

BANK SUSTAINABILITY, DEFAULT RISK AND SYSTEMIC RISK NEXUS



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Abstract

This article aims to study the theoretical nexus between bank sustainability and bank risk. Bank sustainability can be proxied by ESG scores while bank risk can be gauged by stand-alone risk (default risk) and systemic risk contribution. As per the risk-mitigation view, which has its foundation in stakeholder theory and moral capital theory, bank sustainability, and bank risk are inversely related. Sustainability helps to create moral capital and has a risk-mitigating effect like insurance. On the contrary, as per the over-investment view, which has its foundation in agency theory, the association between bank risk and sustainability is positive because of management entrenchment, i.e., managers invest in sustainability for their goodwill or benefits and not for the shareholders' value maximization. If we look at the relationship between bank risk and ESG pillars individually, we find a negative association in the case of environmental and social pillars, while both positive and negative associations (i.e., mixed results) are found in the case of the governance pillar.

INTRODUCTION

Banks facilitate the flow of funds between surplus and deficit spending economic units and thus play a clinical role in the amelioration of the society (Cull *et al.*, 2013). However, societal development is to be gauged in terms of sustainability and banks have to do their bit towards this end (Galaz *et al.*, 2018). Historically, the replication of sustainability aspects in banking business models has not been that encouraging. Of late, however, sustainability seems to have found a place on bank CEOs' desks. Neglecting sustainability aspects may have serious

repercussions on a bank's stand-alone risk (*i.e.*, default risk) which may have contagious effects and take the shape of system-wide risk, called the systemic risk. Therefore, understanding the sustainability and bank risk nexus from the societal lens is critical and more so because the likely aftermaths of multi-dimensional systemic risks with global reach are on the rise (Keys *et al.*, 2019).

The literature on how sustainability impacts a bank's default risk is quite shallow, *i.e.*, there is a dearth of studies that focus exclusively on bank sustainability and default risks and the studies that do so bring out a negative or neutral relationship (Bouslah *et*

al., 2018). The default risk is critical because it may impact the whole financial system as banks operate in a highly inter-connected ecosystem. Also, the continual interactions between people and the ecosystem require us to look well beyond the default risk and account for a bank's systemic risk contribution (Berger *et al.*, 2017). Therefore, this study attempts to establish theoretically the nexus, if any, between banks sustainability and risk. More specifically, the study aims to identify the theories that help explain the nexus between a bank's sustainability practices (often proxied by ESG practices) and its default risk

and contribution to systemic risk. Also, the study aims to examine the nexus, if any, between the individual pillars of sustainability (*i.e.*, environmental pillar, social pillar and the governance pillar) and the bank risk.

BANK SUSTAINABILITY

The bank sustainability as a concept is often referred as the ideology or philosophy wherein banks are expected to be the epitomes of good governance and offer services and products that are environment-friendly, ethically right and socially responsible (Rebai *et al.*, 2014). Post the global financial debacle of 2007–2008, there has been growing pressure on banks to factor sustainability into their business models (Cornett *et al.*, 2016). Financial institutions, particularly banks, are under tremendous pressure from social activists to take the onus of the social or environmental problems caused by their operations and financing. For instance, Amnesty International (2016) wants banks to stop all financial operations concerning illegal possession and usage of arms. “Carbon Tracker Initiative” requires pension funds to avoid fossil-fuel corporations for ensuring a carbon-free ecosystem. The good news is that more and more banks are reciprocating positively to such causes. Numerous initiatives have been taken to facilitate banks to integrate sustainability into their operations. For instance, the Equator Principles talk about the ways in which banks can factor environmental and social dimensions into their project financing.

At the company level, sustainability often takes the form of corporate social responsibility and typically, researchers measure corporate social responsibility through firm performance in terms of environmental, social, and governance (ESG) dimensions. For banks, this could be challenging because banks play the role of mediator in the economy. Banks offer products that help other agents produce goods and render services. Unlike manufacturing or merchandising firms, banks hold their assets primarily in the form of financial assets and offer financial services that need information processing and hinge heavily on networks or connections. Banks

influence society and the environment indirectly through their investing and financing decisions. While screening potential customers, banks get to know the customers’ businesses and prospects and thus can easily take calls on the nature of the projects to be funded by them, *i.e.*, they can factor sustainability or ESG practices into their lending decisions. Therefore, lending policies followed by a bank are of paramount importance to move towards sustainable banking (Greenbaum, *et al.*, 2019).

A number of studies that examine sustainability in the banking sector are available in the literature (Cornett *et al.*, 2016 (US); Malik *et al.*, 2014 (Pakistan); Adewale *et al.*, 2014 (Nigeria); Kamal, 2013 (Egypt); and Callado *et al.*, 2011 (Spain). Barring a few, the main conclusion in these studies hints at a positive association between sustainability and firm performance. For instance, Cornett *et al.*, (2016) studied sustainability in the US banking system and found that socially responsible banks show more resilience against the shocks that emanate from crisis events. Studies with international samples of banks also conform to the findings of studies conducted in individual countries. Chih *et al.*, (2010) established that the key facets of social performance tend to show a positive association with the financial performance metrics in the banking industry. Ciceretti *et al.*, (2014) found that banks with higher sustainability enjoy lower costs of capital and risk. Noteworthy that only a few studies have examined the association between risk and sustainability exclusively. In terms of causality, these studies establish that it is mostly the risk that follows sustainability.

DEFAULT RISK

A bank’s default risk is the risk that stems from a bank’s inability to fulfil its obligations towards debt servicing and repayments. The default risk is critical because it does not only affect the bank itself but also may influence the entire financial system. Existing literature offers two main approaches to measuring a bank’s default risk—accounting data-driven measures (Bouslah *et al.*, 2018) and market

data-driven measures (Anginer *et al.*, 2018). Most popular among the accounting data-driven approaches, is Z-Score (Berger *et al.*, 2017) which indicates how much returns (in terms of standard deviations) have to decrease to wipe out the equity capital of a bank. Merton’s distance to default (DD) measure (Merton, 1974) is the most popular among the market data-driven approaches. Compared to the Z score, the Merton model is more information-rich, especially on the probability of bankruptcy or default (PD). A higher value of DD indicates a longer (shorter) distance to default and therefore, implies lower (higher) default risk. The DD and the PD have an inverse relationship *i.e.*, the longer (shorter) the distance to default, the lower (higher) the probability of default (Anginer *et al.*, 2018).

SYSTEMIC RISK

Systemic risk is multi-faceted and thus there are different approaches to defining and measuring it. At the micro-level, it measures how much a bank contributes to the tail of a financial system’s loss distribution, while at the macro-level, it measures an economy’s contribution to the tail of the loss distribution for the global financial system (Acharya *et al.*, 2017). The approaches to measuring systemic risk can broadly be categorized into two (Jobst, *et al.*, 2013) the contribution approach (the systemic impact of an individual institution’s insolvency) and the participation approach (impact of a common shock on an individual institution).

The literature presents several market-data-based measures for systemic risk including the SRISK by Acharya *et al.*, (2016), the ΔCoVaR by Adrian *et al.*, (2016), and the systemic expected shortfall (SES) and marginal expected shortfall (MES) by Acharya *et al.*, (2017). Acharya *et al.*, (2016) state the systemic risk comes from the under-capitalization of the financial sector as a whole and it can be measured by the systemic expected shortfall (SES). For measuring systemic risk, Brownlees *et al.*, (2017) introduced SRISK which captures the capital shortfall of a firm in the event of a substantial market

decline. Adrian *et al.*, (2016) introduced CoVaR for measuring systemic risk to capture the change in financial system value at risk (VaR) when an institution is found to be in financial distress as compared to its median state. The absorption ratio (AR), introduced by Kritzman *et al.*, (2011), is another market-based measure of systemic risk, which measures the percentage of total market variance explained by a finite set of factors. A forward-looking framework for measuring systemic risk is “Systemic CCA” which measures systemic risk on the basis of the expected losses of financial institutions as implied by the market movements (Jobst, *et al.*, 2013).

INTERACTIONS—BANK SUSTAINABILITY AND RISK

The literature offers broadly two views—“risk mitigation view” and “overinvestment view”—on the nexus between sustainability and bank risk (both default risk and contribution to systemic risk). The “risk mitigation view,” backed by the stakeholder theory and moral capital theory, states that money spent on sustainability works like insurance against risk and helps in the creation of goodwill or formation of moral capital among stakeholders (El Ghoul *et al.*, 2017). This view implies a negative relationship between risk and sustainability. On contrary, the “overinvestment view,” backed by the agency theory, states that money spent on sustainability is a waste because managers have the propensity to spend on sustainability for their benefits or goodwill (Barnea *et al.*, 2010), or for obtaining support from social activists (Cespa *et al.*, 2007). Thus, this view entails a positive relationship between sustainability. If sustainability is linked with a lower risk as perceived by market participants, this should reduce the cost of fund, asymmetric information and agency problems (El Ghoul *et al.*, 2011), and capital constraints paving the path for easy access to finance (Cheng *et al.*, 2014). Moreover, sustainability is likely to increase a bank’s earnings quality (García *et al.*, 2017). Also, sustainability plays a strategic role as a risk-reduction weapon during adverse systemic events (McCarthy *et*

al., 2017).

Sustainability is often proxied by ESG scores. As there is heterogeneity in sustainability activities, which is also reflected in ESG score calculations, one can expect to find substantial interconnectedness among its pillars (Galbreath, 2013). However, the existing literature beckons that each component of ESG is likely to have a critical impact on bank risk.

ENVIRONMENTAL PILLAR AND BANK RISK

As compared to non-financial firms, one would expect a feeble nexus between the bank risk and the environmental pillar. However, literature has evidence that shows environmentally proactive firms experience reduced perceived risk from stakeholders (Feldman *et al.*, 1997) because environment-friendly actions reflect banks’ commitments to all the stakeholders (Cheng *et al.*, 2014). Bouslah *et al.*, (2013) are of the view that concern for the environment can benefit firms in terms of lower compliance costs for regulations especially concerning the environment (less applicable to banks) and enhanced brand image and loyalty from main stakeholders (very much applicable to banks). In the same line, Gangi *et al.*, (2019) reported a strong negative relationship between the bank risk and environmental friendliness.

SOCIAL PILLAR AND BANK RISK

The social pillar has a risk-mitigating effect for banks, though the impact may not necessarily be as strong as derivative hedges which act as shields to protect banks from market crashes (Buston, 2016). Many researchers have established a positive relationship between social aspects and bank stability (Bauer *et al.*, 2007). Bouslah *et al.*, (2018) showed that companies with better social performance enjoyed more moral capital which in turn fetched higher firm valuation and lower risk. Additionally, a higher moral or social capital at the time of a crisis could reduce the risk that stemmed from the loss of confidence and trust among stakeholders. (Lins *et al.*, 2017).

GOVERNANCE PILLAR AND BANK RISK

The nexus between bank stability (*i.e.*, low risk) and the governance pillar is usually found to be in line with the connection between risk and regulation or supervision. Many banking debacles had their roots in management misconduct or bad governance. However, empirical studies do not always validate this nexus. Anginer *et al.*, (2018) and Berger *et al.*, (2017), through their extensive literature review, brought out the relevance and complexity involved in this relationship. Drawing reference from agency theory, Anginer *et al.*, (2018), in particular, showed how shareholder-centric governance magnified both bank default risk and systemic risk contribution. Likewise, a more shareholder alignment was found to have the impact of magnifying losses at the time of crisis and banks with greater board independence were found to have more insolvency risk (Mollah *et al.*, 2016). However, it is not that straight forward to disentangle the association between bank risk and governance. Basing the argument on the stakeholder theory, Kirkpatrick (2009) showed that the governance pillar had a positive association with bank stability because the stakeholder-centric corporate governance boosted bank moral capital which in turn enhanced bank resilience during testing times.

CONCLUDING REMARKS

Bank sustainability can be proxied by ESG scores while bank risk can be gauged by stand-alone risk (default risk) and systemic risk contribution. As per the risk-mitigation view, which has its foundation in stakeholder theory and moral capital theory, bank sustainability, and bank risk are inversely related. Sustainability helps to create moral capital and has a risk-mitigating effect like insurance. On the contrary, as per the over-investment view, which has its foundation in agency theory, the association between bank risk and sustainability is positive because of management entrenchment, *i.e.*, managers invest in sustainability for their goodwill or benefits, not for the shareholders’ value maximization.

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