to see that the appropriate quantile of the  $Z = X + Y$  probability variable is  $1 - \sqrt{2 \cdot (1 - \alpha)}$ . If we want to aggregate  $\sqrt{VaR_x^2 + 2 \cdot \rho \cdot VaR_x \cdot VaR_y + VaR_y^2}$  then in the case of  $\alpha = 99.5\%$  the aggregation should be performed by  $\rho = 0.653$ , while in the case of  $\alpha = 75\%$  it should be performed by  $\rho = 0.314$ . An aggregation by 0.653 would distort the result upward by 55.2 per cent.

On the other hand, it is more important to set lower and upper bounds for the targeted capital level than to make a more accurate estimate, i.e. to be able to say whether the given estimate is a lower or upper estimate. It is still a question whether we do not lose more with the modular approach on the problem of aggregation than we can gain by the more accurate estimation of the individual modules. At present this is an open question.

In summary: The modular approach does not decrease the reliability of the estimated volatility capital buffer significantly, while the multiple distorting effects lower the transparency of the potential disharmony between the hypothetical value and the estimate; as such I do not go into further details on this approach.

### **3.3. Empirical approach**

The appropriate quantile of the loss function may also be estimated with the use of empirical data related to the change in the solvency capital or the capital position (capital surplus).

The usability of the empirical VaR requires relatively many observed values, i.e. in our case we need long time series. For example, to ensure that the empirical quantile value belonging to the 90 per cent level is not determined automatically by the highest value, we would need at least 15–20 data points, meaning a time series of 15–20 years. This method should be excluded not only because we do not have such a long Solvency II time series, but also because the condition of usability is that the observed values should originate from probability variables of identical distribution, i.e. the risk profile of the insurer and the environment<sup>13</sup> should not change. This cannot be assumed even for a short time horizon.

Another possibility is to assume that the distribution of the unexpected loss belongs to a certain distribution family, and we estimate the necessary parameters of the assumed distribution from the available data. For example, the standard deviation of the distribution with the use of the empirical standard deviation. The estimation of the missing parameters returns a reliable result only if we have a sufficiently large number of estimations, i.e. sufficiently long time series. However, the invariance of the distribution cannot be guaranteed on the longer horizon, while this is also a condition for the applicability of the method.

Another condition in both cases is that the observed values should be independent of each other. It is questionable whether the annual values of the unexpected losses may be deemed independent.

The capital buffer linked to empirical standard deviation is a logical choice, as it is the standard deviation of the unexpected losses that best characterises the volatility

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<sup>13</sup> The unexpected loss depends not only on the insurer's portfolio and operation, but also on the environment.

against which the VCB protects the insurer from the capital shortfall. However, without knowing the distribution (distribution type) of the loss we cannot judge the level (probability) of the protection provided by e.g. a capital buffer of 2/3 (empirical) variance. In the case of normal distribution this protection is 75 per cent, but under another distribution this may be overly or insufficiently prudent. The aforementioned factors (sufficiently long time series, steadiness of the distribution and the environment, independence) question the adequacy of the estimate thus obtained even more.

In Section 4.3 I present empirical data despite the fact that, according to the foregoing, it is not possible to determine an adequate VCB based on those.

### 3.4. Time horizon

The purpose of the volatility capital buffer is to prevent capital shortfall in those interim periods when the insurer does not calculate its capital position. The minimum capital requirement and the solvency capital are to be determined quarterly, while the solvency capital requirement must be calculated annually. The insurers need to comply only with the last reported capital requirements, and thus VCB should not provide protection against the possible change in the capital requirements. This means that the “interim period” is the period when we have no information on the solvency capital, i.e. the capital buffer must provide sufficient protection on a quarterly time horizon. On the other hand, the insurers often perform accurate calculations for determining the value of some assets and the majority of the liabilities only annually, and they must have their data audited also annually only, which questions the reliability of the quarterly figures. The objectives of the capital buffer may also include the elimination of the uncertainties arising from the superficial estimate, which raises the necessity of the one-year horizon.

If  $X_i$  denotes the unexpected loss incurring in quarter  $i$  ( $X = X_1 + X_2 + X_3 + X_4$ ), and we know the value of  $VaR_\alpha(X)$ , then under certain circumstances we may also determine the value of  $VaR_\alpha(X_1)$ . For example, if the VaR is proportionate to the variance (e.g. in the case of normal distribution) and we assume that the  $X_i$  are independent and of identical distribution, then (4)

$$VaR_\alpha(X_1) = \frac{VaR_\alpha(X)}{2}. \quad (4)$$

However, usually none of the proportionality, the independence and the identical distribution conditions is satisfied.

Let us assume that an insurer is sensitive only to the decline of the yield curve. The substantial, unexpected loss incurred in the first quarter means the yield curve significantly declined. However, in this case in the second quarter the yield curve

can no longer decline to such an extent that make it suffer a loss of the same degree. Thus the value of  $X_1$  also influences the distribution of  $X_2$  and not only its value.

*Hereafter we search for the VCB belonging to the one-year horizon.*

#### **4. Estimating the volatility capital buffer**

The task is to determine the  $\alpha$  quantile of a probability variable of zero expected value in the knowledge of its 99.5 per cent quantile. It can be seen that if we assume nothing on the distribution of  $X$ , then we can obtain any value for the  $vcb_\alpha = \frac{VCB_\alpha}{SRC}$  proportion.

It is reasonable to set out from the assumption that  $X$  is of normal distribution. In this case, independently of the parameters of the specific distribution, we simply obtain the VCB values as a function of  $\alpha$ . This may be considered as an initial, benchmark value; however, the distribution of an insurer's loss may significantly depart from the normal one. This is typically the case when the insurer underwrites significant risks or undertakes long-term obligations, which may give rise to material losses, while the magnitude of the profit is relatively limited (i.e. the distribution is a positively skewed<sup>14</sup>), or when the probability of the substantial losses is not negligible ("fat-tailed"<sup>15</sup> distribution). Hence it makes sense to examine other possible distribution families as well.

The real loss distributions belong to a given distribution family at least by better or worse approximation, thus the analysis of the constraints based on the more general features of the distribution may also be useful in terms of the practical application.

##### **4.1. Based on assumptions related to the type of the loss distribution (distribution family)**

This Section has a dual purpose. On one hand, it is possible to look at the VCB values that would be obtained if the type of the  $X$  probability variable was known. On the other hand, the results demonstrate that the right-skewed and fatter-tailed attributes decrease the rate of the capital buffer, i.e. the value obtained by assuming normality may be regarded as a kind of upper estimate.

The Section discusses the named distribution families in slightly more detail than absolutely necessary, to enable even those to interpret the obtained values (i.e.

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<sup>14</sup> The skewness of a distribution may be determined in several ways. The most commonly accepted measure is the Pearson's skewness, which is nothing else but the third moment of the standardised distribution (expected value of its third power). The distribution is right-skewed, if its third central moment is positive. In the case of a loss distribution this means that the probability of an unexpected large loss is higher than that of an unexpected high profit.

<sup>15</sup> Intuitively, the distribution of  $Y$  loss is more fat-tailed than the  $X$  distribution, if in the case of  $Y$  the probability of extremely high losses is higher than in the case of  $X$ , and this relation increases with the increasingly higher losses.

in which case they may approximate the loss distributions of certain insurers, to what extent the result may be realistic) who are less familiar with the features of the individual distribution families.

4.1.1. Assuming that  $X$  is of normal distribution

In this case (5)

$$VCB_{\alpha} = \phi^{-1}(\alpha) \cdot \sigma + m, \tag{5}$$

where  $\Phi^{-1}$  is the inverse of the standard normal cumulative distribution function,  $\sigma$  is the standard deviation of  $X$ ,  $m$  is the expected value of  $X$ . Based on  $E(X) = 0$   $m = 0$ .

On the other hand, (using  $m = 0$ )

$$SRC = \phi^{-1}(99.5\%) \cdot \sigma, \text{ from where} \tag{6}$$

$$\sigma = \frac{SCR}{\phi^{-1}(99.5\%)}. \text{ Substituting:} \tag{7}$$

$$VCB_{\alpha} = \frac{\phi^{-1}(\alpha)}{\phi^{-1}(99.5\%)} \cdot SCR \tag{8}$$

which practically means a capital adequacy requirement of  $(1+vcb_{\alpha})$  times, where

$$vcb_{\alpha} = \frac{\phi^{-1}(\alpha)}{\phi^{-1}(99.5\%)}. \tag{9}$$

The value of the capital buffer thus obtained can be easily determined; the values belonging to the individual levels are in presented in *Table 1*. For example, in the case of a capital adequacy of 126.2 per cent, the probability of the insurer’s compliance with the (old) capital requirement even after one year is 75 per cent, while for achieving a confidence level of 90 per cent a capital level of almost 150 per cent is required.

<b>Table 1.</b>										
<b>Volatility capital buffer as a percentage of SCR – normal distribution</b>										
$\alpha$	50%	55%	60%	65%	70%	75%	80%	85%	90%	95%
$vcb_{\alpha}$	0.0%	4.9%	9.8%	15.0%	20.4%	26.2%	32.7%	40.2%	49.8%	63.9%

*Source: Own calculations.*

#### 4.1.2. Assuming that $X$ belongs to other named distribution families

Before discussing the named distribution families, let us make a few digressions. In respect of the  $X$  probability variable in question, we assume that its expected value is zero. However, at the majority of the possible distributions (e.g. exponential, lognormal, Pareto) it is  $E(X) > 0$ . In this case either the quantiles of the  $X' = X - E(X)$  transformed probability variable should be examined, or (which in fact is the same) the distance of the quantiles from the expected value.

In the remaining part of the Section we search for the (10)  $vcb_\alpha$  capital buffer ratio:

$$vcb_\alpha = \frac{VCB_\alpha}{SCR} = \frac{VaR_\alpha(X) - E(X)}{VaR_{99.5\%}(X) - E(X)}. \quad (10)$$

If the  $Y$  probability variable is one time the constant of  $X$  (i.e. an insurer's unexpected losses always just coincide with e.g. seven times of another insurer's unexpected losses), then we get the same  $vcb_\alpha$  value for  $Y$ , as  $VaR_\alpha(c \cdot X) = c \cdot VaR_\alpha(X)$ , and  $E(c \cdot X) = c \cdot E(X)$ , i.e. in (10) it may be reduced by  $c$ <sup>16</sup>. Consequently, the value of  $vcb_\alpha$  is invariant to the linear transformation of the distribution (displacement invariance). (For example, it would have been enough in the previous Section as well to examine only the standard normal distribution.)

##### 4.1.2.1. Skew normal distribution

The impact of the skewness on the capital buffer is illustrated through the skew normal distribution. Probability density function (11)

$$f(x) = 2\varphi(x)\phi(ax) \quad (11)$$

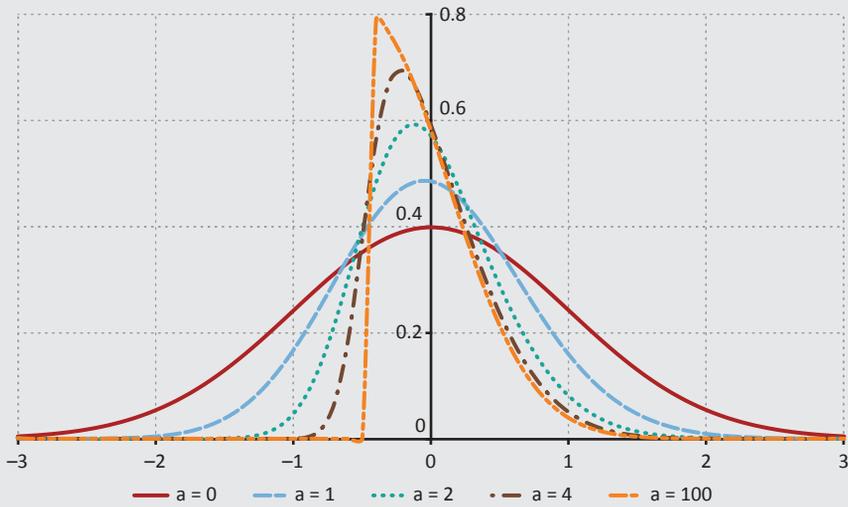
where  $\varphi$  and  $\phi$  are the cumulative distribution function and probability density function of the standard normal distribution (for more details, see Azzalini1 – azzalini.stat.unipd.it). Parameter  $a$  determines the skewness of the distribution.  $a = 0$  returns a standard normal distribution,  $a > 0$  returns a positively skewed, while  $a < 0$  returns a negatively skewed distribution. The greater the absolute value of the  $a$  parameter is, the more skewed the distribution will be.<sup>18</sup>

<sup>16</sup> Obviously here, the only possibility is  $c > 0$ , as in the case of  $c < 0$  the loss turns into profit and vice versa.

<sup>17</sup> Az  $Y = aX + b$  lineáris transzformált eloszlásfüggvénye  $g(x) = 2\varphi\left(\frac{x-b}{\sigma}\right)\phi\left(a\left(\frac{x-b}{\sigma}\right)\right)$ . Ezek alkotják a teljes ferde normális eloszláscsaládot. A volatilitási tőkepuffer mértéke azonban invariáns a lineáris transzformációra, ezért elég a standardizált verziót vizsgálni.

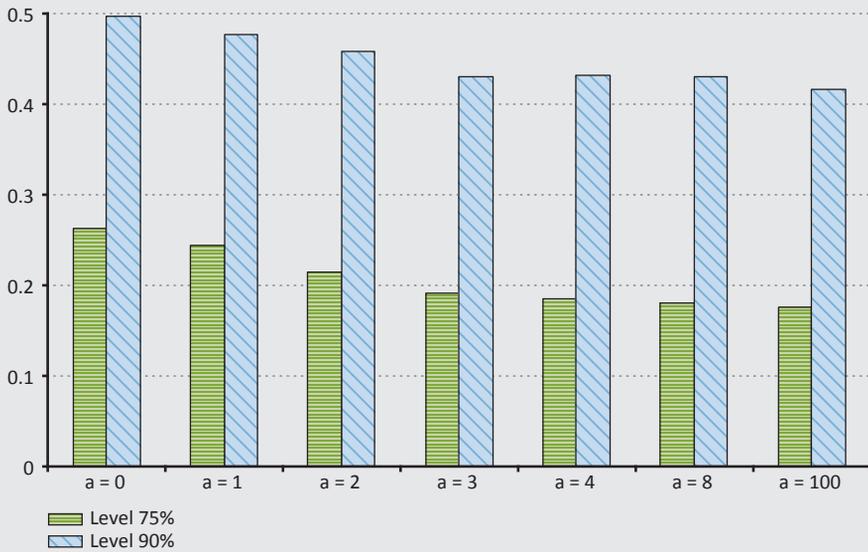
<sup>18</sup> Not only "visually", but also in mathematical terms.

**Figure 1.**  
Probability density function of the skew normal distribution transformed to expected value of 0 and standard deviation of 1



Source: Own calculations.

**Figure 2.**  
Value of the  $vcb_{75\%}$  and  $vcb_{90\%}$  under different  $a$  parameters



Source: Own calculations.

The simulations ran on one hundred thousand samples (based on Azzalini2 – azzalini.stat.unipd.it) clearly show (see Figure 2.) that the more positively skewed the distribution is, the smaller the  $vcb_{\alpha}$  is. For example under  $a = 4$  even a 118.6 per cent capital adequacy provides a protection of 75 per cent, which in the case of normal distribution ( $a = 0$ ) may only be achieved under a capital level of 126 per cent.

**Table 2.**  
 **$vcb_{\alpha}$  values in the case of skewed normal distribution under different a parameters**

	a = 0	a = 1	a = 2	a = 3	a = 4	a = 8	a = 100
65%	15.0%	13.6%	10.6%	8.6%	7.8%	7.2%	6.7%
75%	26.2%	24.5%	21.4%	19.0%	18.6%	18.0%	17.5%
85%	40.4%	38.0%	35.7%	33.2%	32.9%	32.7%	31.8%
95%	63.9%	61.9%	60.7%	58.3%	58.8%	58.6%	57.5%

Note: based on simulation run on one hundred thousand samples  
Source: Own calculations.

According to Arató (1995), the most often used claim distributions are the exponential, the lognormal, the Pareto, the gamma and the Weibull distributions; therefore it is worth examining the value of the volatility capital buffer with these distribution families as well, despite the fact that the volatility of claims is usually not the primary cause of the volatility of the net asset value.

#### 4.1.2.2. Exponential distribution

Exponential distribution may be used for modelling the service life of equipment where the probability of breakdown does not depend on the age of the equipment (“ageless” distribution). Probability density function (12)

$$f(x) = \lambda e^{-\lambda x} \quad (x > 0) \quad (12)$$

wears off relatively fast, but it is significantly skewed to the right. Its expected value is  $E(X) = 1/\lambda$ , thus the unexpected loss is  $X - 1/\lambda$ . It can be easily deduced (13)

$$vcb_{\alpha} = \frac{\ln(1-\alpha) - 1}{\ln(1-99.5\%) - 1}, \quad (13)$$

i.e.  $vcb_{\alpha}$  does not depend on the  $\lambda$  parameter. We knew this on the basis of the displacement invariance as well, since the changing of the  $\lambda$  parameter merely results in the linear transformation of the distribution.

<b>Table 3.</b>										
<b>Volatility capital buffer as a percentage of SCR</b>										
$\alpha$	50%	55%	60%	65%	70%	75%	80%	85%	90%	95%
$vcb_\alpha$	-7.1%	-4.7%	-1.9%	1.2%	4.7%	9.0%	14.2%	20.9%	30.3%	46.4%

*Note: The negative  $vcb_\alpha$  values are attributable to the fact, that (due to the strong skewness of the exponential distribution)  $VaR_\alpha$  is lower than the expected value even under a relatively high confidence level. Source: Own calculations.*

4.1.2.3. Lognormal distribution

The distribution of a probability variable is lognormal when its logarithm is of normal distribution. Or in other words: if the  $X$  probability variable is of normal distribution, the  $e^x$  is of lognormal distribution. Accordingly, its probability density function (14)

$$f(x) = \frac{1}{\sigma\sqrt{2\pi x}} e^{-\frac{(\ln x - \mu)^2}{2\sigma^2}} \quad (x > 0). \tag{14}$$

This results in (15)

$$VaR_\alpha = e^{\phi^{-1}(\alpha)\sigma + \mu} \quad \text{and} \quad E(X) = e^{\frac{\sigma^2}{2} + \mu}, \tag{15}$$

based on which (16)

$$vcb_\alpha = \frac{e^{(\phi^{-1}(\alpha)\sigma + \mu)} - e^{\frac{\sigma^2}{2} + \mu}}{e^{(\phi^{-1}(99.5\%)\sigma + \mu)} - e^{\frac{\sigma^2}{2} + \mu}} = \frac{e^{\phi^{-1}(\alpha)\sigma} - e^{\frac{\sigma^2}{2}}}{e^{\phi^{-1}(99.5\%)\sigma} - e^{\frac{\sigma^2}{2}}}, \tag{16}$$

i.e.  $vcb_\alpha$  does not depend on  $\mu$  ( $\Phi$  is the cumulative distribution function of the standard normal distribution). This also follows from the displacement invariance, as the probability density function of  $Y = \frac{x}{e^\mu}$  (17)

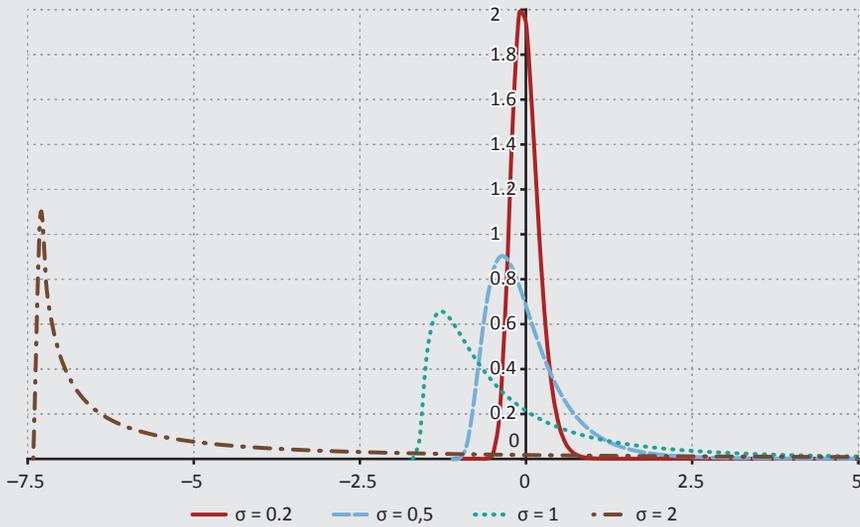
$$g(x) = \frac{1}{\sigma\sqrt{2\pi x}} e^{-\frac{(\ln x)^2}{2\sigma^2}}, \tag{17}$$

i.e. the  $\mu = 0$  value can be obtained by linear transformation.

By increasing  $\sigma$  the distribution is increasingly skewed to the right. Pearson's skewness  $\gamma = \sqrt{e^{\sigma^2} - 1} (2 + e^{\sigma^2})$  increases extremely fast as a function of  $\sigma$ . In case of  $\sigma < 2\Phi^{-1}(\alpha)$ <sup>19</sup>, based on the experiences (see Figure 4), the value of  $vcb_\alpha$  keeps getting smaller by increasing  $\sigma$  thus the skewness.

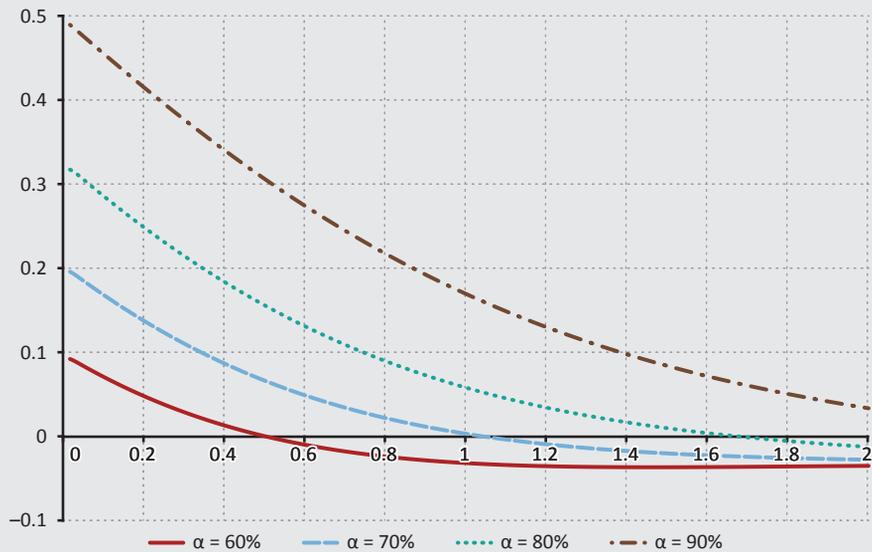
<sup>19</sup> In the case of  $\sigma = 2$  the probability density function is already skewed to such a degree that even the 80 per cent quantile is smaller than the expected value, due to which  $vcb_\alpha < 0$ . We get a negative VCB, if  $2\Phi^{-1}(99.5\%) > \sigma > 2\Phi^{-1}(\alpha)$ .

**Figure 3.**  
Probability density function of the lognormal distribution shifted to zero expected value, under different  $\sigma$  parameters



Source: Own calculations.

**Figure 4.**  
Value of  $vcb_\alpha$  as a function of parameter  $\sigma$



Source: Own calculations.

If we approximate to zero with  $\sigma$ , the skewness of the distribution is converging to zero, and the  $vcb_\alpha$  values keep approximating (from below) the values obtained in the case of normal distribution, which is easy to prove formally as well, using (16) (which is also easy to deduce)

$$\lim_{\sigma \rightarrow 0} vcb_\alpha = \lim_{\sigma \rightarrow 0} \frac{e^{\phi^{-1}(\alpha)\sigma} - e^{\frac{\sigma^2}{2}}}{e^{\phi^{-1}(99.5\%)\sigma} - e^{\frac{\sigma^2}{2}}} = \frac{\phi^{-1}(\alpha)}{\phi^{-1}(99.5\%)}, \tag{18}$$

which equals to the  $vcb_\alpha$  obtained for the normal distribution, based on (9).

**Table 4.**  
 **$vcb_\alpha$  values in the case of lognormal distribution under different  $\sigma$  parameters**

	$\sigma = 1E-10$	$\sigma = 0,1$	$\sigma = 0,2$	$\sigma = 0,5$	$\sigma = 1$	$\sigma = 2$
65%	15.0%	11.9%	9.2%	3.2%	-1.6%	-3.2%
75%	26.2%	22.4%	19.0%	10.8%	2.7%	-2.1%
85%	40.2%	36.1%	32.1%	21.9%	10.2%	0.3%
95%	63.9%	60.2%	56.5%	45.9%	30.7%	11.8%

Source: Own calculations.

4.1.2.4. Pareto distribution

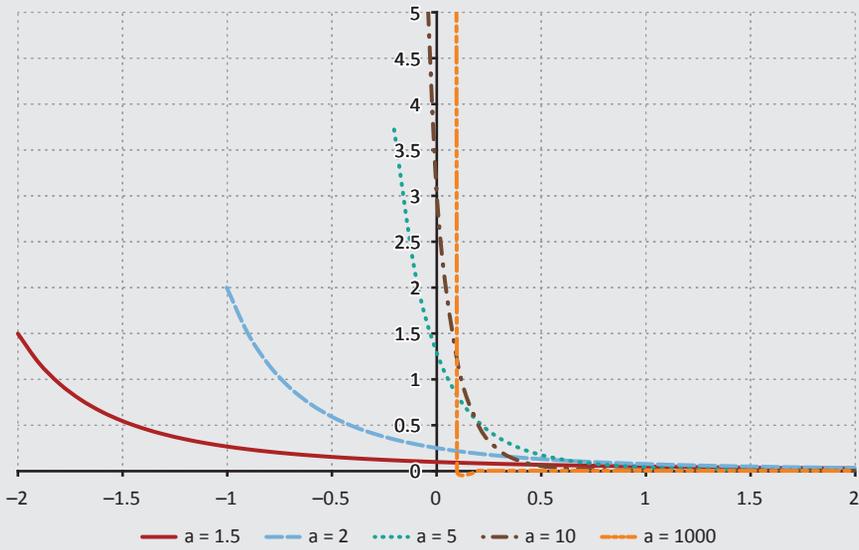
The Pareto distribution has a similar relation to the exponential distribution, as the lognormal to the normal one: if  $X$  is of  $(a; c)$  parameter Pareto distribution, then  $\ln(\frac{x}{c})$  is of  $a$  parameter exponential distribution (Arató 1995). Probability density function

$$f(x) = \frac{a \cdot c^a}{x^{a+1}}, \tag{19}$$

if  $x > c$ , otherwise 0. Changing parameter  $c$  simply means a linear transformation, which has no effect on the value of the capital buffer. It can be easily deduced (20)

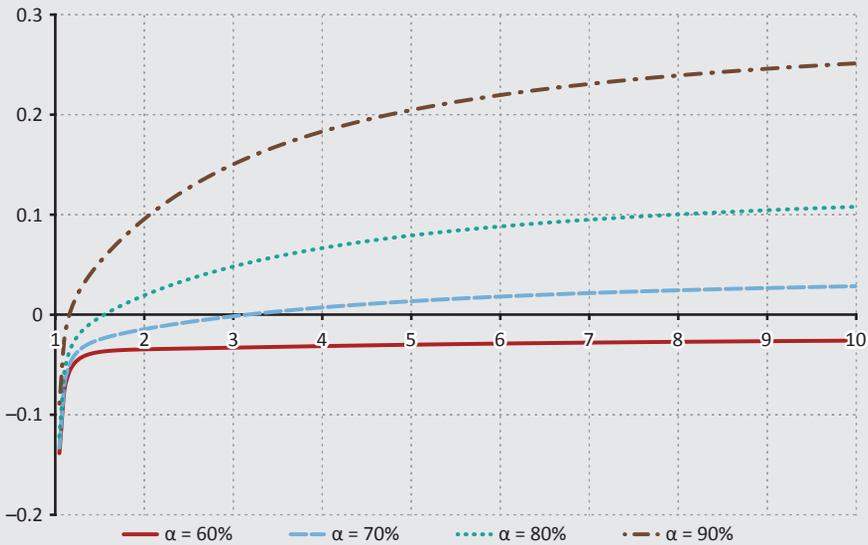
$$vcb_\alpha = \frac{(1-\alpha)^{-\frac{1}{a}} - \frac{a}{a-1}}{(1-0.995)^{-\frac{1}{a}} - \frac{a}{a-1}}. \tag{20}$$

**Figure 5.**  
Probability density functions of the Pareto distribution shifted to zero expected value, under different  $\alpha$ 's ( $c = 1$ )



Source: Own calculations.

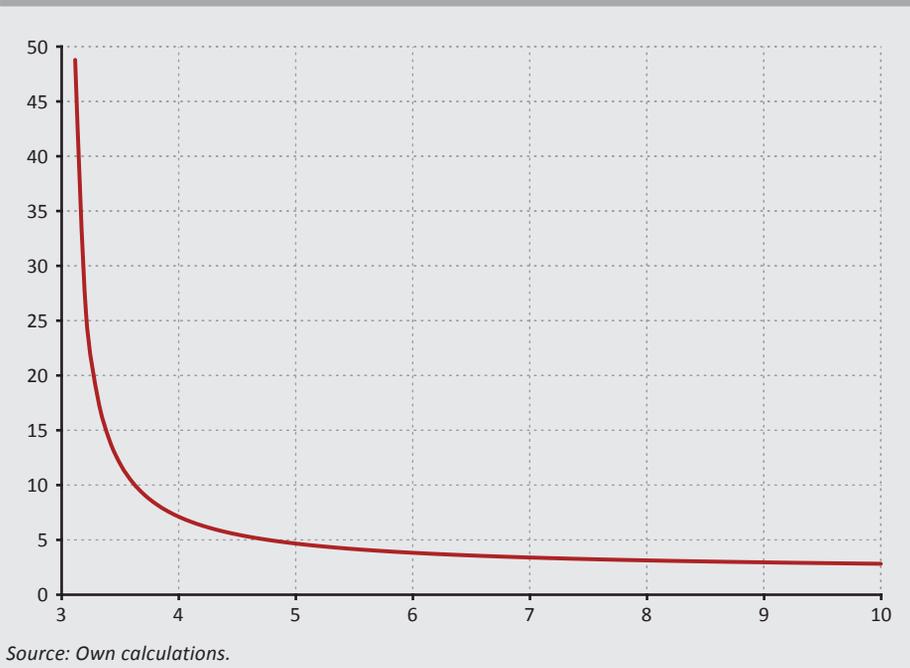
**Figure 6.**  
Value of  $vcb_\alpha$  as a function of parameter  $\alpha$



Source: Own calculations.

If  $a \leq 1$ , the expected value of the distribution is infinite, thus it makes sense to define the  $vcb_\alpha$  only when  $a$  is greater than 1. By increasing  $a$  the tail of the distribution keeps getting thinner and less skewed to the right<sup>20</sup> (see Figure 7). Experiences show in the cases that are relevant for us (where  $VaR_\alpha(X) > E(X)$ ) that by increasing  $a$  the capital buffer also increases under any fixed confidence level; thus it is true here as well that by increasing the skewness or making the tail of the distribution fatter the value of  $vcb_\alpha$  decreases.

**Figure 7.**  
Pearson's skewness of the Pareto distribution as a function of parameter  $a$  ( $c=1$ )



It has only theoretical relevance to examine the boundary value of  $vcb_\alpha$ , when  $a$  converges to the infinite. It can be easily deduced (21)

$$\lim_{a \rightarrow \infty} vcb_\alpha = \frac{\ln(1-\alpha)+1}{\ln(1-99.5\%)+1}, \tag{21}$$

which is positive only if  $\alpha > 1 - \frac{1}{e} \sim 63.2\%$ , i.e. under a confidence level of 63.2 per cent, we get negative volatility capital buffer for all loss functions of Pareto distribution. Usually  $VaR_\alpha(X) > E(X)$  is fulfilled, if  $\alpha > 1 - (1 - \frac{1}{\alpha})^\alpha$ . The threshold  $\alpha$  parameters belonging to the individual  $a$  parameters are explained in Table 5.

<sup>20</sup> It is easy to conceive that Pearson's skewness  $\gamma = \frac{2(\alpha+1)}{\alpha-3} \sqrt{\frac{\alpha-2}{\alpha}}$  ( $a > 3$ ) decreases monotonously in  $a$ .

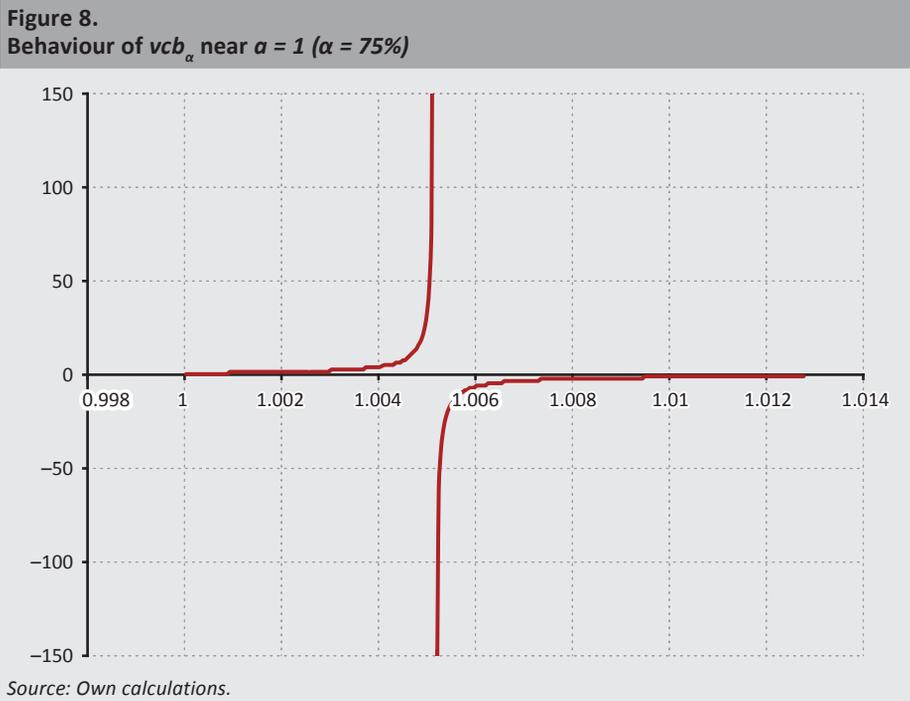
**Table 5.**  
 **$vcb_\alpha$  values in the case of Pareto distribution under different  $a$  parameters**

	$a = 1,5$	$a = 2$	$a = 5$	$a = 10$	$a = 1000$	$a = 1E+09$
60%	-3.7%	-3.4%	-3.0%	-2.6%	-2.0%	-1.9%
65%	-3.2%	-2.6%	-1.0%	-0.1%	1.1%	1.2%
75%	-1.5%	0.0%	4.3%	6.4%	9.0%	9.0%
85%	1.7%	4.8%	12.9%	16.6%	20.8%	20.9%
95%	14.0%	20.4%	34.9%	40.5%	46.4%	46.4%

Source: Own calculations.

In the case of the various distribution families, changing the parameters modifies not only the distance of  $VaR_\alpha$  and  $VaR_{99.5\%}$  from the expected value, but also the relation between them. If  $\alpha < 99.5\%$  then  $VaR_\alpha < VaR_{99.5\%}$ , but the expected value may be anywhere relative to these. For example, in the case of Pareto distribution, if we approximate to 1 with parameter  $a$ , all three values will increase, but it is the expected value that increases the fastest, "overtaking" first the  $VaR_\alpha$  and the

$VaR_{99.5\%}$  value. Thus  $vcb_\alpha = \frac{(1-\alpha)^{-1/a} \frac{a}{a-1}}{(1-0.995)^{-1/a} \frac{a}{a-1}}$ , as the function of parameter  $a$ , becomes negative under any  $\alpha < 99.5\%$  and first converges to the minus infinite, then – after a discontinuity – it converges from the plus infinite to 1<sup>21</sup> (see Figure 8). That is, any



<sup>21</sup> It is not difficult to show the latter.

value may be obtained for the volatility capital buffer even if we assume a Pareto distribution (see also Section 4.2.1).

4.1.2.5. Gamma distribution

Gamma distribution probability density function (22)

$$f(x) = \frac{\lambda^p x^{p-1} e^{-\lambda x}}{\Gamma(p)}, \tag{22}$$

which in the case of  $p=1$  corresponds to the probability density function of the exponential distribution. ( $\Gamma(p)$  is the gamma function<sup>22</sup>.) In the case of  $p \leq 1$   $f(x)$  converges to the infinite, if  $x$  (from the positive side) converges to zero, and in the case of  $p > 1$  it converges to zero. Increasing  $p$  will make the tail of the distribution thinner<sup>23</sup>, and reduce the skewness, while the changing of  $\lambda$  means only a linear transformation, i.e. it is indifferent for us.

We also get a gamma distribution by the convolution<sup>24</sup> of  $p$  pieces of fully independent exponential distributions with parameter  $\lambda$  (Newton L. Bowers *et al.* 1997). As a result of the central limit theorem, the standardised gamma distribution<sup>25</sup> keeps approximating the standard normal distribution by increasing  $p$ . Thus – as  $vcb_\alpha$  is invariant to the linear transformation of the distribution – it is not surprising that the  $vcb_\alpha$  values obtained under  $p$  are very much similar to the figures obtained under the normal distribution.

Experiences show that the value of  $vcb_\alpha$  increases under a fixed  $\alpha$ , if  $p$  increases, i.e. it is true here as well that increasing of the skewness or making the tail of the distribution fatter reduces the value of the capital buffer.

**Table 6.**  
 **$vcb_\alpha$  values in the case of gamma distribution under different  $p$  parameters**

	0,5	1	1,5	4	10	1000	1E+09
65%	-1.8%	1.2%	2.9%	6.5%	9.1%	14.3%	15.0%
75%	4.7%	9.0%	11.3%	15.9%	19.1%	25.4%	26.2%
85%	15.6%	20.9%	23.6%	28.9%	32.5%	39.4%	40.2%
95%	41.3%	46.4%	48.9%	53.8%	57.1%	63.1%	63.9%

Source: Own calculations.

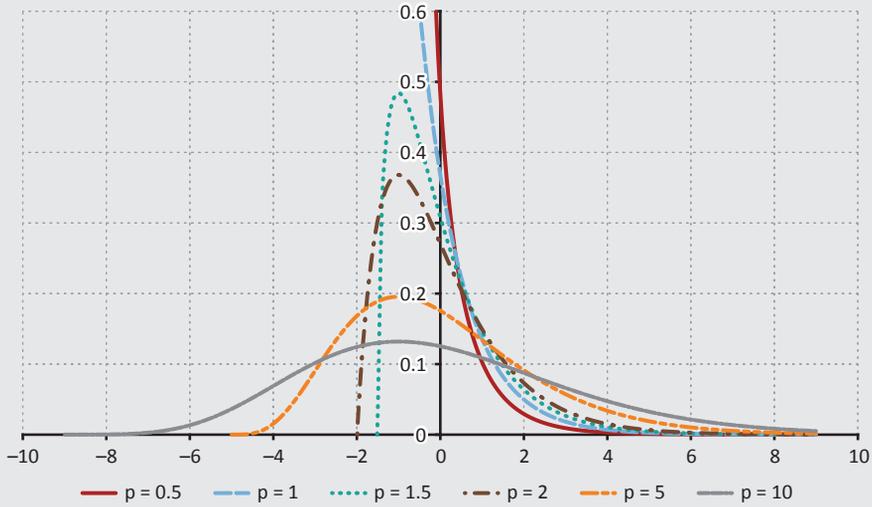
<sup>22</sup>  $\Gamma(p) = \int_0^\infty t^{p-1} e^{-t} dt$  expansion of the factorial function:  $\Gamma(n) = (n-1)!$ , if  $n$  is non-negative integer.

<sup>23</sup> Increasing of  $p$  makes the tail of the distribution thinner in the following sense: distribution  $X$  is of more fat-tailed than distribution  $Y$ , if for the probability density functions of their standardised version  $f(x)$  and  $g(x)$ , respectively  $\lim_{x \rightarrow \infty} \frac{f(x)}{g(x)} = \infty$ .

<sup>24</sup> The distribution of the sum of the probability variables is the convolution of the individual distributions.

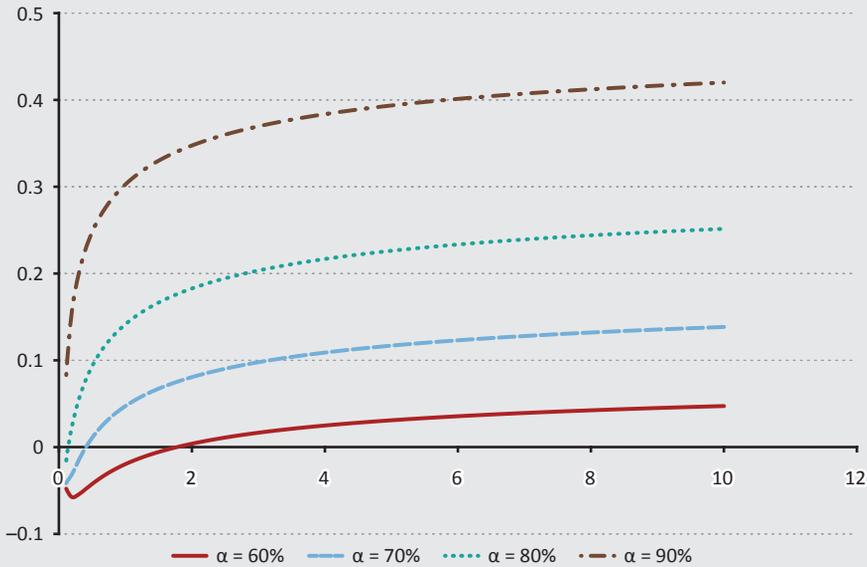
<sup>25</sup> The standardised version of the  $X$  probability variable is the linear transformed version of  $X$ , the expected value of which is zero, and its standard deviation is 1:  $X' = (X - E(X))/D(X)$ , where  $E(X)$  is the expected value,  $D(X)$  is the standard deviation, provided that these do exist.

**Figure 9.**  
Probability density functions of the gamma distribution shifted to zero expected value, under different  $p$ 's ( $\lambda = 1$ )



Source: Own calculations.

**Figure 10.**  
Value of  $vcb_\alpha$  as a function of parameter  $p$



Source: Own calculations.

4.1.2.6. Weibull distribution

The Weibull distribution is also the expansion of the exponential distribution. Probability density function (23)

$$f(x) = \frac{k}{\lambda} \cdot \left(\frac{x}{\lambda}\right)^{k-1} \cdot e^{-\left(\frac{x}{\lambda}\right)^k} \quad (x \geq 0, k, \lambda > 0). \tag{23}$$

This may be used for modelling the time to breakdown (death). In the case of  $k < 1$  with the passing of time it models decreasing (e.g. infant mortality), while in the case of  $k > 1$  it models an end (e.g. car theft, old-age mortality) of increasing probability, and in the case of  $k = 1$  it models breakdown independent of time (e.g. electric bulb). The increasing of  $k$  reduces the skewness of the distribution, and makes the tail of the distribution thinner (see *footnote 23*).

The rate of the capital buffer (24) can be easily deduced here as well

$$vcb_{\alpha} = \frac{\left(-\ln(1-\alpha)\right)^{\frac{1}{k}} - \Gamma\left(1+\frac{1}{k}\right)}{\left(-\ln(1-99.5\%)\right)^{\frac{1}{k}} - \Gamma\left(1+\frac{1}{k}\right)}, \tag{24}$$

where  $\Gamma$  is the already mentioned gamma function. The obtained expression does not depend on  $\lambda$  due to the displacement invariance.

Experiences show that the  $vcb_{\alpha}$  increases monotonously in the positive range, if we increase the value of  $k^{26}$ , i.e. it is true here as well that the higher skewness or the more fat-tailed distribution entails lower capital buffer. When converging  $k$  to 0 we obtain negative capital buffer even at the higher confidence levels. It is conceivable that if we increase the value of  $k$  beyond any limit, the limit of  $vcb_{\alpha}$  is

$$\lim_{k \rightarrow \infty} vcb_{\alpha} = \frac{\ln(-\ln(1-\alpha)) - \gamma}{\ln(-\ln(1-99.5\%)) - \gamma}, \tag{25}$$

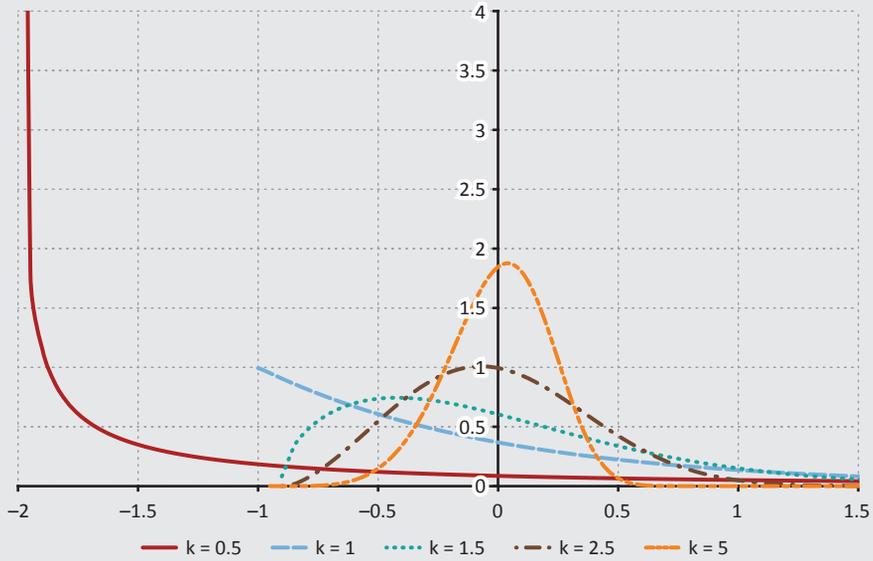
where  $\gamma$  is the Euler–Mascheroni gamma ( $\sim 0.5772$ ) (Jeffrey C. Lagarias 2013).

<b>Table 7.</b>						
<b><math>vcb_{\alpha}</math> values in the case of Weibull distribution under different k parameters</b>						
	0,5	1	1,5	2,5	5	1000
65%	-3.4%	1.2%	6.1%	12.5%	19.2%	27.8%
75%	-0.3%	9.0%	15.9%	23.8%	31.3%	40.2%
85%	6.1%	20.9%	29.5%	38.1%	45.7%	54.2%
95%	26.8%	46.4%	55.0%	62.6%	68.5%	74.6%

Source: Own calculations.

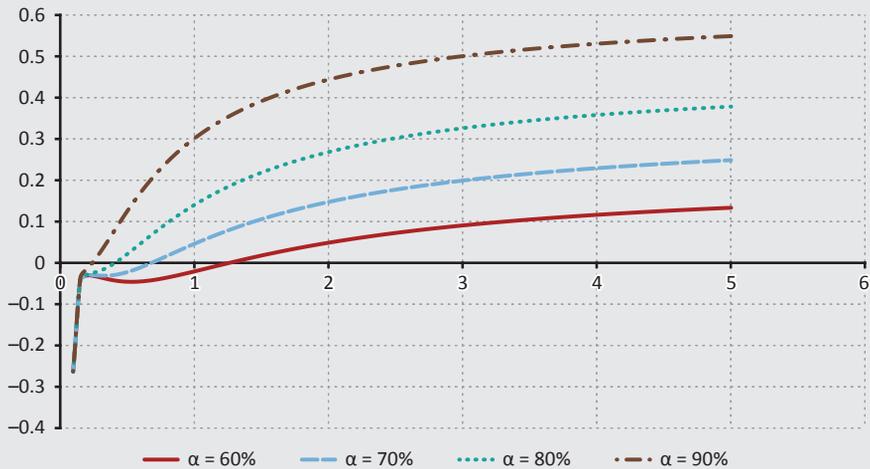
<sup>26</sup> If  $\alpha \geq 75\%$ , then experiences show that  $vcb_{\alpha}$  keeps monotonously increasing in  $k$ . The statement has not been proven formally.

**Figure 11.**  
Probability density functions of the Weibull distribution shifted to zero expected value, under different  $k$  parameters ( $\lambda = 1$ )



Source: Own calculations.

**Figure 12.**  
Value of  $vcb_\alpha$  as a function of parameter  $k$



Source: Own calculations.

## 4.2. Estimations performed based on general distribution attributes

### 4.2.1. Arbitrary distribution

The real distribution of an insurer’s loss does not belong to any of the distribution families; i.e. no matter which distribution family is assumed, it cannot be guaranteed that the capital buffer determined on the basis thereof guarantees the prescribed capital adequacy in the interim period at the targeted confidence level. Is it possible to find a universal  $p\_upper_\alpha$  or  $p\_lower_\alpha$  parameter that in the case of an arbitrary  $X$  distribution function with expected value of zero

$$p\_lower_\alpha \cdot VaR_{99.5\%}(X) \leq VaR_\alpha(X) \leq p\_upper_\alpha \cdot VaR_{99.5\%}(X)? \quad (26)$$

It was presented in Section 4.2.2.4 that such universal parameters do not exist even if we assume in respect of  $X$  that it is of Pareto distribution. However, here for the really interesting case – when the expected value of  $X$  is higher than both  $VaR_\alpha(X)$  and  $VaR_{99.5\%}(X)$  – we obtained an absolute upper bound of  $\frac{\ln(1-\alpha)+1}{\ln(1-99.5\%)+1}$ .

The simple examples below show that if we assume nothing in respect of  $X$ , then the value of the quotient (27)

$$\frac{VaR_\alpha(X)}{VaR_{99.5\%}(X)} = \frac{VaR_\alpha(X)}{SCR} \quad (27)$$

can be anything.

Let us examine the following distribution family, the (28) probability density function of which<sup>27</sup>:

$$f(x) = \begin{cases} A, & \text{if } 0 \leq x < 1 \\ B, & \text{if } 1 \leq x \leq b+1 \\ 0 & \text{otherwise} \end{cases} \quad (28)$$

Under  $A = 0.995$ ,  $B = 0.0000125$ ,  $b = 400$  the expected value of  $X$  is  $E(X) = 1,5$ , while its 99.5 per cent quantile will be  $VaR_{99.5\%}(X) = 1$ . If the loss of an insurer were of such distribution, it would mean that the 99.5 per cent quantile of its unexpected loss, i.e. its solvency capital requirement would be  $SCR = VaR_{99.5\%}(X) - E(X) = -0,5$ , i.e. negative. If under a fixed  $B = 0.0000125$   $A$  is gradually decreasing to the critical 0.99499368712625 value (and in parallel with this we increase  $b$  such that the  $f(x)$  remains a probability density function<sup>28</sup>), the  $VaR_{99.5\%}(X) - E(X)$  gradually converges to zero from the negative side, while under arbitrary  $\alpha < 99$  per cent confidence the  $VaR_\alpha(X)$  will be always between -1.5 and -0.5, that is (29)

$$\lim \frac{Var_\alpha(X) - E(X)}{SCR - E(X)} = +\infty \quad (29)$$

<sup>27</sup> We could build a portfolio that has similar distribution and thus the aforementioned circumstances would fit the insurer thus created, but in real life no such loss distribution occurs.

<sup>28</sup> That is, the field below  $f(x)$ , in our case should be  $A*1+b*B = 1$ .

**Figure 13.**  
Probability density function of the distribution presented in the sample



Due to similar considerations the quotient converges to the minus infinite, if  $A$  is gradually increasing toward the critical 0.99499368712625 value. Thus, the  $vcb_\alpha$  may take any value.

Even then, we can only provide for the searched quotient the (30) trivial

$$0 \leq \frac{VaR_\alpha(X)}{VaR_{99.5\%}(X)} = \frac{VaR_\alpha(X)}{SCR} \leq 1 \quad (30)$$

estimation, if we assume that both the SCR and the VaR are positive: Setting out from the above distribution, for the arbitrary  $\alpha$  we can find such  $A$  (and the corresponding  $b$ ) that ensures that  $VaR_\alpha(X) - E(X) = 0$ , i.e. usually it is not possible to provide a better estimate than the left side of the above trivial estimate. Keeping the same example, let us fix the value of  $A$  as  $A = \alpha$ ! If we converge with  $B$  to the plus infinite (and simultaneously modify  $b$  to ensure that  $A + b \cdot B = 1$  is maintained), then the  $\frac{VaR_\alpha(X)}{SCR}$  quotient converges to 1, i.e. usually it is not possible to find a better estimation than the right side of the trivial inequality, other assumptions must be made with regard to the distribution of the unexpected loss.

#### 4.2.2. Unexpected losses with decreasing probability

It is a natural assumption that the probability of the unexpected loss decreases with the degree of the loss; or to put it more accurately:  $P(a < X < a + \varepsilon) \leq P(b < X < b + \varepsilon)$ , if  $a \geq b > 0$ , where  $X$  is the unexpected loss,  $\varepsilon$  is an arbitrary positive number. If distribution  $X$  has probability density function  $f$ , then this condition is equivalent

to  $f$  decreasing monotonously in the  $[0; \infty)$  interval. It is not difficult to show that then in case of  $\alpha < 99,5\%$  (31)

$$\frac{VaR_{\alpha}(X)}{VaR_{99,5\%}(X)} = \frac{VaR_{\alpha}(X)}{SCR} \leq \frac{\alpha - p}{99,5\% - p}, \quad (31)$$

where  $p = P(X < 0) = \int_{-\infty}^0 f$ . If  $X$  is of symmetric distribution (i.e.  $f$  is an even function), then  $p = 0,5$ . The key argument against the assumption of normal distribution is that the value of the unexpected loss usually exceeds the rate of the unexpected profit, the average of the unexpected losses is typically higher than the average of the unexpected profits.

Let us denote the average of the unexpected losses (32) with  $V$ !

$$V = E(X|X > 0) \quad (32)$$

where  $E(X|X > 0)$  means the conditional expected value of  $X$  under the condition of  $X > 0$ . Let us denote the unexpected profits (33) with  $N$ !

$$N = E(X|X < 0) \quad (33)$$

Considering that  $E(X) = 0$ , i.e.  $E(X^*) = -E(X)$ , where  $X^* = \max(X; 0)$ ,  $X = \min(X; 0)$ , and that it is followed by  $E(X|X > 0) = E(X^*)/P(X > 0)$  and  $E(X|X < 0) = E(X)/P(X < 0)$  (34)

$$\frac{p}{1 - p} = \frac{V}{N}, \quad (34)$$

where  $p = P(X < 0)$  in accordance with the foregoing. If the average unexpected loss is higher than the average unexpected profit, i.e.  $V > N$ , then  $p > 0,5$ . As the  $\frac{\alpha - p}{99,5\% - p}$  expression decreases monotonously in  $p$ , the  $V > N$  is fulfilled in the case of (35) for all  $\alpha < 99,5\%$  confidence levels.

$$\frac{VaR_{\alpha}(X)}{VaR_{99,5\%}(X)} = \frac{VaR_{\alpha}(X)}{SCR} \leq \frac{\alpha - 0,5}{99,5\% - 0,5} \quad (35)$$

Consequently, for example  $vcb_{75\%} \leq 0,505$ , i.e. in the case of a 150.5 per cent capital level each insurance company whose unexpected loss distribution satisfies the following two conditions will comply with the capital requirements with a probability of at least 75 per cent: (i) the probability of the larger unexpected losses is lower; (ii) the unexpected losses on average are higher than the unexpected profits.

However, if we know, for example, that the average of the unexpected losses is twice as high as that of the unexpected profits (then  $p \geq 2/3$ ) then even a capital level of 125.4 per cent is sufficient, with a probability of 75 per cent, for the capital adequacy on a one-year horizon.

**Table 8.**  
Upper estimate for the value of  $vcb_{\alpha}$  as a function of the quotient of the average of unexpected losses and unexpected profits ( $V/N$ )

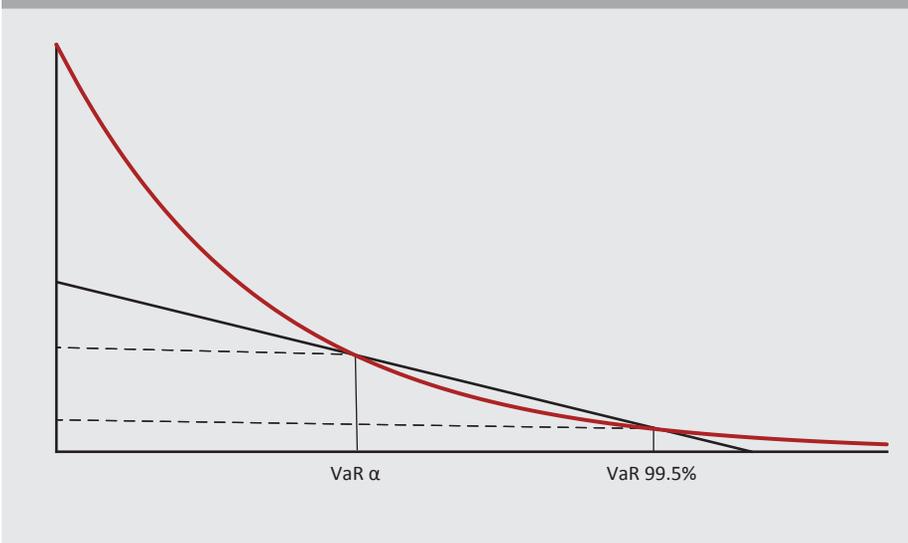
	1	1,2	1,5	2	4	10
65%	30.3%	23.3%	12.7%	-5.1%	-76.9%	-301.6%
75%	50.5%	45.5%	38.0%	25.4%	-25.6%	-185.2%
85%	70.7%	67.7%	63.3%	55.8%	25.6%	-68.8%
95%	90.9%	90.0%	88.6%	86.3%	76.9%	47.6%

Source: Own calculations.

4.2.3. Unexpected losses of a probability that declines at a decreasing rate

In the previous Section, we used the natural assumption that the probability of increasing losses keeps decreasing, that is the  $f(x)$  probability density function of the unexpected loss is monotonously decreasing, if  $x > 0$  ( $E(X) = 0$ ). It can be assumed especially in the case of the fatter-tailed and strongly right-skewed distributions that although the probability of increasing losses keeps decreasing, the intensity of the decrease is also becoming lower and lower, i.e. the probability density function is monotonously decreasing and convex in the case of  $x > 0$  ( $E(X) = 0$ ).

**Figure 14.**  
Probability density function of the distribution presented in the sample



Using the fact that the secant drawn for the probability density function's curve for the  $\alpha$  and 99.5 per cent quantiles runs under the probability density function, if  $0 < x < VaR_{\alpha}$  and if  $VaR_{99.5\%} < X$ , and over, if  $VaR_{\alpha} < x < VaR_{99.5\%}$  (see Figure 14), we get the following (36) inequality:

$$vcb_{\alpha} = \frac{VaR_{\alpha}}{VaR_{99.5\%}} \geq \frac{\sqrt{1-p} - \sqrt{1-\alpha}}{\sqrt{1-p} - \sqrt{1-99.5\%}}, \text{ where} \quad (36)$$

in accordance with the foregoing  $p = P(X < 0) = \int_{-\infty}^0 f$ .

In a symmetrical case, or if the average of unexpected losses equals one of unexpected profits (i.e.  $p = 0.5$ ), the minimum capital level necessary for the 75 per cent confidence level is 132.5 per cent. However, a  $V/N$  ratio higher than one better fits the assumptions made at the beginning of the section. For example, in the case of  $V/N = 2$ , also mentioned in the previous section, the minimum capital level required for a 75 per cent confidence is 115.3 per cent. If we also rely on the results of the previous section, the target capital level is somewhere between 115.3 and 125.4 per cent in this case.

**Table 9.**  
Lower estimate for the value of  $vcb_{\alpha}$  as a function of the quotient of the average of unexpected losses and unexpected profits ( $V/N$ )

V/N	1	1,2	1,5	2	4	10
65%	18.1%	13.7%	7.3%	-2.8%	-38.4%	-125.7%
75%	32.5%	28.9%	23.6%	15.3%	-14.0%	-86.0%
85%	50.3%	47.5%	43.6%	37.5%	15.9%	-37.2%
95%	76.0%	74.7%	72.8%	69.8%	59.4%	33.8%

Source: Own calculations.

### 4.3. Estimation performed on the basis of empirical variance

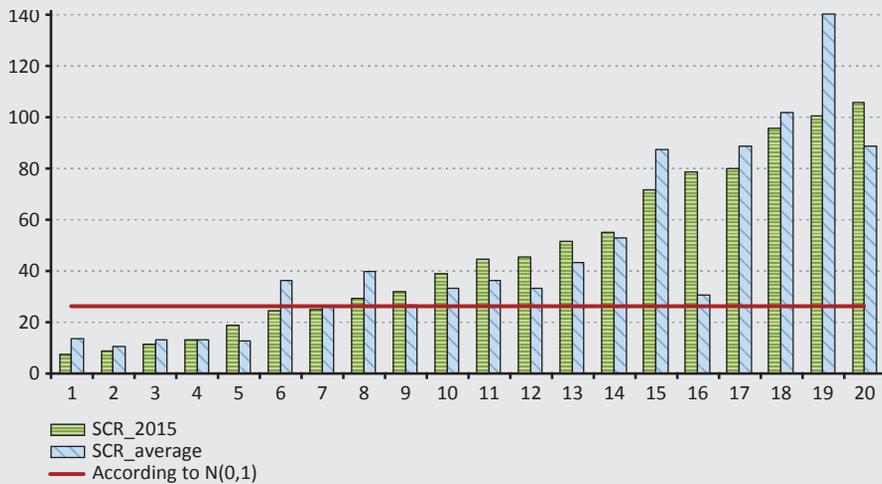
Based on the considerations outlined in Section 1, on a one-year horizon the volatility capital buffer at the given  $\alpha$  confidence level should guarantee that the insurer's solvency capital would not decrease below the level of the last determined solvency capital requirement due to unexpected losses incurred on its existing portfolio and the portfolio to be acquired in the next 12 months as a result of environmental changes. Apart from the difficulties related to the empirical approach listed in Section 3.3, one of the biggest problems is that we have no data for the capital decrease attributable specifically to the above mentioned circumstances and only estimates can be performed for this in the future as well.

Of the available data, it is the change in the net asset value that is the closest to the volume to be examined based on the foregoing, which has to be adjusted for the external capital flows (capital injection, dividends). For this we may use the data of the QIS5 (2010), QIS5bis (2011), and the 2012 and 2014 impact studies, and the RIGL preliminary Solvency II data supply (2015). Only those insurers should be involved in the comparison that participated in at least four of the above five data supplies, although the standard deviation cannot be estimated reliably even

in the case of a sample with four or five elements. The result should be further adjusted for the expected profit/loss of the new portfolio, but this is not possible. In certain cases the volatility may have been considerably influenced by the fact that the insurers provide the data on “best effort” basis, and thus the data did not fully cover the objectives outlined by the Solvency II regime.

In accordance with Section 3.3, we may apply the 2/3 rule for the 75 per cent confidence level, based on which the empirical volatility capital buffer is 2/3 of the standard deviation of the net asset values adjusted in accordance with the previous paragraph. If the value of the empirical capital buffer is converted into the targeted capital level, i.e. divide it by the SCR value – assuming normal distribution – we should obtain additional capital levels around 26.2 per cent.

**Figure 15.**  
Empirical volatility capital buffer as a percentage of SCR



Source: Own calculations.

However, the results obtained from the foregoing should be viewed critically. It is not surprising that at 65 per cent of the 20 insurers, that may be considered on the basis of the empirical data, the capital buffer is higher than that based on the hypothetical model assuming normal distribution (which usually results in upper estimates) and in the case of 35 per cent of them the difference is more than twofold.

In view of the fact that the empirical data belong to different periods and different statuses, it is worth performing the comparison (conversion) also with the average of the previous SCR’s; however, the difference between the empirical and hypothetical approach hardly decreases here as well.

## 5. Summary

The volatility capital buffer – as capital held in addition to the capital requirement – is meant to reduce the risk that the insurer’s solvency capital falls below the last determined and reported capital requirement in the interim period when the insurer does not calculate its solvency capital. This paper details an approach with which the task can be reduced to searching for the quantile belonging to a given confidence level of the same probability variable, which is the 99.5 per cent quantile of the solvency capital requirement (SCR).

Taking the SCR standard formula as a basis, with this approach the VCB reduces the insurer’s risk of capital shortfall in the insurer’s basic own funds (net asset value) arising from the *unexpected loss* incurred on the existing portfolio and the portfolio to be acquired in the next 12 months. The surplus capital requirement thus obtained may be significantly overruled, for example, by the profit expected to be realised from the expected renewal of the insurer’s existing contract portfolio.

It follows from the approach that the value of the VCB is proportionate to the SCR. The  $vcb = \frac{VCB}{SCR}$  ratio thus obtained may have any value, if we apply no restrictions for the distribution of the unexpected loss. Assuming normal distribution, the VCB ratio belonging to the 75 per cent and 90 per cent confidence level is 26.2 and 49.8 per cent, respectively. In the case of the distribution families used for modelling the claim distributions, the VCB value may depend (occasionally – e.g. Parato – to an extreme degree) on the distribution parameters: the capital buffer rate decreases with the fattening of the distribution’s tail and right skewness.

The value of the capital buffer may be defined within a narrow range under certain reasonable general assumptions. Assuming that the probability density function of the distribution is monotonously decreasing and it is convex in the  $(0; \infty)$  interval, then depending on the ratio of the expected loss value ( $V$ ) and the expected profit value ( $E$ ), we can provide lower and upper estimates, being close to each other, for the VCB. For example, in the case of a 75% per cent confidence level under a  $V/E = 1$  ratio the VCB falls between 32.5 and 50.5 per cent, while under  $V/E = 2$  it is between 15.3 and 25.4 per cent.

The above analyses and calculations show that the capital buffer to be targeted by the insurers and expected by the supervisory authority may be fundamentally influenced – among others – by the assumed distribution, the targeted confidence level and the consideration of the expected profit/loss on the future portfolio, but upon defining the ultimate rate other considerations may also emerge (e.g. prudence, simplicity).

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# The Péntintézetzi Központ was established 100 years ago

*Bence Varga*

*On the occasion of the centenary of the Péntintézetzi Központ's establishment in 1916 as the first integrated supervisory "top-level organisation", this study endeavours to outline the historical background and the stages of the formation of the institution, starting in the second half of the 19<sup>th</sup> century. The analysis seeks to determine the factors that led to the emergence of the activities and operating framework of the Péntintézetzi Központ, the supervisory paradigms that influenced its inception and the negative experiences or circumstances that can be associated with its activities. The study presents the operation of the supervisory bodies preceding the Péntintézetzi Központ as regards banks, savings banks and cooperatives, and aims to show the contemporary economic conditions and the situation of the financial architecture, in line with contemporary thinking and on the basis of the relevant opinions of the experts from that era.*

**Journal of Economic Literature (JEL) Classification:** B10, G21, N23, N93

**Keywords:** bank, cooperative, savings bank, Péntintézetzi Központ, financial supervision

## 1. Introduction

Many steps led to the founding of the Péntintézetzi Központ as the supervisory "top-level organisation", and various supervisory paradigms were employed during its development. Among the paradigms in the history of Hungarian supervision, the so-called "Anglo-Saxon" type stands out. In line with the manifestation of the approach of "methodological individualism", it regarded informal supervision based on consultations, the "conscience" of the supervised institution and the institution's own individual inspections as its necessary objective, assuming ideal-typical actors (*Vittas 1992:21*). The main premise of the "Anglo-Saxon" method was that stable operations are in the financial institution's own interest. Characteristic of this approach was voluntary inspection, which meant that the financial institution

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assessed its legal compliance and ability to maintain long-term, profitable operations using its internal staff (the internal audit team and the supervisory board). The “Anglo-Saxon” supervisory system was based on the belief that only the accuracy and the veracity of the balance sheet should be assessed, and the inspection should not include management consulting, the evaluation of corporate governance, the assessment of credit risks, or whether the institution was “*managed wisely or unwisely, profitably or not profitably*” (Éber 1911:801).

The so-called “classical” (or continental) train of thought was also present in the history of Hungarian supervision. It was characterised by a preference for an approach based on intensive on-site inspections, as well as detailed, meticulous regulations covering as many areas as possible. A change of paradigm is perceptible in the history of Hungarian supervision, and this can be observed in the operation of the supervisory bodies preceding the Pénzintézeteti Központ. At the turn of the century, several organisations were formed that also had supervisory powers, which demonstrates that organising supervision (preferably in an institutionalised form) was considered necessary at that time. This attitude was strengthened by failing financial institution actors, the very large number of financial institutions and their increasing concentration: in 1911 in Hungary, almost twice as many banks functioned in Budapest alone than all the financial institutions in Austria combined, and in this period the Hungarian banking sector, especially the five biggest banks in Budapest, considerably increased their influence over the economy through financial capital.

In the second half of the 19<sup>th</sup> century – and especially towards its end – these paradigms were combined and the models were “fine-tuned” (i.e. certain factors were partially changed). The “modern”, risk-based approach that compares individual material risks to the regulatory capital as an adjusted capital value had not yet emerged in that era. The presence of various supervisory paradigms should not lead one to conclude that they were unsuccessful, just as the alteration of the individual streams of economic philosophy over time does not suggest their inappropriate approach to the external and internal economic environments. It merely shows the constant flux of economic conditions, circumstances and processes, and thus the need for modifying response capacities.

In the following sections, the implementation of the individual supervisory paradigms in the various organisations will be demonstrated, as well as the professional debates surrounding the relevant paradigms, with a special focus on the structure of the Pénzintézeteti Központ and the uneven road that led to its formation.

## 2. The operation of supervisory bodies before the establishment of the Pénzintézeti Központ

On the initiative of István Tisza, who later became prime minister, the Magyar Takarékpénztárak Központi Jelzálogbankja (Central Mortgage Bank of the Hungarian Savings Banks) was set up. Its primary goal was to convert the capital in mortgage loans into marketable securities, thereby enabling the assignment of receivables arising from mortgage loans to the Jelzálogbank as the institution authorised to issue debentures, thus facilitating the access of provincial smallholders to loans (Kovács 2004:134; Domány 1926:439). The Jelzálogbank liaised only with savings banks that agreed to the Jelzálogbank reviewing its entire business administration and balance sheet annually (Botos 2002:39). This review function of the Jelzálogbank was therefore a sort of precursor to the future Pénzintézeti Központ's similar function. The review function of the Jelzálogbank was a cross between the "Anglo-Saxon" and the "classical" models, as it did not regard the approach of the "Anglo-Saxon" model primarily based on self-assessment as adequate; however, it did not include the detailed inspection seen in the "classical" model either.

The Országos Központi Hitelszövetkezet (National Central Credit Union) was established some years later in 1898, and it was considered the centre of the Hungarian cooperative movement as well as the "dedicated resource of Hungarian cooperative life" (Schandl 1938:3). In addition to its most important tasks stipulated by law – i.e. satisfying the loan demand of credit unions, and the spread and promotion of the cooperative idea – it also exercised inspection and regulatory powers with respect to the business management of the cooperatives "within its ranks".<sup>1</sup> The law also stipulated that should the Hitelszövetkezet detect any measures in the activities of a supervisory board of a cooperative "within its ranks" which were against the law or statutes, or any negligence or fraud jeopardising the interests of the cooperative, the Hitelszövetkezet should call a general meeting immediately. In such cases, it could also suspend the board of directors or its individual members until the general meeting was held, and it could take measures for temporary business management. In this respect, the Hitelszövetkezet diverged from the "Anglo-Saxon" approach, and it represented a more assertive use of supervisory powers and a higher level of supervisory interference. It was also tasked with (partially) taking over the client base of institutions under liquidation, with transforming smaller, unviable "microbanks", which operated inefficiently from the perspective of economies of scale, and with granting loans to smallholders and

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<sup>1</sup> Based on Article 57 of Act XXIII of 1898 on Economic and Industrial Credit Unions.

tradesmen with favourable conditions<sup>2</sup> (*Adler 1915:170*). The Hitelszövetkezet's functioning was important not only from a supervisory perspective, but also from an economic one: the credit supply to provincial farmers was prone to constant interruptions because savings banks largely restricted their activities to larger villages and county seats, and "*their loans were either excessive or insufficient, but always ruinously<sup>3</sup> expensive*" (*Blum 1899:750*). The loans extended by financial institutions (and land loan institutions) covering larger areas were only available to wealthier farmers (*Schandl 1938:27*). By contrast, even in the early years of its operation, the Hitelszövetkezet, with its extensive network of member cooperatives, granted provincial farmers access to short and medium-term annuity loans aligned with their activities.

The Magyarországi Pénzintézetek Országos Szövetsége (National Association of Hungarian Financial Institutions, MPOSZ), established in 1903, can be considered the first step towards institutionalised banking supervision in Hungary. Although the MPOSZ mainly functioned as the representative body of financial institutions (*Botos 1994:11*), it is also worth mentioning in relation to the later institutionalised supervision, since its tasks included the provision of "*professional guidance with regard to determining the correct business principles related to depositing the assets of provincial financial institutions*" and "*the financial and moral support of provincial financial institutions in crisis*" (*Jakabb et al. 1941:31*). The economic proactivity of MPOSZ is also demonstrated by how early it recognised the importance of provincial financial institutions, yet several aspects of its operations prevented it from exercising adequate supervision of financial institutions. One of the reasons for this was that its scope of activities was very broad; in addition to its supervisory tasks, it also had other duties (e.g. providing professional guidance on depositing the assets of the member institutions, the establishment of a national loan information system). The extensive nature of its activities is also illustrated by the fact that it took part in developing the by-laws of the institutions, which also showed a proactive supervisory character. On the other hand, larger banking groups did not join the MPOSZ (*Botos 1994:17*), and its operation – centred around "self-governance" – enabled financial institutions to request reviews relatively rarely (*Hantos 1916:24*) based on their voluntary decisions. This also contributed to the inefficient functioning of the MPOSZ as a supervisory body. Due to the relative weakness of the supervisory powers and the MPOSZ's role of being the primary representative body of financial institutions, the "Anglo-Saxon" method gained prominence in the organisation's activities.

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<sup>2</sup> The powers and inspection capacities of the Országos Központi Hitelszövetkezet were further bolstered by the fact that from 1920, pursuant to Article 2 of Act XXX of 1920 on Amending and Supplementing Act XXIII of 1898 on Economic and Industrial Credit Unions, credit unions could only be established on the condition that they joined the Hitelszövetkezet.

<sup>3</sup> "Devastatingly", "damagingly".

The efficiency of the MPOSZ's measures was undermined by the Pénzüntézetek Országos Egyesülete<sup>4</sup> (National Association of Financial Institutions, POE), which was established on the initiative of Undersecretary of State Elemér Hantos – who also headed the institution until November 1917 – and which basically acted as the MPOSZ's "rival" during that period. The conflicts arising between these two associations were detrimental to the continuous conduct of business for both. Although a so-called revision committee was formed within the framework of the MPOSZ, it performed no substantial, significant tasks (Éber 1912a:55). These factors determined the actual weight and scope of authority of the MPOSZ, as well as its influence on the financial processes and legislation, resulting in relatively modest success in promoting the institution's interests. Nevertheless, some basic principles emerged during the operation of the MPOSZ, and a number of practices were implemented during the inspections that can also be observed in today's supervisory inspections: for example, the "four-eyes principle", which required at least two inspectors to carry out audits, and the unannounced inspections that the MPOSZ was authorised to perform (Hantos 1916:30). Inspectors employed by the MPOSZ were required to pass a test which proved that they possessed the professional knowledge necessary for performing the inspections. The concept of bank secrecy also emerged in connection with these inspections, because inspectors had to treat the experiences gained during an inspection as strictly confidential, and "whoever failed to do so was guilty of the gravest misconduct, since they breached their oath" (Hantos 1916:34). The statute of the MPOSZ stipulated that the inspectors were obliged to make recommendations in connection with findings in order to correct omissions, taking into account the "interest" of the institution under inspection. The inspection process included reviews of the bookkeeping, business management, inventory and balance sheets of the given institution. The inspectors had to answer predetermined questions with respect to the topics under inspection (e.g. capital position, securities business, current account business, savings deposit business) by filling out a kind of worksheet which formed the basis of the inspection report.

In addition to the MPOSZ, several organisations protecting and enforcing the interests of financial institutions were formed in the first half of the 20th century (e.g. Takarékpénztárak és Bankok Egyesülete [Association of Savings Banks and Banks], Bankárok és Értékpapírkereskedők Országos Egyesülete [National Association of Bankers and Securities Traders]) (Müller et al. 2014:10). These had no supervisory or review functions, yet as they advanced the standardisation of business management, bookkeeping and balance sheet compilation practices, their operation is also worth mentioning from the perspective of supervisory history.

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<sup>4</sup> The scope of functions of the POE was identical to that of the MPOSZ, and it could not fulfil its original function primarily because its member institutions were mainly provincial banks and savings bank. Thus, it lost a large share of its members after the Treaty of Trianon (Botos 1994:19).

### 3. The background to the Pénzintézeti Központ's establishment

#### 3.1. The Trade Act of 1875

The operation of financial institutions had been regulated at different levels even before the Pénzintézeti Központ was founded. Many aspects of the activities of financial institutions were regulated by the Trade Act of 1875. The Act also included a precise definition of the concept of financial institutions, because prior to passing the act, there had been “*utter confusion*” (Schandl 1938:35) regarding the legal concepts and activities of banks, mutual benefit funds, savings banks and cooperatives. The importance of the Act is demonstrated by the speech of lawyer, economist, academician and university professor Ödön Kuncz delivered at the meeting of the Hungarian Economic Association on 9 February 1926, in which he stated that “[*the Act*] does not merely regulate the legal relations between trade and traders, but also creates a firm basis of a whole empire of intensive production”. However, Kuncz added in connection with the Act that it had not been “*completely modern even when it was drafted*” (Kuncz 1926:147). Preceding Kuncz’s remarks by approximately 30 years, objections to the Act were voiced in 1899, namely that it was “*liberal*” and that its contents had “*proved to be outdated and imperfect in many respects, and inadequate in general*” (Sugár 1899:404). The most important proposals in connection with reforming the Act were to replace its “*negative attitude and nonchalance with [the notion of] active state involvement*”, to prevent the “*creation and operation of (further) fraudulent, unrealistic companies*” (Kuncz 1926:152), and to protect the operation of companies with actual economic weight. This was necessary because the Act of 1875 made the creation and supervision of financial institutions a mere formality (Jirkovsky 1945:170). In addition to the above, some extreme opinions surfaced, claiming that due to the “*loose*” provisions of the Trade Act, household insurance contributions were being siphoned abroad, primarily through insurance corporations (Róth 1890:4), and that rules regulating the creation and business management of insurance corporations in the Trade Act were inadequate (Poór 1900:459). The court only assessed legal compliance (e.g. the adequacy of decisions at general meetings). The inspection did not cover the veracity of the inventory or whether the stock of securities and bills of exchange were actually available, because these tasks – based on the “*Anglo-Saxon*” paradigm – fell within the purview of the supervisory board.

While many proposals were made for reforming the Trade Act (e.g. in 1894 with respect to the regulation of the cooperatives’ operation), these were not supported by the Chamber of Commerce and Industry (Schandl 1938:23). This was probably due to the fact that there was no consensus about the necessity of reforming the Act, and even in 1896 there were opinions that its core and spirit were good, and that its main principles were sound (Matlekovits 1896:63).

### 3.2. Reasons and circumstances leading to the establishment of the Pénzügyi Központ

Several factors contributed to the formation of the Pénzügyi Központ. For the most part, these were not institution-specific but generally applicable to the financial institution sector. The need for the creation of an institutionalised supervisory body was emphasised by the Trade Act of 1875 not being proactive enough, its excessively permissive regulations and the resulting great number of financial institution actors which in some cases lacked even economic justification, negative developments in the maturity matching of assets and liabilities characteristic of financial institutions and in the ratio of share and loan capital, and the increasing number of failing financial institutions (*Teleszky 1927:356; Hantos 1916:8*). In 1869–1887, 32 savings banks went bankrupt, including both smaller institutions (e.g. Cserevenkai, Eszék-Alsóvárosi, Püspökladányi Takarékpénztár [Savings Banks of Crvenka, Donji grad (Osijek), Püspökladány]) and large, established savings banks (e.g. Aradi-, Máramarosszigeti-, Újvidéki Takarékpénztár [Savings Banks of Arad, Sighetu Marmăției, Novi Sad]). Naturally, similar to the recent economic crisis, this resulted in a kind of tension and loss of confidence (*Blum 1899:745*), thereby facilitating institutional and regulatory changes (in both eras). Financial institutions failed in later years, too: for example, the Székelyegyleti Első Takarékpénztár (First Savings Banks of the Székely Association) went bankrupt in 1901 (*Szász 1966:123*). In this context, the remarks by General Superintendent Gábor Daniel – the Lord Lieutenant of Udvarhely county – in the opening speech of the 1903 Synod of Vargyas reflect the dwindling confidence in other financial institutions as well as the knock-on effects: “*The failure of the Székelyegyleti Első Takarékpénztár affected our church dramatically, especially our Székelykeresztúr district, which led me to make a proposal to the Council of Representatives in our Church for the partial withdrawal of our – at that time – considerable deposits from the financial institutions of Cluj-Napoca.*” He then later added: “*Besides, I believe that you still agree with me that it is best to invest our capital in land and in safe government securities.*” (*Daniel 1903:251*) After the bankruptcy of the Székelyegyleti Első Takarékpénztár, the representatives of Udvarhely county demanded the state regulation of financial institutions. Kálmán Széll, the prime minister at that time, argued for the need of regulating financial institutions in his speech in Parliament on 19 November 1902 (*Szász 1966:136*). Nevertheless, there were some who believed that there had been no substantially corrupt practices and failures, and that Hungary was faring relatively well at the time of the New York stock exchange crash of 1907 (*Éber 1912a:64; Domány 1926:433*).

The failures of the financial institutions were due to various reasons. First, the international paucity of money caused by the news of the eruption of the Second Boer War (1899–1902) and the resulting spillover effects that also affected Hungary, the flow of debentures deposited abroad back to Hungary, and the general outflow

of foreign capital as a result of the economic paralysis of industrial and trading companies exerted a significant effect on the Hungarian financial institution sector, too. The savings banks operating in Arad, Sighetu Marmăţiei and Nové Zámky were close to insolvency. The Aradi (later Első Aradi) Takarékpénztár ([First] Savings Bank of Arad), which was established among the first savings banks after the creation of the Pesti Hazai Első Takarékpénztár [First National Savings Bank of Pest] and started operating on 19 March 1840 (*Vargha 1896:102*), deserves special mention. In addition to the change in external circumstances, in many cases the failure of the savings banks could be attributed to internal operational reasons, particularly misappropriation. For years, the Érsekújvári Takarékpénztár [Savings Bank of Nové Zámky], falsely reporting its profits, paid out its entire share and reserve capital and part of the deposits in dividends (*Blum 1899:762*). The Soproni Építő és Földhitelbank [Construction and Land Loan Bank of Sopron] was established in 1872 and it failed in 1901. Although it had already lost its share capital in 1883 as a result of stock exchange speculations, it operated for another 11 years, reporting considerable profits and paying out correspondingly high dividends. In some cases, financial institutions entered into transactions, having only 10% of the necessary collateral (*Horváth 1995:3*). Third, in addition to the economic recession and the lack of effective regulation, Article 5 of Act IX of 1848 on the Abolition of Seigniorial Obligations<sup>5</sup> imposed a moratorium on the repayment of a substantial share of mortgage loans, which also contributed to the failure of financial institutions. This severely affected the situation of the savings banks, some of which attempted to sell their stock of securities at a lower price – caused by increased supply – and some of which (including the Pesti Hazai Első Takarékpénztár) applied for emergency aid. New loans could only be extended on the basis of stricter assessment criteria, and some savings banks were temporarily banned from that as well (*Vargha 1896:133*). In addition to misappropriation and speculation, corrupt practices were also rife. One must mention the Újvidéki Takarékpénztár, where several forged bills of exchange were deposited, causing a deficit of 150,000 koronas.<sup>6</sup>

In addition to the domestic, internal need and the increasing prominence of interests long present and strengthening, the establishment of the Pénzintézeti Központ and the development of its supervisory activities with respect to banks were also motivated by the fact that in the early 20<sup>th</sup> century, bank capital was considerably entwined with industrial capital (creating so-called finance capital) (*Tomka 1999:48*). As a result, less well-capitalised financial institutions, especially provincial institutions, lost ground to financial institutions in Budapest which were

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<sup>5</sup> “With the exception of bills of exchange from trade transactions, no debt claims against landowners whose estate was linked to socage before this Act entered into force may be withdrawn pending further legal provisions, and only claims for the payment of legally guaranteed interest may be enforced in court” (Based on Article 5 of Act IX of 1848 on the Abolition of Services (Corvée), Tithe and Cash Payments Provided Until the Present Based On Socage and Supplementary Contracts).

<sup>6</sup> Based on Page 5, Volume 2, Issue 51 of Magyar Paizs (19 December 1901).

predominantly well-capitalised (*Szádeczky-Kardoss 1928:114*). On account of the concentration, various interests (e.g. those of industrial companies) also surfaced, which may have contributed to the increased calls for regulation in the sector. The intertwined nature of the banks and industrial capital can be seen in the fact that the largest industrial, mining, commercial and transport companies belonged to the sphere of interest of a few large domestic banks. In 1913,<sup>7</sup> 225 large industrial limited companies were influenced by the five largest banks of Budapest, with a total share capital of almost 711 million koronas, representing 51% of the capital of all mining and industrial companies operating in the form of limited companies. Thus, the Hungarian banking sector further increased its influence and control of the domestic economy before the First World War. As a result, the scope of activities of this “new” type of bank became more complex; in addition to supplying credit, financing companies, and issuing and depositing shares and bonds, their activities now included the creation of new companies, active involvement in the development and management of existing companies, resolution of bankrupt companies, and organisation of the production and sales in whole industries (*Tomka 1999:47; Botos 1994:25*). On account of the stronger economic spillover effects, the “transformed” big banks boosted the willingness to organise financial regulation.

There was a close correlation between the merging of bank capital and industry and the concentration of financial institutions (which also motivated the organisation of regulation), since the demand for loans by industrial companies – due to their volume – could only be satisfied by well-capitalised financial institutions (*Ács 1936:318*). Several other factors contributed to the increasing concentration of financial institutions in the early 20th century in Hungary. These were economic on the one hand (e.g. brighter lending prospects, greater confidence in the security of clients’ deposits, better possibilities for expansion, higher business “prestige”) and psychological on the other (e.g. increased entrepreneurial spirit with respect to managing complex companies posing more substantial challenges and risks). The third reason for the increased concentration of financial institutions lay in capital, which constantly motivated companies to expand and to invest it again and again. The intention of making borrowing more attractive also fostered banking concentration, because the public believed that the relatively expensive loans in certain periods were caused by the considerable operating and maintenance costs of the oversized lending structure. According to this view, the insufficient amount of available loans, which was also typical because of their relative expensiveness, continued to be a social problem and hindered progress (*Domány 1926:432–457*).

The need to set up regulation within an institutional framework was also heightened by the increasing number of credit institutions, which jumped from 1,598 to 5,033

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<sup>7</sup> In the same year, 121 financial institutions operated in Budapest (excluding cooperative-type institutions (*Szádeczky-Kardoss, 1928:69*)).

between 1894 and 1913 (Tomka 2000:62). The proliferation of credit institutions<sup>8</sup> was also condemned by the chief secretary of the Austro-Hungarian Bank, József Pranger. In a speech in 1912, he “vehemently demanded that the mushrooming of credit institutions be halted” (Domány 1926:434). In the same year, Lipót Horváth, an influential banker, deemed economic measures suitable only with respect to complicating the situation of new credit institutions and decreasing their number. He proposed that the Austro-Hungarian Bank should deny rediscounting with respect to these institutions (Éber 1912a:62). Hantos (1916:62) also spoke out against the large number of credit institutions in his speech at the House of Representatives on 6 May 1914, in which he emphasised that Hungary had more credit institutions than Austria and Germany combined. The perception of these newly established credit institutions was further undermined by the fact that in several cases, the share capital necessary for the formation of the institution was only paid by owners and founders when the capital position of the credit institution urgently necessitated it (i.e. when the institution was close to insolvency). In many cases when the share capital was increased, it turned out that not even the original share capital was available, because it had not been paid. Due to these reasons, according to the proposal of Miksa Havas, an academic professor and the inspector of the Chamber, it was important to begin inspections of the newly established financial institutions (Éber 1912a:56).

In 1915, the two most important steps in rebuilding Hungary after the world war<sup>9</sup> were considered to be the development of state supervision and the emancipation of minorities (Adler 1915:171). This was justified, as the events of the world war had developed favourably for the Austro-Hungarian Empire until that point: the Gorlice breakthrough and the stabilisation of the front at Doberdò were indisputable military successes. The process of the review of financial institutions’ operations and the conditions for performing inspections had to be developed during the war, as afterwards, when a great volume of savings was expected to be deposited, the financial intermediary system had to already be regulated and the financial preparedness of financial institutions had to be ensured.<sup>10</sup> In 1915, Hantos (1915:33) underlined the importance of organising the transition from a war economy to normal production as soon as possible, reflecting the confidence in the future. He

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<sup>8</sup> In 1911, approximately 200 new financial institutions were formed. By comparison it is worth mentioning that while in the same year a total of 67 financial institutions operated in Austria, the number of banks in Budapest alone was 121 (Éber 1911:797).

<sup>9</sup> On the basis of the initial military successes in the war, the confidence in a future victory and the hope for indemnity and reparations, the development of a stable, regulated financial intermediary system was to be promoted.

<sup>10</sup> “The substantial funding needs of the state after the war and the predictably substantially increased credit requirement of the public will impose huge tasks on financial institutions [...] and in order to avoid a shock to our economy, we have to assist financial institutions by all means in adequately performing their challenging duties, because that is the only way the necessary revival of our economic life after the war can be guided onto a healthy path.” (Jakobb et al. 1941:35)

considered the development of financial supervision just as important as organising the army (*Hantos 1916:69*); therefore, we can agree with the economist and historian György Ürögdi (*1948:207*) that popular sentiment demanded the state supervision of financial institutions.

The emergence of the preventive approach should be emphasised, as a result of which, in addition to repressive legal acts and rules, fundamentally forward-looking and preventive measures also received prominence: “... *no flagrant cases can serve as the basis for violent, inconsiderate interventions [...], we need preventive rather than repressive rules. We should not eradicate the whole garden, only the weeds*” (*Sugár 1899:407*). Pál Berényi (*1904:396*), a teacher of the Academy of Trade in Sopron, also promoted this approach in a review published in 1904, in which he declared that taking preventive measures was absolutely necessary in order to ensure that there were no circumstances in the operations of financial institutions that would suggest corrupt practices or negligence.

As a result of the regulatory discrepancies regarding financial institutions, it was characteristic of the operations of financial institutions in Hungary that the business practices of savings banks and commercial banks were often not clearly separated (*Sugár 1899:405; Domány 1926:435*), and thus there were cases where savings banks provided funds to industrial companies from savings deposits (*Teleszky 1927:356*). By way of example, one could mention the Pozsonyi Takarékpénztár [Savings Bank of Bratislava], which played a significant role in providing funding to two industrial companies early after it was established. It also granted loans to the Malomvölgy-társulat [Mill Valley Society] operating in the vicinity of Bratislava, and it contributed actively to the construction of the railway line between Bratislava and Trnava. The deficiencies in defining the concept of financial institutions are demonstrated by the following remark: “*the notion or nature of a financial institution [...] remains obscure. Does a financial institution suggest a limited company, a cooperative, a general partnership or a simple natural person? We do not know*” (*Hantos 1916:23*). As a result, the public could not be expected to distinguish between financial institutions: “*we see that the people do not differentiate between a savings bank, a bank and a credit institution, and they take their money with full confidence to the nearest institution*” (*Blum 1899:758*). And “*banks encroach on the savings deposit business line, just as savings banks do on bank-like business. The categorisation that distinguished between land loan institutions, banks and savings banks is just a remnant of the past...*” (*Hantos 1930:677*). Distinguishing between the different institutions was made more difficult by the fact that in the 1890s, so-called “fake cooperatives” started to spread (e.g. the so-called “korona cooperatives”). These were only “cooperatives” in name: their activities did not show any kind of cooperative character, and they were basically dominated by usury. The operations of these institutions, however, were considerably hampered by the

establishment of the Országos Központi Hitelszövetkezet in 1898 and the spread of cooperatives (Schandl 1938:38–76). Also, the “*eradication of usury’s plague*” was achieved temporarily (Sugár 1899:407).

### **3.3. Professional debates related to the establishment of the Pénzintézetési Központ**

Several debates were held among professionals in connection with the formation of the Pénzintézetési Központ on various platforms, and contrasting views developed among economic thinkers. For example, in the case of savings banks, there were proposals promoting strict, material supervision in line with the “classical” model. These plans aimed to “*restrict the operating activities of savings banks through legislative measures so that their operation should be constrained to making profits from their deposits and their share capital, with a complete ban on rediscounting. Furthermore, we should require our savings banks to only invest their funds into government securities, debentures and mortgages*” (Székely 1890:310). This direct type of central regulation (which was proposed to be introduced on the basis of the contemporary German and Austrian model) was rejected by the future justice minister Ferenc Székely (1890:311), who stated that whatever was “*flawed in our country, we should fix taking into account our special circumstances and the financial and general economic conditions of the country. We should learn from foreign nations but we should not slavishly imitate them.*” Brúnó Blum, a senior officer at the Budapesti Bankegyesület [Bank Association of Budapest] also emphasised the importance of independently developing regulation in Hungary: “*we cannot [...] simply copy whatever worked abroad. By taking into account the actual situation and our special domestic circumstances, we should create a new system, Hungarian to the core*” (1899:763). Ignác Sugár, who was the secretary of the Chamber of Commerce and Industry of Miskolc at that time, propagated a less direct, more lenient type of regulation. He stated that substantially interfering in financial institutions’ practices for handling deposits, bill discounting and rediscounting, as well as their mortgage loan business line, was a “*mistake in theory, and impossible in practice*”, and he believed that in this respect “*no [...] central organisation, chamber of financial institutions or other similar institution would help*” (1899:414). In contrast, he focused on controlling corporate governance and business management, and the importance of educating skilled professionals.

When the draft proposal for establishing the Pénzintézetési Központ was made public in March 1915, financial institutions voiced their concern that it would develop into a large state bank, restricting competition. Another debate was sparked about the inspections with respect to the scope of institutions they should cover. The majority backed a proposal according to which only smaller financial institutions that obtained loans from the Pénzintézetési Központ should be inspected, unless an inspection was otherwise requested. This proposal was also supported by the fact

the Pénzintézeti Központ, especially in its early period, did not have a sufficient number of inspectors able to perform inspections at every member institution, and carrying out previously undefined inspections based on certain criteria would increase distrust. When the proposal was introduced to parliament, the opposition was against it. They saw concealed political goals and the extension of the government's power in the institution of the Pénzintézeti Központ, and exclusively party-political purposes in the creation of the loss reserve fund (e.g. repayment of debts). Nor was their opinion changed by the statute of the Pénzintézeti Központ, Article 58 of which detailed the purposes of the loss reserve fund. Accordingly, the opposition only approved the establishment of the Pénzintézeti Központ on the condition that its statute be incorporated into law and that the use of the loss reserve fund be controllable by the opposition.

The polemics also included the depth of supervision: Sándor Matlekovits, a lawyer and university professor, and later a member of the Board of the Hungarian Academy of Sciences, regarded the review of specific credit transactions, and in fact any other review that went beyond the assessment of the accuracy of the balance sheet, to be harmful and dangerous from a business perspective (*Éber 1912b:216*). The necessity of supervision was also questioned by, among others, Count Gyula Andrássy II, who had been minister of the interior and then later became foreign minister for a short period. He argued against the Pénzintézeti Központ based on the purpose of its creation, as well as the novelty and reforming nature of its operation; according to him, no reform was necessary that had not become rooted in other countries. Count Albert Apponyi, a minister and member of the Hungarian Academy of Sciences, employing considerable exaggerations without acknowledging the purpose of the Pénzintézeti Központ's formation, stated that the establishment of the Pénzintézeti Központ was tantamount to the elimination of the possibility of political independence and free political opinion (*Jakabb et al. 1941:33–40*). The debate surrounding the necessity of supervision was not only observable in Hungary, but also at the international level. In connection with the 1908/1909 “*Bankenenquete*” containing the proposal for adopting state supervision, *Jakob Riesser (1853–1932)*, an influential contemporary German politician, agreed with the “Anglo-Saxon” paradigm and regarded the operation of state supervisory bodies as harmful because those – according to Riesser – inspired unreasonable confidence among depositors, and they were not suitable for producing reliable findings (*Jakabb et al. 1941:29*). While assessing the domestic and foreign “reform movements” in support of developing financial supervision, *Hantos (1916:55)* came to a similar conclusion: “*The first result we can deduce from the foreign and domestic reform movements is negative in nature, and its essence is that state supervision has neither purpose nor justification.*”

#### 4. Operation of the Pénzintézeti Központ

On 1 June 1916, in the shadow of the First World War, only days before the Brusilov Offensive was launched on the eastern front against the Central Powers, the Pénzintézeti Központ was established with the support of Prime Minister István Tisza and Finance Minister János Teleszky, the chairman of the contemporary “altruistic bank” (*Botos 2002:30*), the Magyar Földhitelintézetek Országos Szövetsége [National Association of Hungarian Land Loan Institutions], and several other financial institutions. Taking into account the circumstances of the age, the following excerpt may sound somewhat out of place, but it does reflect the confidence in the future and the public sentiment in the year of the Pénzintézeti Központ’s creation. It was published for the 75<sup>th</sup> anniversary of the first Hungarian bank, the Pesti Magyar Kereskedelmi Bank [Hungarian Commercial Bank of Pest], which was also celebrated in 1916. “*We look into the future with a renewed ambition and confidence, knowing that we can fulfil our role in domestic economic life*” (based on *Lamotte 1941:55*).

The statutory purpose of the Pénzintézeti Központ was to function “*in a cooperative form to foster and promote the interests of the economy through those of the financial institutions operating in the Lands of the Holy Hungarian Crown*” initially for a fixed period (five years). The same law authorised the finance minister to “*contribute to the capital of the Pénzintézeti Központ, from the state budget, by taking over shares with a combined nominal value of a 100 million koronas*”.<sup>11</sup> The institutions that were eligible to become members of the Pénzintézeti Központ included financial institutions operating in the form of a limited company, savings banks in smaller municipalities and cities (with the permission of the finance minister), the Hungarian branches of foreign financial institutions (which primarily concerned Austrian-owned institutions), cooperatives performing banking activities, financial institutions regulated by another law (e.g. the Magyar Földhitelintézetek Országos Szövetsége) and the Magyar Királyi Államkincstár [Hungarian Royal State Treasury] (*Szádeczky-Kardoss, 1928:33*). Act XIV of 1916, which provided for the establishment and basic functions of the Pénzintézeti Központ, was supplemented by the statute of the Pénzintézeti Központ. Together they defined the conditions of the Pénzintézeti Központ’s operations and settled certain economic policy issues that had arisen in the previous period (e.g. they delineated tasks in connection with the branch in the kingdom of Croatia-Slavonia, which enjoyed autonomy within the Austro-Hungarian Empire, as the regional consultative body of the Pénzintézeti Központ). In response to the earlier “foundation fever” – the period of the Gründerzeit that peaked in 1872 – another significant economic policy step

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<sup>11</sup> Based on Article 1 of Act XIV of 1916 on the Pénzintézeti Központ.

was the prohibition of the establishment of new financial institutions with a share capital of less than 20 million coronas until 1 January 1919 (*Teleszky 1927:359*).<sup>12</sup>

In order to avoid being influenced by political powers potentially involved in the operation of the Pénzintézeti Központ, the term of the president heading the Pénzintézeti Központ was fixed at five years. The law that we cited stipulated – in line with the earlier proposals – that the Pénzintézeti Központ should only perform restricted inspections; that is, it could only implement audits at member institutions whose share capital was less than 20 million coronas and that requested it, or that had obtained a loan from the Pénzintézeti Központ (*Tomka 2000:81*). At that time, to avoid double supervision, the cooperatives that belonged to the Országos Központi Hitelszövetkezet and were also supervised by it were not audited by the Pénzintézeti Központ. Out of the 1,871 institutions operating in the form of a limited company, 1,261 joined the Pénzintézeti Központ (thereby consenting to a possible inspection). This did not mean higher risk awareness, more judicious functioning or the need for more prudent conduct in and of itself, as unless the institutions obtained funding from the Pénzintézeti Központ or voluntarily requested an inspection, the Pénzintézeti Központ did not provide an opportunity for one. There were also big banks among the 1,261 credit institutions, which is worth mentioning because earlier (in the case of the MPOSZ) this was one of the factors that hampered efficiency: big banks with a greater ability to promote their interests were not part of the organisation. In fact, they only joined the Pénzintézeti Központ after it had guaranteed big banks in its statutes that it did not wish to become their competitor in banking activities (*Botos 1994:23; Jakabb et al. 1941:33*). In contrast to earlier institutions that also possessed supervisory powers (e.g. MPOSZ, POE), the Pénzintézeti Központ did not function as a representative body, which also demonstrated its primary function as a supervisor.

The review activities of the Pénzintézeti Központ could be grouped into four types. The first included the auditing of accounting books (e.g. the implementation of the principle of completeness, the adequate handling of documents), while the second comprised the assessment of internal management (corporate governance) (e.g. the rules of procedure of the board of directors, the specification of mandates and responsibilities and their observance, audit measures (the functioning of an internal control system), bank security rules, the cost/income ratio). The third type included the assessment of conduct, especially the evaluation of lending (i.e. the portfolio), and the review of the composition and volume of share capital and external funds, the regulation of internal loans, and measurement of the amount of the deposit rate paid. The fourth type comprised the review of the balance sheet,

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<sup>12</sup> The objection against the introduction of this “objective” condition, however, was justified, since it also made it impossible to establish special financial institutions of critical national economic and strategic importance (e.g. so-called “war banks”) or other financial institutions warranted by an economic rationale that would have been needed – at least by “war banks” – especially in the First World War (*Hantos 1916:71*).

the income statement and the inventory (its analytical evaluation), which included the reconciliation of the balance sheet with the ledger, as well as the assessment of the reserves, the write-downs and the distribution of profit (dividend payment). The areas for supervision listed above were detailed in Annex 1 of the Pénzintézetési Központ's statutes in the form of a review directive. The inspection focused on the areas that posed a high risk, as compared to others in that period (e.g. the booking of rediscounting).

In addition to and complementing its supervisory function, the Pénzintézetési Központ also had resolution powers. The Act on the Pénzintézetési Központ stipulated that in the case of a financial institution's bankruptcy, the Pénzintézetési Központ should play a central role.<sup>13</sup> In practice this meant that the Pénzintézetési Központ could provide temporary liquidity (from the so-called "mobility reserve") to distressed but sustainable, viable financial institutions. When the Austro-Hungarian Empire was in financial straits and funding by Austrian capital was suspended, the capital shortfall could be felt directly, primarily at smaller financial institutions; therefore there was a great need for an institution providing temporary liquidity (*Teleszky 1927:358*). This core function also contributed to the fact that in the next period the Pénzintézetési Központ (especially as its powers were gradually expanded) became the most important tool for financial supervision or, in a broader sense, state oversight. The duties of the Pénzintézetési Központ in connection with the unsustainable financial institutions are demonstrated by the summary of *László Passuth* in his book about the years he spent as the vice-president of the institution: "*One of the many anecdotes of my uncle was about the time when the bank directors filed out onto the street after the PK was officially established. The all-powerful director of the Kereskedelmi Bank pointed to the façade of the building, and muttered the following memorable lines, intended for an inscription: 'Should a bank wish to die – preventing it we shall not try.' Initially the goal and purpose of the new institution was to mitigate the agony of financial institutions...*" (1981:5).

While in most countries, institutions similar in type and nature to the Pénzintézetési Központ were only established after the 1929–1933 global economic crisis (e.g. in 1931 in Germany, in 1935 in Switzerland, in 1941 in France), Hungary was among the first in international comparison, which illustrates the proactive nature of financial supervision as well as the excellent ability of the supervisory body to react to the changes in the economic policy environment (*Tomka 2000:81–94*). State supervision had already been in place in several other countries in this period: the supervisory body established in Sweden in 1824 by a royal decree and the so-called "*Comptroller of the Currency*" founded in 1863 in the United States, both of which possessed functions similar to the supervisory duties of the Pénzintézetési Központ) (*Jakabb et al. 1941:28*). In connection with the former, in the interest of a

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<sup>13</sup> Based on Article 7 of Act XIV of 1916 on the Pénzintézetési Központ.

retrospective comparison and an adequate assessment of contemporary conditions we should not forget that Sweden's central bank was established in 1668 and that it had an extensive and relatively developed network of banks even in the early 19<sup>th</sup> century (its tasks basically included issuing licences and assessing periodical statements). In the case of the latter, due to the unique system of government, the supervisory duties regarding the operation of the individual "national banks" gained prominence early on. In the context of our immediate neighbours, we can say that both the Romanian "*Solidaritetea*" cooperative established in 1898 (comprising 126 financial institutions) and the union of Saxon financial institutions formed in 1903 ("*Revisionsverband*"), which also included several financial institutions, started performing inspections in the early 1900s (*Hantos 1916:89*), although these institutions did not have a resolution function. Here we have to point out a unique supervisory and operational characteristic, namely that according to the Swedish practice, the supervisory body issued operating licences for a fixed period, which had to be renewed after expiry by the credit institution concerned. This practice provided greater leeway for the supervisory authority and encouraged credit institutions to operate more prudently, since withdrawing a licence could be much more complicated for the supervisory authority than not granting (or renewing) it. On the other hand, of course, the available resources (e.g. the capacity of the employees) had to be taken into account, because of the more intensive utilisation of labour in these cases.

In connection with the activities of the Pénzintézet Központ, some feared that the powers of the state might become too extensive, while others held a diametrically opposed view. From the perspective of efficient state supervision, the latter group regarded the establishment of the Pénzintézet Központ as a mere "tentative step", which was not sufficient for exercising effective control. This view may have been influenced by the voluntary membership that characterised the first four years of the Pénzintézet Központ's existence, the large number of financial institutions and the fact that depositors only heard about inspections and their results by chance. In line with the "classical" principles, this segment of the contemporary public wished to exercise proactive supervision by strict measures, directly influencing the business operations of the institutions. According to their proposal, member institutions would have been authorised to accept deposits from clients only if they held a specific sum (200,000 koronas in Budapest, 100,000 koronas in other parts of the country) in government bonds exclusively for securing clients' deposits. Another element of the proposal was that institutions should keep at least 10% of their clients' deposits in government bonds. According to the proposal, only those institutions which held 50% of the amount corresponding to 30% of clients' deposits in excess of triple the amount of the institution's share capital in Hungarian government securities, and 50% in securities deemed by the government as trustee securities, could receive state exemptions (e.g. exemption from duties and

taxes or other exemptions) (*Korányi 1918:560–563*). The proposal did not receive widespread support, probably because of its strict material requirements; however, a number of its elements were included in the amendment(s) to the Act on the Pénzintézetési Központ in some form, if only partially. This was true, for example, with respect to the expansion of the scope of member institutions covered by the inspections. Therefore, the features of the “classical” paradigm became increasingly dominant in the operations of the Pénzintézetési Központ.

## **5. Summary**

More than seven decades passed after the establishment of the first Hungarian bank until the creation of the first integrated supervisory body, following lengthy debates among professionals and the analysis of several foreign examples. In the end, however, the endeavour proved successful. There had already been supervisory bodies in other countries than Hungary, and organisations preceding the Pénzintézetési Központ had been formed earlier there as well. However, the early introduction of the resolution function linked to supervision was definitely unique in the history of banking systems. János Teleszky stated about the novelty of the Pénzintézetési Központ after its establishment that: *“an institution that [...] combines the roles of the inspector and controller with those of the supporter and provider of credit, and that not only identifies problems but can also help right away can be found nowhere else...”* (*Jakabb et al. 1941:6*).

The establishment of the Pénzintézetési Központ on 1 June 1916 and its operational framework did not reflect their final form in the first half of the 20th century. They would continue to be shaped and changed, because *“...just like the bough in Stendhal’s work, [the institution] started to crystallise due to its accumulated duties. And it has continued to do so ever since, as far as I know”* (*Passuth 1981:5*). Of course, objections to the operations of the Pénzintézetési Központ were voiced in that era as well. Yet, when evaluating them, we should take the economic and political circumstances of the age into consideration.

With respect to the operations and scope of activities of the supervisory organisations preceding the Pénzintézetési Központ, we can say that Hungarian supervision shifted from the “Anglo-Saxon” principles towards the “classical” approach, without completely identifying with the latter. In the operations, integrated attitude and detailed “inspection programme” of the Pénzintézetési Központ, we can detect a type of supervisory activity which was close to the “classical” approach, covering even the smaller details. The contemporary professional debates, viewpoints and proposals of that period deserve special attention, since an evaluation of their applicability in the present environment may contribute to boosting the efficiency of supervisory activities.

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## **Cutting Edge Debates in Comparative Capitalisms Research**

*Judit Ricz*

*Ebenau, Matthias – Bruff, Ian – May, Christian (Eds.):  
New Directions in Comparative Capitalisms Research: Critical and Global Perspectives. International Political Economy Series, Palgrave Macmillan, Basingstoke, UK, 2015, p. 236  
ISBN: 978-1-137-44460-8*

Fifteen years have passed since the seminal work of Hall and Soskice (2001) on Varieties of Capitalism (VoC), and extensive literature has emerged since then, which can be structured into three (possibly four) generations. The first, called the *classic school of VoC*, mostly relates to Hall and Soskice's work (see also Amable, 2003) and the differentiation of the liberal market economies (LME) (such as the USA, UK, Canada, Australia, New Zealand, Ireland) and the coordinated market economies (CME) (such as Germany, Japan, Sweden, Austria). The second generation is generally called *post-VoC* literature and aims at developing further types of capitalist models, mainly related to different regions or groups of countries. In this regard, the dependent market economy model (Nölke – Vliegenthart, 2009) can be highlighted, but also the work of the Hungarian scholar Beáta Farkas (2011), who analysed the Central and Eastern European (CEE) countries in this framework. The third generation of VoC literature is called *critical comparative capitalism* (CC) and mainly deals with more critical, global approaches, and most current issues such as international economic integration (e.g. *Eurozone crisis*) and tries to incorporate the demand side of the analysis. The book reviewed here with the title "New Directions in Comparative Capitalisms Research: Critical and Global Perspectives" is excellent at summarising how the different models and varieties of capitalism are undergoing rapid change and are the consequence of several interwoven processes. Accordingly, it provides an overview of the cutting-edge debates in the most recent strands of VoC literature.

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For the sake of being comprehensive, a fourth generation of VoC research might also be mentioned, although still rather on a speculative basis. There are some works and signs showing that VoC analysis has recently (since the publication of this volume) moved towards intertemporal (instead of international) comparisons aiming to define and characterise historical phases, rather than simply building valid models for certain countries or world regions.<sup>1</sup>

Edited by Matthias Ebenau (*IG Metall's Training Centre*), Ian Bruff (*University of Manchester*), and Christian May (*Goethe University, Frankfurt am Main*), the book brings together almost all of the relevant authors<sup>2</sup> in 21st century VoC research (altogether seventeen authors from all over the world from Brazil via Ireland to Austria).

The book represents a final volume and main results of a larger international research project – Comparison, Analysis, Critique: Perspectives on the Diversity of Contemporary Capitalism(s) – conducted in 2011–2014. The book's main objective is to “document a variety of novel and thus relatively less well-known ways of thinking about diversity within capitalism” (p. 2). This goal is achieved excellently by showing a wide diversity of alternative and critical materialist approaches.

The second main objective of the book is to intensify the dialogue between and across approaches related to VoC and CC research fields. In this regard however I felt that it was only able to partially succeed, as the book remains very closely connected to the more leftist approaches, and does so intentionally as it explicitly refers to Coates's statement (2005:21) regarding left-institutionalism and neo-Marxism, as providing the majority of best pieces on capitalist diversity. The context of the global crisis and its social consequences might justify this approach, but a more balanced selection of approaches and papers may have provided a more balanced, comprehensive view on CC research (or at least open the way for further volumes).

The third objective of the authors was to expand the understanding of varieties of capitalism in different geographic settings and different economic centres, thus looking at regions and countries which were mostly neglected by previous

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<sup>1</sup> Andreas Nölke draw attention to these most recent developments in VoC research in his presentation at the international conference on “The Role of State in Varieties of Capitalism (SVOC) Achievements and challenges for Central and Eastern Europe and the emerging markets”, organised by the Institute of World Economics (IWE), Centre for Economic and Regional Studies (Hungarian Academy of Sciences) and the Center for EU Enlargement Studies (CENS, Central European University) on 26–27 November 2015, Budapest.

<sup>2</sup> Renato Boschi (Rio de Janeiro State University); David Coates (Wake Forest University in North Carolina); Jan Drahokoupil (University of Mannheim, European Trade Union Institute in Brussels); Flavio Gaitán (Federal University of Latin American Integration); Bob Jessop (Lancaster University); Julia Lux (University of Tübingen); Terrence McDonough (National University of Ireland); Martin Myant (European Trade Union Institute); Andreas Nölke (Goethe University Frankfurt am Main); Nadia Pessina (Catholic University of Córdoba); Lucía Suau Arinci (University of Kassel); Lisa Tilley (University of Warwick, Université Libre de Bruxelles); Ingrid Wehr (Heinrich Boell Foundation Cono Sur); Stefanie Wöhl (University of Vienna).

generations of VoC. The contribution of the book in this regard cannot be denied, on the contrary it provides excellent added value for all readers who are interested in the real varieties of capitalism on a global scale.

In our time-constrained and informationally overloaded world, readers can obtain an excellent overview of the book, by looking at the introductory and concluding chapters that purposefully highlight most important trains of thought and most relevant messages (agreements and also disagreements among the authors). However, for a deeper understanding of how and why, it is highly recommended to deal more thoroughly with the volume.

The main text of the book is divided into three parts. The first part, *Comparing Capitalism in the Global Political Economy*, introduces in three chapters the most important processes of changes that have led to the emergence of the third generation of VoC or rather CC literature: 1. internal and external critiques of the classic VoC categories (the underestimation of diversity of varieties of capitalism); 2. moving away from firm-level analysis, to include more widely defined institutions; 3. the expansion of geographical scope (including Central and Eastern Europe, Latin America and also extending to large emerging economies, such as BRICS).

The second part of the book, *Critical Perspectives and Debates*, consists of five chapters, each of them presenting alternative theoretical outlooks, often disagreeing with each other, and mainly serving as food for thought for readers to draw their own conclusions or form alternative perspectives. To just selectively highlight some pieces from the wide-ranging issues tackled, it is enough to refer to the critical institutionalist approach of May and Nölke, the application of the gender approach in capitalist diversity research by Lux and Wöhl, or Wehr's attempt to overcome the shortcomings of the new 'patrimonial' models of capitalism in the Global South.

In the third part, *Global Perspectives and Debates*, the authors explicitly look at the development of different varieties (or models) of capitalism in world regions, typically neglected by earlier generations of VoC literature. These chapters illustrate excellently how to expand the scope of analysis of capitalism to different spatial and developmental contexts. The example of the transition economies such as Russia, Eastern Europe and Central Asia (by Drahekoupil and Myant), and Latin America (by Gaitán and Boschi), but also Tilley's analysis on (among others) the East Asian experience highlight numerous previously underestimated specificities. Just to highlight one such specificity is the underestimation (and under-investigation) of the role of the state in a (semi-) peripheral context.

Finally, the editors of the book conclude by summing up some common points of the chapters and also drawing attentions to disagreements and main areas of remaining debates, while also highlighting some further directions for research. Once again

just a selective list would include (for a comprehensive overview on prospective new directions in CC, see *pages 225–231*): the interconnected issues of capitalist dynamics, crises and institutional change; investigations of ‘national’ diversity and relational, cross-border character of global capitalism; and the politics (both the re-appreciation of classic thoughts and the more modern approach) of CC research.

And finally for us (and hopefully for other – Hungarian – readers) one of the main messages of this book is that the direction of research in comparative capitalism should be fundamentally reoriented and take a global focus, if it aims to remain or become relevant in a global sense and on a global level.

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## **Is it possible to live a happy life in a value-neutral world?**

*Viktória Németh*

*Jonathan Haidt:*

*The Happiness Hypothesis: Finding Modern Truth in Ancient Wisdom*

*Basic Books, 2006, p. 320*

*ISBN: 978-0-46-502802-3*

Jonathan Haidt is a social psychologist and professor at New York University's Stern School of Business. Since his youth he has been searching for the answer to the age-old question: What is the meaning of life? and How should we live a happy life? He has dedicated his first book, entitled "The Happiness Hypothesis", to this topic. The book is also inspired by his philosophy of life: it is not possible to live a happy life in a value-neutral world.

The book sheds new light on the achievements of positive psychology. Antique philosophy and theology build a bridge between the centuries-old wisdom of religions and scientific achievements. He pays special attention to identifying which old theories are supported by modern psychology and science and which ones are not.

According to Haidt, a happy life partially depends on external circumstances, contrary to the propositions of Buddha or the stoic philosophers. On the other hand, he also agrees with the Buddhist view in the sense that finding the inner harmony is of key importance. It is the external circumstances that make our happiness lasting.

The author is concerned not only about the happiness of the individual, but also about the anomie and atomised state characterising the entire western society. In a state of anomie there is a conflict between the accepted norms and the social reality. Deviant behaviour, such as the high number of suicides, is frequent. The author is of the opinion that the people of Western civilisation do not recognise that their view on norms and morality is rather strange for other civilisations and that those are based on – false – psychological approaches.

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According to Haidt, the European moral mentality got off to a good start in ancient history: one need merely consider the Bible, the epic of Homer, Aesop's fables, *The state* by Plato or Aristotle's *Nicomachean Ethics*. The Greek philosophy already contained the elements that carried the risk of a subsequent comedown, at the same time creating the basics for moral and scientific curiosity. For the investigative mindset it is difficult to find the place of logic in moral behaviour and emotions.

The principles that developed during the Enlightenment produced societies that respect the rights of the individuals, while they work efficiently for the good of people. However, this approach went hand in hand with a few unintended consequences. If we ignore the question of morality: it weakens morals, makes people narrow-minded, and on the other hand it leads to moral rationalisation, which is harmful for the mental state. The feelings of lack of roots and despair entail amoral and antisocial behaviour.

Finding harmony starts from within the individual and it is an extremely difficult task, as the human mind is divided into parts (right brain vs. left brain, automatic vs. controlled or conscious vs. unconscious parts), which often conflict with each other. The author often uses a metaphor in the book, according to which human mind is like a rider on the back of an elephant, where the conscious mind is the rider and the unconscious mind is the elephant. The rider is able control the elephant only partially. The book presents several methods that facilitate the cooperation of the two sides.

Human behaviour is based on the "Golden Rule", i.e. on the principle of reciprocity, which plays a much greater role in our life than we may think. (*the principle of tit for tat or an eye for an eye.*) Another truth that directly influences the principle of reciprocity is hypocrisy, according to which we examine the world through the bias lens of good and evil, which diverts us from following the Golden Rule. That is, "*Why do you see the speck in your neighbour's eye, but do not notice the log in your own eye?*"

In order to understand human happiness it is essential to examine where happiness comes from. If we mean by happiness that we acquire what we would like to have and can form the world as we wish, we can expect short-term high spirits. If we assume that happiness comes from within, it is worth examining the wisdom of Buddha and the stoic philosophers. Modern researches also confirm ancient wisdom in many respects. Changing our attitude often helps reduce internal tensions. On the other hand, research has also shown that there are goals where our efforts made to attain those may contribute to our happiness and certain environmental factors can make our happiness more lasting.

Research also confirms that *“what doesn’t kill me makes me stronger”*. This is the so-called *“post-traumatic growth”*, which is related to the interpretation of the events and to our standpoint.

On the other hand, our standpoint may change depending on the extent to which we deal with our virtues. Ancient wisdom contains much useful advice related to virtues and virtuous life that can be used even today. For example, positive psychology can be of great help in developing and unfolding our strengths and virtues.

As regards the meaning and fullness of life, Haidt encouraged the readers to study the religions of the world. The results of the surveys conducted by the author put the emotions generated by the spiritual dimension and the related virtues, which influence our day-to-day life and lifestyle, in a framework that is relevant both for the religious and the non-religious. At this point in his theory he presents very unique research, e.g. how the development of religion was impacted by the feeling of disgust, and where is the place of moral elevation and awe within human emotions. The emotions and thoughts related to the higher dimension, affecting day-to-day life, also explain phenomena such as religious fundamentalism, political culture war and experiencing the meaning of life.

## **A small monograph of big cities – The logic behind the regional foundations of growth**

*Sára Farkas*

*Bálint Filep:*

*A nagyvárosok az európai és a magyar területi politikában*

*(Big cities in European and Hungarian regional policy)*

*Publikon Kiadó, Pécs–Győr, 2014, p. 202*

*ISSN: 2064-4698*

After the authors graduation in finance at the Faculty of Business Administration and Management of Széchenyi István University, his interest gradually shifted, through comparative economic policy disciplines, to international relations and eventually to regional policy. Bálint Filep gradually shifted his interest. The key topics of his PhD thesis connected to higher education development policy and its labour market implications. Beyond the topics of welfare states, social economy, regional economics and their labour market correlations are also organic parts of his professional expertise. In addition to his professional activity, during his university studies, he assumed several public functions: as an opinion leader and interest conciliator, among other positions, he was President of the Students' Union at Széchenyi István University, as secretary he worked for the Nonprofit Association for the University of Győr, and he was also member of the Rector's Council at Széchenyi István University. Utilizing his previously gained experiences in university procedures and academic community as a research fellow; at present he is associate professor at the Department of Regional Studies and Public Policy and has served as Chancellor of Széchenyi István University since November 2014.

The monograph entitled *Big cities in European and Hungarian regional policy* was published in 2014 within the framework of the Doctoral School for Regional and Economic Sciences, established in 2004.

In the two decades preceding the mid-2000s, the *concept of settlement networks* and the network and settlement hierarchy oriented approach to regional processes had been largely neglected in the Hungarian scientific community. The *interrelated role of cities, however, has increasingly gained significance* both in terms of population concentration and economic performance. To put this in perspective,

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while 30 per cent of the world's population was urban in 1950 and this ratio rose to 54 per cent by 2014, by 2050, 66 per cent of the world's population is projected to be urban (UN 2015<sup>1</sup>). In OECD countries, GDP per capita is, on average, 64 per cent higher in urban areas than in rural areas (UN 2013<sup>2</sup>). These *concentration, densification and realignment processes are also presented in Hungary* (albeit to a lesser degree), and their management inevitably requires shifts and a higher degree of harmonisation both in development policy and the resource coordination and execution thereof. Focusing on the level of major cities functioning as individual network centres that react actively to the processes mentioned above, in this monograph, Bálint Filep presents the background of Hungarian urbanisation processes with the synthesis of the most recognised Hungarian regionalists' research outputs and highlights the most important Hungarian and international policy dimensions that determine urban policy.

The *process-oriented reasoning and editing* of the work provide a clear framework of for the *development paths* of the Hungarian medium sized and large cities and introduces the main urban development directions that have still impact on regional development. Among these issues, the author sheds light on such interconnections as the way in which the *underestimation of the communication and transport sectors in the socialist era* gave rise to regional and thematic and territorial dissonances in the allocation of production capacities and “accentuated higher centres”, which largely determined the – still persisting – imbalances of Hungarian industrial development and regional processes.

Modelling the evolution of Hungarian towns and cities, the author dedicates a separate chapter to the *development of two cities, Győr and Nyíregyháza*. In this section of the book, using complex, multidimensional competitiveness indicators, the author provides evidence that, despite the East-West imbalances of the country, altogether the adequate size (of over 100,000 inhabitants), the social recognition of education and knowledge, embedded in cultural and religious traditions, furthermore the regional concentration of manufacturing sector developments can cause leading position in the settlement network, even if the given territory can not benefit from the government's central development priorities. The growth pattern of the two cities, however, also highlights significant differences: broadly interpreted cooperation with rural and partner city regions constitutes a pivotal point in the sustainability of long-term growth. In this regard, Nyíregyháza still faces considerable challenges, addressing the striking development disparities between the city and its neighboring areas, as well as to the implementation of a dynamically functioning urban triplets of Nyíregyháza–Debrecen–Oradea region.

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<sup>1</sup> UN – DESA (2015): World Urbanization Prospects – the 2014 Revision, Final Report

<sup>2</sup> UN – HABITAT (2013): State of the World's Cities 2012/2013

Looking *ahead*, along with the foreign urban policy visions, the author sets out directions for the future development of the Hungarian settlement network highlighting the development potentials of the cross-border urban regions, and the urban network's impact on the diffusion and promotion of innovation.

The book also provides a summary of the *potential methodological*, tools and classification methods required for the exploration of the horizontal and vertical (hierarchical) processes transpiring in the *urban network*. In this context, as one of the most frequently used method, the author gives prominence to the factor and cluster analyses that form the basis of many multivariate analyses; in addition, he introduces the Global Competitiveness Index (developed by A.T. Kearney in 2008) and some average dimensions of the complex competitiveness rankings, exemplifying the methods and scopes behind these complex, multivariate statistical indexes.

The monograph of Bálint Filep on big cities equally supports the implementation of an *evidence-based policy* – both in terms of the urban developments historical horizon and regional integration in the international space – and the high-level decision planning work of regional and local government bodies; moreover, it identifies the key points of *towns' capacity to act* and deliver their projects, highlighting, the institutional capacities and social capital of the regions concerned. *The book knowledge base also contributes to the efficient absorption of EU funds under the 2014–2020 programming period*, giving special attention to the implementation of the territorially integrated urban development strategies in cities with county rights and in their surroundings, and to the spatially-sensitive utilisation of innovation resources.

From a policy and scientific perspective the book provides a comprehensive overview of the ongoing processes of the Hungarian medium and large-sized towns for the university students, and for the civil servants and other officeholders in the institutional system of the Hungarian development policy as well. Given that we are only at the beginning of the 2014-2020 EU programming period latter stakeholders' professional competence has special importance in the efficient delivery of the development policy. Based on these issues the adaptation of the book's valuable information may also provide a guarantee for successful implementation of the Europe 2020 Strategy, the National Development and Territorial Development Concept published by the government in January 2014 and achieving the objectives defined in the Partnership Agreement with the European Commission.

## **Bull by the Horns – Persistent dilemmas of the banking system and the tightness of reins**

*Gábor Gyura*

*Sheila Bair:*

*Bull by the Horns – Fighting to Save Main Street from*

*Wall Street and Wall Street from Itself*

*New York: Free Press, 2012, p. 415*

*ISBN-10: 1451672489*

Hundreds of books have addressed the history of the financial crisis that started in 2007. Nearly all stakeholders have drawn conclusions, from influential economists through politicians and consumer protection activists to famous or infamous bank executives. The highly autobiographical publications by key protagonists of crisis management form a separate subcategory, giving readers a behind-the-scenes look at the events. Tim Geithner, former president of the New York Fed and United States Secretary of the Treasury between 2009 and 2013 (*Geithner 2013*), Ben Bernanke, who headed the Fed between 2006 and 2014 (*Bernanke 2015*), and Henry Paulson, who served as United States Secretary of the Treasury between 2006 and 2009 (*Paulson 2010*) have all authored their own memoirs of the crisis.

These three figures are also key protagonists in the memoir written by Sheila Bair, entitled *Bull by the Horns*, which has not yet been published in Hungary. Bair is less of a household name in Hungary, but is widely known in the US for her emblematic role in crisis management, having served as the chair of the Federal Deposit Insurance Corporation, the US banking supervision and resolution authority between 2006 and 2011, the most turbulent period of the crisis. She had a key responsibility in addressing the hundreds of bank failures, took part in negotiations for creating the global regulatory response referred to as Basel III, and played an active role in rethinking the US financial supervisory framework. She recounts these events in depth through her accessible, yet professionally objective writing.

At the same time, one may ask: can a book published in 2013 still offer something in 2016 as a myriad other publications have since covered the same topic?

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The views expressed in this article are those of the author and do not necessarily reflect the official view of the Magyar Nemzeti Bank.

The value of *Bull by the Horns* lies mainly in the fact that its questions, dilemmas and recommendations remain relevant today. The core conceptual dilemma that permeates the entire book is how tight the rein needs to be kept on financial institutions. Bair is relentlessly rigorous in this regard. In her view, moral hazard is encoded into bank operation: credit institutions have a tendency to take on excessive risk that exceeds the socially optimal level. For one, because deposits are insured by deposit insurance funds, even risky, poorly run banks are able to easily collect funds at a low cost. In addition, institutions can count on being bailed out by the state, which does not allow them to become insolvent. Thus, neither their shareholders or professional creditors need to fear losing their capital or loan-type investments in banks. These two factors may foster reckless operation, and Bair deems that this was a major factor in the emergence and escalation of the crisis, which climaxed with the bailouts of banks and investment firms, costing taxpayers billions of dollars. (The book presents the history of these bailouts and the related internal debates from the front lines— perhaps the most valuable parts of the publication.) Moreover, the role of the state as a regulator is also ambivalent in light of the foregoing, because as long as banks are driving the economy, it also has an interest in growth, as presented by Bair in her chapter on the banking system's golden years.

Accordingly, the main dilemma and challenge for regulators remains the same even today, three years after the book's publication. In the meantime, many things that were recommended also in the book have been implemented. International capital requirement standards have been raised. Many countries (including Hungary) have introduced a resolution framework, also prompted by Bair. Financial market supervision has been reinforced: by establishing macroprudential powers on the one hand, and with the integration of formerly fragmented — and thus weak and at times inconsistent when faced with market players — authority structure on the other hand. (The latter was only partially achieved in the US, but implemented for the most part in the euro area by vesting the ECB with a supervisory function.)

At the same time, many members of the G20 are still struggling to relaunch economic growth, and more specifically, to stimulate lending. There is an ongoing debate on whether financial regulation has become excessive and on the leeway that should be given to banks in defining their capital requirements. Furthermore, relaunching securitisation, which was considered as one of the root causes of the crisis a few years ago, also became an objective. Regulations were introduced to govern the entities of the shadow banking system, which are not or only barely covered by financial supervision and regulation (and which also contributed to the emergence of the crisis), while various fintech companies, crowdfunding platforms

or virtual currencies – all of them falling outside the supervisory radar – are seeing a rapid rise.

In her book, Bair vigorously presses for passing the cost of the bailouts of large financial institutions (Bear Stearns, AIG, Citigroup, etc.) using taxpayer funds on to shareholders and large institutional creditors. In the period that has since elapsed, we have seen precedents for this, i.e. the approach of the authorities has been tightened in this regard, in line with the author's recommendation. At the same time, the case of Portugal's Novo Banco in early 2016 – where losses were passed on to bondholders rather than taxpayers – prompted strong objections from professional investors (*Financial Times 2016*). The debate on the tightness of reins remains as relevant as ever.

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## **Europe needs a new social contract – Lessons from the Lámfalussy Lecture Conference of 2016**

*István Ábel*

The Lámfalussy Prize and the Popovics Prize, both established by the Magyar Nemzeti Bank, were awarded on 1 February 2016 at a Gala Concert in the National Theatre in Budapest.<sup>1</sup> The purpose of the Lámfalussy Prize is to recognise outstanding professional contributions to progress in international monetary policy. The Popovics Prize, commemorating the first Governor<sup>2</sup> of the MNB, is an award given by the central bank to outstanding professional achievement in the field of economy and finances.

This year, the recipient of the Lámfalussy Award is not an individual, but a deservedly recognised institution, the *Bank for International Settlements (BIS)* seated in Basel. Since its establishment, in several areas, the BIS has pioneered the reform of monetary policy and the approach to financial stability, thereby promoting new concepts on the functioning of modern economies. Alexandre Lámfalussy (1929–2015) played a significant role in the operation of the BIS for 18 years, and thus this year’s award and the conference after the event – apart from acknowledging the outstanding and internationally acclaimed activity of the BIS staff – is also a kind of commemoration of Mr. Lámfalussy’s contributions as the “father” of the euro.

The Popovics Prize was awarded to *Ádám Balog*, the Chairman and CEO of MKB Bank and former Deputy Governor of the central bank, who played a dominant role in the implementation of the successful monetary turnaround, and in the launching of the Funding for Growth Scheme, one of the key drivers of the Hungarian economy. Upon presenting the award, *György Matolcsy*, the *Governor of the MNB* emphasised that the MKB, reformed under the leadership of Ádám Balog, has now re-established its operation in the domestic financial market as a competitive, profitable bank.

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<sup>1</sup> The press release issued on the event is available at: <http://mnbintanet/hirfoiyam/2016/kommunikacios-es-penzugyi-ismeretterjesztesi-igazgatóság/lamfalussy-konferencia-es-gala-2016> and <http://www.mnb.hu/sajtoaszoba/sajtokozloemenyek/2016-evi-sajtokozloemenyek/atadasra-kerult-a-lamfalussy-es-a-popovics-dij>

<sup>2</sup> Sándor Popovics (1862–1935) was Minister of Finance in the Wekerle government in 1918. From the establishment of the Magyar Nemzeti Bank in 1924 until 1935 he was the Governor of the MNB, and was an Academy member, and Vice President of the Hungarian Academy of Sciences in 1933–1934.

The Award Gala was followed by the Lámfalussy Lectures Conference on 2 February. The widow of Alexandre Lámfalussy and several members of his family, prominent representatives of the government and the Hungarian banking community, as well as a number of outstanding representatives of financial and economic sciences and the banking profession were among the more than 400 participants of the conference. Presentations were made by Luiz Awazu Pereira da Silva – Deputy General Manager of BIS, Ewald Nowotny – Governor of the National Bank of Austria, Benoît Coeuré – Board Member of the European Central Bank, Edmond Alphandéry – former Minister of Economy of France and by Klaus Regling – Managing Director of the European Stability Mechanism.

The focus of this year’s Lámfalussy Conference, organised for the third time, was on the reform of the euro area. Revival is conditional upon drawing the lessons from the crisis. The lecturers of the conference have done a great deal to foster the elaboration of solutions that facilitate sustainable convergence in the EU, based on financial stability and structural reforms.

In his opening address to the guests of the conference *György Matolcsy*, Governor of the central bank, emphasised the timeliness of Alexandre Lámfalussy’s work. The engine of global economic growth is faltering. These days, new signs of weakness have re-emerged in each of the countries which were the pillars of the global economy. The United States, the European Union, China and Japan face new difficulties, in addition to the legacy problems from the past. The maintenance of financial stability is critical amidst this deceleration. Lack of financial stability would jeopardise economic recovery, while the absence of jobs would destabilise politics. Structural reforms are necessary to reinforce the triple, intertwining pillars of economic, financial and social security and stability. “We could learn from Alexandre Lámfalussy that economic instability easily leads to crisis. Sustainable growth may be achieved through financial stability underpinned by structural reforms.”<sup>3</sup> emphasised the Governor of the Magyar Nemzeti Bank.

Continuing this argument, *Luiz Awazu Pereira da Silva*, Deputy General Manager of the Bank for International Settlements (BIS) (formerly the Deputy Governor of the central bank of Brazil), also talked about global challenges.<sup>4</sup> He emphasised that in order to reinforce the stability of the ailing global economy the key task of the decision-makers is to calm the markets by focusing on the solution. He pointed out that the measures first proposed by Lámfalussy are suitable for creating stability. According to da Silva, the world has made enormous progress in stabilisation in recent decades. He emphasised that the structural reforms in the economy must

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<sup>3</sup> [http://magyarhirlap.hu/cikk/46638/Nincs\\_gazdasagi\\_bovules\\_penzugyi\\_stabilitas\\_hijan#sthash.RVdr8Lq2.dpuf](http://magyarhirlap.hu/cikk/46638/Nincs_gazdasagi_bovules_penzugyi_stabilitas_hijan#sthash.RVdr8Lq2.dpuf)

<sup>4</sup> Title of his presentation: Old and new challenges for 2016 and beyond.

be implemented such that people accepted it as a new social contract. “We see now what causes vulnerabilities in certain situations: this may include excessive credit growth or the insufficient supervision. We also know that credit-driven growth complicates the challenges of central banks, especially in the case of an open economy. Taken together, with the use of models, today we already know much better how a crisis may be prevented” he noted.<sup>5</sup>

*Ewald Nowotny*, Governor of the National Bank of Austria and recipient of the Lámfalussy Award in 2014, emphasised in his presentation (“From Euro to Banking Union – What can we learn from Mr. Lámfalussy?”) that in the work of Lámfalussy the efforts to have the concept of macroprudential supervision accepted and implemented played a key role in paving the way for the euro. Lámfalussy saw clearly that integrated financial markets must be accompanied by integrated regulation. Governor Nowotny mentioned Hungary as a good example, where the single supervision in close cooperation with the central bank helped the country survive the years of the crisis with relatively smaller shocks, which enabled it later to benefit from ECB’s quantitative easing at an early stage. The monetary policy of the ECB also contributed to the relatively strong performance of the Hungarian economy. A stable banking regulatory environment is an important condition for the economic stimulus arising from the monetary policy stance of the Community to become efficient. Governor Nowotny emphasised that the accession to the banking union in the future could be a similarly important breakthrough as the development of the single macroprudential supervisory mechanism in the recent past. The strengthening of the banking system’s stability is an important precondition for placing the financing of the economy on stable foundations.

*Benoît Coeuré*, Board Member of the European Central Bank and recipient of the Lámfalussy Award in 2015, discussed the issues of the central banks’ independence and interdependence in the EU in his presentation entitled “Time for a new Lámfalussy moment”.<sup>6</sup> He emphasised that the efficient cooperation of the central banks in the EU required strong institutional frameworks. This framework has two pillars. One of the pillars is the Stability and Growth Pact (SGP), which keeps fiscal policy under control. The cooperation between the European Central Bank and the independent central banks of the Member States in the area of monetary policy takes place within the framework of so-called monetary dominance. This framework facilitates cooperation, which is an important precondition for ensuring that the monetary policy measures of the ECB achieve their goals. However, the efficiency of monetary policy largely depends on the timing and the way of implementing the

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<sup>5</sup> [http://magyarhirlap.hu/cikk/46638/Nincs\\_gazdasagi\\_bovules\\_penzugyi\\_stabilitas\\_hijan#sthash.RVdr8Lq2.dpuf](http://magyarhirlap.hu/cikk/46638/Nincs_gazdasagi_bovules_penzugyi_stabilitas_hijan#sthash.RVdr8Lq2.dpuf)

<sup>6</sup> The presentation is available at the following link: <https://www.ecb.europa.eu/press/key/date/2016/html/sp160201.en.html>

measures necessary in the area of fiscal and structural policy. In the wake of the crisis, it was necessary to tighten banking regulation, but the consequences of these measures would have severely curbed lending had the ECB not offset this impact by the marked expansion of the liquidity supply. The increase in banks' risk would have undermined the sustainability of government debt. The regulatory initiatives of the central banks and the establishment of the banking union tried to mitigate this effect by elaborating a single framework at the EU level for the restructuring of banks which were facing difficulties. The ECB regulated the participation of the private sector in the settlement of the bank crisis (bail-in) in a precise manner and determined the relevant circumstances and the scope of the application of the central bank instruments. With these measures, it mitigated the risks burdening government debt. In addition to the interactions of monetary policy and fiscal policy, structural policy may reduce the burdens of both fiscal and monetary policies, as better functioning product and labour markets also reduce the risks of the crisis. However, the single banking regulation raises the need for further measures in the securities markets as well. The key step toward the single regulation of the securities markets was taken 15 years ago by the report of the Committee of Wise Men led by Alexandre Lámfalussy (Final Report on the Regulation of European Securities Markets to the Commission<sup>7</sup>). Today, Europe faces a similar challenge in several respects, which can only be resolved with yet another breakthrough, i.e. a new "Lámfalussy moment". By now we are past the temporary solution of the most pressing problems of the crisis; Europe today must focus on the global challenges. The management of the global challenges such as the refugee crisis or climate change, require definite measures and the necessary changes must not be postponed. With the cooperation of Alexandre Lámfalussy, the European Union managed to overcome several similar obstacles, and integration often gained a new momentum through the measures taken in the crisis. Today, similarly brave political solutions are necessary, while the technical issues can be solved by the existing institutions in the specialised fields, but this alone is not enough for making progress. The statement made by Alexandre Lámfalussy in 2000 is still valid: "either to dawdle aimlessly along in our slowcoach, in the slow lane – with ... the world passing us by, or to change and capture the benefits".<sup>8</sup>

According to Benoît Cœuré, Europe faces a similar dilemma today. Deepening integration requires a new political strategy. In order to manage the economic

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<sup>7</sup> Lámfalussy, A. et al., "Final Report of the Committee of Wise Men on the Regulation of European Securities Markets", Commission of the European Communities, 2001.

<sup>8</sup> Lámfalussy argued in 2000 that the Union had a clear choice: "either to dawdle aimlessly along in our slowcoach, in the slow lane – with ... the world passing us by, or to change and capture the benefits". Source: Summary of remarks made by Alexandre Lámfalussy, Chairman of the Committee of Wise Men on the Regulation of European Securities Markets, to the Press concerning the Committee's initial report published on 9 November 2000 ([http://ec.europa.eu/internal\\_market/securities/docs/lamfalussy/wisemen/lamfalussy-summary\\_en.pdf](http://ec.europa.eu/internal_market/securities/docs/lamfalussy/wisemen/lamfalussy-summary_en.pdf))

problems jointly, the framework of cooperation should be also changed. Today, economic integration may be carried further by political decisions facilitating stronger political cooperation.

According to *Jan Smets*, Governor of the National Bank of Belgium, Alexandre Lámfalussy navigated the euro to safe ports in uncharted waters and thereby laid the foundation for a real economic and financial union. Governor Smets suggested that it would make sense to increase competitiveness at national levels, by setting up national competitiveness councils – if so required – that coordinate, for example, the conflicts of interest between the trade unions and other economic agents. The fiscal council, the goal of which is to preserve the fiscal balance and control central spending, works efficiently in Belgium. In addition to the government, the autonomous regions and local governments also participate in this work, ready to make compromises. The Governor of the central bank of Belgium closed his presentation by noting, “Countries of Europe, we are dependent on each other!”<sup>9</sup>

In his presentation<sup>10</sup> *Edmond Alphandéry*, former Minister of Economy of France and currently Chairman of the *Euro50 Group*, dealt with the lessons learnt from the Greek crisis. He emphasised that the Greek crisis could become also a crisis for the euro area due to the severe disparities between the countries in the euro area. In the first years after the creation of the monetary union, there were strong hopes for fast convergence by the less affluent countries and this trust also attracted investors to these regions. When the crisis erupted, strong capital inflows reversed into strong capital outflows, generating severe tensions in the debt financing of these countries. Financial difficulties soon generated social and political tensions, further exacerbating the problems that arose due to the shaken trust of investors. Further escalation of the crisis can only be stopped by reinforcing the economy’s shock absorbing capacity by joint efforts. This places a duty upon both the countries of the Union and Greece. Success can only be achieved by deepening integration. Alphandéry recalled that the Union had faced challenges before as well, and a breakthrough could only be achieved by the political deepening of integration. He reminded the audience of the words of Jean Monnet: “Europe will be forged in crises, and will be the sum of the solutions adopted for those crises.”<sup>11</sup> He recalled that Monnet had managed to convince both France and Germany to take the steps necessary for the creation of the European Union, despite the numerous opponents to political integration.

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<sup>9</sup> [http://magyarhirlap.hu/cikk/46638/Nincs\\_gazdasagi\\_bovules\\_penzugyi\\_stabilitas\\_hijan#sthash.RVdr8Lq2.dpuf](http://magyarhirlap.hu/cikk/46638/Nincs_gazdasagi_bovules_penzugyi_stabilitas_hijan#sthash.RVdr8Lq2.dpuf)

<sup>10</sup> Title of his presentation: What lessons from Greece can be drawn for the EMU?

<sup>11</sup> “Europe will be forged in crises, and will be the sum of the solutions adopted for those crises.” Jean Monnet

Having drawn the lessons from the crisis of the euro area, *Klaus Regling*, Managing Director of the European Stability Mechanism (ESM), started his presentation by stating that although Hungary is not a member of the euro area, it has already made a major contribution in the person of *Alexandre Lámfalussy*. Regling interpreted the fact that Europe managed to recover from the shocks, which was undeniably the most severe one since the 1929–33 crisis, and that the euro survived the crisis, as the sign of the viability of the euro. In his view, there are probably not too many other common currencies that would have been able to achieve this. Regling emphasised that, on the whole, the consequences of the crisis were managed successfully.<sup>12</sup>

The moderator of the panel discussion in the afternoon of the conference was *György Szapáry*, Ambassador, Chief Advisor to the Governor of the MNB. The discussion was attended by *Dániel Palotai*, Executive Director and Chief Economist of the MNB, *Daniel Gros*, Director of the Centre for European Policy Studies, and *Niels Thygesen*, Professor Emeritus, University of Copenhagen.

*Dániel Palotai*, Executive Director of the MNB, emphasised that it made one major difference between the present financial crisis and previous crises was that the small open economies of Europe were not in a position to “export themselves out of the crisis”, as the growth of the export markets abruptly slowed down globally. He recalled that the Hungarian central bank recognised this in due course and announced the Funding for Growth Scheme to boost growth. The high level of government debt was another major problem that hindered the development of the Hungarian economy, and the government applied innovative, unconventional solutions to manage this problem. The most important measure taken to stabilise and reduce the debt was the improvement of the budget balance. For the first time in a long while, in 2001 the budget closed with a surplus in Hungary as a result of the pension reform. By the end of 2015 Hungary achieved a positive change also in the debt structure, by reducing the ratio of foreign currency debt in the total debt from roughly 50 per cent close to 30 per cent. In the past, the high tax burden on labour had a negative impact on economic performance and employment. In order to remedy this problem the government cut taxes to reduce the tax wedge on labour. He emphasised that monetary policy gradually reduced interest rates to a level that nobody would have imagined a couple of years ago. He remarked that the Monetary Council thought this level can be maintained until the end of 2017. He also noted that the growth performance of the Hungarian economy has outstripped average European growth for a considerable time, and investors’ perception of Hungary has improved, although this improvement had not yet been reflected in the reports of the international credit rating agencies.

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<sup>12</sup> [http://magyarhirlap.hu/cikk/46638/Nincs\\_gazdasagi\\_bovules\\_penzugyi\\_stabilitas\\_hijan#sthash.RVdr8Lq2.dpuf](http://magyarhirlap.hu/cikk/46638/Nincs_gazdasagi_bovules_penzugyi_stabilitas_hijan#sthash.RVdr8Lq2.dpuf)

According to *Niels Thygesen*, Professor Emeritus of the University of Copenhagen, the creation of the European Union and the smooth introduction of the euro were attributable to fortunate timing, as at those times the employers, the politicians and the trade unions all supported it because they envisaged the advantages of the integration and the larger market. This helped to overcome the great political uncertainties that surrounded the process.

*Daniel Gros*, Director of the Centre for European Policy Studies (CEPS), noted that corporate finance in Europe relied on bank financing, while in the United States capital market funding played the primary role in corporate funding. As a result of this difference, the stability of European banking systems has a critical impact on the conditions of economic growth. Keeping interest rates at a low level on a permanent basis is another important factor of growth conditions. He pointed out an interesting duality in the quantitative easing policy of the European Central Bank (ECB), insofar as the separation of the nation states once again appears here, since the asset purchases are managed by the nation's central banks and they buy the government securities of their own countries within the quantitative limits specified by the ECB. He noted that in the individual countries the average duration of the government securities acquired by the central banks in the course of the asset purchases was different. The countries deemed riskier by the markets are usually characterised by longer residual maturity of the central bank's portfolio. In these countries, investors make efforts to shorten the maturity of their portfolio and thereby reduce their potentially large capital loss on long-term securities, which would occur if the papers were repriced due to an anticipated interest rate increase. Gros pointed out that through this tendency the maturity of the state's liabilities shortens, which reduces the risk of their government debt. This government debt risk mitigating impact of quantitative easing differs from country to country. In the countries with higher risk the maturity, and thereby the risk, decreases to a greater degree. He believes that this is an undesirable phenomenon, as it becomes easier to increase debts particularly in those countries where the opposite of that would be desirable.

In his closing speech *György Matolcsy*, Governor of the Magyar Nemzeti Bank, thanked the participants for their contribution to the success of the conference. This year's conference – in addition to addressing the most important problems of Europe – was a commemoration and a tribute to Alexandre Lámfalussy, who passed away in May 2015. The lecturers all highlighted the importance of Lámfalussy's intellectual legacy and the usefulness of the guidance provided thereby in the management of current problems. They agreed that the strengthening of political stability in the euro area required urgent structural reforms and further progress in the development of the monetary union. The management of today's problems, the reduction of high unemployment and the reform of the unsustainable tax regimes must be implemented in a particularly difficult situation, facing new global challenges exacerbated by climate change and the migration. To accomplish this Europe needs a new social contract.

## **Member State Integration Models – New Dimensions of Economic Governance in the European Union**

*Olivér Kovács*

The conference *Member State Integration Models – New Dimensions of Economic Governance in the European Union* was held in the grand reading room of the Hungarian Academy of Sciences on 23 November 2015, as part of a series of events titled Hungarian Science Festival intended to provide a comprehensive, interdisciplinary view of today's most important issue concerning Europe, i.e. what will happen to the process of integration.

The opening lecture was delivered by Péter Halmi, Doctor of Economics. In his presentation entitled *New Geometry – 'Complete' Economic and Monetary Union?* he returned to the roots of integration, and at the same time he recalled that Europe's Economic and Monetary Union had never met the criteria known from the theory of optimum currency area. Halmi emphasised that although actual and real economic and monetary union (*ever-closer union*) and fiscal union were set as aims in the continuous integration of economies with different levels of competitiveness, a number of questions arise, as this would require a higher degree of transfer of sovereignty. Actually, the main motivation for the fulfilment of this goal may be the avoidance of peripherisation. All of this is reminiscent of the thoughts of *Wilhelm Röpke (1962/2000:12)*, who noted that the primary value and strength of Europe lies exactly in the fact that our continent embodies unity in diversity (*Einheit in der Vielfalt*).

The second lecture was given by Tibor Palánkai, ordinary member of the Hungarian Academy of Sciences, with the title, *Model and Regulatory Crises of European Integration: Welfare State and/or Ecosocial Market Economy as Reply to the Challenges of the 21<sup>st</sup> Century*. Palánkai did not content himself with merely mentioning the advantages of integration and the crisis phenomena of our time: using a model-type comparison of the welfare state to an ecosocial market economy he strived to prove that a more efficient and more sustainable European management of social, economic and environmental problems in the global system of modern capitalism can primarily be expected from the ecosocial model. To some extent he also commented on the book *Capital in the Twenty-First Century* by Thomas Piketty, or more exactly on the part regarding global progressive wealth

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taxes. The reviewer completely agrees with the lecturer for the very reason that he is not convinced that in the course of managing the highly complex problems of our time it is really sufficient to independently pick out the issue of inequalities in wealth and income, and treat them with one single instrument – moreover, a global one. At this point, Ferenc Jánossy's classical thought may come to mind: that the fabric of the social-economic system should not be raised by grabbing certain points: several areas must be treated and raised for a material implementation.

The third lecture, *Banking Union, Fiscal Union, 'Multi-Speed' Europe*, was delivered by László Csaba, ordinary member of the Hungarian Academy of Sciences. Three of the several important arguments in his lecture are highlighted here: First, Csaba emphasised that there are elements of European crisis management that can be strongly criticised not only in an economic, but also in a legal sense (he called attention to the practice of the European Central Bank, for example). Second, he also mentioned some of the dilemmas related to the banking union, underlining in connection with the fiscal union that intergovernmental solutions still seem to be more viable and, moreover, more politically acceptable. This contradiction can be pointed out in relation to the banking union as well. Here I would just refer to the fact that supervision by the ECB may already be problematic in itself. As a main rule, during supervision the ECB would carry out on-site inspections, but taking the text of the agreement literally, it turns out that it would actually be done by the national authorities.<sup>1</sup> Third, in his lecture, Csaba put David Cameron's letter to Donald Tusk<sup>2</sup> in a positive light, emphasising that Cameron does not really want to exit the European Union, but would much rather prefer to achieve a complete revision and renegotiation of the EU Treaties.

The next section on legal issues was opened by László Kecskés, corresponding member of the Hungarian Academy of Sciences, with his presentation *The Integrating Power of Legal Harmonisation*. He provided an overview of the process of legal harmonisation in the EU, which has accompanied integration so far. In his interesting presentation he also mentioned what shifts in focus have taken place among the directives, regulations and decisions, and touched on the circuitous nature of legal harmonisation as well, recalling, for example, the case when the legislators – in the spirit of legal unification – dealt with the EU conformity of forklift trucks for eleven years.

PhD candidate Miklós Király essentially continued the presentation of László Kecskés. In his lecture *The Ways of the Codification of International Private Law*

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<sup>1</sup> The text: '[...] may confer specific tasks upon the European Central Bank [...]'. Available at: <https://www.ecb.europa.eu/press/key/date/2012/html/sp120907.en.html> Downloaded: 7 December 2015.

<sup>2</sup> The letter is available at: [http://issuu.com/spectator1828/docs/donald\\_tusk\\_letter\\_001\\_d5d09dcc167f11](http://issuu.com/spectator1828/docs/donald_tusk_letter_001_d5d09dcc167f11) Downloaded: 7 December 2015.

in EU Member States, he focused on the aspect of private law standardisation, touching upon a number of interesting topics, which prompted the audience to ask questions (for example, whether it is possible or necessary to deem the legislation, rights and obligations, etc. according to the country of residence to be governing in connection with the migration issue).

Following the legal dimension, economics and economic policy topics were the focus of the conference again. In his lecture entitled *Fiscal Indiscipline – Different Qualities of National Governance at Member State Level*, Associate Professor István Benczes pointed out that the disciplinary power of EU institutions is far from perfect, and internal, Member State commitment is necessary for steady compliance with fiscal criteria. The application of fiscal rules may help (balance rule, debt ratio rule, etc.), but is not a precondition for success. Accordingly, achieving fiscal union in the current system of relations between institutions and Member States is deemed inconceivable by the author because the Member States are very heterogeneous in terms of fiscal discipline. Of course, we cannot see what the future brings, but it still holds true that European integration is an open-ended project (*open finalité politique*).

Associate Professor Gábor Kutasi analysed the issue of *External Imbalance in the Single Currency Area – Is Multi-Level Governance a Solution?* In the lecture, Kutasi presented the phenomenon of *asymmetrical interdependence*, namely the fact that the growth of core countries (Germany and France) depends to a great extent on whether the goods and services to be exported to periphery countries can be absorbed there; for this, it is necessary to finance these countries. This is how external indebtedness and external imbalance evolves on the periphery, and the external surplus in the core countries (mainly in Germany). One need only recall the period in the early 2000s (2002–2003), when stagnation was more typical than growth in the German economy as well. Therefore, one should not be surprised that in those days the loosening of the Stability and Growth Pact (as also mentioned in the lecture of István Benczes) was put on the agenda. Restrictions had to be softened, because continuous expansion brought the centrifugal forces of deceleration to the surface. It was exactly after this easing (the absence of sanctions in the case of Germany and France) when a surplus started to evolve in the external balance of core countries, in parallel with an increase in deficits in the periphery countries (see *Cesaroni and De Santis, 2015:20*).

In his lecture entitled *Multi-Speed Europe and Hungary's Interests*, Géza Hetényi, Head of Department of the Directorate-General for Economic and Financial Affairs of European Commission, focused on the relationship between the various cornerstones of economic governance (e.g. fiscal pact, European Semester, two-pack and six-pack, Euro Plus Pact, banking union, etc.) and Hungary. In his opinion, a country with a currency of its own, such as Hungary, may approach the principles

laid down; and furthermore, may even apply them cautiously (e.g. banking union). In his view, considering the measures and prospective plans, there is a shift from intergovernmental solutions towards EU-level approaches.

The last section of the conference featured case study approaches. In her lecture *Member State Case Study I: Greece and the EMU. GREXIT?*, Dóra Gyórfy, Doctor of the Hungarian Academy of Sciences, elaborated on this issue with exemplary thoroughness, emphasising that the main source of troubles in Greece is the excessive size of the state and the low quality of its functioning. The reviewer agrees with this view to a great extent, adding that the entwined relationship between the market and the state in Greece would be worth examining. Economic growth in Greece (and together with that the possibility of reducing the debt ratio) is mainly based on sectors (tourism, catering trade), the international competitiveness of which can be considered low (even compared to other periphery countries, e.g. Spain).<sup>3</sup> In plain English, in addition to the fact that the size of the state should decrease, good governance as well as good quality public services available for a wide strata should be pursued in a way that in the meantime a kind of structural modernisation can also take place in the various sectors of the economy. In fact, however, there is no existing recipe for this and implementation can only be imagined in slow steps, over a period of decades. For this very reason, we agree with Dóra Gyórfy, who believes that the probability of an exit from the EU/euro area is very low. Greece would have to pay a very high price for that, not to mention the possibility of a chain reaction, for example in the case of Portugal. Accordingly, the key to the development of Greece can be the sobering, master role of integration, which has already started by the EU actually taking over the role of governance, as Dóra Gyórfy emphasised.

The conference was closed by Associate Professor Boglárka Koller's lecture, which echoed László Csaba's thoughts earlier in the day that the United Kingdom does not intend to exit the European Union. Her lecture *Member State Case Study II: Great Britain and the European Economic Integration. BREXIT?* reviewed the famous letter and analysed its points. Although the capital market of the United Kingdom is enormous, an exit does not seem to be its interest. On the contrary, the crisis and its management offer an opportunity for the EU charters and treaties to be put on new foundations, i.e. to be adjusted to the new times, as the case may be.

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<sup>3</sup> This is confirmed by the World Economic Forum, Travel and Tourism Competitiveness Report 2015. Greece is only the 31st among the 141 countries in the ranking, while Spain is the 1st, Italy is the 8th and Portugal is the 15<sup>th</sup>. Available at: <http://reports.weforum.org/travel-and-tourism-competitiveness-report-2015/> Downloaded: 7 December 2015.

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## **New Silk Road – New Possibilities – Report on the Boao Forum for Asia Financial Cooperation Conference**

*Levente Kovács*

The Boao Forum is a non-governmental, non-profit organisation, which organises conferences attended by prominent representatives of national governments and business life, as well as by Academy members and researchers from Asia and other continents. Its mission is to strengthen regional integration and facilitate the implementation of development objectives in the Asian countries, as efficiently as possible. Since its establishment in 2001, the Forum has earned great recognition and become an intellectual workshop on issues related to international (primarily Asian) economic and financial cooperation. The central topic of the event organised in London on 8–10 November 2015, entitled „Boao Forum for Asia Financial Cooperation Conference”, was the strengthening of the economic and financial cooperation between Asia and Europe, focusing on „A New Vision of Financial Connectivity”.

The author of this conference report, as a banking expert from Central Europe, had the opportunity for the first time – and alone of our region’s banking associations – to attend this prestigious event at the invitation of the Chinese Banking Association. The organisers of the conference also implied in the subject of strengthening financial cooperation – quite rightly – the commercial relations, fixed investments, as well as cultural and personal cooperation. The individual sections analysed the ways to balance the management of global financing better, the new, medium-term work plan of the G-20, the innovative financing of infrastructure development, as well as ways to diversify and connect the Asian and European financial systems.

In professional terms, one of the interesting and exciting events of the conference was the round table discussion of financial managers, where the author of this paper made a panel presentation on behalf of the Hungarian Banking Association. The round table discussion addressed the following key topics on its agenda: the varying „landscape” of the banking system of the future in light of technological revolution and the related risk management; strengthening the financial relations between Asia and Europe, and innovative opportunities for financial cooperation; the conditions for developing the financial cooperation mechanism between Asia

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and Europe in the perspective of global regulation; the bi-directional opening of the Asian and European financial and capital markets; tasks for capitalising on new opportunities such as the „Belt and Road” strategy, facilitating cooperation between Asia and Europe; strengthening pragmatic cooperation between Asia and Europe and sustainable economic growth; exploring the prospects of and opportunities for financial cooperation between Asia and Europe.

The organiser and intellectual leader of the 20-person financial round table was the Chinese Banking Association, while the moderator of the discussion was Yang Zaipin, Chairman of the Chinese Banking Association. The lecturers came from various economic and financial areas. They included the former Prime Minister of Pakistan, the Deputy Chairman of the Chinese Banking Association, the Chairman of the Dagong Global credit rating agency, the General Manager of Bank of Tokyo-Mitsubishi, the Chairman of Ginkgo International, the Chairman of HSBC RMB Global Development, the Chairman of International Banking Federation and the CEO of the European Banking Federation. With the participation of these lecturers, the thoughts that may promote the financial cooperation between Asia and Europe from the perspective of Central Europe – and more importantly of Hungary – were articulated in the fifth topic of the round table, bearing in mind throughout the discussion the potential financial and economic interests that may enjoy priority in the region, also based on the principle of reciprocity. Within the strict time limits, the message focused – in line with the title of the panel – on the opportunities offered by the latest developments in international economic and financial relations, which should be seized and capitalised upon to achieve sustainable growth, with special regard to the „Belt and Road” strategy announced by the Chinese government. As a starting point, it was worth emphasising that in our view the Boao Forum is an extremely topical event, as it searches for the answer to one of the greatest challenges of our days, namely: how to achieve sustainable economic growth. This is not only a global question, but also a challenge for national economies and regional integrations. After the 2008-2009 crisis there was an international consensus that a new economic paradigm is necessary, where the Asia-Pacific region and most importantly China has a primary role. The presentation of the author of this conference report focused on the following topics. (i) The Boao Forum for Asia Financial Cooperation Conference is a very important event since it addresses the most crucial challenge of our days: how to achieve sustainable economic growth. This is a global question and a challenge for national economies and regional integrations. (ii) One of the most inevitable answers to this question is that a new economic paradigm is necessary, where the Asia-Pacific region and most importantly China plays a primary role. (iii) On the global scene, the great economic integrations and economic collaborations must contribute to the establishment of this new paradigm, such as the European Union, the Asia-Pacific Economic Cooperation or the ongoing negotiations between the EU and the

USA to create the Transatlantic Trade and Investment Partnership. The outcome of the two Asia-Pacific economic integration initiatives, i.e. the US-led Trans-Pacific Partnership and the Chinese-led Regional Comprehensive Economic Partnership will also have an important impact on this global process. (iv) In this respect, the declared strategy of China, called „going global” or „going out” is an important development and is an integral part of the „One Belt and One Road Programme” (also known as The New Silk Road project), where we are again confronted with the fundamental question: What actions do we need to take advantage of the new opportunities? And this is the major theme of our present panel discussion. (v) Analyses of the following preconditions are important: favourable trade relations and conditions, overseas direct investments, common major projects (such as infrastructure), which are not only welcomed by a nation but also by the economic integration, which it belongs to (in Hungary’s case this is the European Union) and finally, and most importantly, the establishment of the proper financing conditions. (vi) The European Union and the Central Eastern European region, which is seen by many as the growth engine of the EU for the next decade or so, can meet all of these preconditions for China. In our well-integrated region, and particularly in Hungary, foreign investments, development projects and financing facilities are crucial for sustaining economic growth. On the other hand, we can say that we are one of the best gateways to the European Union’s large market, which is important for China and the Asian region. As far as financial conditions are concerned, we consider the internationalisation of the RMB an important device. On October 2nd of this year, the People’s Bank of China and the National Bank of Hungary officially announced that the Budapest-based regional branch of the Bank of China received the authorisation to open the Hungarian Clearing Centre for RMB. Since this office acquired a regional competence, this means that the RMB Clearing Centre will serve the whole Central Eastern European region, following Hong Kong, Taiwan, Paris, Frankfurt, Sidney and Kuala Lumpur. Furthermore, Bank of China Hungary also received the authorisation to issue „One belt, One road” bonds. (vii) To summarise: the new opportunities are there and we must seize them, through the means of close cooperation and open dialogues.

On the global scene, the large economic integrations and the regions of economic cooperation must take an active role in the development of this new paradigm. Naturally, these must include the European Union, the Asia-Pacific Economic Cooperation and the Transatlantic Trade and Investment Partnership (TTI), expected to be created as a result of the ongoing negotiations between the EU and the USA, which will establish a trade area also impacting the global economy. Apart from the TTIP negotiations conducted with the USA, it is the key interest of the European Union to participate in this process. Last year, at the start of its mandate, the Commission of the European Union – led by President Juncker – determined

the ten most important, priority tasks of the Union. Sustainable economic growth and employment creation are the first on this list.

In parallel with this, in the Asian region – as mentioned before – the series of negotiations aimed at the strengthening of the Asia-Pacific Economic Cooperation achieved major progress and development. This region is dominated by the strength of the Chinese economy and banking system, as well as the recent strategic decision of the Chinese government – officially referred to as „going global, going out” – which symbolises the fact that the government supports and encourages foreign direct investments by Chinese enterprises and financial institutions – in addition to enhancing internal demand – to strengthen and ensure the sustainability of Chinese economic growth. This process forms an integral part of the globally known comprehensive plan of China, i.e. the One Belt, One Road Programme.

As is clear from the foregoing, both the European Union and the Asian region, and particularly China, have a vested interest in the cooperation. The question to be answered is which opportunities are to be seized mutually. And also, whether the means and conditions of this process can be established.

The efforts aimed at the integration, the free trade regions and the mutual opening of the markets have already been mentioned, both in the Asia-Pacific region and in respect of the negotiations being conducted between the EU and the USA. Let us narrow the examination of the available opportunities down to the European Union and China. The primary interest of the European Union is to boost economic growth and make this growth sustainable. However, the fact that this is the key priority of the European Commission is a necessary but not sufficient condition. The means to achieve this goal must also be specified. In financial terms, one of the European Union’s most important decisions was the completion of the Monetary Union in the coming period. The Commission announced the specific plans and phases for strengthening the Monetary Union at the end of October, shortly before the Boao Conference in London. In Stage 1, which covers the period between 2015 and 2017, the foundations for the smooth operation of the Monetary Union must be laid down.

It is an interesting point – and we note it here, due to the importance for external financial relations – that the strengthening of the euro area’s external representation also forms part of this action plan. In the opinion of the Commission, the external representation of the euro area has not kept pace with the increased economic and financial weight of the currency area. While the US dollar has a single, strong representation in the financial world, the euro area Member States do not speak the same language. According to the Commission’s proposal, the euro area needs a single representation on the global scene and in the IMF, in such a way that the President of the Eurogroup would represent the euro area in the latter. Another

important element of completing the Monetary Union is to conclude the building of the Banking Union.

In terms of the international financial relations and capital investments, the next plan of the European Union – being introduced and implemented – is the creation of the Capital Markets Union. This is a key element of the Commission's investment plan: the action plan of the implementation was approved by the Commission also before the conference in London. The purpose of the capital market union is to broaden the diversified sources of finance available for the business enterprises, to provide the regulatory environment for the financing of long-term, sustainable EU-wide infrastructure investments and for raising private and foreign capital to achieve the objectives of the European investment plans.

Comparing these EU processes to the strategic goals of the Chinese government, we see that opportunities for cooperation do indeed exist, or may evolve, which serve the interests of both parties and must be seized.

From the perspective of China, this cooperation opportunity may be summarised, in a somewhat simplified manner, as follows. In recent years the Chinese government introduced a number of reforms (price reform, agricultural reform, rural industry development reform, etc.), but now it must move on. According to the programme announced by the government, an excessive economic growth rate is unsound, but a certain growth rate – at present determined as 6 per cent – must be maintained. Several decisions were made to support this, from boosting internal demand and consumption to stopping the ageing of the population; however, what is interesting for us is the international aspects of addressing the problem. The first – and probably most important – task of the developed strategy is to reverse the mass capital inflows of several decades and instead the substantial accumulated industrial surplus capacity and capital reserves must be „utilised” abroad. They developed the economic, commercial and financial conditions that facilitate the implementation of this concept.

The „One Road, One Belt” programme was elaborated and announced, which creates the contractual and infrastructural conditions for transferring Chinese goods to the West through Central Asia to Europe and the EU markets (this is the so-called Green Road) or by sea, through South-East Asia and South Asia to Africa and Europe (the Blue Road).

The concept focuses on trade, and particularly on the expansion of export opportunities. The Asia-Pacific Economic Cooperation has been mentioned already before. On 5 October 2015, after a series of negotiations for seven years, finally the Trans-Pacific Partnership (TPP) agreement was concluded, which was also joined by – in addition to some thirty countries – by the USA and Canada. The official objective

of the agreement is worthy of attention in terms of our topic: „the objective is to promote economic growth, preserve jobs, support employment creation, strengthen innovation, productivity and competitiveness, improve the standard of living and reduce poverty”. This objective corresponds almost word for word to the first part of European Commission’s ten priorities mentioned before.

The „One Belt, One Road” and the „Going Global” programmes must provide not only the commercial routes, but also the financial and financing scheme thereof. As mentioned before, China has substantial liquidity and capital available for investment abroad (as well). In addition, China initiated the establishment of the Asian Infrastructure Investment Bank (AIIB), an international financial institution that plans to finance primarily the infrastructure investments of the Asia-Pacific region. In September 2015 the process of the establishment reached the stage when more than thirty future participants approved the bank’s Memorandum of Association and the subscription of the bank’s capital commenced. This bank is regarded by many as the competitor of the IMF, the World Bank and the Asian Development Bank (ADB), hence the USA, Japan and Canada are not among the signatories.

In terms of the financing and financial conditions, the internationalisation of the RMB and the applicability thereof in daily business relations is an important issue. For this very reason, the Chinese government made serious efforts to have the RMB accepted globally, and so far it has succeeded pretty well. 30 November 2015 will be an important day, when the Board Meeting of IMF will decide whether the RMB can be admitted to the IMF’s prestigious currency basket, the SDR (Special Drawing Rights). The SDR currency basket so far has comprised the US dollar, the British pound, the Japanese yen and the euro. The admission of the RMB would also mean that it becomes one of the world’s reserve currencies. In order to achieve this it must satisfy at least two basic conditions of the three: on the one hand the RMB „must be widely used” and on the other hand, it must be „a freely usable currency”. Since China is managing one of the highest, if not the highest, trade turnover in the world, according to the IMF economists the RMB satisfies both of the above conditions. The third condition, i.e. „convertibility” is no longer a disqualifying cause when the first two conditions are satisfied. Thus, a positive decision at the end of November is quite predictable, which will be a breakthrough for China.

In the foregoing, we tried to provide a brief summary of the international processes in the background that make the Boao Forum in London really significant.

As we see, China and the Asian region, as well as the European Union and the United States determined – since the outbreak of the economic and financial crisis – the programme, means and schedule of the potential ways to address the situation. Initially it appeared that these economic great powers and regions had set out on

two parallel paths. The milestones of the two paths are mostly similar and the number of concurrences is striking. By now – knowing the interests of these large economic units – it has become clear that these paths, driven by their interests, do meet.

One of the meeting points of these two paths – not only in the geographic sense – is Hungary. Hungary and the Central European region is an important gateway for the Asian and Chinese export when directed to the market of the European Union. There is great demand for the foreign – i.e. Chinese – capital investments and the support of infrastructure development. It is worth mentioning the planned modernisation of the Belgrade-Budapest railroad, with the participation of China, which hopefully will become an important section of the „green road”.

It is difficult to evaluate the events of a large-scale conference, attended by more than 300 opinion leaders, decision makers, government representative and Academy members from 22 countries. The presentations, technical discussions and the round table forum of financial managers searched for comprehensive, holistic answers to key questions in the global economy: how to achieve sustainable economic growth and how to establish strong financial relations between the Asian region and Europe. The evident lesson learnt is that cooperation is essential for Asia and Europe, financial links between the continents must be reinforced, and the opportunities that may boost and strengthen the maintenance of economic growth are starting to take shape.

It is a common interest to improve the conditions of international trade and financial operation, overseas capital investment opportunities must be facilitated and it is necessary to define those major – primarily infrastructure – projects, the implementation of which is a common interest and supported by not only the national states, but also by economic communities. In this environment, Hungary is open and interested in the support of investment and capital inflow, and in the creation of appropriate financing conditions.

Thus our interests coincide to a great degree, the new opportunities are there and we must seize them.

## **Many Facets of Institutions – 1<sup>st</sup> Debrecen Workshop on Institutional Analysis**

*Anikó Paróczai – Zsuzsanna Bényei*

The 1<sup>st</sup> Debrecen Workshop on Institutional Analysis was held on 14 December 2015 under the title of *Many Facets of Institutions*, hosted by the Institution of Economics of the University of Debrecen's Faculty of Economics and the Hungarian Association of New Institutional Economists. For years, the Institution of Economics, operating within the University of Debrecen's Faculty of Economics, has been conducting important research on institutional economics. The research group working within the Institution is one of the centres of Hungarian institutional economic research and maintains close ties with other leading international research groups active in this domain (including the Ronald Coase Institute, Université de Paris1). The Institution hosted this seminal workshop to showcase the widest possible range of research directions in institutional economics. The guest speakers are prominent representatives of the research topics on the international scene and gave compelling and interesting presentations. Due to the nature of the workshop, the presentations were followed by dialogue and debate, helping the work of both the speakers and the audience. The organiser of the workshop, Judit Kapás (University of Debrecen), selected three foreign and four Hungarian researchers for the first event to showcase the institutional economic research conducted in Hungary and its neighbouring countries at the inaugural event.

The foreign speakers hailed from Romania and Poland. *Agnieszka Wysokinska* is assistant professor at the University of Warsaw; her presentation analysed the impact of history on economic development through the intermediary of culture. *Bogdan Dima* and *Stefana Maria Dima* teach at the University of Timisoara and gave a presentation on their research on the link between globalisation and happiness, and between professional autonomy and the successful adaptation of international standards. The Hungarian researchers hailed from the key centres for institutional research in Hungary. *Judit Kapás* is professor at the University of Debrecen's Faculty of Economics, currently researching the link between culture and economic growth. *Balázs Váradi*, senior analyst at the Budapest Institute and academic member of Eötvös Lóránd University, investigated the potential factors shaping and influencing

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institutional change within a specific policy (disability policy). In his current research, *Miklós Rosta*, senior lecturer at the Corvinus University of Budapest, investigated the link between János Kornai's system paradigm and new institutional economics. *Károly Mike*, senior lecturer at the Corvinus University of Budapest and academic employee of the HÉTFÁ Research Institute, held a presentation on the success of self-organising community initiatives.

In her presentation entitled *"Invisible wall: The role of institutions and culture for long-term development"*,<sup>1</sup> Agnieszka Wysokinska investigated whether the current economic development of Polish areas ruled by different empires in the 19th century differ significantly. She takes a historical look at Poland, treating the areas ruled by different empires as separate entities, subject to diverging social and economic impacts over the course of roughly one century (1815–1918). The Congress of Vienna settlement in 1815 marked a turning point in Poland's history, resulting in the partition of Poland between the great powers: the Duchy of Warsaw was awarded to Russia, Poznan to the Prussians and the region of Kraków was given a neutral status under the oversight of the three great powers. After roughly 100 years, the regions were reunited (in 1918). The question is whether this earlier partition of Poland still prevails after 100 years have passed.

The investigation reveals that the areas formerly inhabited by Prussians are still richer today compared to the once Russian and Austrian areas. However, the economic discrepancies between the two latter regions are not as significant. After identifying this discrepancy, the question of what underlying factors may be at the root of these developmental differences arises. One possibility is the different structure of ownership rights in the 19th century (the average size of farms is 75% greater and the number of rural households is 25% lower in the former Prussian areas). In addition, there is also a difference in terms of political preference (with electoral participation being 14% higher in the richer areas). Wysokinska also examined the channels that may explain the persistence of these differences even after 100 years have passed. The explanation may reside in the judiciary and the efficiency of education.

In his presentation entitled *"Policies for happiness in the global village"*, Bogdan Dima sought to answer the question of whether happiness, government policies and globalisation are linked. The author used a projection of the utility function to measure happiness: two indicators from the World Database of Happiness<sup>2</sup> database and the Happy Planet Index.<sup>3</sup> The author used the indicators of the World Bank's

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<sup>1</sup> The paper forming the basis of the presentation is available on the author's website: <http://agnieszkawysokinska.home.pl/data/documents/Invisible=20Wall=2013.04.2014.pdf>

<sup>2</sup> <http://worlddatabaseofhappiness.eur.nl/>

<sup>3</sup> <http://www.happyplanetindex.org/>

World Governance Indicators<sup>4</sup> for measuring good governance, and the KOF Index of Globalization<sup>5</sup> for determining the level of globalisation. Based on the empirical research, the author concluded that the quality of the regulatory framework and politics are important determinants of good governance, and that efficient and reliable politics increases citizen satisfaction, and furthermore that there is also a positive correlation between “good” government and globalisation. However, the author did not find any significant correlation between globalisation and happiness.

The organiser of the workshop, Judit Kapás (University of Debrecen) held a presentation entitled “*Core of culture: The role of sticky individual values in development*” examining the impact of culture on economic development. Based on the shortcomings of culture by definition, the author broke culture down into layers and analysed the impact of these layers, assuming that the various cultural layers (individual values, religion, trust, ideology) exert a different impact on development. The layers may have different impacts due to their different degree of stickiness. In her paper, she focused on the most sticky cultural layer, individual values. Kapás’s hypothesis was that individual values shaped development in their own right, that is to say even if formal institutions are included in the regression. Based on this theory, the author also presumed that due to stickiness, interaction between individual values and formal institutions can also be expected. In her empirical research, the author measured individual values using data from the Schwartz Values Survey and formal institutions using several indicators (the degree of rule of law from various databases). The empirical findings of the two-level regression showed that sticky institutions exacerbated the impact of individual values on development. Individual values, as very deeply embedded culture, influence economic development over and above formal institutions, and long-term harmony between the two – that is, the fact that values are integrated into formal institutions – increases the impact of the values.

Stefana Dima presented her research conducted together with Bogdan Dima and Miruna-Lucia Nachescu, entitled “*Professional autonomy and IFRSs adoption*”. The main question of their analysis is whether an increase in professional autonomy improves the successful adaptation of standards based on lawfulness, such as the International Financial Reporting Standards (IFRS). Autonomy can be achieved in two areas: personal (linked to individual desires and motives) and professional. Professional autonomy can be broken down into two further types: organisational autonomy is when individual actions are governed by rules or directives independent of the individual, while a professionally autonomous individual is capable of making his own decisions. Relative to these elements, the authors created an index called

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<sup>4</sup> <http://info.worldbank.org/governance/wgi/index.aspx>

<sup>5</sup> <http://globalization.kof.ethz.ch/>

the Professional Autonomy Index based on data from the World Values Survey.<sup>6</sup> They incorporated various dimensions into the indicators that express the three levels of autonomy presented above: the individual's perception of being in charge of his own life (personal autonomy), being able to follow instructions at his workplace, the power of initiative necessary for work (individual autonomy), respect for social hierarchy and trust in the legal system (organisational autonomy). The five dimensions and the "professional autonomy" index that they constitute are also positively correlated with the adaptation of the IFRS standards. The research found that the indicators expressing individual autonomy exerted the greatest impact, while the index expressing personal autonomy exerted the smallest impact.

Balázs Váradi presented his paper co-authored with Ágota Scharle and Flóra Samu, entitled "*Policy convergence across welfare regimes: the case of disability policies*".<sup>7</sup> The aim of the paper is to identify the factors that drive or hinder institutional change. To this end, they chose a special area that has undergone significant change in recent years, enabling a comparison of any potential differences across various welfare systems. This area was disability policy. The authors grouped European countries based on their welfare regimes (Continental, social democratic, liberal) and examined how government disability benefits changed over the 1990–2013 period. The authors found that *one* general trend can be observed across all welfare regimes: benefits shifted increasingly from monetary compensation towards incentives for labour market integration. The findings suggest that the 2008 crisis had a tangible impact, as the number of reforms increased during this period, in other words the recession was essentially the catalyst for change. In terms of Central and Eastern European countries, accession to the European Union was also a key milestone. However, alongside general trends, there are also regime-specific factors: for instance, social democratic countries exhibited a greater shift in both dimensions of change (compensation and integration), while compensation is predominant in Continental countries and integration is predominant in liberal countries. Consequently, the finding of the paper is that although there is convergence across welfare regimes, path dependence is still perceptible to some degree among disability policies.

Miklós Rosta's presentation entitled "*System paradigm and the New Institutional Economics – neither same or separate*" opened with a quote from János Kornai: "Haven't you noticed that I have long been an institutional economist and behavioural economist?" Based on this thought, the presentation first shed light on the essence of Kornai's system paradigm, economic antecedents, and the concept of new institutional economics and its main research areas. Stressing the

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<sup>6</sup> <http://www.worldvaluessurvey.org/wvs.jsp>

<sup>7</sup> The paper is available at: [http://www.budapestinstitute.eu/uploads/WWWforEurope\\_WPS\\_no076\\_MS10.pdf](http://www.budapestinstitute.eu/uploads/WWWforEurope_WPS_no076_MS10.pdf)

similarities between the two areas, Rosta explained that they stem from similar intellectual roots, explained through the presentation of the essence of the German historical school. Another common trait between the two researched topics is the opposition to classic equilibrium economics, however in the author's opinion, Kornai is more sharply distinguished from neoclassical economists. Following the political transition, the representatives of new institutional economics and professor Kornai examined similar puzzles: for instance, performing systemic analyses of the types of capitalism and sectors, investigating the Chinese model; they use an identical or similar conceptual apparatus. So despite the fact that Kornai did not consider himself an institutional economist in the earlier period, the similarity is undeniable in terms of the researched areas, even if the approaches differ in terms of methodology.

In their paper entitled "*Communities after markets*",<sup>8</sup> Károly Mike and his colleague Boldizsár Megyesi investigated the prospects of self-organising community governance. Their main question is why this form of governance is so rare in ex-communist Central and Eastern European countries. They conclude that in these countries, the following principle determined the creation of institutions: "first market institutions, then community initiatives", which although it does not preclude the correct regulation and control of community governance, it does substantially delay them. The presentation first answered the question of the theoretical foundations of community governance in terms of natural resources. While the earlier solution to the "impending tragedy" was state intervention, voluntary collective action is now also seen as a potentially successful option. This self-organising community government is located between individuals and the government within the governance hierarchy, and its basis is collective reputation which may be particularly important in the field of natural resources. In their empirical research, the authors looked at two local winemaker groups striving for such collective reputation: the Tihany protection of origin regulation and the Csopak Code. A top-down approach was adopted in the Tihany winelands in defining the incentives (Tihany brand, quality and production requirements). In the Csopak winelands, bottom-up incentives were created (with winemakers deciding on new members and the regulations affecting them). The authors concluded that the case studies confirmed that the long-term membership of winemakers within the community fosters the deepening of cooperation. In terms of group size, they found that cooperation is easier within smaller groups. The comparison revealed that both initiatives created viable institutions, but the Tihany method rendered governance more static and bureaucratic within the created community, and internal motivation was lower, requiring stricter control. By contrast, development within the Csopak region is far more dynamic, and winemakers are far more deeply

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<sup>8</sup> The presentation is a part of the following paper: [http://hetfa.hu/wp-content/uploads/file/NFFT\\_zarotanutmany.pdf](http://hetfa.hu/wp-content/uploads/file/NFFT_zarotanutmany.pdf)

involved in decision-making. As an important lesson, the authors stressed that bottom-up initiatives must be supported in the context of devising regulations, potentially even on a government level.

This brief summary shows that the presentations spanned a wide range of topics. The workshop's objective to showcase the broadest possible spectrum of institutional economic research was fulfilled. The questions that followed each presentation often shed a different light on the current topic and provided a platform for interesting dialogue between the researchers. The workshop also filled a void, as there are few events in Hungary covering institutional economics. The relationships established may lead to joint projects later down the line, and were also a great inspiration for beginner researchers. In accordance with our intentions, we hope to take part in the second institutional economics workshop in Debrecen in 2016.

# **Catching Up or Lagging Behind? The Hungarian Economy a Quarter of a Century after the Political Transformation – Report on the Conference of the Pázmány Péter Catholic University**

*Erzsébet Tasi*

On 12 November 2015, the conference of the Heller Farkas Institute of Economics of the Faculty of Law and Political Sciences of the Pázmány Péter Catholic University (PPKE) was followed with keen interest by a large audience. The conference analysed the path of development of the Hungarian economy in the past quarter of a century, and presented the changes in its competitiveness in an international dimension and with a national economy approach. Various domestic institutions were represented at the conference: in addition to the professors of the PPKE, the researchers of the Institute of World Economics of the Centre for Economic and Regional Studies of the Hungarian Academy of Sciences as well as the professors and teachers of the National University of Public Service (NKE), the University of West Hungary (NyME), the University of Szeged (SZTE), the Budapest Business School (BGF) and the International Business School delivered lectures.

In his opening speech, Deputy Dean Professor István Szabó called attention to the importance of the analysis of and consideration for historical experiences as well as to the fact that the various areas of science contribute to development with their specific aspects. The task of both law and political sciences as well as of economic science is to serve people and the society.

Associate Professor and Head of Institute Klára Katona (PPKE) gave a comprehensive lecture on ‘The Impact of the Elements of Foreign Capital on Hungarian Corporate Investment in the Past Quarter of a Century’, recalling in the introduction the theory of Modigliani and Miller, according to which the separability of investment and financing decisions assumes a perfect capital market. In practice, however, exactly because of market imperfections, corporate capital structure decisions play a very important role in the increase in corporate value. Taking financing decisions is not only subject to internal considerations, but also depends on a number of external factors, and thus basically on the development of capital/financial markets. In her

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lecture, Katona presented the positive and negative effects of foreign capital inflows, and using a database containing the top 5000 companies in terms of sales revenue, she analysed the developments in the sources of Hungarian- and foreign-owned corporate investment in Hungary in the period between 1994 and 2012. As the main finding, she pointed out that the ratio of debt in investment financing was higher in the case of foreign companies, but it was mainly attributable to long-term bank loans and not to loans from parent companies.

In his lecture titled 'Hungary's Regional Competitiveness in the Carpathian Basin', Dean and Head of Institute Attila Fábián (NyME) explained that defining the Carpathian Basin as space for existence is more difficult in a geographical sense, and easier in an economic and social sense. He emphasised that in spite of the development funds, inequalities had increased to a greater extent at regional level than before, and metropolitan regions had become the real winners of the transformation, while the rural and eastern border regions had become the losers of regional developments. His analysis made it clear that improvement of the regional competitiveness of the Carpathian Basin requires cooperative, cross-border strategies. The human capital base, the historical relations and intertwining of cultures as well as the replies to be given to the common demand of increasing the welfare constitute the relevant foundation. Fábián highlighted the important role of the changes in regional and local specialisation, corporate competitive advantages and spatial concentration in the spatial realignment processes of the Carpathian Basin.

Associate Professor Etelka Katits (NyME) provided a comparative analysis of the sectors of the Hungarian national economy based on a study co-written with Éva Szalka. She analysed the financial indicators of the top 5000 companies with the highest sales revenues for the period of 1992–2013. In her lecture, she distinguished several periods, from the hectic sales revenue of the 1990s through the increase in the 'golden era' starting from 2000 to the blocking effect of the economic crisis in 2008. In addition to the periodic fluctuations in competitiveness, she cast light upon the inadequate capital structure, which is one of the fundamental growth problems of the Hungarian corporate sector. In the sectors of the national economy comprising of the largest Hungarian- and foreign-owned companies, especially in services, trade and construction, the ratio of external funds is high (60–80 per cent), because companies were unable to finance their sustainable growth from internal sources. She concluded that increasing the sales revenue at any price neglects the creation of harmony between expectations concerning profitability, financing, return on total assets and productivity. She referred to the key role of industry in laying the foundation and ensuring of sustainable growth.

Krisztina Vida, a researcher of the Hungarian Academy of Sciences and teacher of the IBS analysed the trends in catching up of the Visegrád countries. The key question of her lecture was whether more convergence can be expected in our region. The years from the accession until the crisis (2004–2008) were characterised by diverging, but mostly improving macroeconomic trends, primarily in the case of Poland, the Czech Republic and Slovakia. It was followed by the crisis period (2009–2013), when recession, stagnation or lower growth as well as gradual recovery and consolidation were observed. Finally, the post-crisis period, in which the convergence to one another and to EU averages/regulations of the examined macro indicators in the region is well visible, began in 2014. Vida pointed out that within the V4, on the basis of most of the indicators, Hungary was the ‘black sheep’ from the accession until the crisis, i.e. contrary to the other three partner countries it was unable to make good use of the momentum and opportunities offered by the membership. In the past few years, however, Hungary’s positions improved considerably. Since 2014, the indicators of the Visegrád countries have shown a better convergence, and together they are closer to standard EU levels than ever. Moreover, forecasts suggest that the favourable trends and catching-up may continue in the coming years as well.

Associate Professor István Kőrösi (PPKE), a researcher of the Hungarian Academy of Sciences, gave a presentation on ‘The Chances of Competitive, Social Market Economy in Hungary’. He pointed out that in Hungary the past quarter of a century rolled by in the spirit of contrasting policies and economic policies. In the period between 2002 and 2010, the Hungarian economic and social development was on the wrong track, characterised by decline and serious losses. In 2010, Hungary took a new road, where the task was the simultaneous reduction of financial imbalances, the increasing of employment and putting the country on a sustainable growth path. Following 2010, the new Hungarian economic policy focused on the rapid starting of crisis management, the reduction of the general government deficit and the starting of cutting the debts. Numerous positive results were witnessed in the period between 2010 and 2015, both in terms of stabilising the economy and launching sustainable growth. Hungary and the countries of the Visegrád region are taking significant economic policy steps for catching up, but several factors of lagging behind have become permanent: declining wage share, development gap (slight convergence was observed in some periods, followed by increasing distance again during the crisis), migration of skilled labour, insufficiency of domestic savings and investment from own sources. The way of increasing competitiveness is exactly the rise in productivity through investment, which provides a basis for the catching up of wages and the expansion of the internal market.

Professor Katalin Botos (PPKE and SZTE) gave a presentation titled ‘Political Transformation and Economic Policy. The Truth of Ferenc Rabár’. She started with

pointing out that the political transformation that took place a quarter of a century ago left a burdensome heritage that influences our days as well: the unrealised wage–price reform and the significant government debt. In her presentation she strove to dispel the misbelief that the first government failed to ask for debt relief. She explained that at the very beginning it was not feasible. She presented that the initial ideas took into account a wage–price reform, because wages did not contain a number of costs that are part of wages in a market economy, such as housing, public health, education. She explained that in 1990 it would have been possible to implement a comprehensive reform with a parallel wage increase and reduction of contributions. As it was not done, the level of wages remained low compared to those in the West. Therefore, the ‘reform’ of large systems entailed significant tightening in terms of reducing the standard of living, and it is hard to implement the changes.

Retired Associate Professor József Botos (PPKE and SZTE) gave an overview of the past and future of the sustainable pension system. He presented how the Hungarian social insurance system developed in the past quarter of a century. Looking back, he recalled that between 1990 and 1993 the social insurance system contributed to the smooth transition. Between 1993 and 1998, social insurance was divided into two funds in a self-governance system. This system did not stand the test, and was terminated in 1998. At the same time, pillar II, the mandatory pension insurance was introduced, which deprived the state pension insurance of funds. The budget made up for the missing amount, but drifted into deficit as a result of that. Therefore, the Orbán government terminated the mandatory private pension fund system in 2010. In 2013, a social contribution tax was introduced for entrepreneurs, which indicated the end of the insurance paradigm. However, corporate contribution was terminated in public health, so the insurance principle prevails to the maximum extent there. Sustainability would require a change of paradigm in the pension system again, acknowledging that the costs of bringing up children also mean investment, and children are needed for producing old-age incomes.

Professor Csaba Lentner (NKE) elaborated on the subject ‘Certain Strategic Issues of the Functioning of the Local Government System – Past and Future’. The consolidation of the local general government subsystem became a necessity in the operation of the Hungarian State, which was reorganised following the political transformation. As of the beginning of the political transformation, the decentralisation of tasks from the central government and the failure to decentralise the relevant funds as well, then the bridging with loans of the own contribution part of the investment possibilities that opened with the EU accession in 2004 resulted in a considerable amount of debt for local governments. Lentner presented the process of indebtedness of the local government sector and its subsequent successful consolidation, referring to the thorough fact-finding work of the State

Audit Office and the multi-phase consolidation work of the government, by which an important segment of the risk of state bankruptcy was eliminated. He mentioned the risk of becoming indebted again and the relevant tools of prevention as well as the change in the role of the local government sector, i.e. the challenges of becoming an organiser of the local economy from a maintainer of institutions.

In his lecture, Tamás Halm, a teacher at the BGF, presented higher education as a factor of competitiveness, using a comparison of resources and outcomes. In his lecture, which was richly documented with data series, he explained that after 1990 the number of students in higher education increased very rapidly, and the expansion of financing did not keep up with it. Three acts were adopted for the regulation of higher education, which were amended more than one hundred times. Those who work in the system faced a painful decline in quality. In the recent years, higher education has been characterised by a strengthening of central control, some really justified rationalisation and not only relative, but absolute cutting of funding as well. Although the educational government realises and acknowledges the achievements of higher education, even classifying it as a success sector of the Hungarian economy, it has deemed substantial reorganisation necessary. The tightening of quality requirements, the increased consideration for the demands of companies and institutions that employ graduates as well as the efforts to increase institutions' own incomes all point to the right direction, but no significant progress can be expected without a material increase of state funds allocated to higher education.

Associate Professor Tamás Szigetvári (PPKE), a researcher of the Hungarian Academy of Sciences, presented the situation of the Hungarian infrastructure at the time of the political transformation and now, with special regard to the transport sector. In his presentation he gave an overview of the most important changes that took place in the Hungarian infrastructure in the past 25 years, then elaborated on the main developments focusing on transport. The developments in the Hungarian economy are a good example for the fact that freeways, high-performance railway, good air transport and in the case of industrial and agricultural commodities the possibility of cheap inland water transport are among the most important conditions of the selection of a location for industrial, commercial and logistics facilities. Transport has become one of the most important determinants of the economic development and the increase in competitiveness of Hungary. However, for Hungary to be able to comply with this fundamental condition of competitiveness, also quoted from Porter, the funds provided by the European Union proved to be indispensable. Prior to its EU membership Hungary could implement the necessary investment only through a considerable increasing of government debt, which, in turn, had a negative impact on the competitiveness of the country.

The conference presented the changes in the position of the Hungarian economy in the past quarter of a century in a comprehensive manner, with deep analyses. By analysing the various areas, the presentations proved that in our times only an economic policy that generates long-term, sustainable growth and stability can lead to success. Hungary and the countries of the Visegrád region are taking major economic policy steps for catching up. This requires the application of a reasonable economic policy mix, which facilitates knowledge-oriented, organic development.









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- Folyóiratunkban a tanulmányok átlagos hossza 1 ív (40 000 leütés szóközzel), ettől legfeljebb  $\pm 50$  százalékkal lehet eltérni. A kéziratokat magyar és/vagy angol nyelven is el lehet küldeni.
- A tanulmányok minden esetben körülbelül 800–1000 karakteres tartalmi összefoglalóval kezdődnek, amelyben a főbb hipotéziseket és állításokat kell ismertetni.
- Az összefoglalót követő lábjegyzet tartalmazza a tanulmány elkészítésével kapcsolatos információkat és köszönetnyilvánításokat. Ezután következik a szerző foglalkozása (beosztása), munkahelye és e-mail címe magyar és angol nyelven is.
- Az összefoglalót követően kérjük megjelölni a tanulmány JEL-kódját (minimum három szükséges).
- A főszöveg legyen jól strukturált. A fejezetek élén vastag betűs címek álljanak!
- A tanulmánynak minden esetben tartalmaznia kell a hivatkozási listát a szerzők teljes nevével (külföldiek esetében elegendő a keresztnév monogramja), a megjelenés évszámával, a mű pontos címével, kiadójával, kiadási helyével, illetve a folyóirat pontos címével, évszámával, kötetszámával, oldalszámmal. A szövegben elegendő a vezetéknevével, évszámmal és oldalszámmal hivatkozni. Szó szerinti hivatkozás esetén az oldalszám feltüntetése nélkülözhetetlen.
- A táblázatokat és az ábrákat a tanulmányban folyamatosan kell számozni (a számozás az új alfejezetekben, alpontokban nem kezdődik újra). Mindegyik táblázatnak és ábrának címet kell adni, és a bennük szereplő mennyiségi értékek mértékegységét fel kell tüntetni. A táblázatokat és az ábrákat a Word és az Excel program segítségével el kell készíteni magyar és angol nyelven is. A táblázathoz és az ábrához tartozó megjegyzéseket és az adatok forrását közvetlenül a táblázat alatt kell elhelyezni.
- A képleteket a jobb oldalon, zárójelben folyamatosan kérjük számozni (tehát az egyes alfejezetekben ne kezdődjön újra a számozás).
- Fel kívánjuk hívni továbbá a szerzőink figyelmét, hogy csak olyan kéziratot küldjenek, amelyet más szerkesztőségnek egyidejűleg nem nyújtottak be közlésre. A tanulmányt minden esetben két független, anonim lektor bírálja el.
- A tanulmányokat e-mailben kérjük eljuttatni a szerkesztőségbe Word for Windows formátumban. A közölni kívánt ábrákat és táblázatokat Excel-fájlban is kérjük magyar és angol nyelven.
- Kérjük, hogy a további szerkesztési szabályokkal kapcsolatosan tájékozódjanak az alábbi oldalon: [http://www.hitelintezetiszemle.hu/szerzoknek/Szerzoi\\_utmutato.pdf](http://www.hitelintezetiszemle.hu/szerzoknek/Szerzoi_utmutato.pdf)

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