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Measuring and Assessing Risk Culture

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7.1 Introduction

A weak risk culture was one of the drivers of banking crisis of 2008 (Parliamentary Commission on Banking Standards 2013). The interest of risk culture is now common to practitioners, regulators and academics. For instance, HSBC states that “Establishing and maintaining a strong link culture is of fundamental importance in ensuring the sustainable success of an organization and to the reestablishment of trust of financial

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institutions and the banking sector”. It is therefore not surprising that banking regulators (Financial Stability Board 2014) and practitioners (Deloitte Australia 2012; Institute of Risk Management 2012) developed frameworks to analyze and enhance risk culture in financial institutions: e.g. a new pillar III discipline is pushing banks to develop a strong risk culture (BCBS 2015). The New York Fed Governor, Dudley (2015) notes “In the last year, we have seen emerging approaches to supervision that aim to address culture, conduct and governance. These methods are being developed in a number of jurisdictions”.

Although there is a great interest and discussion on how to improve bank risk culture, there is surprisingly no empirical evidence about the bank risk culture and how banks’ risk culture is related to stability. This chapter aims to fill this gap: specifically, we provide evidence that among the four components for a sound risk culture, identified by the FSB, Tone-from-the-top is the most significant for banks’ stability. Institutions with a higher level of intervention of the Board and Senior Management show, on average, a higher solidity between 2004 and 2014, after controlling for dimension, impaired loans, annual average sector’s performance and average bank’s performance throw considered period.

In this chapter, we aim to provide empirical evidence about the risk culture of European banks. For this purpose, we measure banks’ risk culture by using a text analysis technique build on the Financial Stability Board’s framework (Financial Stability Board 2014) of sound risk culture. Specifically, we identify a set of words (labelled “bag of words”) capturing the bank’s risk culture orientation based on the Financial Stability Board’s 2014 framework and we apply a quantitative text analysis (QTA) on banks’ public disclosure to build an index, labelled as “Sound Risk Culture Indicator” (SCRI). In the final step, we measure the correlation between our SCRI index and the Z-score of the banks. Our sample includes 147 of the major European banks between 2004 and 2014.

This chapter is organized as follows. Section 7.2 presents a brief discussion on methods used in risk culture measurement and the advantages to use QTA. Then, Sect. 7.3 illustrates SRCI’s computation, Sect. 7.4 describes the sample and Sect. 7.5 reports the analysis and the results. Section 7.6 concludes the chapter.

7.2 How to Measure Banks' Risk Culture

The first necessary step to measure bank's risk culture is to define the concept of culture. In our framework, we focus on the organizational culture definition, i.e. "culture is people's beliefs, values and attributes" (Schein 2010). "Beliefs and values" are the core (deepest) levels of culture: they can be observed only from inside companies by using interviews, ethnographic studies or questionnaire. Conversely, "Attributes" is the most visible level of culture and it refers to any behaviour that is observable from outside the organization (e.g. disclosure, buildings, history, performance, risk-taking, etc.): companies' attribute can be analyzed by indirect methodologies (as e.g. a text analysis).

There are various approaches to measure firm's culture that would enable a researcher to measure companies' beliefs, values and attributes and each measurement approach has its pros and cons (e.g. Schneider 2000). As such, the choice of the technique to measure corporate culture depends on the aims of the analysis. Qualitative methodologies (as interviews) can provide researchers with a deeper understanding of firms' culture, but are very time-consuming. First, we need to recognize that values disclosed by firms are not useful to evaluate culture (Guiso et al. 2015). Generally, practitioners and consultants use such methodologies to interview board members, CEOs and top management with the aims of evaluating the main challenges in risk taking, and then they evaluate existing culture in the company with questionnaires to employees (Deloitte Australia 2012). This process applies to (one or few) companies to measure culture beliefs and attributes, it requires time to be set up and results cannot be safely compared across competitors. In order to measure corporate culture for a large number of companies, the most effective approach is to focus on companies' attributes: although these do not provide a direct measure of company's culture, "attributes" provide analysts with some visible effects of companies' risk culture. Attributes are easier to be identified and evaluated in an objective manner using quantitative methods.

In this chapter, we focus on largest European banks and so we rely on text analysis to measure their risk culture. Specifically, we use a QTA, i.e. a method widely used in past papers dealing with corporate culture

(Fiordelisi and Ricci 2014; Carretta et al. 2010, 2015a, b). The QTA has various advantages: it is objective, replicable and it is able to measure soft characteristics such as attention to client, risk sentiment or Tone-from-the-top. For our purposes, Richter (2014) is an interesting example of the QTA usage since it builds a quantitative measure of risk culture in financial institutions. Specifically, Richter (2014) develops a risk culture Intensity Index using QTA on the annual reports of the 30 biggest banks in Germany, between 2008 and 2011 and he provided evidence that risk culture changes over time.

7.3 Estimation Procedure

The underline assumption behind the QTA use to estimate the bank risk culture is that the bank's culture is mirrored in the words (vocabulary) used by this bank. As such, our estimation procedure is based on the following four steps: first, we need to identify some "items" of a sound risk culture. Second, we need to define a "bag of words" capturing each of the items defined in the previous step. Third, we need to identify appropriate company's documents where we believe the risk culture is mirrored; and, in final, we can run a QTA and estimate a score capturing the risk culture.

Regarding our first step, we identify the attributes of a risk culture based on the framework presented by Financial Stability Board (2014) "Guidance on supervisory interaction with financial institutions on risk culture", which includes contributions given by Senior Supervisors Group (2009), Group Trinity, KPMG, McKinsey and IIF. In this framework, FSB identifies four minimum characteristics of a good risk culture: Tone-from-the-top (TFT), Accountability (ACC), Effective and Challenging Communication (COM) and Incentives (INC).

The "Tone-from-the-top (TFT)" attribute suggests that Board and Senior Management have the main responsibility to develop the RC within the bank, e.g. by supporting the implementation of Risk Appetite at all organizational levels (FSB 2014). The second attribute, labelled as "Accountability (ACC)" suggests that a company is able to

take into account its risk-taking only if it has the know-how to recognize risks and it has escalation processes (as whisper blowing) to report treats. The third risk culture attribute is labelled as “Effective Communication and Challenge”: specifically, a careful risk management requires not only an intense data flows but also an open communication culture inside the organization: e.g. the top management must encourage alternative views and pay attention to the risk management’s advisory. In final, a company needs a system of “Incentives” (INC) in the form of rewards and penalties related to its risk indicators at all levels (from the CEO to loan officers), and these incentives should be not only monetary but also related to training, job rotation and successions planning to develop risk culture (Bianchi and Carretta 2016).

In the second step, we identify the bag of words. This step is based on Financial Stability Board’s framework of sound risk culture (Financial Stability Board 2014). In Table 7.1, we report a summary of the indicators that the FSB identifies for each of the four attribute (above discussed) and we collected the words from the FSB’s description. Since most of these words would be too generic taken stand-alone, we grouped two and three words where these together gives a well-defined and unique meaning to a sentence. For example, the word “board” and “lead” stand-alone would be not sufficient to identify the leadership attitude of the board (ID 4.1.a in Table 7.1), but these words taken together would show a guidance role of the board. The combination of the words selected (labelled as “Extracted Sentences”) are reported in Table 7.1, where each coma-separated term in the first group is searched with each term of the second group. These combinations of words are thereafter labelled as “Groups-Meaning-Units” (GMUs).

Since some GMUs reported in Table 7.1 are associated to more than one indicator, we deleted each GMU that refers to more than one FSB’s items. The subclasses (SCs) reported in Table 7.1 are obtained aggregating GMUs with the same first group’s terms or MUs with just one word in each C. In Table 7.2, we show the outcome of this process.

Each extracted MU expresses a certain meaning and it is used to look for this meaning in the text. One limitation is that the same concept may be stated in different ways, not just with the words included in the

Table 7.1 Examples of terms extracted by FSB's framework

FSB's ID	Indicators	Extracted sentences ²
4.1	<i>Tone-from-the-top</i>	
4.1.a	Leading by example	board ³ ; management ³ ; sm ³ ; tm ³ ; ceo ³ ; AND cfo ³ ; cio ³ ; chro ³ ; cbo ³ ; cto ³ ; chair* ³
4.1.1	The board and senior management have a clear view of the risk culture to which they aspire for the financial institution and of the behavioral and organizational consequences of this culture, systematically monitor and assess the prevailing risk culture and proactively address any identified areas of weakness ⁵ or concern	board; management; sm ³ ; tm ³ ; ceo ³ ; AND cfo ³ ; cio ³ ; chro ³ ; cbo ³ ; cto ³ ; chair* ³ risk AND culture; risk culture
4.2	<i>Indicators of accountability</i>	
4.2.a	Ownership of risk	risk AND ownership; account
4.2.1	Clear expectations are set with respect to the monitoring and reporting of, and response to, current and emerging risk information across the institution, including from business lines and risk management to the board and senior management	AND emerge; monitor; information; assessment ³ ; asses ³ ; view ³ ; communica- tion ³ ; debate ³ ; exchange ³ ; man- age ³ ; challenge ³

(continued)

Table 7.1 (continued)

FSB's ID	Indicators	Extracted sentences ²
4.2.b	Escalation process	
4.2.7	Appropriate whistleblowing procedures are in place and are expected to be utilized by employees without any reprisal, to support effective compliance with the risk management framework the treatment of whistle blowers is clearly articulated and followed in practice	whistleblowing; whistle-blowing; whistle
4.3	<i>Effective communication and challenge</i>	
4.3.a	Open to alternative views	AND alternative; open
4.3.1	Alternate views or questions from individuals and groups are encouraged, valued and respected and occur in practice. A culture of open communication and collaboration is constantly promoted to ensure that each employee's view is valued and the institution works together to strengthen risk- related decision making.	AND open; effective AND employee; line ³ ; AND staff ³ ; department ³ ; office ³ ;
4.3.b	Stature of control functions	

(continued)

Table 7.1 (continued)

FSB's ID	Indicators	Extracted sentences ²
4.3.4	Control functions operate independently, have appropriate direct access to the board and senior management and a process is in place for them to periodically report to the board.	function AND control; audit ³ ; ia ³ ; risk AND management ³ ; rm ³ ; compliance ³ ; supervisory ³ ; chief AND risk ³ ; cro ³
4.4	<i>Incentives</i>	
4.4.a	Remuneration and performance	
4.4.1	The compensation structure supports the institution's espoused core values, promotes sound risk-taking behavior, and is supported by a well-documented process.	risk; value AND compensation; cooperate ² ; remuneration ³

Notes (1) The basic idea is that the use of certain terminology suggest that the bank has a sound risk culture. The words are chosen from the FSB's framework, which proposes four minimum characteristics for a sound risk culture, and some indicators to measure them. The most of indicators reveal useful terms for our dictionary but other not, the framework is used to extract the terminology a bank with sound risk culture should use. Sure enough, our index is not an exact measure of the FSB's framework but a proxy of it. Neither the contracted variable want to be a complete measure of the bank's risk culture, it is just an index that provides an approximation, sufficient for our research purpose; (2) Since during the searching in the texts words are tokenized, sentences with words that are not verb and noun itself are integrated with substantive with the same significance; (3) The term is included because it related with FSB's sentence even if it is not present in the specific indicator

Source Authors' Elaboration

Table 7.2 Grouped original MUs by characteristics and sub-characteristics

C	SC	Group 1	Group 2
1	1	board; management; sm; tm; ceo; cfo; cio; chro; cbo; cto; chair*	lead; example; risk; employee; line; staff; department; office; value
	2	risk	scepticism; skepticism; sceptic; points of view; appetite; statement; strategy; report; framework; understand; understanding; aware; awareness; deficiency; deficit; root; weakness; weak; culture
	3	past	experience; event; failure
	4	risk culture; tone-from-the-top; tone-at-the-middle; integrity	
	5	tone	top, middle
2	6	risk	ownership; account; emerge; monitor; information; asses; assessment; challenge; view; communication; debate; exchange; manage; low probability; high impact; horizontal; vertical; mechanism; escalation; consequence; limit
	7	employee; line; staff; department; office	assessment; asses; challenge; elevate; report
	8	whistleblowing; whistle-blowing; whistle	
3	9	view	alternative; mechanism; open; effective; challenge
	10	communication	open; effective; mechanism; challenge
	11	employee; line; staff; department; office	risk
	12	audit; ia; rm; compliance; supervisory; cro	board; management; sm; tm; ceo; cfo; cio; chro; cbo; cto; chair*; employee; line; staff; department; office; stature; participate; participation; active; activity; decide; decision; independent; independence; cooperation; cooperate
	13	risk AND chief, management	board; management; sm; tm; ceo; cfo; cio; chro; cbo; cto; chair*; employee; line; staff; department; office; stature; participate; participation; active; activity; decide; decision; independent; independence; cooperation; cooperate
	14	function AND control	board; management; sm; tm; ceo; cfo; cio; chro; cbo; cto; chair*; employee; line; staff; department; office; stature; participate; participation; active; activity; decide; decision; independent; independence; cooperation; cooperate

(continued)

Table 7.2 (continued)

C	SC	Group 1	Group 2
4	15	community; society	remuneration; performance; result
	16	audit; ia; rm; compli- ance; supervisory; cro	succession; career; development-plan; plan; rotation; performance; objective; deficien- cies; deficiency
	17	risk AND chief, man- agement	succession; career; development-plan; plan; rotation; performance; objective; deficien- cies; deficiency
	18	function AND control	succession; career; development-plan; plan; rotation; performance; objective; deficien- cies; deficiency
	19	risk	train; course; succession; career; develop- ment plan; skill; remuneration; compensa- tion; incentive; bonus; performance; result; customer
	20	value	remuneration; compensation; incentive; bonus
	21	culture	skill
	22	customer	remuneration; compensation; incentive; bonus

Source Authors' Elaboration

MU. To face this limit, the method includes new MUs, these are composed by synonymous of each term taken from the *Thesaurus Collins Dictionary*. This results in 9361 MUs considered.

We count how many time MUs appear in the banks' disclosure. We divide the text into *sentences* (consecutive words contained between a blank line and a dot or between two dots) and add one to a MU-specific count for each sentence containing the MU.

In the third step, we run the QTA by using the NLTK Python package. Specifically, we count a term irrespectively whether it appears as adverb, adjectives, verb or noun (considering not the term itself but its root without the suffix). Table 7.3 shows the final list of MUs considered. SC from 1 to 5 contains MUs composed by words extracted from TFT's indicators and their synonymous, SC from 6 to 8 contains the ones from COM's indicators, SC from 9 to 14 the ones from COM's indicators and the rest refers to INC's indicators. Each Group 1's term is aggregated with each term of Group 2 and 3 to create the MUs.

Table 7.3 Final MUs' list

C	SC	Group 1	Group 2
1	1	board, management, sm, tm, ceo, cfo, cio, chro, cbo, cto, chair, head, leader, director, executive, committe, boss, governor, panel, administr, control, president, chief, chair-person	lead, exampl, risk, employe, line, staff, depart, offic, valu, guid, conduct, steer, escort, preced, usher, pilot, command, rule, govern, presid, head, control, persuad, move, draw, influenc, motiv, prevail, induc, inclin, dispos, direct, leadership, guidanc, model, pattern, danger, chanc, threat, prospect, uncertainti, hazard, worker, labour, workman, jobhold, workforc, personnel, team, organ, section, unit, station, divis, branch, bureau, subdivis, area, function, place, workplac, base, workroom, principl, moral, ethic, more, standard
	2	risk, danger, chance, threat, prospect, uncertaint, hazard	sceptic, skeptic, appetit, statement, strateg, report, framework, understand, awar, defici, deficit, root, weak, doubt, suspicion, disbelief, cynic, incredul, desir, demand, tast, passion, willing, yearn, inclin, propens, polici, plan, programm, approach, scheme, manoeuvring, comprehend, grasp, know, realiz, recogn, appreci, aware, penetr, make, discern, apprehend, conceiv, suss, tumble, catch, cotton, head, tail, percept, knowledg, sens, knowhow, insight, skill, masteri, comprehens, familiar, profici, belief, impress, interpret, feel, idea, conclus, notion, convict, assumpt, supposit, enlighten, learn, expert, vers, pictur, pluggedin, erudit, wellread, wellbrief, lack, want, absenc, shortag, depriv, inadequaci, scarciti, dearth, privat, insuffici, scanti, fail, fault, defect, flaw, drawback, shortcom, imperfect, frailti, shortfal, loss, default, arrear, radix, radicl, sourc, caus, heart, bottom, begin, base, seat, seed, foundat, origin, core, fundament, essenc, nucleus, start, deriv, fountain-head, mainspr, vulner, impot, meek, irresolut, spineless, ineffectu, timor, craven, cowardli, transpar, lame, hollow, implaus, flimsi, unsound, tenuous, blemish, achilles, armour, feebl, exhaust, frail, debilit, spent, wast, tender, delic, faint, fragil, shaki, sick, languid, puni, decrepit, unsteady, infirm, anaem, effet, enerv, poor, inadequ, pathet, faulti, substandard, under-strength, culture
	3	past, last, recent, previous, precedent	experienc, event, failur, incid, happen, matter, affair, occas, proceed, fact, busi, circumst, episod, adventur, mileston, occur, escapad, lack, defeat, collaps, abort, wreck, frustrat, breakdown, overthrow, miscarriag, fiasco, downfall
	4	risk culture, tonefromthetop, toneatthemiddle, tone at the middle, integrity, honesty, principle, honour, virtue, goodness, morality, purity, righteousness, probity, rectitude, truthfulness, trustworthiness, incorruptibility, reputability	
	5	tone	top, middle

(continued)

Table 7.3 (continued)

C	SC	Group 1	Group 2
2	6	risk, danger, chance, threat, prospect, uncertain, hazard	ownership, account, emerg, monitor, inform, ass, challeng, view, communic, debat, exchange, manag, prob, impact, horizon, vertic, mechan, escal, consequ, limit, consid, rate, valu, explain, judg, estim, think, hold, believ, count, reckon, weigh, calcul, esteem, deem, comput, gaug, apprais, appear, come, came, surfac, rise, proceed, aris, turn, spring, eman, materi, issu, appar, develop, known, light, transpir, check, follow, record, watch, survey, observ, scan, overse, supervis, keep, fact, detail, news, latest, notic, advic, data, intellig, instruct, counsel, info, determin, analys, evalu, check, weigh, size, judgment, analysi, valuat, opinion, question, interrog, accost, regard, see, perceiv, treat, adjudg, look, inspect, gaze, eye, clock, examin, explor, stare, contempl, behold, eyebal, gawp, recc, spectat, discuss, argue, disput, contest, deliber, contend, wrangl, thrash, controvert, reflect, consider, medit, cogit, ponder, revolv, mull, rumin, talk, argument, convers, controversi, dialogu, content, palem, alterc, word, chat, run, handl, rule, direct, conduct, command, govern, administ, preside, superintend, organ, regul, cope, carry, cut, perform, do, deal, achiev, carry, undertak, accomplish, contriv, finish, control, influenc, guid, master, domin, manipul, steer, work, way, result, effect, outcom, repercuss, event, sequel, boundari, end, edg, border, extent, pale, confin, frontier, precinct, perimet, peripheri, maximum, restrict, ceil, restraint, fix, bound, specifi, curb, restrain, ration, hinder, circum-scrib, hem, demarc, delimit, straiten
	7	employe, line, staff, depart, offic, worker, labour, workman, jobhold, workforc, personnel, team, organ, section, unit, station, divis, branch, bureau, subdivis, area, function, place, workplac, base, workroom	ass, challeng, elev, report, judg, determin, estim, analys, evalu, rate, valu, check, comput, gaug, weigh, weighs, apprais, size, eye, judgment, analysi, valuat, opinion, question, interrog, accost, promot, rais, avanc, upgrad, exalt, communic, publish, record, announc, state, air, detail, describ, note, cover, document, give, broadcast, post, tweet, pass, proclaim, circul, relay, recit, narrat, write, inform, betray, denounc, incrimin, tell, grasses, rat, grass, inculp, dob, account, statement, relat, version, tale, descript, declar, summari, paper, review
	8	whistleblowing, whistleblowing, whistle	

(continued)

Table 7.3 (continued)

C	SC	Group 1	Group 2
3	9	view, scene, pictur, sight, prospect, aspect, perspect, landscap, outlook, spectacl, panorama, vista, vision, visibl, eyeshot, rang	altern, mechan, open, effect, challeng, differ, other, substitut, replac, complementari, nonstandard, process, work, way, system, oper, method, techniqu, procedur, methodolog, frank, direct, natur, plain, innoc, straightforward, sincer, transpar, honest, candid, truth, upfront, plainspoken, unreserv, artless, ingenu, guileless, question, interrog, accost
	10	communication	open, effect, mechan, challeng, process, work, way, system, oper, method, techniqu, procedur, methodolog, frank, direct, natur, plain, innoc, straightforward, sincer, transpar, honest, candid, truth, upfront, plain-spoken, unreserv, artless, ingenu, guileless, question, interrog, accost
	11	employe, line, staff, depart, offic, worker, labour, workman, jobhold, workforc, personnel, team, organ, section, unit, station, divis, branch, bureau, subdivis, area, function, place, workplac, base, workroom	risk, danger, chance, threat, prospect, uncertain, hazard
	12	audit, ia, rm, compliance, supervisory, cro	board, management, sm, tm, ceo, cfo, cio, chro, cbo, cto, chair, employe, line, staff, depart, offic, statur, particip, activ, decid, decis, independ, cooper, head, leader, director, execut, committe, boss, governor, panel, administr, control, presid, chief, chairperson, import, stand, prestig, size, rank, consequ, promin, emin, part, involv, engag, perform, join, enter, partak, hand, parti, take, contribut, partnership, assist, share, busi, occupi, restless, move, strenuous, tireless, go, action, work, labour, movement, choos, determin, elect, conclud, conclus, judgment, find, rule, order, result, sentenc, settlement, resolut, outcom, verdict, decre, arbitr, separ, unrel, unconnect, unattach, uncontrol, unconstrain, neutral, object, detach, impart, fair, equal, openmind, open, equit, disinterest, unbias, evenhand, nonpartisan, unprejud, nondiscrimin, teamwork, concert, collabor, giveandtak, combined, concurr, help, togeth, coordin

(continued)

Table 7.3 (continued)

C	SC	Group 1	Group 2
	13	risk AND chief, management	board, management, sm, tm, ceo, cfo, cio, chro, cbo, cto, chair, employe, line, staff, depart, offic, statur, particip, activ, decid, decis, independ, cooper, head, leader, director, execut, committe, boss, governor, panel, administr, control, presid, chief, chairperson, import, stand, prestig, size, rank, consequ, promin, emin, part, involv, engag, perform, join, enter, partak, hand, parti, take, contribut, partnership, assist, share, busi, occupi, restless, move, strenuous, tireless, go, action, work, labour, movement, choos, determin, elect, conclud, conclus, judgment, find, rule, order, result, sentenc, settlement, resolut, outcom, verdict, decre, arbitr, separ, unrel, unconnect, unattach, uncontrol, unconstrain, neutral, object, detach, impart, fair, equal, openmind, open, equit, disinterest, unbias, evenhand, nonpartisan, unprejud, nondiscrimin, teamwork, concert, collabor, giveandtak, combined, concurr, help, togeth, coordin
	14	function AND control	board, management, sm, tm, ceo, cfo, cio, chro, cbo, cto, chair, employe, line, staff, depart, offic, statur, particip, activ, decid, decis, independ, cooper, head, leader, director, execut, committe, boss, governor, panel, administr, control, presid, chief, chairperson, import, stand, prestig, size, rank, consequ, promin, emin, part, involv, engag, perform, join, enter, partak, hand, parti, take, contribut, partnership, assist, share, busi, occupi, restless, move, strenuous, tireless, go, action, work, labour, movement, choos, determin, elect, conclud, conclus, judgment, find, rule, order, result, sentenc, settlement, resolut, outcom, verdict, decre, arbitr, separ, unrel, unconnect, unattach, uncontrol, unconstrain, neutral, object, detach, impart, fair, equal, openmind, open, equit, disinterest, unbias, evenhand, nonpartisan, unprejud, nondiscrimin, teamwork, concert, collabor, giveandtak, combined, concurr, help, togeth, coordin
4	15	good, community, society	remuner, payment, income, earn, salari, pay, return, profit, fee, wage, reward, compens, repay, repar, indemn, retain, reimburs, recompens, stipend, emolu, consequ, effect, outcom, result, issu, event, develop, product, reaction, fruit, sequel, upshot
	16	audit, ia, rm, compliance, supervisory, cro	success, career, developmentplan, rotat, defici, purpos, aim, goal, plan, hope, idea, design, target, wish, scheme, desir, intent, ambit, aspir, lack, want, deficit, absenc, shortag, depriv, inadequaci, scarciti, dearth, privat, insuffici, scanti, fail, fault, weak, defect, flaw, drawback, shortcom, imperfect, frailty

(continued)

Table 7.3 (continued)

C	SC	Group 1	Group 2
17	risk AND chief, management		success, career, developmentplan, rotat, defici, purpos, aim, goal, plan, hope, idea, design, target, wish, scheme, desir, intent, ambit, aspir, lack, want, deficit, absenc, shortag, depriv, inadequaci, scarciti, dearth, privat, insuffici, scanti, fail, fault, weak, defect, flaw, drawback, shortcom, imperfect, frailty
18	function AND control		success, career, developmentplan, rotat, defici, purpos, aim, goal, plan, hope, idea, design, target, wish, scheme, desir, intent, ambit, aspir, lack, want, deficit, absenc, shortag, depriv, inadequaci, scarciti, dearth, privat, insuffici, scanti, fail, fault, weak, defect, flaw, drawback, shortcom, imperfect, frailty
19	risk, danger, chance, threat, prospect, uncertaint, hazard		train, cours, success, career, plan, remuner, compens, incent, bonus, school, prepar, improv, coach, teach, disciplin, rear, educ, drill, tutor, rehears, studi, qualifi, taught, class, course, schedul, lectur, curriculum, expertis, abil, experi, art, techniqu, facil, talent, craft, compet, readi, knack, skil, payment, incom, earn, salari, pay, return, profit, fee, wage, reward, repay, repar, indemn, retain, reimburs, recompens, stipend, emolu, indemnif, restitut, induc, motiv, encourag, urg, comeon, spur, bait, carrot, impuls, stimulus, impetus, stimul, goad, incit, entic, product, reaction, fruit, upshot, customer, client, consumer
20	value, principle, moral, ethic, mores, behaviour		remuner, compens, incent, bonus, payment, incom, earn, salari, pay, return, profit, fee, wage, reward, repay, repar, indemn, retain, reimburs, recompens, stipend, emolu, indemnif, restitut, induc, motiv, encourag, urg, comeon, carrot, impuls, stimulus, impetus
21	culture		skill, expertis, abil, profici, experi, art, techniqu, facil, talent, intellig, craft, compet, readi, accomplish, knack
22	customer, client, consumer		remuner, compens, incent, bonus, payment, incom, earn, salari, pay, return, profit, fee, wage, reward, repay, repar, indemn, retain, reimburs, recompens, stipend, emolu, indemnif, restitut, induc, motiv, encourag, urg, comeon, carrot, impuls, stimulus, impetus

Notes "head, presid and control" in sentence number one are in both group 1 and 2 to avoid duplication they are not considered together. Some couple of words are duplicated in the sentences to count just one time, the duplicates are automatically delated and they are arbitrary considered in the first sentence. This include just 113 chases that are not relevant with respect of the total number of word's couple considered

Once defined MUs, we defined the Sound Risk Culture Indicator (SRCI) as:

$$\text{SRCI}_{it} = \text{TFT}_{it} + \text{ACC}_{it} + \text{COM}_{it} + \text{INC}_{it} \quad (7.1)$$

$$\text{TFT}_{it} = \frac{N_{it}^{\text{TFT}}}{\text{tw}_{it}} \quad (7.2)$$

$$\text{ACC}_{it} = \frac{N_{it}^{\text{ACC}}}{\text{tw}_{it}} \quad (7.3)$$

$$\text{COM}_{it} = \frac{N_{it}^{\text{COM}}}{\text{tw}_{it}} \quad (7.4)$$

$$\text{INC}_{it} = \frac{N_{it}^{\text{INC}}}{\text{tw}_{it}} \quad (7.5)$$

where TFT_{it} , ACC_{it} , COM_{it} and INC_{it} are, respectively, the indicators for Tone-from-the-top, Accountability, Communication and Incentives for the bank i at time t . N_{it}^{TFT} , N_{it}^{ACC} , N_{it}^{COM} and N_{it}^{INC} are the total number of sentences containing a MUs associated with the correspondent C. tw_{it} is the total number of words in the bank- i 's disclosure at time t . Dividing by total number of words corrects indicator for the distortions due to a longer or shorter bank's disclosure.

7.4 Data

Our QTA focuses on annual and Pillar 3 reports of the largest banks (both listed and non-listed) in the eurozone and the UK between 2004 and 2004. Listed banks have been identified by using Datastream, while non-listed banks were selected looking at the ECB's register of Significant Supervised

Entities (SSE). As such, we identified 247 banks, but we have to limit the analysis to 147 banks that have (at least) one report in the English language.

In Tables 7.4, 7.5 and 7.6, we report various descriptive statistics of our sample. Looking at the number of banks, most are from Italy, Germany, France and the UK (67% of the Eurozone Bank's total asset).

Figure 7.1 shows the mean SRCI and mean tw's growth rates per year, mean tw increases in the whole period suggesting an increasing attention for disclosure's transparency (perhaps, due to a stricter regulation over time). As shown in Table 7.7, SRCI and the four components have long tails and, consequently, we winsorize these variables at the 10% level.

Table 7.8 shows the correlation between the four components of SRCI and other variables, such as total assets and impaired loans on gross loans. Interestingly, we do not find a very high correlation among the four components: overall, this suggests that the four components really measure different aspects of bank risk culture. A higher TFT is positively associated with bank's dimension and negatively associated with impaired loans.

Table 7.4 Sample composition: number of banks by country

Austria	8
Belgium	7
Cyprus	4
Estonia	2
Finland	5
France	10
Germany	26
Greece	5
Ireland	4
Italy	19
Latvia	4
Lithuania	1
Luxembourg	3
Malta	3
Netherlands	5
Portugal	6
Slovak Republic	2
Slovenia	3
Spain	10
United Kingdom	21

Source Authors' Elaboration

Table 7.5 Sample composition: number of banks by year

2014	143
2013	146
2012	141
2011	133
2010	125
2009	116
2008	105
2007	101
2006	96
2005	84
2004	70

Source Authors' Elaboration

Table 7.6 Sample composition: number of listed and non-listed banks

Public	101
Not listed	46
Total	147

Source Authors' Elaboration

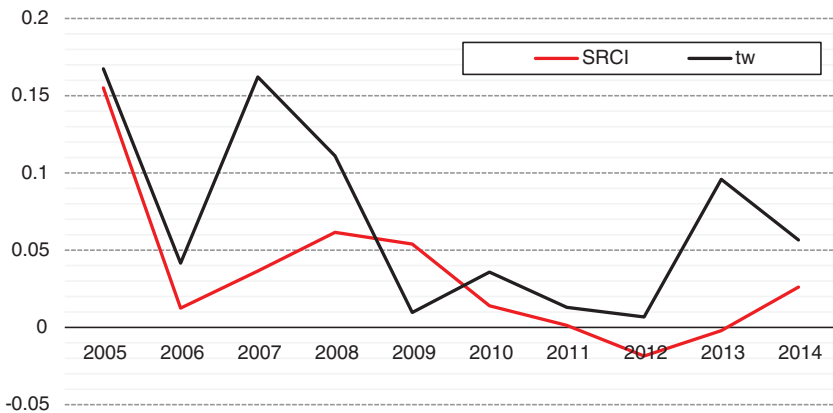


Fig. 7.1 Mean tw and SRCI' growth rate per year. Source Authors' Elaboration

Table 7.7 Descriptive statistics

	SRCI	TFT	ACC	COM	INC	TA	IMP_GL	Z
N	1051	1051	1051	1051	1051	17.4310	1097	1357
mean	0.0439	0.0162	0.0166	0.0072	0.0049	2.2448	0.0671	1.4454
sd	0.0134	0.0069	0.0059	0.0047	0.0019	7.6009	0.0810	1.1126
min	0.0001	0.0000	0.0000	0.0000	0.0000	21.6736	0.0000	-3.4532
max	0.0746	0.0668	0.0664	0.0863	0.0128	12.4556	0.5727	4.9055
p1	0.0003	0.0001	0.0000	0.0000	0.0000	15.8987	0.0026	-1.4472
p25	0.0371	0.0118	0.0137	0.0046	0.0038	17.5487	0.0205	0.8716
p50	0.0457	0.0165	0.0167	0.0066	0.0047	19.1207	0.0398	1.4966
p75	0.0520	0.0195	0.0188	0.0088	0.0059	20.3214	0.0775	2.1267
p90	0.0598	0.0242	0.0219	0.0123	0.0074	21.3989	0.1591	2.7483
p99	0.0713	0.0337	0.0377	0.0204	0.0099	17.4310	0.4258	4.2634

Source Authors' Elaboration

Table 7.8 Correlation table

	TFT	ACC	COM	INC	TA	IMP_GL
TFT	1.00	-	-	-	-	-
ACC	0.34	1.00	-	-	-	-
COM	0.43	0.17	1.00	-	-	-
INC	0.15	0.35	-0.12	1.00	-	-
TA	0.23	0.00	-0.06	0.03	1.00	-
IMP_GL	-0.13	0.01	-0.07	0.03	-0.21	1.00

Source Authors' Elaboration

7.5 The Relationship Between Risk Culture and Stability

To analyze the relationship between the SRCI four components and bank stability, we run the following OLS model:

$$Z_{it} = \beta_1 \text{TFT}_{i(t-1)} + \beta_2 \text{ACC}_{i(t-1)} + \beta_3 \text{COM}_{i(t-1)} + \beta_4 \text{INC}_{i(t-1)} + \omega_1 \ln \left(\frac{\text{IMP}_{it}}{\text{TL}_{i(t-1)}} \right) + \omega_2 \ln (\text{TA}_{i(t-1)}) \alpha_t + \varphi_j + \epsilon_{it} \quad (7.6)$$

where Z_{it} is measure the bank i 's stability (i.e. the ratio between the sum of bank ROA and equity ratio and the ROA standard deviation, i.e.

$$Z_{it} = \frac{\text{ROA}_{it} + \frac{E_{it}}{\text{TA}_{it}}}{\text{sd}(\text{ROA}_{it})}; \ln (\text{TA}_{it}) \text{ is the one year lag of natural logarithm of}$$

the total asset; $\ln(\text{IMP}_{it}/\text{TL}_{it})$ is the one year lag of natural logarithm of impaired loans on total loans. φ_j and α_t the country- and time-fixed effects. We included the lag values of four components because we hypostasize that risk culture–stability relationship is not simultaneous.

As shown in Table 7.9, the estimated coefficients for TFT and ACC are statistically significant, respectively, at 5 and 10% confidence level: TFT displays a positive link with bank's stability, while ACC shows a negative link. Our results are consistent with past studies that suggested the primary role of Tone-from-the-top in determining institution's risk culture. Specifically, the FSB (2014) stress that Board and Senior Management have the main responsibility in setting risk culture and Power et al. (2013), after interviews with different financial institutions, recognize that the development of a good TFT is the common element of all risk culture changing programs set after the crisis.

Table 7.9 The relationship between risk culture and banks' stability

	zZ
TFT _{<i>i(t-1)</i>}	0.116 [0.052]**
COM _{<i>i(t-1)</i>}	-0.003 [0.043]
ACC _{<i>i(t-1)</i>}	-0.065 [0.036]*
INC _{<i>i(t-1)</i>}	0.037 [0.031]
$\ln\left(\frac{\text{IMP}_{i(t-1)}}{\text{TL}_{i(t-1)}}\right)$	0.047 [0.037]
$\ln(\text{TA}_{i(t-1)})$	-0.568 [0.266]**
Cons	1.196 [0.143]***
<i>N</i>	351
Country fixed effect	YES
Time fixed effect	YES
<i>R</i> ²	0.95
<i>R</i> _{adj} ²	0.93

p* < 0.1; *p* < 0.05; ****p* < 0.01

Robust standard errors

Source Authors' Elaboration

7.6 Conclusion

A weak risk culture was one of the drivers of banking crisis of 2008 (Parliamentary Commission on Banking Standards 2013) and there is great attention toward risk culture among practitioners, regulators and academics. Surprisingly, there is no empirical evidence about the relationship between bank risk culture and stability. Our chapter aims fill this gap: specifically, we focus on the FSB framework and we provide evidence that the Tone-from-the-top feature is the most significant component of the risk culture and this is associated to a greater banks' stability. Furthermore, banks with a higher level of intervention of the Board and Senior Management show, on average, a higher solidity between 2004 and 2014, after controlling for dimension, impaired loans, annual average sector's performance and average bank's performance throw considered period.

Notes

1. For example in 4.1.a is searched “board” AND “lead” OR “board” AND “example” OR “management” AND “lead” OR “management” AND “example” and so on.
2. Subclass has no particular meaning, they are used just to simplify text analysis and are obtained aggregating MUs within the same category that have same first or second word inside.
3. <http://www.collinsdictionary.com/>.
4. Source: aggregated balance sheet of euro area monetary financial institutions, excluding the Eurosystem August 2016.

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