



Development of a Risk Culture Intensity Index to Evaluate the Financial Market in Germany

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Abstract: Banks have been seriously impacted by the financial crisis. The financial crisis causes an immense discussion about the soundness of the risk culture of the financial institutions. Corresponding to the results of diverse research studies, senior risk management observed a weak risk culture in the financial market as a trigger of the crisis. In accordance with the prevailing literature, I designed a risk culture model, which is used as the foundation for the autonomous development of a risk culture intensity index (R.C.I.I.). In the next step, I applied this index for the analysis of the risk culture of the 30 top financial institutions in Germany in a timeframe of four years from 2008 to 2011. The evaluation is based on a content analysis of the published financial statements of the organizations. The study examines whether a change in the risk culture can be considered or not. The result of the analysis is that there is a clear trend towards a more risk-aware and adequate risk culture in the financial market in Germany.

Keywords: Risk culture, organizational theory, financial market, content analysis

1 Introduction

“All organizations need to take risks to achieve their objectives. The prevailing risk culture within an organization can make it significantly better or worse at managing these risks”(AIRMIC / ALARM / IRM, 2012). The organizational culture directly influences the business performance of a company (Xenikou and Simosi, 2006). In today’s business life a company needs to establish a conscious risk culture as part of its corporate culture to stay competitive. *“Risk culture – besides people - is THE most crucial factor for a successful risk management”* (Doerig, 2003). As a result, the risk culture determines the success of a financial institution whereas the risk itself is only an indicator of the established risk culture. 65% of the seriously impacted banks increased their focus on a sound risk culture (Ernst & Young, 2012).

1.1 Definition of risk and risk culture

Risk is a part of the financial economy. Business activities always contain uncertainties and the jeopardy of failure. For a better understanding of the risk culture framework, it is important to define first of all the meaning of risk in this paper.

The terminology of risk is not explicit. It has changed in the last centuries. Taking into consideration that only the financial statements of the banks in Germany are analyzed, the following statutory definition in accordance with IDW (INSTITUTE OF PUBLIC AUDITORS IN GERMANY) and the ACCOUNTING STANDARDS BOARD OF GERMANY of risk will be applied in the paper: *Risk is the possibility of a negative future impact on the economic position of a group.* Therefore, risk can but not necessarily has to result in a potential loss. Risk can occur in each organizational unit and is related to all activities of an entity (Denk and Exner-Merkelt, 2005). This definition is applied because it represents the statutory principle of risk in respect to the financial statements. Moreover, this definition stands in accordance with common financial risk measurement models, e.g. the RoRaC-concept (Return on Risk Adjusted Capital).

Several key characteristics determine an appropriate and sound risk culture. These aspects are considered in the following definition of a strong risk culture: *A company has to possess a high integrity. The organization has to establish clear principles regarding risk management. These guidelines have to be promoted by the executives of the institution. The senior management is accountable for the implementation of the risk culture. But each individual employee is responsible for the management of risk. There has to be a risk-awareness throughout the whole company. Risk appropriate behavior has to be encouraged and rewarded. The company has to promote an actively learning culture to be able to survive by adapting to the new developments in the market.* (Bungartz, 2006; O'Donovan, 2011; AIRMIC / ALARM / IRM, 2012).

Research regarding risk culture is a relatively new subject of applied science. The risk culture concepts are based on diverse theories such as cultural theory, organizational theory, or other psychological approaches. The next section describes the existing risk culture studies and compares the diverse risk culture approaches.

Prior to the explicit risk culture research and conceptual work, other authors have already generated theoretical models which partly consider the risk culture aspects. Such a framework is conducted by SMALLMAN. He describes risk culture as the beliefs and attitudes that influence the activities of individuals and groups who are in charge of risk management within the institution. SMALLMAN differentiates between a proactive and a reactive risk culture. Proactive institutions value a cost / benefit analysis and want to maximize profits by minimizing risks. The proactive risk culture possesses a holistic risk management and a future-oriented time horizon. They believe that they can affect and alter the risk position of a company. Therefore, they implement a direct interaction and on-going learning environment. Contrariwise, reactive institutions are too occupied with their established procedures. Thus, they do not have an adequate risk-awareness. They are not able to identify emerging risks early and cannot adapt to new developments fast enough (Smallman, 1996).

In contrast to cultural theory, the behavior of organizations is a key aspect of the resource-based risk management approach. To identify the soundness of the risk management organizational system FÜHRING invents a risk culture typology, which is based on two dimensions. One dimension is the “degree of risk-appropriate behavior” and the other dimension is the type of “risk conviction” of the organization. The different risk management types according to FÜHRING are: resource-based risk management, market-oriented risk management, bureaucratic ignorance, and reactive fatalism. According to FÜHRING, the ideal risk culture approach for an organization is the resource-based view. These companies possess a high degree of risk-appropriate behavior and an internal risk conviction (Führung, 2009).

By comparing the risk management approach based on cultural theory and the resource-based risk management approach, it is evident that these two approaches emanate from contrary points of origin. In cultural theory, the influence of groups regarding the shape of individuals is analyzed, in the resource-based view the culture of the organization is in the center point of research. Although the approaches differ in respect to the point of origin, both theories define four groups and some of the groups are identical regarding their risk perception and behavior. Both theories have identified a group called “Fatalist”. This group is reactive and does not believe that they can influence their environment. Thus, they do not implement a risk management system. In addition, Individualists perform a very similar behavior as the organizations applying a bureaucratic ignorance. In both theories, these groups do not care about external risk. They are occupied with their own rules and regulations. From these findings, it can be reasoned that groups with a self-serving behavior act less risk aware. A reason for this attitude might be that individual-oriented groups do not look at the whole picture. They just focus on themselves. In contrast to the before mentioned groups, a clear mapping of the other groups is not possible. The Egalitarians do not fit into the concept of FÜHRING. Possible organizations which fit to this role are institutions, which want to establish a fair market and to install equilibrium in the market such as banking supervision or shareholder organizations. The group of Hierarchists wants to manage risk. Like market-oriented or resource-based institutions they have high risk awareness. Hierarchic institutions have implemented many risk artifacts. These criteria have hierarchical groups in common with companies applying a market-oriented or resource-based approach. A differentiation between external or internal risk convictions is not applied in the risk management approach of cultural theory. Concluding, the risk management approach of FÜHRING and the cultural theory complement each other.

The risk management role according to above described theories can be transferred to financial institutions. The board, Chief Risk Management officer (CRO) and risk management department take the role of the Hierarchists, the marketing, sales and trade department or shareholder act like the Individualists and the audit and compliance department, unions or other stakeholders behave like Egalitarians.

Moreover, the proactive (Analyzer) and reactive risk culture (Defenders) have similar attributes with the groups clustered in cultural theory or in the resource-based view. The characteristics of the “Analyzers” are very similar to the risk culture of Hierarchists. Contrariwise, reactive risk culture groups possess very similar attitudes in comparison to groups possessing a bureaucratic ignorance.

According to the findings above, it is obvious that the results of the different risk culture concepts do not vary significantly. Even if the points of origin and applied theoretical concepts vary, all of them differentiate between a more proactive, sound, and risk aware culture in contrast to an inadequate risk culture characterized by reactivity or too risky and selfish behavior.

For the analytic research of risk cultures of financial institutions especially the frameworks based on organizational theory have to be considered. These approaches embody an appropriate frame of reference to develop a risk culture concept for banks.

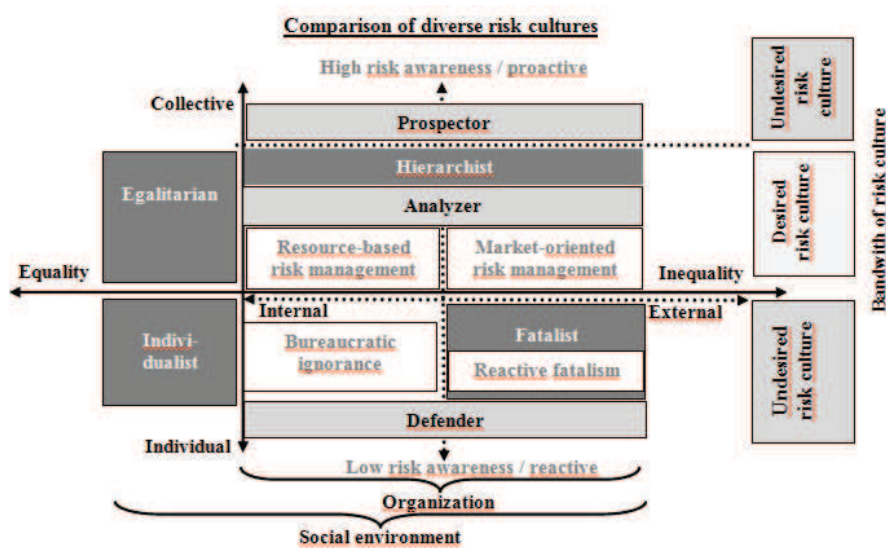


Figure 2
Risk culture model; own illustration

2 Research Method

2.1 Content analysis

To examine whether any changes in respect to the banks risk culture can be measured, 123 financial reports of GERMAN financial institutions published from 2008 till 2011 are evaluated via a content analysis. The analyzed financial institutions belong to the top financial institutions in Germany. The asset amount of the top forty institutions represents about 76% of all financial institutions in Germany in 2011 (Kuck, 2012). They are chosen because they represent the banks with the highest risk assets as well as the greatest total assets. In total thirty banks are analyzed because some of the top forty banks are subsidiaries of bigger institutions and already considered in the consolidated

financial statements. A cut-off method can be used, if a small part of the population has a major impact or a high significance for the research objective. It is a commonly used method for official statistics (Kromrey, 1994). Hence, a concentration method for the data selection is applicable.

Type of financial institutions	Year				Total	%
	2008	2009	2010	2011		
cooperative	3	3	3	3	12	9,8
private	14	13	12	12	52	41,5
public	15	15	15	15	60	48,8
Total	32	31	30	30	123	100

Table 1

Overview of the different types of financial institutions; own illustration.

From the top 30 financial institutions in 2011, 3 banks are cooperative organizations with a total equity of 4,538 Mio. €. Between 2008 and 2011 41.5% banks are private owned organizations. In this category the Dresdner Bank has been merged with the Commerzbank in 2009 and the Postbank has been integrated into the Deutsche Bank in 2010. The private banks own an equity of 126,060 Mio. € in 2011. The number of public banks has been at constant level of 15 financial institutions. These financial companies possess equity of 90,314 Mio. € in 2011.

The financial reports are all published publicly and are subject to the German regulation. Thus, the same context analysis can be applied for all financial reports examined. In total 3.617 pages are analyzed.

According to SCHEIN, language is an artifact of the corporate culture. The vocabulary itself is an expression of the company culture (Schein, 2004). As organizations grow, they develop their own common language and common conceptual categories. ATTESLANDER affirms that a content analysis has a diagnostic function and provides information about the sender and the situation within which the sender produced the text (Atteslander, 2010).

In addition, CARRETTA, FARINA and SCHWIZER applied a text analysis for the comparison of the regulator's and bank's culture in Italy. According to them, the distinctive characteristics of the organization are reflected in the company's documents. Hence, these documents can be used for the interpretation of the company's culture (Carretta, Farina and Schwizer, 2010). Moreover, the research of RASID, RAHMAN and ISMAIL exhibits that financial institutions are enhancing the link between accounting and risk management (Rashid, Rahman and Ismail, 2011). The research illustrates that the analysis of the financial statements contributes most towards risk management.

Furthermore, the BASEL COMMITTEE OF BANKING SUPERVISION has enhanced the disclosure requirements for banks according to the third pillar of BASEL II: *“The Committee aims to encourage market discipline by developing a set of disclosure requirements which will allow market participants to assess key pieces of information on the scope of application, capital, risk exposures, risk assessment processes, and hence the capital adequacy of the institution. [...] In principle, banks' disclosures*

should be consistent with how senior management and the board of directors assess and manage the risks of the bank.” Thus, the financial statements embody the risk culture manifestation of a company provided to the public under supervision of the external auditor and regulatory institutions.

Thus, a content analysis of the financial statements is applied. Due to the fact that the reports of four years are analyzed, the research offers the possibility to determine whether any changes regarding risk culture can be observed. The goal of the content analysis is to detect numeric relations. Therefore, the following empirical structure has been developed.

2.2 Risk culture intensity index

The aim of the paper is to analyze the development of risk culture in the financial market in Germany between 2008 and 2011. The following null hypothesis is applied:

H₀ = No change exists in the specification of risk culture in the financial organizations in Germany between the years 2008 and 2011.

To measure the intensity and strength of the company’s risk culture, a risk culture index has been developed. The index consists of three sub-indicators.

According to the definition of a strong risk culture, one major prerequisite is that all company members are responsible for risk management and encouraged to act correspondingly. To overcome this obstacle the three lines of defense, consisting of the operational business units (first line), the risk management units and its supporting functions (second line), and the internal audit organization (third line), have to be established (Bessis, 2010). Thus, one indicator of an adequate risk culture is whether these three lines of defense are in place. Therefore, this risk culture indicator has to be subdivided into three categories – first line of defense (FL), second line of defense (SL), and third line of defense (TL). The risk culture indicator relating to the organizational functions (RCIOF) is measured by the risk functions named in the risk report of the financial statement. Each risk function illustrated in the financial statement represents one point. The sum of the points of all three categories (FL + SL + TL) divided by three represents the strength of the indicator. This corresponds to the mean value of the risk functions (RF). Solely measuring the organizational functions is too simplified. This indicator only measures how strong the functions are integrated in the company’s risk culture. Thus, it examines who is responsible for risk management and whether this creates the possibility to create risk awareness throughout the financial organization. But the indicator provides no information whether the company members accomplish the required risk management procedures. Thus, the other prerequisites of an adequate risk culture have to be taken into account. This prerequisite is measured by the “Risk Culture Indicator of Artifacts” (RCIA). This indicator represents the mean value of the risk artifacts (ra) used in the risk management framework of the company. By the RCIOF and RCIA the risk culture is measured in terms of strength of the involvement of the company members and the degree of the adequate risk management behavior. But both indicators do not consider the risk itself. Thus, if all the people are involved and

would have applied all relevant risk instruments the risk culture can be weak because the company members only focus on some selected risks. Thus, a third indicator, the “Risk Culture Indicator of Risk Exposures” (RCIRE), is applied. These three indicators measure the strength of the diverse premises for the establishment of a sound risk culture.

The sum of the three indicators determines the intensity of an adequate risk culture. But solely to add the results $F_{rf} + F_{ra} + F_{re}$ reproduces a misleading picture of the risk culture, because they do not measure the same attributes (Früh, 2001). Hence, a common numeric coding has to be developed. Therefore, the classes of the indicators are rated on five-step scale. The following point-scheme is applied:

very weak = 1 / weak = 2 / average = 3 / strong = 4 / very strong = 5

The points of the classes of the three indicators are added ($C_{rf} + C_{ra} + C_{re}$). The results can vary in a range between 3 to 15 *points*.

$$\text{Risk Culture Intensity Index (R.C.I.I.)} = C_{rf} + C_{ra} + C_{re}$$

These results are transferred to the following rating system to determine the intensity of the entire risk culture.

Risk Culture Intensity Index (R.C.I.I.)					
Class	Very weak	Weak	Average	Strong	Very strong
Rating scores	≤ 4	5 – 7	8 - 10	11 - 13	≥ 15

Table 2
Classification of the Risk culture Intensity Index

To analyze the content of the financial report the software program IBM SPSS Statistic version 22 is used. At first a glance, the overall facts of the evaluated financial institutions are given.

In comparing the risk culture between the different types of years, it is obvious that in all type of organizations average, strong and very strong risk culture exists. None of the financial institutions possess a weak or very weak risk culture. In 2008, one cooperative, three private and two public organizations had an average risk culture. In 2009 and 2010, only three companies showed an average risk culture. The amount of companies with an average risk culture declined again in 2011. Only one public and one cooperative financial institution possessed an average risk culture. In total about 11% of the analyzed companies could be classified as financial institutions with an average risk culture. In 2008, eight companies showed a strong risk culture. Two private and six public organizations belong to this group of companies. From 2009 to 2011, this group declined from seven to four organizations. In 2011, one private and three public organizations belong to this risk culture category. The number of companies possessing a very strong risk culture increased from eighteen to twenty-four financial institutions from 2009 to 2011. The number of cooperative organizations has been stable during all four years. About two third of the analyzed cooperative companies belong to this group. The number of private institutions in this category increases by two companies from

2008 to 2011. In 2011 about 92% of the private banks possessed a very strong risk culture. Even more, the number of public banks possessing very strong risk culture increased. Whereas in 2008 47% of the public financial institutions belong to this group, the number of companies increases to 73% in 2011.

Type of financial institutions per year	Risk Culture Intensity Index			
	Average	strong	very strong	Banks in total
Total 2008	6	8	18	32
cooperative	1		2	3
Private	3	2	9	14
Public	2	6	7	15
Total 2009	3	7	21	31
cooperative		1	2	3
Private	1	2	10	13
Public	2	4	9	15
Total 2010	3	6	21	30
cooperative	1		2	3
Private		3	9	12
Public	2	3	10	15
Total 2011	2	4	24	30
cooperative	1		2	3
Private		1	11	12
Public	1	3	11	15
Total 2008 - 2011	14	25	84	123
Total 2008 - 2011 in %	11%	20%	68%	100%

Table 3

Overview of the different types of financial institutions; own illustration.

Based on these figures the above mentioned null hypothesis should be analyzed: The year is the independent variable whereas the risk culture indicator is the dependent variable. A first analysis shows that the arithmetic average of the risk culture intensity index rises from 12,969 to 14,1. This calculation is based on the numeric classification according to table 2. The lowest risk culture intensity index constitutes in 2008 by only 8 points. It rises in 2009 to 9 and in 2011 to 10 points. It shows a clear trend towards the implementation of a stronger risk culture between 2008 and 2011.

Risk Culture Intensity Index						
Year	Arithmetic mean	Median	Minimum	Maximum	Sum	Frequency
2008	12,969	14,000	8,0	15,0	415	32
2009	13,613	14,000	9,0	15,0	422	31
2010	13,700	14,000	9,0	15,0	411	30
2011	14,100	15,000	10,0	15,0	423	30
Total	13,585	14,000	8,0	15,0	1671	123

Table 4

Overview of the arithmetic average of the risk culture indicator index; own illustration.

To examine the null hypothesis the Kendall-Tau-b and Spearman-Rho tests are used. These tests are non-parametric. Thus, the R.C.I.I. represents the dependent variable of the null hypothesis whereas the time line represents the independent variable.

Correlation analysis

		year	RCII
Kendall-Tau-b	year	coefficient of correlation	1,000
		Significance	,161*
Spearman-Rho	year	coefficient of correlation	1,000
		Significance	,182*

Table 5

correlation analysis of the risk culture indicator; own illustration.

The Kendall-Tau-b shows an association of 16.1% whereas as the Spearman-Rho shows an association between the variables of 18.2%. Thus, as the significance is less than 5% the probability of error can be denied. A positive correlation between the years and risk culture intensity exists.

3 Conclusions

According to the results of the correlation analysis, the null hypothesis can be denied and a clear trend towards the implementation of a more sound and adequate risk culture over the timeframe of four years exists in the financial market in Germany. This trend is observable in all three banking types in the banking sector in Germany, although the private sector has made the most efforts to amend their risk culture.

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