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Moufty, Souad, Clark, Ephraim and Al-Najjar, Basil (2021) The different dimensions of sustainability and bank performance: evidence from the EU and the USA. Journal of International Accounting, Auditing and Taxation, 43. 100381 ISSN 1061-9518

DOI: https://doi.org/10.1016/j.intaccaudtax.2021.100381

Publisher: Elsevier

Version: Accepted Version

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Additional Information: This is an Author Accepted Manuscript of an article published in the Journal of International Accounting, Auditing and Taxation by Elsevier.

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The different dimensions of sustainability and bank performance: Evidence from the EU and the USA

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A B S T R A C T

This paper looks at four different dimensions of sustainability and examines their effects on bank performance in the United States of America and the European Union. Content analysis is applied to a sample of 483 reports to construct a consistent index that reflects the multi-dimensionality of sustainability. Using structural equation modelling path analysis to test the sustainability model, the results reveal a significant positive relationship between the internal social dimensions of sustainability and bank performance while no evidence was found for the relationship between the environmental dimensions of sustainability and bank performance.

1. Introduction

This paper examines the relationship between environmental and social sustainability practices and financial performance in the banking sector. Since the World Commission on Environment and Development (WCED) of 1987 highlighted the impact of corporate business activities on the environment and society, the concept of corporate sustainability has captured the attention of businesses, academics, and policymakers. In fact, this concept, which is based on the argument that corporate longevity requires integrating considerations of environmental protection and social justice into corporate objectives, is increasingly embraced by corporate culture. It is not immediately obvious, however, how broad goals of environmental protection and social justice can be reconciled with corporate profits and shareholder value. Nevertheless, the solution to this question is a key element in the general problem of resource allocation and sustainable economic development defined by WCED (1987, p. 47) as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs".

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Banks are particularly important in the context of sustainable economic development. In most, if not all, economies, banks constitute the backbone of the financial infrastructure that determines how and where resources will be deployed. As intermediaries between savers and investors, they play a fundamental role in resource allocation through their financing decisions reflected in their lending activities. The outcomes of these financing decisions ultimately go a long way in determining overall resource allocation and economic performance. They also determine the financial performance of individual banks. If a bank's loans go bad because of poor performance by their borrowers, this will affect the bank's financial performance and its 'sustainability'. Banks have a major effect on sustainability as they can promote or hinder it. Thus, in this sense, the sustainability of banks depends to a large extent on the sustainability of the companies to which they lend.

Furthermore, sustainable lending and sustainability-related products and services strengthen the overall financial system by reducing systemic risk and improving confidence and trust. Therefore, some banks use sustainability criteria in their lending decisions to reduce their risks (Weber, Scholz, & Michalik, 2010). Using sustainability and environmental criteria in Bangladeshi banks' credit risk management process was proven to reduce credit defaults in those banks (Weber, Hoque, & Islam, 2015). Cui, Geobey, Weber, and Lin (2018) investigate whether green loans are less risky than non-green loans in a sample of Chinese banks. Using the non-performing loan ratio as the indicator for credit risk, they found that higher green loan ratios reduce non-performing loan ratios (i.e. credit risk). Furthermore, Earhart, Van Ermen, Silver, and De Marcillac (2009) pointed out that during the last financial crisis some banks, such as Triodos, survived and even continued to grow, while others simply vanished altogether. Earhart et al. (2009) argue that banks able to avoid the impact of the financial crisis and which continued to grow were sustainable banks that focused on sustainable businesses that delivered social, environmental, and cultural benefits. Thus, investigating the relationship between environmental and social sustainability practices and financial performance in the banking sector also provides insights on overall corporate sustainability and sustainable economic development.

Numerous empirical studies have considered the relationship between corporate sustainability and performance with mixed results. Many found a positive relationship between sustainability and financial performance (Pava & Krausz, 1996; Preston & O'Bannon, 1997; Waddock & Graves, 1997; Moore, 2001; Simpson & Kohers, 2002; Chang & Kuo, 2008; Inoue & Lee, 2011; Lee, Seo, & Sharma, 2013). Others, such as McGuire, Sundgren, and Schneeweis (1988), McWilliams and Siegel (2000), and Sarkis and Cordeiro (2001) found a negative relationship; and others like Murray, Sinclair, Power, and Gray (2006) found no significant relationship at all.

Outside the banking sector the majority of previous empirical sustainability studies examined only one-dimension – mostly the environmental dimension – or used a third-party evaluation or reputation index (e.g. Preston & O'Bannon, 1997; McWilliams & Siegel, 2001).

A common problem with prior studies is how environmental and social sustainability is measured. First, the measures used are rankings and shed little light on the degree of sustainability. Second, the rank is based either on only one aspect of sustainability – environmental or social - or on a mixture of both together. Third, there is no distinction between whether the engagement is in the internal realm or in the external realm of sustainability. Thus, the measures do not address the multi-dimensional nature of sustainability with respect to whether sustainability is environmental or social and whether the engagement is internal or external.

For example, environmental performance indicators could be broken down into those stemming from bank operations (internal), such as materials, paper, and energy used, and those stemming from the products and services they offer (external), such as client environmental risk and specific environmental products. Social sustainability performance indicators could also be broken down into those stemming from bank operations (internal), such as labor practices and human rights practices, and those stemming from the bank's products and services (external) themselves, such as the social impacts arising from the way in which the bank delivers its products and services. Clearly, the effects of sustainability could vary in magnitude and sign with respect to each of these specific sustainability dimensions.

As Cavaco and Crifo (2014) recognized, different dimensions of corporate social responsibility (CSR) could lead to synergies and trade-offs that impact financial performance. Similarly, Brooks and Oikonomou (2018) stated that the unclear link between CSR and financial performance may be because the positive and the negative effects net out. The failure of the foregoing empirical literature to account for these distinctions and the trade-offs between the different dimensions[1] they imply could explain the mixed results of these studies. Therefore, the different dimensions of sustainability need to be taken into account when studying the relationship between sustainability and performance. This paper seeks to fill this gap. Using a sample of 483 published reports of EU and USA banks over the period 2006–2012, we examine the relationship between sustainability practices and financial performance in the banking sector.

Previous sustainability literature is dominated by studies examining the issue mainly in the USA (van der Laan Smith, Adikhari, & Tondkar, 2005; Soana, 2011). Few studies were conducted in the financial sector in general and in the banking sector in particular. Therefore, our study contributes to the literature by focusing on the banking sector in a cross-country context. The novelty of this paper is the construction of a consistent sustainability index that reflects the multi-dimensionality of sustainability. This index is based on the Global Reporting Initiative's (GRI) 2011, Sustainability Reporting Guidelines (Version 3.1), and Sustainability Reporting Guidelines & Financial Services Sector Supplement (Version 3.0). To account for the multi-dimensionality of sustainability highlighted by many authors such as Griffin and Mahon (1997),

[1] As the companies' good performance in some dimensions could be offset by the poor performance in others.

Waddock and Graves (1997), Moser and Martin (2012), and Cavaco and Crifo (2014)[2], we separate sustainability into two pillars, one environmental and the other social. Each pillar is broken down with respect to operations (internal) and products & service (external). The *internal environmental effect* refers to the environmental impacts arising from the way in which the bank delivers its products and service while the *external environmental effect* refers to the environmental impacts arising from the bank's products and services themselves. The *internal social effect* refers to the social aspects caused directly by the operating business in the main administrative buildings and branches, such as child labor. It also includes efforts to reduce the direct social effect of the company and the expenditures on the direct social issues. The *external social effect* refers to the social impacts arising from the bank's products and services, the social impacts arising from the way in which the bank delivers its products and services, and the social impacts of the users of these products. Each category in each pillar is broken down into a number of sub-categories.[3]

In the major contribution of this study, we show that when a multi-dimensional sustainability measure is employed, the effects of sustainability change with respect to magnitude and sign within different sustainability dimensions. The results reveal no significant positive relationship between the environmental aspects of sustainability (i.e. internal and external) and performance (i.e. profitability, liquidity, operation, and funding). They do reveal a significant negative relationship between the internal environmental effect and operation as well as the external environmental effect and funding. However, where the social aspects of sustainability are concerned, there is a significant positive relationship between the internal social effect dimension and all performance measures (i.e. profitability, operation, funding, and liquidity). Our study also detected a significantly negative relationship between the external social effect and liquidity, but no significant relationship with profitability, operation, and funding.

This paper also contributes to the extant literature by using actual data collected from bank reports. Thus, unlike surveys and interviews, which might be directed or affected by respondents' thoughts or opinions, we argue that the reports reflect an objective picture of what is actually happening in those banks. Companies will communicate their environmental activities if they are complying with environmental laws and regulations and wish to assure their stakeholders of this (Holland & Boon Foo, 2003). Companies with better sustainability activities will disclose a higher level of sustainability information in order to differentiate themselves from other less sustainable companies (Cahan, De Villiers, Jeter, Naiker, & Van Staden, 2016). Thus, firms cannot use false discloser - "window-dressing" - as this will, eventually, be discovered and firm value will be negatively affected (Cahan et al., 2016). In other words, sustainability reporting may be used as a way of legitimizing a bank to its stakeholders. In addition, an increasing number of banks produce stand-alone sustainability reports (Kolk, 2003), but they must be treated with caution since this data may still suffer from the self-reporting bias.

The paper is structured as follows. Section 2 provides the theoretical framework and literature discussion. Section 3 presents previous studies, the hypotheses development, and a discussion of sustainability and performance measurements. Sections 4 and 5 highlight the research design and the results. Section 6 provides an analysis and discussion of the results. Finally, Section 7 concludes the paper.

2. Theoretical background and literature discussion

Stakeholder theory provides a theoretical framework for investigating the relationship between sustainability and financial performance. It argues that the purpose of any firm (including banks) is to satisfy stakeholders' needs. This theory offers an explanation of why companies should work toward sustainable development, which is that it is in the company's best economic interest to work toward sustainability as the company will be able to meet its business objectives by improving its relationship with stakeholders. Companies have been put under pressure by stakeholders to be more transparent in the market. Proponents of stakeholder theory argue that firms and banks can achieve legitimacy by engaging in socially responsible behavior and they can achieve higher financial performance from responding to their stakeholders' concerns (Freeman, 1984). Similarly, Orlitzky, Schmidt, and Rynes (2003, p. 405) noted that "the satisfaction of various stakeholder groups is instrumental for organizational financial performance".

According to stakeholder theory, the traditional view that the success of the bank depends solely on maximizing shareholders' wealth is not adequate. One proposition of stakeholder theory is that any company can have an influence, not just on society in general, but also on different stakeholders. This stands in contrast to institutional theory where norms are imposed on the firms. Thus, under the institutional theory, institutional forces could influence the companies' sustainability practices (Spence, 2007), whereas under stakeholder theory the influence could be reciprocal (e.g. Fassin, 2012).

All stakeholders (including shareholders) are directly or indirectly affected by the bank's wealth creation and activities. On the other hand, they themselves affect the bank's wealth as well. In this sense, banks should be responsible to them. Stakeholder theory can explain the positive link between sustainability and financial performance as satisfying stakeholders' explicit and implicit demands that would improve the firm's financial performance (Freeman, 1984; Donaldson & Preston,

[2] Cavaco and Crifo (2014) recognized the importance of using multi-dimensional measure for CSR. However, they limit their analysis to the three CSR dimensions of environment, human resources and business behavior towards customers, and suppliers. Inoue and Lee (2011) studied the relationship between five dimensions of CSR and financial performance and found that all dimensions have positive, but differential financial effects. However, the five dimensions were defined based on primary stakeholders (i.e. employee relations, product quality, community relations, environmental issues, and diversity issues).

[3] Appendix A summarizes all variables used in the article. Appendix B explains each of the four dimensions and shows how the index was constructed.

1995; Preston & O'Bannon, 1997; Balabanis, Philips, & Lyall, 1998)[4]. This provides a clear argument of the applicability of stakeholder theory in the banking sector.

Different authors have tried to classify stakeholder theory, including Donaldson and Preston (1995) and Berman, Wicks, Kotha, and Jones (1999). Donaldson and Preston (1995) recognized three classifications of stakeholder theory which have been presented and used in three ways that are quite distinct. These classifications are Descriptive, Instrumental, and Normative. According to Donaldson and Preston (1995), when the theory describes and explains specific corporate characteristics and behaviors (i.e., how managers actually deal with stakeholders), then it is empirical or descriptive.

When the theory is used to recognize the connections, if any, between stakeholders' management and the attainment of various company performance goals (e.g., growth, profitability), then it is instrumental or managerial (i.e., what happens *if* managers treat stakeholders in a certain manner) (Donaldson & Preston, 1995). Berman et al. (1999) explained that the firm will have an instrumental posture towards its stakeholders if those stakeholders' activities can affect the achievement of a firm's objectives, decisions, and, hence, its performance. Therefore, the firm will try to manage those stakeholders in order to maximize profits.

According to Donaldson and Preston (1995), when the theory is used to understand the role of the company, including the moral or philosophical guidelines for the management of companies, then it is a normative or ethical one (i.e., how managers *should* deal with stakeholders). Therefore, according to the ethical form of stakeholder theory the essential obligation of management is not to achieve the highest financial performance but to balance stakeholders' conflicting interests to ensure survival.

This research adopts the instrumental branch of stakeholder theory that banks will always aim to maximize their profit. If stakeholders' relations are well managed with their rights ensured and with their participation in decisions that substantially impact their own welfare, a bank's profitability will be improved. Therefore, we propose that banks engage with sustainability to maximize their profits, which is consistent with most previous studies (see for example, Preston & O'Bannon, 1997; Waddock & Graves, 1997; Moore, 2001). Following this branch of stakeholder theory, this study, using a sample of US and European banks, acknowledges the key role of stakeholders in banks to demand things that banks will not normally do without such pressure coming from the stakeholders.

An extensive literature examines the relationship between corporate sustainability and performance. Many empirical studies analyze the relationship between firms' sustainability behavior and their economic and financial performance. Over the last three decades, significant efforts were made to understand this relationship and many extensive reviews of this cumulative literature exist (Ullmann, 1985; Pava & Krausz, 1996; Griffin & Mahon, 1997; Orlitzky et al., 2003; Brooks & Oikonomou, 2018). However, as stated earlier, these studies produced mixed results.

Some studies that support the positive link between sustainability and financial performance implicitly support the idea that meeting the needs of major stakeholders increases financial performance (Pava & Krausz, 1996; Preston & O'Bannon, 1997; Waddock & Graves, 1997; Moore, 2001; Simpson & Kohers, 2002; Chang & Kuo, 2008; Perrini, Russo, Tencati, & Vurro, 2011; Lee et al., 2013; Kiessling, Isaksson, & Yasar, 2016). This should be achieved by strengthening relationships with stakeholders, enhancing employee loyalty and motivation, enhancing the company's reputation, differentiating the company's products, improving trust and legitimacy, decreasing transaction costs, improving the company's public image, and increasing the ability of firms to face competition. This, in turn, will lead to an increase in the financial performance, which is theorized as the social impact hypothesis by Preston and O'Bannon (1997). This is derived from instrumental stakeholder theory (Platonova, Asutay, Dixon, & Mohammad, 2018) as satisfying the needs of the main stakeholders will enhance financial performance. The positive link between sustainability and financial performance is also supported by the 'good management theory' proposed by (Waddock & Graves, 1997) which is a further articulation of stakeholder theory. The 'good management theory' proposes that satisfying stakeholder needs will improve the company image and reputation, which ultimately can enhance financial performance (similar to the normative or ethical branch of stakeholder theory). Therefore, stakeholder management could lead to competitive advantage and, consequently, to a positive financial performance.

Starting from this viewpoint, Perrini et al. (2011) argue that sustainability can be viewed as an investment that yields financial returns and societal benefits. Other studies, such as Lee et al. (2013), argue that companies can benefit from the competitive advantage produced by sustainability, if, for example, customers are willing to pay higher prices for firms' sustainable products and services. Higher explicit costs in the form of interest payments to bondholders can also be avoided by maintaining product quality and reducing environmental costs (Waddock & Graves, 1997; Simpson & Kohers, 2002). In addition, sustainability activities can have a positive effect on intangible assets, such as customer satisfaction, employee loyalty, and reputation (McGuire et al., 1988; Lee et al., 2013). Dhaliwal, Li, Tsang, and George (2011) studied the relation between CSR disclosure and the cost of equity capital. They found that firms perceive CSR as beneficial as their results indicated that firms with a high cost of equity capital are significantly more likely than others to initiate standalone CSR disclosures in the next year. In addition, the Dhaliwal et al. (2011) results indicate that for firms with superior CSR performance, the cost of equity capital will decrease and they attract institutional investors and analyst coverage. Moreover, sustainability activities can increase shareholder value and operating performance (Nguyen, Kecskes, & Mansi, 2020). Weber et al. (2010) tried to answer the question "does it pay to be sustainable" by assessing the role of sustainability criteria in the commercial credit risk management process, and found that those criteria can predict the financial performance of a debtor.

[4] Detailed explanation is given in the next section.

3. Hypotheses development, sustainability and performance measurements

3.1. Sustainability and performance in the banking sector: Arguments and evidence

Sethi, Martell, and Demir (2017) attributed the limited understanding of the sustainability implication in the financial service sector to the lack of studies in this sector, the limited coverage of existing studies by focusing only on one country or region, and the voluntary non-standardized nature of sustainability reports. The few studies that investigated sustainability practices in the banking sector can be separated into two main groups. The first group of studies uses content analysis and concentrates on the sustainability reporting practices or disclosure (e.g. Cuesta-Gonzalez, Muñoz-Torres, & Fernandez-Izquierdo, 2006; Branco & Rodrigues, 2008a; Jizi, Salama, Dixon, & Stratling, 2014).[5]

The second group of studies looks at the relationship between sustainability and financial performance (Simpson & Kohers, 2002; Chih, Chih, & Chen, 2010; Soana, 2011; Wu & Shen, 2013; Mallin, Faraga, & Ow-Yong, 2014; Cornett, Erhemjamts, & Tehranian, 2016; Broccardo, Costa, & Mazzuca, 2016). Simpson and Kohers (2002) used Community Reinvestment Act ratings as a social performance measure to classify banks into CSR or non-CSR and found a positive relationship between financial performance and bank social performance in the US over the years 1993–1994, but there was no mention of the environmental aspect of sustainability. Wu and Shen (2013) used a survey conducted by the Ethical Investment Research Service to classify banks into four groups based on their CSR degree of engagement and also found a positive relationship with financial performance for a sample of 162 banks in 22 countries for the period 2003–2009. Cornett et al. (2016) examined the relation between banks' CSR and financial performance (Return on Equity) (ROE) for 235 USA banks in the context of the first financial crisis of this century and found that financial performance is positively and significantly related to CSR scores. The same conclusion was reached by Cornett et al. (2016) when using alternative measures for performance (i.e. Return on Assets (ROA), Operating Profit, and Tobin's Q). Mallin et al. (2014) measured CSR using ten dimensions and found a positive relationship between CSR disclosure and banks financial performance in 90 Islamic banks across 13 countries over the period 2006–2011. However, Mallin et al. (2014) did not consider the extent of disclosure as they considered only the presence or absence of CSR information. More recently, Weber (2017) studied Chinese banks and found a positive relationship between their sustainability performance and the banks' financial indicators (i.e. total assets, net profit, ROA, and ROE). Platonova et al. (2018) examined Gulf Cooperation Council Islamic banks over the period 2000–2014 and found a significant positive relationship between CSR disclosure and the financial performance, where CSR was measured by content analysis using six dimensions. However, Platonova et al. (2018) used a dichotomous approach (i.e. If the bank disclosed an item it received 1, and 0 otherwise).

However, Chih et al. (2010) used the Dow Jones Sustainability World Index as a CSR measure to classify 520 financial firms in 34 countries into CSR or non-CSR and found no significant link between corporate financial performance and sustainability. Analyzing 89 international banks, Scholtens and Dam (2007) found no significant difference in the performance of banks that adopted the Equator Principles for sustainable lending and those that did not.[6] Soana (2011) found no link between corporate social performance and corporate financial performance in the banking sector when using ethical rating indexes to measure corporate social performance. Broccardo et al. (2016) used content analysis for the banks' reports to measure CSR disclosure in only five areas (economics, customers, human resources, community, and environment) and found no relationship between CSR and financial performance in Italian co-operative banks between 2007 and 2011.

From the previous discussion of the banking sector, there is some evidence of a positive relationship between sustainability and bank performance. Hence, based on the arguments of the stakeholder theory and on the results of the previous literature, we hypothesize:

H1: There is a positive relationship between sustainability and bank performance.

To provide a more detailed view on the relationship between sustainability and bank financial performance, we adopt the four major sustainability dimensions of internal environmental effect, internal social effect, external environmental effect, and external social effect. In addition, the study employs four measurements of bank financial performance: profitability, liquidity, operation, and funding. Fig. 1 shows our conceptual framework, and from this figure we adopt four sub-hypotheses:

H1a: There is a positive relationship between the internal environmental effect and bank performance (measured as bank profitability, bank liquidity, banking operation, and bank funding).

H1b: There is a positive relationship between the internal social effect and bank performance (measured as bank profitability, bank liquidity, banking operation, and bank funding).

H1c: There is a positive relationship between the external environmental effect and bank performance (measured as bank profitability, bank liquidity, banking operation, and bank funding).

H1d: There is a positive relationship between the external social effect and bank performance (measured as bank profitability, bank liquidity, banking operation, and bank funding).

[5] For example: Branco and Rodrigues (2008a) examined the social responsibility disclosures of 12 Portuguese banks and Cuesta-González, Muñoz-Torres, and Fernández-Izquierdo (2006) analyzed the social performance of the main Spanish financial companies.

[6] The Equator Principles are designed to help banks assess their lending decisions to assure sustainable development in the projects they finance.

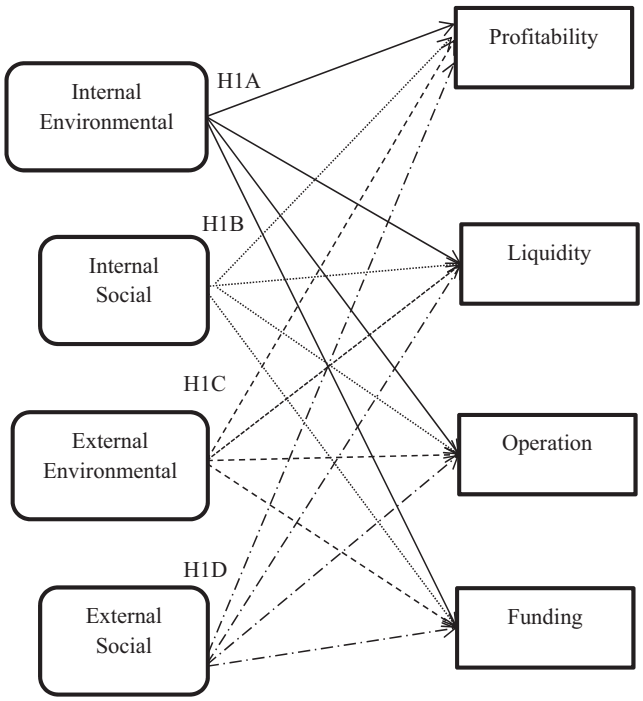

Fig. 1. The conceptual framework.

3.2. Sustainability and performance measurement variables

One difficulty with the existing research that examines the relationship between sustainability and performance is the variability of measures (sustainability and financial) that are used. For example, where financial performance measures are concerned, Griffin and Mahon (1997) found that 80 different measures of financial performance were used in the 51 studies they reviewed. Although fewer in number, the measures of sustainability also vary from study to study, as discussed in the introduction.

3.2.1. Sustainability measurement

A wide range of sustainability measures were used over time, such as government environmental reports, various surveys, and information gathered by the Council on Economic Priorities. Most measures in this area tend to be one-dimensional. Many concentrate on the environment (e.g. emissions and pollution reduction). This measure, however, does not truly represent sustainability as it provides a very limited perspective of a company's sustainability. Other studies employed a third-party evaluation or reputation index of various social and environmental responsibility indicators. The two most common indices used in this area are the Fortune Corporate Reputation Index, and the Kinder, Lydenberg and Domini (KLD) index (e.g. Preston & O'Bannon, 1997; Waddock & Graves, 1997; McWilliams & Siegel, 2001). A third and different view has considered sustainability from the point of view of company disclosures, mainly by using content analysis (Hackston & Milne, 1996).

Although there are numerous indexes and analytical frameworks for sustainability evaluation and performance, most previous sustainability databases do not incorporate stakeholder issues (Mishra & Suar, 2010). Because of this, Harrison and Freeman (1999), and Mishra and Suar (2010) argue that the currently available sustainability databases cannot be relied upon and that new ones should be developed. To account for this shortcoming, this study develops a new framework and sustainability index for measuring sustainability practices in the banking sector that incorporate stakeholder issues. Our index developed in this paper incorporates four major sustainability dimensions – internal environmental effect, internal social effect, external environmental effect, and external social effect – all of which can be broken down into a wide range of sub-categories (see Appendix B for details).

More specifically, our index is based on the Global Reporting Initiative's (GRI) 2011, Sustainability Reporting Guidelines (Version 3.1), and Sustainability Reporting Guidelines & Financial Services Sector Supplement (Version 3.0). Our four dimensions were constructed using the performance indicators in the GRI. These indicators were grouped into 27 sustainability performance indicators with some having sub-categories constituting a total of 44 disclosure items that are equally weighted in the index. Our index aims at capturing the context (i.e., the areas and sub-areas of disclosure), and the extent (i.e., the amount of disclosure in the different areas and sub-areas) of bank sustainability practices. The extent of disclosure

can be taken as an indication of the importance of a sustainability topic to the bank (Campbell, Craven, & Shrives, 2003). Thus, it was tailored specifically for banks and can be used in future studies.

3.2.2. Performance measures (accounting VS. market-based measures)

When measuring performance, the first question is whether to use accounting-based data, such as a firm's ROA or ROE, market-based data, such as price per share, share price, investor returns, or Tobin's Q, or a mixture of both. Pava and Krausz (1996) reviewed 21 studies published between 1972 and 1992 and found that six studies focused solely on accounting-based measures, seven based their results on market-based measures, and six used multiple criteria. Lopez, Garcia, and Rodriguez (2007) argue that accounting-based measures are less complicated since they indicate what actually happens in a firm. They are also better in terms of predicting sustainability than market-based measures (McGuire et al., 1988) and the studies that used accounting variables to measure economic performance are more long-term oriented, ranging from 1 to 10 years, while market reaction studies focus on the short term with a maximum period of 24 months. Similarly, Chang and Kuo (2008) preferred accounting measures to market measures (e.g. share price), arguing that market measures are affected by external market factors and macroeconomic status. Market-based measures also suffer from information asymmetry between managers and stockholders and generally assume that shareholders are the primary or only stakeholder group. Based on these considerations and the fact that sustainability is an ongoing activity, not an unexpected event that elicits a market reaction that could be studied at a certain point in time, this study uses accounting-based measures for performance evaluation.

For robustness, a group of accounting measures was selected. Of the 80 measures in the 51 studies Griffin and Mahon (1997) considered, 57 measures were used only once. Of the 23 remaining measures, the most commonly used measures were ROA, ROE, return on sales (ROS), asset age, and size. We follow Griffin and Mahon (1997), who emphasized that multiple accounting measures of performance should be used, and Lopez et al. (2007), who stated that the use of variations in the indicators helps in revealing whether the adoption of sustainability practices affects performance. Thus, we use four measures of performance pertinent to the banking sector: profitability, liquidity, operation, and funding. Each one captures a different facet of bank performance.

We measure profitability as Return on Average Assets (ROAA) (net income/ total assets average), which is considered to be the most easily recognizable measure of financial performance in the banking sector (Simpson & Kohers, 2002). Since it includes the whole balance sheet, it refers to a wider range of stakeholders (bondholders, suppliers, shareholders, etc.) than ROE which refers only to shareholders.[7] According to McGuire et al. (1988), it provides better predictors of sustainability. Similarly, in the Bankscope database, ROAA is considered as the most important ratio for banks as it looks at the returns generated from the assets financed by the bank.

Liquidity can be defined as the ability of the bank to meet its financial obligations as they come due in the short term without disrupting the normal operations. According to Bankscope, this can be measured as the percentage of net loans in total assets (net loans/ total assets). This liquidity ratio indicates what percentage of the assets of the bank is tied up in loans, such that the higher this ratio, the lower the level of liquidity.

Operation refer to the scope of the bank's income generating activities. It can be measured as the percent of non-interest income in total income (non-interest income/ gross income). Since it shows the amount of fees, trading, and asset sale income to total revenues, it provides a measure of financial efficiency complementary to that of the loan activity.

Funding shows how the bank funds itself in terms of the strength of its deposit base and is measured as the percent of customer deposits in total funding (customer deposits / total funding excluding derivatives). Fig. 1 presents the theoretical relationships between the different dimensions of sustainability and each performance measure.

3.2.3. What about bank size and region?

Methodological rigor can improve by controlling for certain variables known to affect firms' sustainability practices. The two most frequently used control variables are firm size and industry (Gray, Kouhy, & Lavers, 1995; Hackston & Milne, 1996; Branco & Rodrigues, 2008b). However, as this study was carried out on a single industrial sector (banking), we already control for industry. In line with prior sustainability studies, we use size as a control variable (Waddock & Graves, 1997; Moore, 2001; Simpson & Kohers, 2002; Chih et al., 2010; Lee et al., 2013).

Most previous studies suggest that large companies are significantly more likely to practice and disclose sustainability information than small companies (e.g. Gray et al., 1995; Hackston & Milne, 1996; Moore, 2001; Branco & Rodrigues, 2008b). However, some empirical studies, such as Freedman and Jaggi (1988), Lynn (1992), and Roberts (1992), found no relationship, or a negative one, between company size and the level of sustainability disclosures. Hence, we expect a positive relationship between bank size and sustainability.

In previous studies, company size was measured by a wide variety of measures, such as number of employees, total assets, sales volume, and index rank (such as Fortune 500), or a mix of many measures. In this study, size is measured by total assets because it is frequently used in prior sustainability studies (for example, Gray et al., 1995; Hackston & Milne, 1996; Waddock & Graves, 1997; Simpson & Kohers, 2002), and for the banking industry it appears to be more appropriate than other measures (such as employee numbers).

[7] ROAA and ROE are highly correlated.

In addition, the country of origin is considered to be an important determinant of the level and type of corporate social disclosure (van der Laan Smith et al., 2005). Similarly, many authors demonstrated how sustainability disclosure and performance may vary across countries (e.g. Dhaliwal, Radhakrishnan, Tsang, & Yang, 2012; Ioannou & Serafeim, 2012; Cahan et al., 2016). Hence, this study expects a moderating effect of region (EU and USA) on the relationship between sustainability and performance.

4. Research design

Performance data was obtained from the Bankscope database. We use content analysis from the reports of a group of European and US banks from the period 2006 – 2012 to collect data on sustainability. Structural equation modeling path analysis was used to test the sustainability model.

4.1. Sample selection

The criteria for the sample selection from the BankScope database was any active bank operating in any of the 15-EU member states in 2012 that was a publicly listed bank classified as a commercial bank or bank holding company. Similar criteria were used with regard to the USA sample. This narrowed the sample down to 122 banks operating in Europe and 334 operating in the USA for a total of 456 banks. Then, a further criterion was applied: sustainability report data had to be available for some or all of the years during the period 2006–2012. This left a final panel dataset containing 43 EU and 23 USA banks. Five additional banks that match all criteria were added from the list of banks regulated by the Federal Reserve Banks in the USA. This topped up the number of USA banks to 28, leaving a sample of 71 EU/USA banks representing over 15% of the total population. This gave a pooled total of 483 bank report-year observations, of which 295 came from the EU and 188 from the USA. This pool was formed from 340 sustainability reports and 143 annual reports, a data set which is an unbalanced panel.

The sample size and balance between the EU and the USA are not surprising as several studies found that European companies in general and the UK in particular produced more stand-alone sustainability reports than USA companies (Holland & Boon Foo, 2003). Furthermore, the relatively small sample size could be a result of the concentration in the financial market, especially after the financial crisis earlier in this century.

4.2. Content analysis and sustainability index

Content analysis is widely used for quantifying qualitative data. Given the qualitative nature of sustainability reporting, this technique was adopted to generate our sustainability data. There is a distinction between two ways of capturing the disclosure in content analysis. The first type, "index studies", detect the presence or absence of sustainability information and, thus, does not allow the extent of information disclosure to be measured (Branco & Rodrigues, 2008a). On the other hand, the second type, "amount-volume studies", check the amount or volume of disclosure by counting words, sentences, or page proportions. It was argued that the extent of disclosure is an indication of the importance of a particular subject to the company (Campbell et al., 2003). Therefore, we use the second type of content analysis as it gives a better picture of the sustainability practices.

In this study, the sampling unit is a whole report (whether annual or sustainability). 'Sentence' was adopted as the measurement unit, as sentences, rather than words or paragraphs, are likely to provide more reliable measures of inter-rater coding than words (Hackston & Milne, 1996). The 'sentence' is also adopted and supported by several other sustainability studies (e.g. Hackston & Milne, 1996; Holland & Boon Foo, 2003). We used our four-category sustainability index (discussed earlier and detailed in Appendix B) as the 'coding schedule' of sustainability. The coding manual (content analysis dictionary) was developed by selecting 28 reports (14 from each country) and then manually reading and searching for words or phrases within them that could express each coding schedule category. Next, random reports were picked up and scanned for any additional phrases for each category until no additional phrases were found. Then, the reports were coded using NVivo 10 (64 bits) computer software. Finally, to prepare the data for analysis, the coding outcomes were divided by the number of pages in each report to get the relative weight of the variable in the report rather than an abstract number; this offered a better view of each variable and allowed for comparison.

4.3. Research methodology

We used Structural Equation Modeling (SEM) path analysis to analyze the data and test our proposed hypotheses. SEM is a set of multivariate techniques that allow for the simultaneous study of the relationship between directly observable and/or unmeasured latent variables, while incorporating potential measurement errors. Thus, SEM does not suffer from the shortcomings of traditional statistical techniques used for analyzing data (e.g. correlation and multiple regression), such as the use of only one dependent variable, the incapacity to test different types of relations in a single model, and the assumption that the measurement of constructs is error-free. Thus, as Garson (2012) emphasized, path analysis using SEM instead of traditional regression procedures allows for the measurement of model fit, the modification of indices, and measuring error while considering latent variables.

4.3.1. Factor analysis

To examine how underlying constructs influence the observed variables, we used the maximum likelihood method of factor extraction[8] as it is similar to the estimation method implemented in the SEM path analysis software. To determine the appropriate number of factors for inclusion after the initial extraction, we applied the Kaiser criterion, where the number of factors is equal to the number of the eigenvalues of the correlation matrix that are greater than one. Finally, using Bartlett Scores, orthogonal rotations up to the result of the Kaiser criterion were used to arrive at a final solution.[9]

The internal environmental effect was measured by eight variables. The initial extraction indicates that variable biodiversity has a weak correlation with the internal environmental factor and so it was dropped. The internal environmental effect explained at least 50% of the variance in the remaining seven measures. The significant measures of internal environmental effect were energy used, emissions, water used, and transport. Internal social effect was measured by 12 variables.

The initial extraction indicates that all the measures are significantly related to the internal social effect. Internal social effect factors explained 69% of the variance in the related measures. Three factors were extracted from the maximum likelihood rotation. The significant variables for Factor 1 were labor health and safety, impacts on communities, employee benefits, labor /management relations, and human rights policies. The significant variables of Factor 2 were employee training practices, labor training and education, labor diversity, compliance with social law, and employee information. The third factor was represented by human rights assessment, and child and compulsory labor laws.

The external environmental effect was measured by eight variables. The initial extraction reveals that most of the eight variables were significantly related to the external environmental effect construct, explaining 62% of the variance in external environmental effect. The significant factor loadings on Factor 1 were active environmental ownership, products and service environment policies, environmental risks, environmental staff competency, products and service labeling, and products and service compliance with laws. Factor 2 explained more variance in clients' environment risk, and special products and services.

External social effect was measured by 16 variables. The initial extraction suggests that financial literacy, corruption, human rights agreements, and products and service compliance with social laws were not correlated with external social effect. The rotated factor matrix revealed the external social effect explained 58% of the variance of the 12 variables. Factor 1 was represented by marketing communications, social risks of business line, accessibility of financial services, anti-competitive behavior, clients' social risk, active social ownership, and special social products. Factor 2 was represented by public policy, social policies, and staff social competency. Table 1 summarizes the Maximum likelihood factor analysis results.

4.3.2. SEM-Path analysis approach

The SEM path analysis tests the hypothesized relationships among the multiple independent and dependent model constructs (observed and latent). The sustainability practice variables (internal environment, internal social, external environment, and external social effect) are considered as latent variables and measured by a group of observed variables. Financial performance is the dependent endogenous variable.

Although SEM typically focuses on latent variables, it is possible to conduct path analysis using observed variables obtained from composite factor scores with no measurement error. The path model tested specifies relationships between independent exogenous variables (internal environment, internal social, external environment, and external social effect), and endogenous dependent variables (profitability, liquidity, operation, and funding).

The hypotheses were tested by interpreting the path coefficients, which are standardized regression coefficients (beta weight), showing the direct effect of independent variables on dependent variables in the path model while controlling for other prior causes of the given dependent variables. The residuals in the endogenous variables reflect unexplained variance in those endogenous variables due to the effects of variables not in the model and the effect of measurement error. The path coefficient was estimated using the maximum likelihood method. Table 2 summarizes the goodness-of-fit tests used to evaluate the model and shows that the overall fit of the model was acceptable.

5. Results

5.1. Descriptive statistics

The sample consists of 483 reports, over 70% of the reports used are sustainability reports which are almost equally distributed across the seven years. European bank reports make up>61% of the total sample with the rest coming from the USA. Table 3 provides descriptive statistics for our variables. The results show that banks (the whole sample, European, and US) cared the most about their internal social effect with (m = 2.51, SD = 1.01), (m = 2.67, SD = 1.1), and (m = 2.25, SD = 0.78), respectively. Banks (the whole sample, European, and US) cared least about their internal environmental effect with (m = 0.81, SD = 0.36), (m = 0.9, SD = 0.39), and (m = 0.68, SD = 0.26), respectively. These results are not surprising as banks to a great extent do not have much direct environmental impact (for example, they do not pollute). The table also shows that in all the main sustainability groups, that EU banks had higher means than US banks.

[8] This was performed after examining the suitability of the data for factor analysis by checking for missing values, normality, and reliability.

[9] In Bartlett Scores only the shared variance has an impact on factor scores. They were used as they closely reflect the factor structure, taking into account the contribution of each measure.

Table 1
Maximum likelihood factor analysis.

Construct	Number of items	Number of factors	Cumulative percentage of variance explained
Internal Environmental	7	2	50.29%
Internal Social	12	3	68.92%
External Environmental	8	2	62.63%
External Social	16	2	58.10%

Table 2
Summary of model fit indices.

Model	$\chi 2$	Df	$\chi 2$/df	RMSEA	CFI	NFI	TLI
Value	16.92	8	2.11	0.05	0.99	0.99	0.98
Good fit	Not significant		Range 2:1 or 3:1	< or = 0.08	> or = 0.90	Close to 1	Close to 1

Notes: $\chi 2$ = Chi-square; df = Degree of freedom; $\chi 2$/df = Relative Chi-square; RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; NFI = Normed Fit Index; TLI = Tucker-Lewis Index.
Insignificant Chi-square = a good model fit. The Relative Chi-square should be in the range of 2:1 or 3:1 for an acceptable model. CFI, NFI and TFI > or = 0.90 indicates a good fit. Finally, RMSEA less than or equal to 0.08 indicates a good model fit.

Table 3
Descriptive statistics of variables.

	Total			EU			USA		
	Mean (SD)	Min	Max	Mean (SD)	Min	Max	Mean (SD)	Min	Max
IE	0.81 (0.36)	0.10	3.18	0.9 (0.39)	0.20	3.18	0.68 (0.26)	0.10	1.76
IS	2.51 (1.01)	0.76	7.92	2.67 (1.10)	0.79	7.92	2.25 (0.78)	0.76	5.60
EE	1.58 (0.65)	0.25	4.40	1.64 (0.68)	0.50	4.40	1.48 (0.60)	0.25	3.70
ES	1.43 (0.59)	0.32	3.86	1.45 (0.60)	0.49	3.67	1.4 (0.57)	0.32	3.86
Size	4.23 (5.63)	0.005	25.87	3.38 (4.69)	0.005	25.87	4.78 (6.10)	0.02	17.88
Profitability	0.51 (1.38)	−12.37	5.25	0.74 (1.02)	−12.37	5.25	0.36 (1.56)	−5.84	3.31
Liquidity	51.50 (20.25)	0.00	84.12	47.68 (24.25)	6.12	81.13	53.96 (16.77)	0.00	84.12
Operation	43.17 (25.02)	−126.2	223.03	51.33 (25.97)	−126.20	223.03	37.91 (22.94)	−14.65	133.09
Funding	61.26 (20.81)	3.97	99.03	73.19 (21.20)	3.97	98.68	53.82 (16.72)	7.00	99.03

Notes: IE = Internal Environmental, IS = Internal Social, EE = External Environmental, ES = External Social.

5.2. SEm

The bivariate correlations, presented in Table 4, indicate that none of the four measures of sustainability is significantly correlated with bank profitability. Although there is no correlation between external social effect and liquidity, the results reveal significant negative correlations between the internal social effect and liquidity, and significant positive correlations between the internal and external environmental effects and liquidity. Similarly, both internal and external environmental effects are negatively correlated to funding. There is a positive correlation between the internal social effect and operation performance. The results further indicate that there are positive correlations between profitability and operation, and between liquidity and funding. On the other hand, there is a significantly negative correlation between liquidity and operation. It should be noted that there is no correlation among the bank performance measures and external social effect. Finally, size is positively correlated with the internal environmental effect, internal social effect, and external environmental effect, but there was no significant correlation with external social effect.

Fig. 2 represents the SEM path model and testing the effect of sustainability measures on bank performance, and the effect of size on sustainability. The Squared Multiple Correlations indicate that sustainability explains 4% of the variance in profitability, 13% of the variance in liquidity, 5% of the variance in operation, and 10% of the variance in funding.

The results in Table 5 confirm that apart from the negative relationship between the internal environmental effect and operation, there is no relationship between any of the banks' performance variables and the internal environmental effect at a 5% significance level. Thus, hypothesis H1a is rejected, this contradicts our expectations and different studies in the banking sector (as discussed in Section 3.1). We also report a positive relationship between the internal social effect and profitability, operation, funding, and the bank's liquidity at a 5% significance level.[10] Therefore, H1b is accepted and this is in line with the previous findings in the literature (as discussed in Section 3.1). In addition, our findings reveal that external environmental effect negatively predicts funding, and no significant relationship was found between external environmental and the other performance measures at a 5% level. Hence, H1c is not supported. Furthermore, our results found a significantly

[10] Remember that higher levels of the liquidity variable imply lower levels of bank liquidity. The negative sign on the liquidity variable indicates an increase in bank liquidity.

Table 4
Pearson's Correlations between sustainability and banks' performance.

	Size	ES	EE	IS	IE	Funding	Operation	Liquidity	Profitability
Size	1.00								
ES	0.03	1.00							
EE	**0.40****	0.27	1.00						
IS	**0.34****	0.31	0.60	1.00					
IE	**0.47****	−0.25	0.58	0.50	1.00				
Funding	−0.37	0.08	**−0.17****	0.01	**−0.17****	1.00			
Operation	0.11	0.06	0.04	**0.13****	0.00	−0.09	1.00		
Liquidity	−0.27	0.03	**−0.14****	**−0.28****	**−0.18****	**0.34****	**−0.29****	1.00	
Profitability	−0.01	0.01	−0.06	0.04	−0.05	0.02	0.11	−0.02	1.00

Notes: * Correlation is significant at the 0.05 level (2-tailed). ** Correlation is significant at the 0.01 level (2-tailed). IE = Internal Environment; IS = Internal Social; EE = External Environment; ES = External Social. The sustainability practice variables (ES, EE, IS and IE) are considered as latent variables and measured by a group of observed variables. Financial performance (profitability, liquidity, operation, and funding) are the dependent endogenous variable.

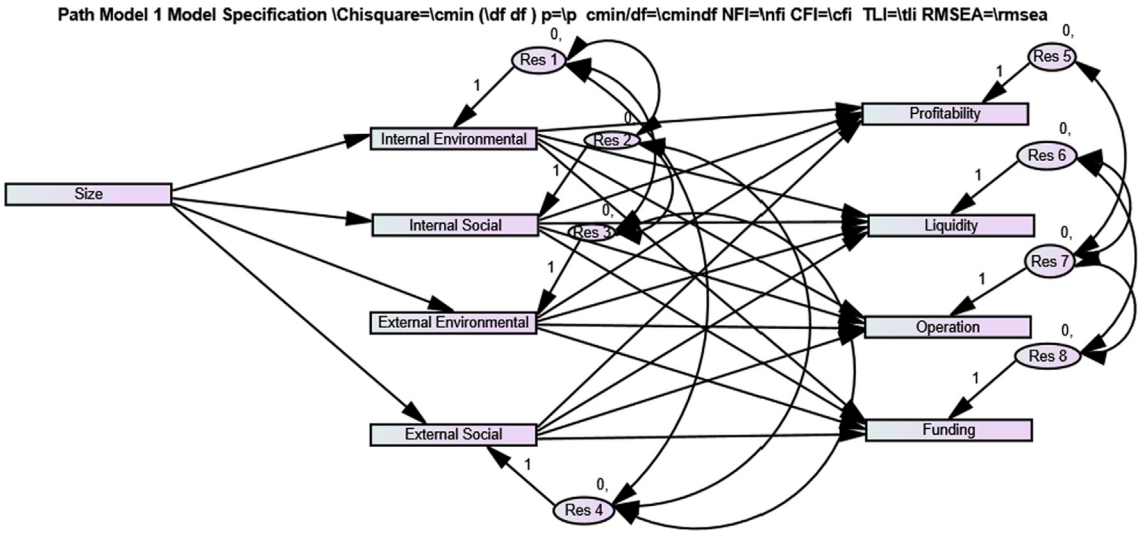

Fig. 2. SEM path model.

negative relationship between the external social effect and bank liquidity, but no relationship to profitability, operation, and funding at $p < 0.05$.[11] Thus, we do not support Hypotheses H1d. Finally, we report that size of the bank is positively associated (at $P < 0.05$) with the internal and external environmental effects, and the internal social effect, which is consistent with our expectations

When examining the relationship between sustainability and performance, some studies used a time lag (McGuire et al., 1988; Roberts, 1992; Pava & Krausz, 1996; Moore, 2001; Chang & Kuo, 2008; Weber, 2017). These studies examined whether there is an association between prior period sustainability and subsequent period financial performance. As a robustness test, further analysis was conducted to test if a one-year time lag would make any difference to the results. This lag in time was justified because: "sustainability is normally perceived to be a long-term strategy" (Chang & Kuo, 2008, p. 370), and "the focus of stakeholder theory is on meeting the long-term interests of stakeholders" (Roberts, 1992, p. 599).

We re-estimate our model by investigating lag sustainability on financial performance and report the results in Table 6. Overall, our results show support for H1.b, which is consistent with our previous findings in Table 5.[12]

Finally, to test for moderation effects of region (EU and USA) on the relationship between sustainability and performance, multi group analysis was performed in SEM employing standard errors for path coefficients. One of the main goals of this type of analysis is to compare pairs of path coefficients for identical models but using different samples. We employed procedures described by Garson (2012). First, the model-fit for the multi groups (EU and USA) region was calculated. The overall fit of the model was acceptable, with $\chi 2$ of 16.93 (df = 8, $p = 0.01$), Relative Chi square ($\chi 2$/df ratio) of 2.11, CFI of 0.99, NFI of 0.98, TLI of 0.93, IFI of 0.90, and RMSEA of 0.049.

[11] Same as above.
[12] The effect of performance on the next year's sustainability activities was examined. However, the results did not support this relationship.

Table 5
Squared Multiple Correlations and Regression Weights (H1; size).

Hypotheses	Path description			SMC	Standardized coefficients			Direction
	Independent variable		Dependent variable		Beta	S.E.	C.R.	
H1.A	Internal Environmental	→	Profitability	0.04	−0.07	0.01	−0.91	
H1.A	Internal Environmental	→	Liquidity	0.13	0.10	0.05	1.38	
H1.A	Internal Environmental	→	Operation	0.05	**−0.14***	0.02	−1.95	**-R**
H1.A	Internal Environmental	→	Funding	0.17	−0.02	0.03	0.27	
H1.B	Internal Social	→	Profitability	0.04	**0.14***	0.01	2.24	**+ A**
H1.B	Internal Social	→	Liquidity	0.13	**−0.33*****	0.04	−5.49	**- A**
H1.B	Internal Social	→	Operation	0.05	**0.19*****	0.02	3.02	**+ A**
H1.B	Internal Social	→	Funding	0.17	**0.21*****	0.03	3.64	**+ A**
H1.C	External Environmental	→	Profitability	0.04	−0.11	0.01	−1.61	
H1.C	External Environmental	→	Liquidity	0.13	0.05	0.05	0.82	
H1.C	External Environmental	→	Operation	0.05	−0.04	0.02	−0.52	
H1.C	External Environmental	→	Funding	0.17	**−0.17*****	0.03	−2.47	**- R**
H1.D	External Social	→	Profitability	0.04	−0.02	0.01	−0.38	
H1.D	External Social	→	Liquidity	0.13	**0.15****	0.04	2.67	**+ R**
H1.D	External Social	→	Operation	0.05	−0.02	0.01	−0.41	
H1.D	External Social	→	Funding	0.17	0.08	0.02	1.41	
	Size	→	External Environmental	0.16	**0.47*****	0.04	11.32	**+ A**
	Size	→	External Social	0.12	**0.34*****	0.05	7.97	**+ A**
	Size	→	Internal Environmental	0.22	**0.40*****	0.05	9.31	**+ A**
	Size	→	Internal Social	0.00	0.03	0.01	0.32	

Notes: * Beta is significant at the 0.05 level (2-tailed). ** Beta is significant at the 0.01 level (2-tailed).*** Beta is significant at the 0.001 level (2-tailed).SMC-Squared Multiple Correlations R2 (variance explained). A: accepted; R: rejected. Beta = path coefficients/ parameter estimate/ standardized regression coefficient. S.E. = standard error. C.R. = Critical ratio. C.R > 1.96 indicates a beta weight is significantly different from 0 at the p = 0.05.

Table 6
Time Lag Squared Multiple Correlations (banks' performance) and Regression Weights (sustainability) (H1).

Hypotheses	Path description		SMC	Standardized coefficients			Direction
	Dependent variable	Independent variable		Beta	S.E.	C.R.	
H1.A	Profitability	Internal Environmental	0.03	−0.11	0.01	−1.28	
H1.A	Liquidity	Internal Environmental	0.18	−0.01	0.06	−0.12	
H1.A	Operation	Internal Environmental	0.06	−0.11	0.02	0.09	
H1.A	Funding	Internal Environmental	0.25	0.03	0.03	−0.45	
H1.B	Profitability	Internal Social	0.03	**0.15***	0.01	2.15	**+ A**
H1.B	Liquidity	Internal Social	0.18	**−0.43****	0.05	−6.67	**- A**
H1.B	Operation	Internal Social	0.06	**0.22****	0.02	3.09	**+ A**
H1.B	Funding	Internal Social	0.25	**0.24****	0.03	3.93	**+ A**
H1.C	Profitability	External Environmental	0.03	−0.07	0.01	−1.10	
H1.C	Liquidity	External Environmental	0.18	−0.06	0.05	1.03	
H1.C	Operation	External Environmental	0.06	0.04	0.03	−0.55	
H1.C	Funding	External Environmental	0.25	−0.04	0.03	0.20	
H1.D	Profitability	External Social	0.03	−0.09	0.01	−0.38	
H1.D	Liquidity	External Social	0.18	0.08	0.05	1.59	
H1.D	Operation	External Social	0.06	−0.04	0.02	0.20	
H1.D	Funding	External Social	0.25	0.01	0.03	1.13	

Notes: * Beta is significant at the 0.05 level (2-tailed). ** Beta is significant at the 0.01 level (2-tailed). *** Beta is significant at the 0.001 level (2-tailed). SMC-Squared Multiple Correlations R2 (variance explained). A: accepted; R: rejected. Beta = path coefficients/ parameter estimate/ standardized regression coefficient. S.E. = standard error. C.R. = Critical ratio. C.R > 1.96 indicates a beta weight is significantly different from 0 at the p = 0.05.

After confirming that the model's goodness of fit, path coefficients were then estimated for the separate groups. Critical ratios (C.R) were used for differences between parameters. This means that C.R > 1.96 indicates a beta weight is significantly different from 0 at the $p = 0.05$.

Our results in Table 7 indicate that the regional context moderates the effect of the internal environmental and external environmental effects on funding. The internal environmental has a significant positive effect in the EU while there was no significant effect in the USA. In the EU, the external environmental has a negative effect on funding while it has no effect in the USA.[13]

[13] No moderating effect for region on the relationship between size and sustainability was found.

Table 7
Moderation effect of region on sustainability.

		EU Region		USA Region		Critical
		Beta	***P***	**Beta**	***P***	**Ratio**
Profitability		**SMC = 3%**		**SMC = 3%**		
	Internal Environmental	−0.13	0.18	0.17	0.24	
	Internal Social	0.11	0.40	−0.02	0.90	
	External Environmental	0.01	0.93	−0.20	0.12	
	External Social	0.02	0.83	0.06	0.66	
Liquidity		**SMC = 15%**		**SMC = 33%**		
	Internal Environmental	0.02	0.80	−0.16	0.17	
	Internal Social	**−0.44**	***	**−0.04**	**0.75**	
	External Environmental	−0.05	0.63	−0.17	0.11	
	External Social	0.09	0.23	0.06	0.61	
Operation		**SMC = 2%**		**SMC = 22%**		
	Internal Environmental	−0.10	0.27	0.10	0.41	
	Internal Social	0.18	0.18	0.06	0.68	
	External Environmental	0.02	0.83	0.15	0.18	
	External Social	−0.04	0.59	0.11	0.36	
Funding		**SMC = 21%**		**SMC = 27%**		
	Internal Environmental	0.23	**	−0.21	0.09	−2.74***
	Internal Social	0.31	**	0.12		
	External Environmental	**−0.31**	***	**0.08**	**0.46**	2.47**
	External Social	−0.03	0.67	−0.04	0.75	

Notes: * Beta is significant at the 0.05 level (2-tailed). ** Beta is significant at the 0.01 level (2-tailed). SMC = Squared Multiple Correlations R2 (variance explained).

6. Discussion

The absence of a significant positive relationship between the environmental dimensions of sustainability and bank performance indicates that when banks engage in environmental activities (internal and external) they are not going to increase their profitability. For example, the external environmental is measured by the disclosure on banks' environmental products and services, as banks might develop new specific environmental products and services, such as ethical investment, financing environmentally friendly projects, and environmental insurance. Thus, the results show that more disclosure in this regard has a negative influence on funding. This might be because customers perceive this information as greenwashing and they do not believe that the bank's true motive is to protect the environment, which might hinder them from depositing money in the bank. However, banks still disclosing such information even though it is decreasing their funding is in-line with the normative branch of stakeholder theory. The results suggest that the motive behind the environmental dimensions of sustainability might truly be a moral or ethical one, which, in turn, supports the normative or ethical branch of stakeholder theory.

The significant, positive relationship between the internal social effect and profitability, operation, funding, and liquidity (significant, negative relationship with un-liquidity) is interesting. The internal social effect, which are the social aspects caused directly by the operation of banks and efforts to reduce the direct social effect of the banks, we mainly measure by issues linked to labor practices, labor training and education, and human rights practices. The implication is that this is money well spent. Spending on the internal social effect improves profitability, operation, funding, and even liquidity. This positive relationship is in-line with stakeholder theory as taking care of and satisfying employees will increase their morale, productivity, retention rate, and at the same time reduce any potential problems and hiring costs (Waddock & Graves, 1997; Balabanis et al., 1998; Barnett & Salomon, 2012), which in turn will improve the financial performance. These results are consistent with Simpson and Kohers (2002) who found a positive relationship between financial performance and bank social performance in US banks.

The external social effect has a significant, negative impact on bank liquidity, but not on profitability, operation, and funding. The negative relationship between the external social effect with liquidity would be better understood by looking at how the external social dimension is measured. The dimension represents the social impacts arising from the bank's products and services, the social impacts arising from the way in which the bank delivers its products and services, and the social impacts of the users of these products (i.e. clients' social risk). Thus, the products of the banks themselves do not have significant social impact. It is, rather, the users of these products. According to Weber et al. (2010), in order for banks to manage this risk, they add sustainability criteria in their lending decisions (credits, loans, and mortgages). So, if borrowers are deemed socially risky by stakeholders, they will suffer from reputation risk and consumer boycotts, and therefore lose the ability to repay the loan (Weber, 2017). Liquidity in this study is measured by what percentage of the bank's assets is tied up in loans. Reflecting this on the current negative relationship with liquidity might mean that banks with more disclosure on the external social effect would be more confident in lending more to customers (higher percentage of their assets are tied-up in loans). Again, this result is in accordance with the normative branch of stakeholder theory as the managers are

practicing and disclosing information on their external social effect even though it is not positively linked to performance because it is the right thing to do regardless of whether it leads to improved financial performance. While we acknowledge that this relationship is not unique for the banking sector, we argue that the sustainability of banks will depend on the sustainability of the companies they lend to and, thus, our results show the importance of sustainability in one of the most important sectors (banking sector) that can shape the sustainability of the economy at the macro-level.

One of the most fundamental issues in the relationship between sustainability and financial performance is the direction of the causality (i.e. which one affects the other) (Preston & O'Bannon, 1997; Endrikat, Guenther, & Hoppe, 2014). However, the results of our study did not confirm a strong cause and effect relationship between sustainability and financial performance, perhaps because the relationship is not a simple linear one (see for example, Ullmann, 1985; Moore, 2001, Barnett & Salomon, 2012; Brooks & Oikonomou, 2018).

This study found that bank size has a positive effect on the internal and external environmental effects, and the internal social effect; and a negative effect on the external social effect. The positive relationship is in-line with most previous studies in the area of sustainability in general (e.g. Gray et al., 1995; Hackston & Milne, 1996; Branco & Rodrigues, 2008b) and the banking sector in particular (e.g. Chih et al., 2010; Weber, 2017). Thus, the negative effect of size on the external social effect could be explained that bigger banks are hiding the impact of their products and services on society to protect their reputation or to avoid tougher regulations and increasing taxes.

When we retested the model using a one-year time lag, the results did not significantly change. This is similar to Qiu, Shaukat, and Tharyan (2016) findings of no reverse causality from lagged disclosures to profitability. Chang and Kuo (2008) found that sustainability had an influence on profitability at a later period of time and, thus, it is weaker than the influence on profitability in the same year. Our results are inconsistent with Pava and Krausz (1996), who found some supporting evidence for the positive relationship between sustainability and financial performance in a later period. Weber (2017) found a bi-directional causation between years lag (one year and two years) of sustainability and both total assets and net profits. So, the lack of relationship between the lagged disclosures on performance could be that the reputation effect of sustainability disclosure needs a longer time to translate into profit (Jo, Kim, & Park, 2015; Qiu et al., 2016). This means that sustainability activities are likely to affect same year results significantly more than performance in a subsequent year.

When we tested for moderation effects of region (EU and USA) on the relationship between sustainability and performance, the only different result between the two regions was in the relationships between the internal and external environmental effects on funding. In the first relationship, the internal environmental effect has a significant positive effect on funding in the EU while there was no significant effect in the USA. It might mean that customers in the EU appreciate more banks' internal environmental effort, which results in them significantly depositing more of their money in those banks than customers in the USA. The second relationship revealed that in the EU, the external environmental effect has a negative effect on funding, but no effect in the USA. This might be in line with our previous discussion that customers perceive this information as greenwashing and do not believe that the bank's true motive is to protect the environment, which might hinder them from depositing money in the bank. Thus, the lack of effect of both relationships on US banks might be in accordance with the conclusion of van der Laan Smith et al. (2005) that the US is a more shareholder-oriented country and the EU is a more stakeholder-oriented region. This implies that stakeholder theory explanations of sustainability are more applicable to the EU region.

7. Conclusion

This study investigates the relationship between sustainability and financial performance on a sample of EU and USA banks. It makes a significant contribution to the debate regarding the relationship of sustainability with performance in the banking sector.

The lack of evidence of a significant relationship between sustainability environmental dimensions and performance (reported in our work) means that when banks engage in environmental activities (both internally and externally), they are not keen to increase their profitability. The motive behind the environmental aspect of sustainability might truly be a moral or ethical one that, in turn, supports the normative or ethical branch of stakeholder theory. In addition, the lack of an external social effect on the performance measures could be because the expenses of sustainability activities are offset by the reduction in other costs which accompany them. These relationships could be affected by other factors not included in this study, such as ownership structure, risk, and organizational management systems. This is why we encourage further research to consider such aspects. It is also worth noting that, due to sample restrictions, especially from the European-side, this study treated the 15 EU member states as a unified unit and compared it to the US, and hence further studies examining the institutional settings of each European country should enhance our knowledge of bank sustainability.

Overall, our paper provides a better understanding of different dimensions of sustainability and how these affect bank performance. The results of this study have empirical implications for banks in the EU and the USA by directing their efforts to sustainability areas. Even if such activities might not provide immediate positive returns, they might enhance bank reputation.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Variable description

Variables	Symbol	Description	Source
Profitability		Return on Average Assets (ROAA) (net income/total assets average %).	Bankscope
Liquidity		The ability of the bank to meet its financial obligations as they come due in the short term, without disrupting the normal operations. Measured by net loans/ total assets %. Higher values of this variable imply lower bank liquidity.	Bankscope
Operation		The financial efficiency of a bank as it shows the bank's uses of its assets to generate gross revenues. Measured by (non-interest Income/ gross revenue %).	Bankscope
Funding		How the bank funds itself in terms of the strength of its deposit base. Measured as the percent of customer deposits in total funding (customer deposits/total funding excluding derivatives).	Bankscope
Size		Bank size was measured by total assets.	Bankscope
Internal Environmental Effect	**IE**	Internal environmental performance indicators such as materials and paper used, energy used. . .etc.	
Internal Social effect	**IS**	Internal social performance indicators such as labor practices e.g. employee numbers, employee turnover, benefits and remuneration and health & safety at work place; human rights practices e.g. child and compulsory labor.	
External Environment Effect	**EE**	External/indirect environmental performance indicators it is divided into two categories: environmental risk management related to financial products e.g. clients' environment risk and environmental staff competency; and specific environmental products.	
External Social Effect	**ES**	External/indirect social performance indicators it includes the social impacts arising from the bank's products and services themselves; the social impacts arising from the way in which the bank delivers its products and services.	

Appendix B:. Developed sustainability index

I- Internal Environmental Effect (performance indicators)

	GRI	Category	Description
SUS 1	EN1 EN2	Materials used	All forms of materials and components that are part of the final product; and recycled input materials.
SUS 2	EN3 EN4 EN5 EN7	Energy used (e.g. electricity, fuel, Heating)	The reporting organization's consumption of direct primary energy sources and indirectly through the purchase of electricity, heat, or steam. This also includes energy saved due to conservation and initiatives to reduce energy consumption.
SUS 3	EN8,9, 21, 25	Water used	All water used and discharged by the reporting organization from all sources and water bodies significantly affected by this.
SUS 4	EN11, 13,14,15	Biodiversity	The impact of operation on biodiversity and strategies, current actions, and future plans for managing impacts on biodiversity.

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Appendix B (*continued*)

	GRI	Category	Description
SUS 5	EN16 17,18 19,20	Emissions	Emission from all sources owned or controlled by the reporting organization.
SUS 6	EN22 EN24	Waste	Waste created by the organization's operations (for financial institutions, the waste will be mainly paper and IT products) and waste recycled.
SUS 7	EN29	Transport	Business travel, transporting products, materials used for the organization's operations, and members of the workforce.
SUS 8	EN28	Compliance with operating Environmental laws & regulation	Identify sanctions and fins for failure to comply with environmental laws and regulations.

Note: Sus = sustainability Performance Indicators; GRI = Global Reporting Initiative; EN = Environmental Performance Indicators.

II- Internal social effect (performance indicators)

	GRI	Category	Description
Sus 9		**Labor Practices**	
SUS 9–1	LA1 LA2	Employee information	Information regarding employees (such as total workforce by employment type, employment contract, gender, and region); information about employee turnover and hired (by age group, gender, and region).
SUS 9–2	LA3 LA15	Employee benefits	Benefits provided to full-time employees (e.g. life insurance; health care; . . .etc.). Return to work and retention rates after parental leave, by gender.
SUS 9–3	LA4 LA5	Labor /Management Relations	Information about employees covered by collective bargaining agreements and minimum notice period(s) regarding operational changes, including whether it is specified in collective agreements.
SUS 9–4	LA6 LA7 LA8 LA9	Labor health and safety	This includes the formal health and safety committees; education, training and risk-control programs in place and rates of injury, lost days, and absenteeism. Financial institutions should report their policies and practices regarding threats and violence such as attacks and aggressions by customers; bank robberies and terrorism.
SUS 9–5	LA10 LA11 LA12	Labor training and education	This includes average hours of training per year per employee; programs for skills management and lifelong learning and percentage of employees receiving regular performance and career development reviews.
SUS 9–6	LA13 LA14	Labor diversity and equal opportunity	This includes composition of governance bodies and breakdown of employees per employee category according to gender, age group, minority group membership, and other indicators of diversity. Ratio of basic salary and remuneration of women to men by employee category, by significant locations of operation.
Sus 10		**Human rights practices**	
SUS 10–1	HR6 HR7	Child and compulsory labor	Operations and significant suppliers identified as having significant risk for incidents of child labor, forced or compulsory labor and measures taken to contribute to their elimination.
SUS 10–2	HR3 HR8	Employee training & Security Practices on human rights	Employee and security personnel training on policies and procedures concerning aspects of human rights that are relevant to operations.

Appendix B (*continued*)

	GRI	Category	Description
SUS 10–3	HR2 HR4 HR5 HR9	Human rights policies	How the reporting organizations apply their human rights policies to their suppliers, contractors and other business partners. Relevant forms of discrimination involving internal and/or external stakeholders across operations in the reporting period and corrective actions taken. Freedom of association and collective bargaining and indigenous rights.
SUS 10–4	HR10 HR11	Human rights Assessment and Remediation	Percentage and total number of operations that have been subject to human rights reviews and/or impact assessments and number of grievances related to human rights.
SUS 11	SO1 SO9 SO10	The impacts of operations on communities	Operations with significant potential or actual negative impacts on local communities. Any programs and practices that asses and manage the impacts of operations on communities, including entering, operating, and exiting. Development programs, prevention and mitigation measures.
SUS 12	SO8	Compliance with operating social laws & regulations	The organization's overall record of compliance with the range of social laws under which it must operate and any monetary and non-monetary fines and sanctions for noncompliance (such as accounting fraud, workplace discrimination, etc).

Note: Sus = Sustainability Performance Indicators; GRI = Global Reporting Initiative; LA = Labor Practices and Decent Work Performance Indicators; HR = Human Rights Performance Indicators; SO = Society Performance Indicators.

III- External environment effect (indirect performance indicators)

	GRI	Category	Description
		A-Environment risk management related to financial products	
SUS 13	PR3 PR4	Products and Service labeling environment information	This indicator provides an indication of the degree to which information and labeling addresses a product's or a service's impact on environment. Also, total number of incidents of non-compliance with (environmental) regulations and voluntary codes concerning product and service information and labeling.
SUS 14	FS3 FS5	Clients environment risk	The environmental indirect impacts associated with the actions of clients and business partners and processes for monitoring clients' implementation of and compliance with environmental requirements. Interactions with clients/investees/business partners regarding environmental risks and opportunities.
SUS 15	FS2	Environmental risks in business lines	Procedures for assessing environmental risks in business lines, the environmental impacts of products and services and how this affects transaction decisions. Including those procedures used to implement environment policies.
SUS 16	FS4	Environmental staff competency	Process(es) for improving staff competency to implement the environmental policies and procedures as applied to business lines.
SUS 17	FS10 FS11 FS12	Active environmental Ownership	Percentage and number of companies held in the institution's portfolio with which the reporting organization has interacted on environmental issues. Percentage of assets subject to positive and negative environmental screening. Environmental screening investment strategies; voting polic(ies) applied to environmental issues for shares over which the reporting organization holds the right to vote.

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Appendix B (*continued*)

	GRI	Category	Description
SUS 18	PR9	Products and service Compliance with environmental laws and regulations	Identify administrative or judicial sanctions levied against the organization for failure to comply with products and service environmental laws or regulations, and report significant fines and non-monetary sanctions.
		B- Specific environmental products	
SUS 19	FS1	Products and services Environment policies	Provide an overview of the reporting organization's intention to consider environmental criteria across design and delivery of core products and services (e.g., project finance, loans, mortgages, mutual funds, etc.). Investment in countries or regions that are controversial.
SUS 20	FS8	Special products and services	Monetary value of products and services designed to deliver a specific environmental benefit for each business line broken down by purpose.

Note: Sus = Sustainability Performance Indicators; GRI = Global Reporting Initiative; PR = Product Responsibility Performance Indicators; FS = Financial services sector- specific Products and Service Impact Performance Indicators.
* EN6 product energy and EN12, EN26 Products environmental impacts in GRI were deleted from this index as banks products do not consume energy and there is no direct impact of banks product on environment.
* EN27 Products recycle were deleted from this index as banks in general "do not generate significant volumes of products with recoverable material" (Santander report 2012).
* PR1-PR2 the impacts of products and services on Customer Health and Safety were deleted from this index as they do not apply to banking business.

IV- External social effect (indirect performance indicators)

	GRI	Category	Description
SUS 21		**Community**	
21.1	FS13 FS14	Accessibility of financial service	Financial services should be reasonably accessible to all customers within the regions where the financial institution operates. So, this indicator report on access points in low-populated or economically disadvantaged areas by type and on initiatives to improve access to financial services for disadvantaged people.
21.2	FS16	Financial literacy	Financial literacy initiatives to educate customers and other groups or communities on financial planning and management. This would improve the sophistication of customer base, its ability to use products and services and to address issues of over indebtedness, social exclusion and other financial risks.
21.3	SO2 SO3 SO4	Corruption	Efforts to manage reputational risks arising from corrupt practices by employees or business partners. The percentage and total number of business units analyzed for risks related to corruption; employees trained in organization's anti-corruption policies and procedures; and actions taken in response to incidents of corruption.
21.4	SO7	Anti -Competitive Behavior	Total number of legal actions for anticompetitive behavior, anti-trust, and monopoly practices and their outcomes.
21.5	PR6 PR7	Marketing Communications	Programs for adherence to laws, standards, and voluntary codes related to marketing communications, including advertising, promotion, and sponsorship and total number of incidents of non-compliance.
Sus 22		Public policy	Report the significant issues that are the focus of the reporting organization's participation in public policy development and lobbying. Financial and in-kind contributions to political parties, politicians, and related institutions.

Appendix B (*continued*)

	GRI	Category	Description
SUS 23		**Products and services**	
23.1	FS1 FS15	Social policies	The consideration of social criteria across design and delivery of core products and services. Policies for the fair design and sale of financial products and services. How the reporting organization manages potential conflicts of interest with customer. Ensuring appropriate, fair and responsible use of products, services and advice.
23.2	FS2	Social risks of business line	Procedures for assessing social risks in business lines (e.g. incorporating assessment of social criteria into the risk management system) and assessing the social impacts of its products and services and how this affects transaction decisions.
23.3	PR3 PR4	Labeling social information	This indicator provides an indication of the degree to which information and labeling addresses a product's or a service's impact on society; type of product and service information required and information about the social impacts of products and services (positive and negative). Also, total number of incidents of non-compliance with (social) regulations and voluntary codes concerning product and service information and labeling.
23.4	FS7	Special social products	Monetary value of products and services designed to deliver a specific social benefit for each business line broken down by purpose.
SUS 24		**Clients**	
24.1	FS3 FS5	Clients social risk	The indirect impacts associated with the actions of clients may be more significant than the direct impacts of a financial institution, and interactions are therefore one of the key opportunities for managing impacts. Therefore, this indicator measures the interactions with clients/investees/business partners regarding social risks and opportunities. Interactions may be aimed at examining clients' approaches to management of social risks or social impacts. Also, this indicator looks at the processes for monitoring clients' implementation of and compliance with social requirements included in agreements or transactions.
24.2	PR5 PR8	Customer satisfaction and privacy	Practices related to customer satisfaction, including results of surveys measuring customer satisfaction. Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data.
24.3	HR1	Human rights investment agreements	Disclosure about investment agreements and contracts that include clauses incorporating human rights concerns or that have undergone human rights screening. For financial services, "investment agreements" refers to the range of financing agreements that include standard banking agreements such as loans agreements and underwriting contracts as well as insurance agreements.
SUS 25	FS4	Social staff competency	Process(es) for improving staff competency to implement the social policies and procedures as applied to business lines. The indicator enables assessment of the degree to which the reporting organization has ensured the necessary competencies are in place to effectively address the social risks and opportunities associated with its products and services.

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Appendix B (*continued*)

	GRI	Category	Description
SUS 26-	FS10 FS11 FS12	Active social ownership	Percentage and number of companies held in the institution's portfolio with which the reporting organization has interacted on social issues. Percentage of assets subject to positive and negative social screening. Social screening Investment strategies that involve selecting companies on the basis of set social criteria. Voting policies applied to social issues for shares over which the reporting organization holds the right to vote shares or advises on voting.
SUS 27	PR9	Products and service Compliance with social laws and regulations	Monetary value of significant fines and total number of non-monetary sanctions for noncompliance with social laws and regulations concerning the provision and use of products and services. Identify administrative or judicial sanctions levied against the organization for failure to comply with social laws or regulations, including international declarations/conventions/ treaties, and national, sub-national, regional, and local regulations concerning the provision and use of the reporting organization's products and services.

Note: Sus = Sustainability Performance Indicators; GRI = Global Reporting Initiative; FS = Financial services sector-specific Products and service impact Performance Indicators; HR = Human Rights Performance Indicators; SO = Society Performance Indicators; PR = Product Responsibility Performance Indicators.

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