

# The Deviations in Financial Risk Correlations, and Some Analyses to the Banking Risk Governance after 2015

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## Abstract

In this study, we aimed to discuss the institutional risk dimension of financial risk elements within the global process on the basis of both EU banks as primary financial institutions and structural global financial risk correlations. In this context, determining the institutional risk impact levels of banks, which are important financial risk sources for EU and the other countries, has revealed the primary purpose of our study. On the other hand, the analyses of the structural-institutional management effects of financial crisis management on a global ground express the unique aspect of our study. Structural institutional arrangements and the analysis of international financial activities in the financial risk management process have also revealed important criteria for determining corporate performances. In addition, the developments in bank loans since the crisis have been found meaningful in terms of our study, which's as an impact level of the corporate financial structures and how it creates a component balance in terms of financial crises. Although it has an indirect impact on our work, it has been understood that also the financial developments in the overall bank credits since the crisis have been taken as a meaningful part in our analyses intended to put forth institutional financial risk governance.

**Keywords:** EU Countries, Financial Developments, Financial Risk, Financial Risk Governance, Institutional Standards.

**JEL Codes:** G01, G14, G15.

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## 1. Introduction

After the global financial crisis, it is seen that the necessity of considering the corporate finance sector by analyzing different risk factors has emerged, which is a current reality financial fact. Especially after 2009, the corporate finance sector realized significant system weaknesses in banking activities. This phenomenon revealed two important corporate strategies related to the crisis process in the banking sector. First of all, global financial institutions have put forth to be trending a financial buffer by going to increase their reserve funds for financial capital increase. This led to an increase in banks' non-liquidity debt portfolios. Another strategic approach on the basis of financial institutions is based on the strengthening of approaches to the emergence of possible financial crises on the basis of the banking sector primarily. In other words, global competition, apart from the increasing banks in the global process, has also expanded the possible risk framework of corporate banking. Especially after 2015, the risk correlation coefficient of the banking sector increased has caused structural frameworks of financial institutions have been starting further questioned within the possible risk expectations for recently years. However, it should not be forgotten that the structural position of a possible financial crisis has also revealed a structure that prevents the banking sector from growing on solid financial foundations in many countries such as EU countries.

Studies on the related corporate financial institutions and post-risk corporate risk correlations have an important place at the global level. The first one of these studies is the work carried out by "The Committee on the Global Financial System-CGFS" in 2018. In this study, we see that the financial risk correlation of the banking sector is analyzed to depend on the structural problems (by The Committee on The Global Financial System-CGFS for Bank for International Settlements, 2018). It is possible to say that another study was the study conducted by The European Central Bank in 2010 by Ester Faia (Faia, 2018), which aimed at structural financial analysis in the based of credit risk after the 2009 global crisis. In this study, we see that credit risks that directly concern the banking sector as an institutional financial structure are analyzed. In addition, among the important studies emphasizing the theoretical framework of financial risks related to banks, the studies of Trinh and his colleagues have an important place. In this study in 2015, the risk correlations of developing countries were taken into consideration and a Vietnam-based correlation was tried to be determined (Thrinh et al., 2015). In addition, the report, which has been organized by The European Banking Authority with the another partner groups on the EU basis in recent years to address risk factors and possible institutional negative aspects in terms of financial risk management, also has an important place.

In the study, it was aimed to disclose the probable financial risk components within the structural status as related to Eurozone. In addition, the report, which has been organized by European Banking Authority with the another partner groups on the EU basis in recent years to address risk factors and possible institutional negative aspects in terms of financial risk management, also has an important place. In the study, it was aimed to disclose

the probable financial risk components within the structural status as related to the Eurozone (EBA, 2018). This study has especially emphasized the market volatility in the first half of 2018 with corresponding episodes of sharp equity price declines, and a sizable financial widening in the probable financial risk process. Indeed, these structural alterations have resulted in a significant reduction in the business volumes of all financial institutions, especially the banking sector in the EU countries. On the other hand, this means that EU countries focus on more selective banking activities if it's consider the recent structural developments, which has been within the Eurozone with financial infrastructure relations.

## **2. The Objective of Banking Risk Governance and Structural Risk Dynamics**

In this context, the effects of the global financial crisis, especially on the EU countries, have made the analysis of a possible financial crisis phenomenon inevitable at this stage as the main purpose. This primary aim is to make the control of private finance sectors by the public sector meaningful in terms of providing country public financial balances. It is observed that the banking sector has weakened the option of creating an important financial resource within the scope of the EU after 2015. While there are approaches that emphasize the fact that this phenomenon has a direct relationship with structural change policies, but there are also opinions that predict this phenomenon as a reason for financial reform. However, it is insufficient for emphasizing the banking risk factors as a risk correlation only within the EU as a financial institution.

### *2.1. The Risk Components in Terms Supervisory Review and Evaluation Process (SREP)*

This phenomenon, which presents different correlations to Eurozone countries that are related to some countries that are outside of EU, also presents significant differences for global financial institutions. First of all, we should emphasize that there are significant reductions in the profit limits of global banking. Globally, the corporate financial structure has preferred a position regarding the structural financial expansion approach in risk assessment processes. This significantly has increased the volume of banks' balance sheets and corporate financial flexibility. In this new institutional formation process, two important targets were aimed for banking related to a possible crisis management after 2015 (European Commission, 2019). In this context, it is possible to list the possible risk factors of these global corporate finance institutions global EU banks as follows:

- First of all, it is useful to emphasize the risk classification by considering the target profit limits of global banking. The first is that the profitability goals of global banking have created an important institutional pressure. This is because that global corporate banking is required to harmonize the weak economic environment with target profit margins. This requirement constitutes an important risk factor for all corporate finance units, especially banks (Monetary Authority of Singapore, 2019).
- Interest incomes gained by banks represents an important corporate income. The problem at the global level is the position of the banks' net interest income to average income. A proportionally status where interest-based bank profits exceed the average half of all bank revenues is seen as an important risk factor. This situation, which is in parallel with the increase in the global quality of banking, means that it expresses a process in which risk correlation also increases. At this point, the main factor affecting the increase in risk correlation is undoubtedly the institutional structure becoming more resistant and causing tension in financial markets (PwC-Global, 2015).
- Another risk factor in a framework based on the target profitability of banks is the non-homogeneous structure of the insufficient institutional finance capital that is incompatible with the global transaction volume and global financial markets. In other words, the capital limits of global banking are negatively affected by non-performing loans and increase the financial risk correlation. In terms of the profitability of banks, this means a negative credit cycle and is an important risk factor for target profitability limits. For all financial institutions, especially banks, this means abandoning global profit targets and higher interest financial markets. This situation further more disrupts the already inhomogeneous nature of the global financial markets and increases the financial risk correlation (PwC-Global, 2015).
- When the subject is addressed within the scope of Terms Supervisory Review and Evaluation Process (SREP), macroeconomic balance factors showed the negative growth trend for developed economies with the low growth rate in question after the 2009 global crisis. This phenomenon, which creates a negative impact scale, means the structural incompatibility of the macro-financial environment. This structure, on the other hand, is characterized by the phenomenon of inflation, which is a risk factor, and attention has been drawn to the interaction of a process in which sectors are negatively affected by the financial risk process (Central Bank of Sri Lanka, 2019). In addition, this means also credit growth related to the increase of financial risk factors. In this framework, this growth in credit demand of total sectors has revealed an expanding but not conventional structure for central banks after 2015. This fact means unconventional monetary policies, carried out by central banks, in which the financial risk correlation increases (Central Bank of Sri Lanka, 2019). This phenomenon, which emerged as a result of the combination of structural factors with low interest rates on a global level, seems to drag global corporate

- financial institutions to important financial impasse (IMF, 2019).
- Regulations directed to market practicing and supervision, are practices to strengthen the global banking system against possible financial shocks. Certainly, the aim is to provide a higher quality capital increase and to raise money liquidity to the desired level. On the other hand, with these arrangements, it is possible to reduce possible corporate financial risks and to transition to a more effective banking system through subsidies. In other words, this approach include it is to reduce the default levels, which are among the assets of global banking, and to strengthen the institutional quality of financial risk management (International Criminal Court, 2019). This approach means that the financial risk correlations of the banks decrease in the practicing process. However, this point, reforms and supervisions can turn into an important risk factor in a process where individual banking prevails.

It is understood that some basic-key factors related to banking regulations and global financial risk management create a more negative risk factor with the incompatible regulations in the implementation process regarding the increase of risk correlation values. This fact also can convert to cause for macro-prudential policies to be reasoned a risk factor with some of the elements mentioned below:

- ✓ The risk-weighted policies of all financial institutions, especially banks, have caused these institutions to frequently put macro-prudential programs on the agenda. In practice, this phenomenon has led banks to apply different rates in their transactions, in order to reduce the risk correlation. This fact, which is found as a reserve capital in practice, has not given the desired result in increasing the cyclicity of the business and also put forth the reasons to persistence of the risk components in the process. In the SREP process, this situation also negatively affected the future estimation level of the economic and financial condition of the risk components and created a structural basis for global capital mobilization intended to ward to become a more limited structure (World Economic Forum, 2019).
- ✓ It is observed that approximately 30 the banks (see Annex 1), which have global systematic effects (G-SIB), have entered a new structuring process regarding global risks as related to keep up with the aimed risk correlations. It is understood that structural stress test evaluations have an important role in determining risk correlations in these structuring processes. Undoubtedly, this situation has brought the operational impulse of these banks to a stronger spread in their internal economies. That is why that the institutional elements of development and restructuring in the SREP process have brought a phased process to the balance between high capital buffers and target risk correlation values (Cappelletti et al., 2019).
- ✓ Another key factor that increases the risk correlation in the Supervisory Review and Evaluation Process (SREP) is undoubtedly the effect created by liquidity risk factors thought their location in the institutional system. When the subject is considered on the basis of banks, it is seen that the banks' liquidity coverage ratios and the position of net funds have an important place. Particularly, the banks' liquidity demand coverage ratios express the operational flexibility of banks, while also preparing a justification for decreasing risk correlations. In the other words, in a situation where banks' weak funding structure continues, it is understood that deviations in flexible transaction volume increase financial risk correlation on corporate basis. In this respect, the financial risk correlations of global financial institutions are shaped based on their funding structure and off-balance sheet funds that can provide short-term flexibility (European Central Bank, 2019-b).
- ✓ Structural components that form the risk correlations of global financial institutions, especially banks, have included in the process as an infrastructure dynamics of the global operational framework. This process requires banks to include their national decision dynamics in the relevant process, in order to explicitly reveal their risk options. Global Banks' efforts to internalize financial risk correlations in order to achieve more regular structural analysis also bring to the fore the existence of structural components where possible losses arising from risks can be estimated correctly. In this respect, the components affecting corporate risk correlations have included in the process as a structural view of provision financial bail assets after 2015 (European Central Bank, 2019-c).

In addition, the increase in coefficients of financial correlation values on an institutional basis is shaped by the liquidity strategies of all financial institutions, especially banks, especially in the short term. However, relying on the limits of liquidity tolerances in determining global risk correlations necessitates a serious global financial management. When "Collateral Management", which is an element of the liquidity management process, cannot be managed at the desired level, it is observed that it significantly increases the global risk correlation values. In this strategic location is aim that financial funds related to the current financial strategic management that should appropriate for ensuring the financial collateral practicing as defined the collateral management.

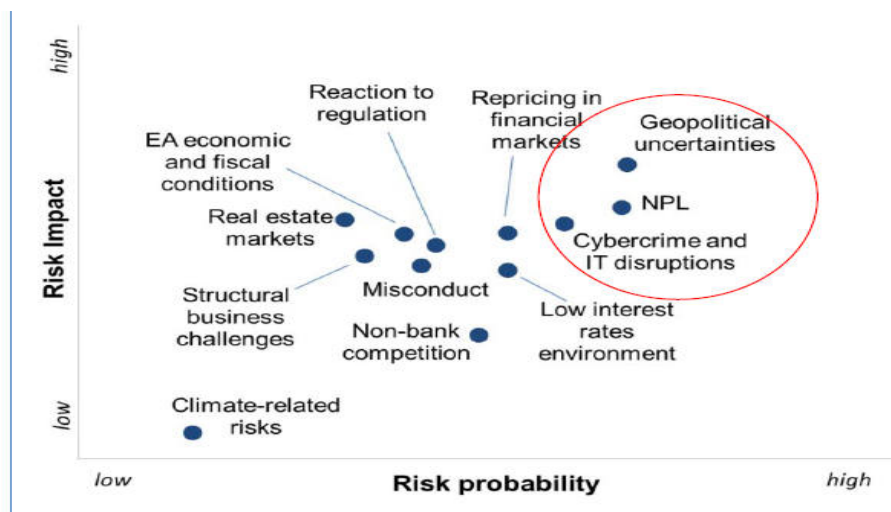
## 2.2. *The Qualitative Risk Profile Probability for Global Banking and The Macro- Financial Environment.*

Approaches to reveal the qualitative risk profile for the macro-financial environment within the context of global banking are shaped primarily based on the measures taken by banks to reduce their risk correlations. When looked

at the current situation, it is seen that the measures taken by all global financial institutions, especially banks, are directly proportional to the increasing risk profiles of the banks. In other words, it is observed that the risk correlated values of the institutions where the risk measures taken by the institutions are comprehensive and intensive are high. What we need to emphasize here is that it is directly related to the current structure of the Supervisory Review and Evaluation Process (SREP). At this stage, while only qualitative measures are taken in financial institutions and banks with low financial risk correlations, but we see that intensive supervisory actions are included in the process in other institutions and banks with high risk correlations.

A process in which financial risk correlations increase in a macro-financial framework required financial institutions to include adequate capital and liquidity buffers in the process to overcome the stressful financial conditions it poses. Although a gradual liquidity application of banks against qualitative risk possibilities significantly reduces the risk correlation coefficient on the basis of banks, the Liquidity Coverage Ratio (LCR) appears to have increased by 130% as of the end of 2016. Before 2016, most of the banks covered by the Global Systemically Important Banks (G-SIB) had a financial resistance that was able to withstand nearly one-month financial net cash crises and demonstrate positive stress management. In terms of risk management, this situation has continued after 2016 and revealed that the financial buffer positive effect of the LCR limit in the recently years continued. However, it should be emphasized that the decrease in risk correlations is a phenomenon to be explained with less use of capital and liquidity buffers when the risk correlation phenomenon is considered more qualitatively. In this context, it is understood that many banks other than Global Systemically Important Banks (G-SIB) do have not created sufficient financial capital and liquidity buffers to deal with macro-financial crisis management. Because, in a macro-financial framework, the banks' stabilization of risk correlations is a very difficult phenomenon due to structural uncertainties arising from competition in macro areas where banks operate. In addition, we should emphasize that the decrease in risk correlation values for banks varies depending on the structural changes and regulations as well as the incentives that banks are subject to and publicly supported risk management processes. At this stage, the purpose of a qualitative risk management is to provide the banks' and their stakeholders' corporate confidence in a stable macro-financial framework with a credit cycle and to control risk correlation values by spreading the positive impact of financial liquidity buffers.

To this end, the qualitative risk profile probabilities for global banking also covers the structural macro-financial dynamics framework in order to compare and address the financial risk possibilities. A study conducted by the European central bank has revealed that the increased risk correlation values increase even further with possible regional conditions with low interest rates and geographical location.



**Source:** European Central Bank (2019-a), *Methodology Booklet in 2019: Level Playing Field - High Standards of Supervision - Sound Risk Assessment*, Frankfurt: European Central Bank-Banking Supervision, 2019, p. 8.

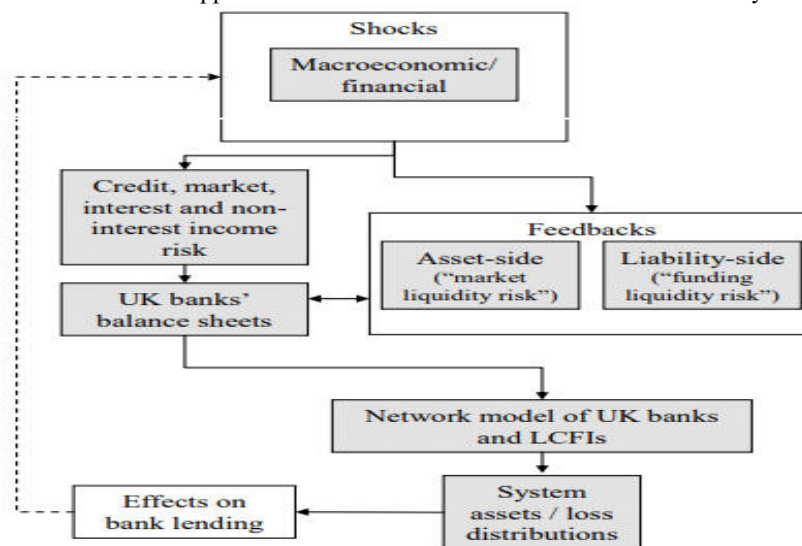
Figure. 1. Key Risks for Single Supervisory Mechanism (SSM) in EU

Figure 1 shows the dynamics of the structural relationship between financial risk impact and risk probability in the base of EU Banks as the global banks. In this study, mainly for Eurozone, it is seen that increases in economic and financial conditions and increases in real estate market trends are not evaluated in the high risk group. When these two facts are considered together with climatic changes, even if the risk effect is considered to be high, a rather low trend in terms of risk probabilities is also taken into consideration and it is concluded that questioning

the re-pricing effect in the process is more meaningful. It is observed that the risk probability correlations related to financial balances have increased in institutions where low-interest rates in the market are handled outside the banks in high risk possibilities with increased risk correlation values in the global process.

The reason for this originates from the uncertainties of the medium-term investments directed to the future in the process, at a time when the risk impact-stress is initially low. However, in a structure where the process is evaluated under global financial conditions, it is also understood that operational disruptions present a higher risk effect and probability due to the effects of geographical regional uncertainties and cybercrime (De Volksbank, 2019). Undoubtedly, in this considered study, especially it should be emphasized that non-institutional financial transactions that have took place in global markets more a reason the increases in financial risk correlations. It is understood that the re-pricing in order to reveal the qualitative risk possibilities in the globalization process and the fact that the low interest rates are included in the same process create a significant meaning and risk emphasis

This structural position, in which financial risk correlations also increase, expresses a process in which especially global European Banks also increase their market liquidity and increases the risk possibilities that cause significant decreases in the credit sales-presentation options of banks (Abbasi et al., 2017). In relation to this approach, figure 2 set forth the institutional systemic dynamics of a qualitative risk assessment model on the basis of all global banks including EU banks. The model in the figure 2 was occurred based on global UK banks and this approach is considered meaningful for the institutional finance systematic because of it gives global meaningful results in the field of application for the Risk Profile Assessment Model for Systemic Institution.



**Source:** Aikman et al. (2009), *Funding Liquidity Risk in A Quantitative Model of Systemic Stability*, Working Papers of The Central Bank of Chile, No. 555, Agustinas: The Central Bank of Chile, December 2009.

Figure 2. The Qualitative Risk Profile Assessment Model for Systemic Institutions

Although Risk Assessment Model for Systemic Institutions (RAMSI) considered in figure 2 is a ten-year model, it remains keeping valid and keep significant today. Again within the framework of this model, it is observed that the probability of qualitative risk profile, in which both the financial risk effect and the risk possibilities are high, for global banking has developed due to the corporate communication followed during the possible financial. Within the framework of this model, it can be said that the responses of financial institutions (especially global banks) to structural change targets emerge at two points, especially towards increasing the financial risk correlations. The first is that banks' future financial target policies are incompatible with liquidity policies, thereby increasing possible financial risk correlations (De Volksbank, 2019). The second is that banks are excluded from the decision-making processes that is, they are excluded from the risk approaches models, especially in determining the qualitative financial risk possibilities. In other words, banks, which cannot control the decision processes regarding reforms, have expressed themselves in a higher risk profile as financial institutions. In particular, UK-based approaches to which the model is applied confirm as a result this global level of influence. In this process it is understood that, in which the macroeconomic environment is also effective in regulations and the regulations related to financial regulations increase the risk possibilities and the risk impacts equally especially for the EU global banks (European Commission, 2012). In terms of increasing the possible risk



correlation values, this phenomenon has caused significant deviations in rational estimation scales especially for UK banks within the framework of low market interest rates of repricing practices (Bank of England, 2018).

### 3. Financial Risk Correlation Analytical in The Liquidity Process and The Location of Risk Management

Especially for banks that have global characteristics, the control of liquidity processes and the continuity of liquidity management within global targets represent a meaningful process for financial risk correlations. In other words, it can be said that the correlation between the liquidity processes' control effectiveness and financial risk correlation express an opposite location. It is observed that especially the position of default rates of funding sources of investment banks increases financial risk correlation values by affecting financial sources even more negatively (Barnhill Jr. and Schumacher 2011). In this respect, it is important to reveal a common risk correlation analytical at the global level as well as to evaluate the structural effectiveness of the risk management process along the evaluation of risk analysis.

#### 3.1. Risk Models related to Systemic Liquidity Process in Financial Risk Analyses

In a process where risk correlation values are determined, handling the liquidity process in a systemic structure is important in terms of expressing the relationship between financial institutions' liquidity problems and correlation values. An increasing liquidity shortage in a process where risk correlation values increase is a process that results in the financial institutions' funding transactions being insufficient and market oriented transactions result in a negative trading process (European Central Bank, 2017). In this respect, it is seen that a systemic liquidity process is a holistic phenomenon that occurs with the market liquidity risk of financial institutions and especially reduces the asset values of banks. Undoubtedly, this process takes place as a liquidity shock, as deviations in the normal purchases and trade volumes of the assets of financial institutions (Barnhill Jr. and Schumacher 2011). In other words, an equivalent liquidity shock for risk correlation is a situation in where many global institutions are affected simultaneously by liquidity shock, and it is an important reason for a significant shift in preferences regarding current consumption. In addition, this situation brings up a process in which banks are reluctant to provide funding-obtaining, but, also causes the asymmetric information in financial markets to manipulate a process in which more liquidity is drawn from the markets in the same process. As a result, this process causes banks to enter into an important payment crisis process due to liquidity shocks, and also makes the risk correlation analytical solutions of banks and their risk management processes difficult. Along an analytical approach, it has seen that the risks banks' liquidity shocks in the market depend on the solvency of the banks have also increased the global risk correlations of banks for a quantitative risk profile analysis by increasing institutional stress. However, it is possible to say that the risk correlation values increase primarily with the credit risk stresses of the banks. Therefore, the model approach, which is put forward in systemic credit risk analysis including the macro-economic environment by Barnhill Jr. and Schumacher (2011), is meaningful (Barnhill Jr. and Schumacher 2011):

$$MVE_t = \sum_{i=1}^n A_{i,t} - \sum_{i=1}^n L_{i,t} , \dots\dots\dots(1)$$

Equality (1) presents the risk distribution values of approximately 10 global banks on the equity market in a structure that takes into account the bank portfolios and macroeconomic environment. In Equality (1), which shows a risk analysis that also takes into account the macroeconomic environment, "MVE" refers to the market values of the banks obtain at the time of "t" in the scope of "n" number of banks. "Ai" shows the macro financial environment variations such as interest rates on the basis of market, exchange rates, real estate prices and loan rates used for borrowings at the time "t". "Li", on the other hand, represents the interest rates accrued on the borrowing transactions in the market and the foreign exchange provisions of borrowings in foreign currency. Equality (1), which also reflects macro values, also presents a model that incorporates net interest income and wage income into "MVE" values and reflects taxes on these values in the market. Undoubtedly, within the scope of a risk correlation analytics, it is not possible to separate the market values (MVE) obtained by banks from the capital change trend as a capital value formation at the time "t". On the other hand, it is important to express this approach with the ratio of capital of global banks to the assets they obtain. In terms of risk approach, this fact not only affects bank risks directly, but also determines the institutional risks to be created by capital distribution values. The default probabilities proportional comparison of a global bank capital with, changes in capital ratios, and a risk scale can be expressed as follows:

$$Capital\_Ratio_t = MVE_t / \sum_{i=1}^n A_{i,t} \dots\dots\dots(2)$$

Equality (2) is based on the principle that the risk possibilities and correlation values of a globally traded bank capital will reveal a neutral risk value when the capital changes are equivalent to the change of default phases. In Equation 2, again, "Ai" shows interest rates, exchange rates and real estate-commodity prices in the market at time

"t". It is worth emphasizing that this approach includes in macro financial environment changes such as loan rates used for borrowings in "t" time. In Equation 2, in determining the financial risk correlations of these banks, systemic risk distribution values proportional to their capital were tried to be determined. We see that this approach aims to determine the risk of the expectations of banks in future default rates, the degree of compliance of banks with changes in capital ratios. In determining the financial risk correlations at the level of banks, it is seen that the capital exchange rates and the share sales of banks for their own assets have also an important place. The financial market depth is important in this case, which is also referred to as "Fire Sales" as a crisis period phenomenon in Coval and Stafford's studies (2007). In the study of Aikman et al. (2009) financial risk correlation analytics, it is noted that the prices, or the market values of the assets, which are handled over the asset prices of the banks create a higher financial risk correlation with possible liquidity deviations in the markets (Aikman et al., 2009: 17-18). It is possible to express this analytical approach of Aikman et al. (2009), as follows:

$$P_j^i = \max \left\{ 0, P_j \left( 2 - \exp \left( \theta \frac{S_{ij}}{M_j + \varepsilon_j} \right) \right) \right\} \dots \dots \dots (3)$$

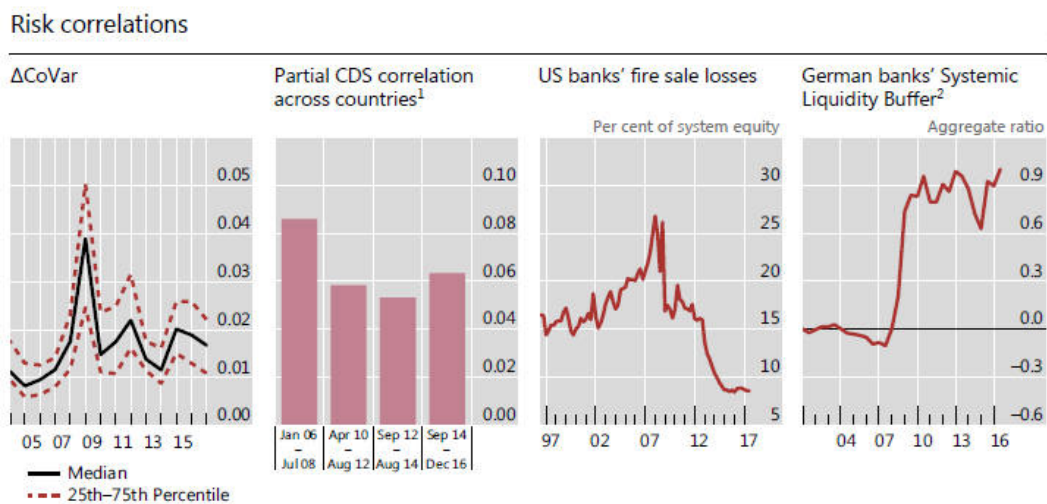
It is possible to say that equation (3) also modeled a global risk network methodology in analyzing the risk correlations of banks analytically "j" in Equation (3) refers to the price of bank assets related to risk period sales; "i" indicates the probable discount rate of the financial asset and "P<sub>j</sub><sup>i</sup>" represents the market equilibrium point where after-sales asset sales are equal to "Zero" which is the highest value. "P<sub>j</sub>", on the other hand, expresses the value of the difference coefficient, where the prices before the crisis are multiplied by the value in the discount period. Also, the term "i", in "Fire Sales" is a function of the bank assets sold. "S<sub>ij</sub>" express the depth of the market related to the volume of sales in normal liquidity processes (M<sub>j</sub>) and also "θ" is treated on the equation as a parametric coefficient value, and this shows as the cash flow coefficient, which causes less liquidity flow in the markets, and shows the tightness of the markets cash flows. In addition, the term "ε<sub>j</sub>" refers to the coefficient of variation that can have a meaningful impact on the markets to express fluctuations in the markets as macroeconomic conditions change.

This analytical approach is also used by banks as a simulation to estimate possible defaults. Analytically, the purpose of determining the risk correlation values here is to reveal the equivalence between the current and future presumed times in the assumption of the possibility of future of risk correlations. In this context, it is inevitable that the probable default losses related to bank loans increase during the periods of economic instability, especially if these banks have similar asset and transaction liabilities, express their simultaneous failure in other global banks. In this context, this process, in which interbank borrowing and loan default options are considered as a whole, appears to be a structure in which the capital increase rates and risk correlation values of these institutions operate in the opposite direction in the process, and this financial phenomenon mean that along the financial operations risk correlation values are high in an analytical analyses framework (Dietrich and Hauck, 2019).

### 3.2. The Risk Correlation Analysis Values, and Structural Criteria Distribution in The Risk Governance

As banks are forced to sell more financial assets in a process where financial risks increase, they also have endured higher financial costs within the framework of their sales prices throughout the risk governance process. If we emphasize again that corporate sales in this period of risks are called "Fire Sales", we should point out that the discount factor for sales is an important risk factor for banks. In this respect, it can be more clearly emphasized that the banks are subject to higher risk correlation increases in liquidation of their financial assets due to the discount factor for sales, which should be solution among the governance process. In this sense, as it was shown previous years, the financial stress correlation coefficient moves in a concave trend due to the risk governances that is not suitable (Duffie, 2006).

In addition, this structural governance fact has brought on agenda again the negative coefficients resulting from the sales of the shares increases related to the Banking Financial Risk Governance after 2015, as the risk correlation values in the recently years, which intended to find resolution. In this structural approach framework, comparing the risk correlation values with the global banks monitored in Annex 1 after 2015 is quite meaningful due to allow to also analysis the systemic liquidity process touch with financial risk process. This significance is also important in terms of showing the institutional based financial depreciations due to be discounted sales of their assets in the aforementioned during the financial crisis. The versatile research conducted by Abbasi and et. regarding the determination of risk correlation values after 2015 has been quite meaningful. In this study, which is based on the banks covered by Annex (1), comparisons between banks with ABD origin and European banks were made and striking results were obtained. Another striking aspect of the study relates to measurements of a buffer effect of changes in liquidity values in the relevant process. In this study published by Deutsche Bundesbank, it has seen related to the fact that the systemic liquidity risks of banks of German origin have increased even more in the post-2015 years:



**Source:** Committee on the Global Financial System-CGFS (2018), *Structural Changes in Banking After The Crisis*, CGFS Papers No 60, New York and Frankfurt: Bank for International Settlements, 2018, p. 44.

Figure 2. The Risk Correlation Alterations in The Global Banks After 2015

In Figure (2), it is seen that the risk correlation and median values peaked with the effect of the global crisis in 2009 and then entered the normal scale distribution. On the other hand, it is understood that the risk distribution values are not very different for banks with different financial characteristics. The point that draws attention in the study is that while the liquidity buffer effect has increased in European origin banks, "Fire Sales" after the crisis has also entered a significant downward trend in US origin banks. It is observed that the liquidity volume increased by the European Central Bank after the financial crisis year 2009 had an effective buffer effect on possible financial crises after 2015.

The transformation of this liquidity buffer effect, which was negative before 2009, into an important positive train after 2015 is a result of the stable financial policies of the European Central Bank. Undoubtedly, it can be said that this situation has also created an important impact trend that increases the global value of the Euro during financial volume operationally, and lowers the risk correlation values. There is no doubt that correct identification of risk sources is meaningful and important for risk management in determining financial risk correlation values (Valaskova et al., 2018). In addition, this approach provides a significant assessment ground for comparing the scale values of the structural distribution of risk criteria with different clustered countries in risk management. It can be said that one of the most important studies in which the relationships between risk types and risk sources are determined in the average median is the study done by Oláh et al. (2019). In the study, the global banks in Annex (1) are again taken as the main sampling group and countries are considered in two main classifications as high risk group and low risk group in terms of financial institutions.



Table 1. Relative Proportional Distribution of Risk Distributions, and Location of Risk Sources after 2015

Type of Risk/Risk Source		Country	
		Lower (V1–V3)	Higher (V4–V5)
economic	development of taxes	57.4% (m <sub>111</sub> )	42.6% (m <sub>112</sub> )
	poor availability of financial resources	77.1% (m <sub>211</sub> )	22.9% (m <sub>212</sub> )
	development of interest rates	82.3% (m <sub>311</sub> )	17.7% (m <sub>312</sub> )
	the rise in energy prices	66.9% (m <sub>411</sub> )	33.1% (m <sub>412</sub> )
economic total		70.9% (m * <sub>111</sub> )	29.1% (m * <sub>112</sub> )
financial	insufficient profit	62.3% (m <sub>111</sub> )	37.7% (m <sub>112</sub> )
	corporate debt	83.3% (m <sub>211</sub> )	16.7% (m <sub>212</sub> )
	unpaid receivables	74.1% (m <sub>311</sub> )	25.9% (m <sub>312</sub> )
	inability to pay for liabilities	78.0% (m <sub>411</sub> )	22.0% (m <sub>412</sub> )
	financial total	74.4% (m * <sub>211</sub> )	25.6% (m * <sub>212</sub> )

**Source:** Oláh, J., Kovács, S., Virglerova, Z., Lakner, Z., Kovacova, M. & Popp, J. (2019), “Analysis and Comparison of Economic and Financial Risk Sources in SMEs of the Visegrad Group and Serbia”, *Sustainability*, 11, 1853, p. 7.

Table 1 shows that the changes in institutional taxes in terms of financial institutions put forth the highest percentage coefficient values especially in low income developing countries. In this context, middle and low income countries in the V1, V2 and V3 categories that mean the risk perception percent are economically affected by weaknesses in total taxes developments. In brief, the highest values at the financial risk level are observed to occur during the periods when the debt payments are insufficient in these countries. Again, it is observed that the changes in high market interest rates are an important risk factor for the countries in this group and they also affect the risk perception correlation values at high levels. The value (m) next to the risk correlation values expressed as risk percentage in the table indicates the average median values in the determinations regarding the financial units included in the sampling group. While the total percentage risk perception correlation value created by structural dynamics in low risk percent countries around 70.9 percent, it is observed that in high income countries, this risk perception percentage down to by 29 percent as to aim to determine the macroeconomic balances. However, in low-income countries where the level of financial risk perception is low, the correlation value of the perception of risk is around 74.4 percent.

It is observed that this value is around 25.6 percent in countries with high income and institutionalization, and it is understood that there is a significant difference in institutionalization risk perception correlation values. In this framework, in which the risk correlation values are both perceived and determined by banks, it is observed that the risk governance process of global banks bring on the agenda some important discussion dynamics. The first of these is the requirement for global banks to adapt to their current risk profiles and to update their structural activities. On the other hand, this approach means that risk management also supports structural transformation and growth for banks. It should not be overlooked that effective management of the risk management process at this stage means restoring possible security violations after the crisis and accelerating the recovery process. To the risk management of banks, 80% of the banking participants agree that cyber attacks and natural disasters are the most important sources of risk (EY, 2018). Another equivalent of the elements currently considered as the most important source of risk for the risk management processes of banks at this point is the potential risk factors due to cyber security and climate changes.

In this context, it is inevitable to create a structural risk management by dividing the risk management process of global banks into three main categories. These categories are "Credit Risk", "Market Risk" and "Operational Risk" (Yarız, 2011). The inevitability of an integrated risk management for global banks arises from this structural approach. The integrated risk management primarily covers advanced measurement methods and stress tests that arise from legal limitations and internal rating methods. Here, approaches to analyzing operational risks for risk governance and then seeking a standard method are the most controversial elements of the banking risk governance process. This factual approach makes inevitable some of the imperatives and criticisms that further detail the risk governance process of global banking. On the other hand, the measures taken by the banks within the framework of risk management are undoubtedly that they have provided capital accumulation to cover losses that may occur

after the probable risk process. The positive relationship of the accumulation of capital with the risk ratios assumed or anticipated caused banks to increase their capital guarantees. Undoubtedly, this fact brings important management factors such as accurate and systemic measurement of risk measurement values into the agenda. In this context, the financial risk measurement technique, which is used frequently by global banks, is the "Financial Risk Matrix Measurement" technique and it generally takes place with a management structure subject to public practices in countries (Yarız, 2011).

#### 4. Discussion

One of the topics that are important for discussion in this framework is that banks' risk appetite phenomenon is well defined in terms of quality and expectations in financial risk management. The risk appetite phenomenon is also a strategic part of the financial crisis management process and reveals what positive results you expect from the risk process (Mongiardino and Plath, 2010). The way financial risk management is handled within the framework of the banks' risk appetite approach is also an expression of which financial decisions, which will aim to reveal throughout the positive financial results institutionally.

It should be emphasized that the financial decisions taken aimed to the "Crisis Appetite" are more than one-way, but rather the subject of the decisions that concerns the banks' common decisions process. The point under discussion is how and in which profile the approach related to the "Crisis Appetite" phenomenon will be addressed within the scope of financial risk management and how it will be harmonized with post-crisis capital increase expectations. On the other hand, the degree of compatibility of risk sources with the phenomenon of "Risk Appetite" is also an important discussion topic in the crisis management process. All these contradictions can be coming in the process of defining the risk profile, and also it takes time to see and analyze the governance effects of banks on their balance sheets (Rokhmawati, 2019).

But, this governance phenomenon, which also makes sense in the process as a problem of delays, has an important constraint effect that also affects the banks' "Risk Appetite" limits. Factors such as debt, liquidity, exchange rate risk, interest rate risk and fragility in commodity prices in banks' implementation of financial risk management are also important dynamics that affect fluctuations in banks' income and expense flows during the risk process. (De Volksbank, 2019). In brief, the banks are affected differently from liquidity processes, and the different negative effects are made inevitable invented to the expectation regarding financial processes related to risk management processes and afterwards. The location to which a bank's balance sheet, which gives an instant financial view, will affect the possible risk correlation values is an important uncertainty for the future in the risk governance of banks. At this stage, it is seen that banks' probable results from financial risk management and risk appetite expectations have brought some inquiries to the agenda one after another (Aebi, 2011). What the main sources of income of the bank in question are, and the degree of sensitivity to financial risks is that is a serious matter of debate. On the other hand, to which time banks' debts and financial liabilities are distributed and the composition of these liabilities are the main issues that create a significant impact uncertainty. In this context, the ever-changing structure of macro variables such as interest rates and unemployment has also been an important discussion topic in the risk management process (Hägele, 2019). Within this framework, determining the risk governance and risk correlation sensitivity values of banks is on the agenda as a new discussion topic of a new interbank crisis process, which is far from introducing a common decision process (European Central Bank, 2020).

#### 5. Conclusion

The possible deviations in financial risk correlation on the basis of global banks after 2015 year are explained with some institutional dynamics, and macro effects such as liquidity process are observed to have significant transformation effects on these financial facts. In this context, the change process of risk components directly affects the banks' risk correlation values and may cause important different results related to the risk process for purposes such as target financial profitability. In other words, it is seen that insufficient capital accumulation frequently encountered by banks that are traded at a global level, and the consequences resulting from the lack of transactions in global financial transactions, also cause significant deviations in the banks' risk correlation values. Undoubtedly, the reasons that increase the risk correlation in the scope of financial risk management is to necessitate a management process compatible with the profit targets of global banks.

It is understood that the efforts of global banks to reach the target profit limits create a significant institutional pressure and make the rising risk correlation values inevitable after 2015. Again, in this context, it is seen that the differences in corporate interest rates increase the corporate risk sensitivity by causing the profit targets of banks to be differed. Therefore, in our determinations, it has been found meaningful that this institutional global financial phenomenon creates a significant risk increase and tension towards global financial markets among global banks. In addition, another reason for this situation is the negative credit cycles caused by insufficient corporate bank capitals. It is understood that in overcoming this situation, global banks have started to increase the urgent qualified "Fire Sales", but also it appears that this situation has also caused some deviations in the Audit Review and Evaluation Process (SREP) regarding risk governance.

Especially after the global financial crisis year of 2009, global banks have put forth different results in risk correlation values as a result of different governance practices. It is observed that especially the proportional increases in "Fire Sales" of banks of European origin play an effective role in the process and aim to create a significant correlation with the changing liquidity processes. In this context, in a framework where dynamics that directly affect financial correlation values are evaluated in two categories that are meaningful according to financial risk sensitivities for global banks, it is understood that financial institutions, primarily banks, have debts is the most significant effective component. Again, we would like to point out that the perception scale of financial risk stress has been included in the process as a dynamically as upper criteria level, which is directly affected by the development level of countries especially after 2015. In other words, the economic development levels have been the main decisive of the perception scale of financial risk stress in the scope of global banks aim to be analyzed. In addition, although the financial institutions' lack of payment of their liabilities in the post-2015 period -or inability to pay liabilities-, has increased their corporate urgent financial value sales. To intended to this financial phenomenon, it can be said that it has been successful to aim to ensure revealing a market balance via increasing liquidity rates after 2018. At this stage, we can emphasize that especially the risk governance process of global banks has been still in a positive process increasingly the percentage of success after 2015.

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**Annex 1.**

**G-SIBs as of November 2019<sup>11</sup> allocated to buckets corresponding to required levels of additional capital buffers**

<b>Bucket<sup>12</sup></b>	<b>G-SIBs in alphabetical order within each bucket</b>
5 (3.5%)	(Empty)
4 (2.5%)	JP Morgan Chase
3 (2.0%)	Citigroup HSBC
2 (1.5%)	Bank of America Bank of China Barclays BNP Paribas Deutsche Bank Goldman Sachs Industrial and Commercial Bank of China Mitsubishi UFJ FG Wells Fargo
1 (1.0%)	Agricultural Bank of China Bank of New York Mellon China Construction Bank Credit Suisse Groupe BPCE Groupe Crédit Agricole ING Bank Mizuho FG Morgan Stanley Royal Bank of Canada Santander Société Générale Standard Chartered State Street Sumitomo Mitsui FG Toronto Dominion UBS UniCredit

**Source:** Financial Stability Board-FSB, 2019 List of Global Systemically Important Banks (G-SIBs)-22 November 2019, <https://www.fsb.org/wp-content/uploads/P221119-1.pdf>,

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