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The integration of sustainability into the theory and practice of finance: an overview of the state of the art and outline of future developments

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Abstract The purpose of this paper is to provide a comprehensive view of the current state of the literature in sustainable issues in financial research. Progress in these areas has generally been slow, and the concept of sustainable finance has not yet fully settled in the academic literature. We introduce corporate social responsibility as the underlying framework for sustainable finance and review key strands from the diverse literature on sustainability in finance. We suggest how this research field might advance in the future and propose a number of open questions that require further analysis.

Keywords Sustainable finance · Sustainability · Corporate social responsibility · Socially responsible investing

JEL Classification G24 · O57 · Z1

1 Introduction

The purpose of this paper is to provide a comprehensive view of the foundations of social responsibility and their applications to finance as suggested by the current state of the literature. The concept of social responsibility has attracted growing attention and businesses feel increasingly obliged to respond. Socially responsible finance refers to responsibility from the corporate side as well as from investors in financial markets (Baker and Nofsinger 2012). An extant literature has already captured the fields of corporate social responsibility (CSR) and socially responsible

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investing (SRI). However, current economic research fails to address the role of certain key aspects of capital markets—namely banking and corporate finance—in terms of social finance. Thus the concept of sustainable finance has not yet fully settled in the academic literature.

The developments over the past few years have emphasized to the public that financial markets have profound effects on the economy. Given the recent financial crisis and numerous bailouts, as well as ecological damage caused by economic growth, the interest in socially responsible finance is increasing. In particular, since the beginning of the financial crisis, banks are being called upon to operate in a more responsible manner. Financial institutions, especially investment banks, are often accused of unethical behavior, most of which has arisen from unfair treatment of some counterparty (Heal 2004).

Awareness of social responsibility has evolved at the firm level, and to that effect, a growing number of investors, asset managers and financial intermediaries are willing to integrate sustainability considerations into their business practices. The capital markets can be seen as one of the fundamental drivers for a company to adopt socially and environmentally responsible policies that boost overall ethical conduct (Haigh and Hazelton 2004). However, financial research lacks an explicit approach which could substantiate the term "sustainable finance". Hitherto, finance is still dominated by the traditional neoclassical paradigm as value-free discipline.

To begin with, one needs to elaborate on the motivation of CSR. Why should firms conduct themselves in a sustainable manner? Some scholars maintain that the primary purpose of a corporation is to maximize the return to its shareholders. To that effect, besides abiding by the law, firms do not have other obligations to society. This notion contradicts with stakeholder theory. Proponents of the latter argue that firms do have responsibilities to stakeholders other than shareholders. Stakeholders are those who are affected by corporate activities and consist of owners, management, employees, customers, suppliers, the local communities, and others (Baker and Nofsinger 2012). The sections that follow take a predominantly neoclassical view intended to enhance traditional financial analysis from a sustainable perspective.

Section 2 evaluates the academic literature in the field of sustainable finance, observing that sustainable finance is an important but somewhat neglected subfield within financial economics. Section 3 provides a review on the backgrounds of the field of CSR. Section 4 summarizes some of the key strands from the diverse literature on the relevance of finance. Section 5 suggests a series of research puzzles which seem of particular importance in current times.

2 Academic interest in sustainable finance

This section evaluates the academic interest in sustainable finance. We first assess the role of sustainability issues in the social sciences in general, and then turn to the importance of sustainability in the area of finance. All analyses were performed in mid-2012.

2.1 Sustainability in business economics

Since the late 20th century, many environmental and social problems have become global in scale, and there is increasing awareness of the threat posed by the aggravated greenhouse effect, which is largely human-induced by forest clearance and the burning of fossil fuels. The concept of sustainable development emerged as a high profile public issue and triggered movements toward corporate social responsibility as a mainstream business activity (Kitzmueller and Shimshack 2012).

Academic interest in social and environmental responsibility developed in the same way. We evaluate the numbers of papers submitted to the prolific Social Science Research Network (SSRN) over the years. We therefore perform a keyword search for part of the title, limiting our search by a date range. We use the following 30 search terms: CSR, business ethics, social responsibility, sustainable behavior, social performance, environmental performance, ethical aspects, moral aspects, ethical behavior, SRI, social investment/investing, ethical investment/investing, socially responsible investment/investing, sustainable investment/investing, socially conscious investment/investing, sustainable bank, sustainable banking, ethical bank, ethical banking, alternative bank, alternative banking, civic bank, civic banking, sustainable finance, socially responsible finance. Figure 1 summarizes information on the numbers of papers that matched our search criteria. A steady increase in the number of publications can be observed. The numbers of papers distributed on the SSRN eLibrary in the broad field of sustainability rises from 10 in 2000 to 46 in 2005 to 259 in 2011, corresponding to an average increase of 43 % per year. Evidently, academic interest in social and environmental concerns is on the rise.

At the beginning of 2012, SSRN announced the creation of the Sustainability Research & Policy Network to provide a comprehensive online resource for research in all areas of sustainability and policy. Since then, sustainability has ranged among the traditional disciplines of financial economics, accounting research, legal scholarship, economic research and management research, and has been recognized as major research subject in the social sciences.

To assess the general extent of sustainability research, Table 1 overviews SSRN's specialized subject area networks and the numbers of published papers. Considering the fact that the network has been created quite recently, the 3,180 papers that have already been distributed on this platform underline the general importance of sustainability as a research field. Combined with the increased number of papers submitted in this area in the 2000s, this suggests that the area has become well established.

2.2 Sustainability in financial economics

Table 2 evaluates the subspecialties of the Sustainability Research & Policy Network in order to highlight its major research topics. Sustainable finance does not subsist as its own research field, which is proleptic for the following literature review.

Table 3 splits the major disciplines of the network further into their subsections providing an overview of underlying research areas and their relative importance.

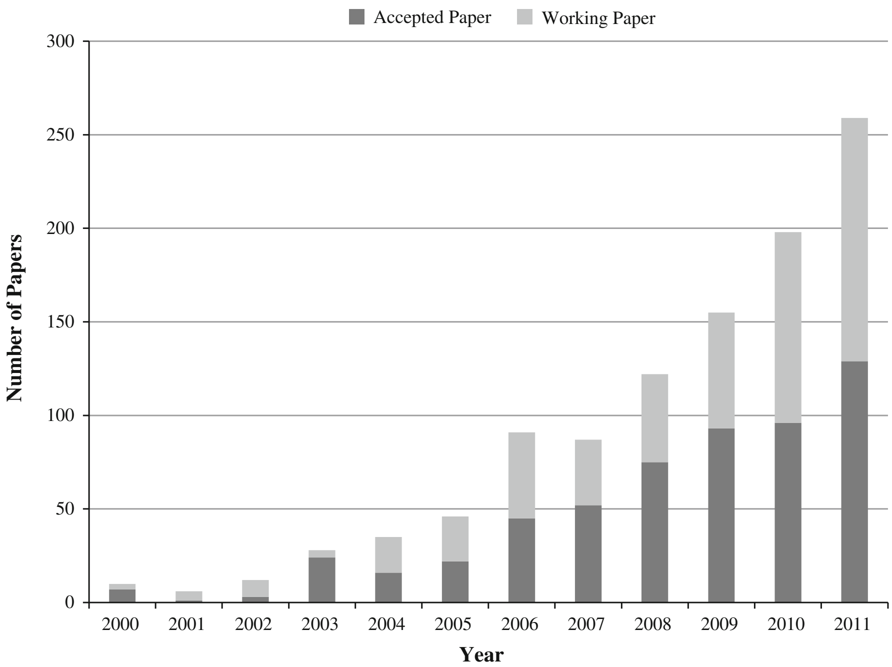

Fig. 1 Academic interest in sustainability. The graph charts the yearly number of papers in the area of sustainability that have been submitted to SSRN since 2000

Table 1 SSRN eLibrary Networks

Accounting research	17,988
Cognitive Science	5,977
Corporate Governance	14,833
Economics Research	257,163
Entrepreneurship Research and Policy	20,581
Financial Economics	96,944
Health Economics	5,615
Information Systems and eBusiness	11,978
Innovation Research and Policy	693
Legal Scholarship	132,525
Management Research	45,946
Political Science	42,839
Social Insurance Research	5,207
Sustainability Research and Policy	3,180
Humanities Network	22,965

The table lists SSRN eLibrary Networks and the number of distributed papers

Table 2 Sustainability Research and Policy Network eJournals

Built environment	367
Food Industry	256
Food Politics and Sociology	203
Nuclear Energy	92
Politics and Energy	514
Pollution	231
Renewable Energy	200
Social Responsibility of Business	659
Socially Responsible Investment	367
Sustainability and Economics	849
Sustainability at Work	209
Sustainable Technology	276
Sustainable Transport	143
Waste	137
Water Sustainability	227

The table lists the Sustainability Research and Policy eJournals and the number of distributed papers

As expected, CSR and SRI operate among the most fruitful research areas in the field of sustainability. 332 and 367 papers have been distributed in these fields, each accounting for approximately 10 % of the research on this platform. The term "finance" appears solely in the sub-discipline of SRI.

A similar picture emerges from this listing of the sub-disciplines of the Financial Economics Network, as the area of finance completely neglects sustainability issues among its research topics. The classifications of the JEL are similarly organized.

We next explore the evolutionary process of sustainability issues in the finance literature. We focus our analysis on the top five finance journals, which are ranked A+ or A according to *VHB-Jourqual*. Within these journals, we search the *EBSCOhost* database for the subject terms "business ethics", "social responsibility", and "moral and ethical aspects". EBSCO maintains a comprehensive subject index of subject terms, which are applied to all articles indexed by EBSCO. The indexing is based on rules created by the *Library of Congress* and the *Anglo-American Cataloging*. We recombined the three searches and manually examined all the entries to clean up the raw dataset. We removed double entries and deleted publications that had no apparent relationship to the topic at hand. Figure 2 charts the actual development in the field. We distinguish the total number of publications that have appeared in each journal since its establishment and the number of articles published since 2000. Most evolution of the literature occurred during the last decade, except for *The Journal of Finance*. Whereas the latter journal has published about as many articles under the considered subject terms after 2000 as in prior years, the majority of the publications in the other journals stem from recent research. The overall number of published articles remains equally low among all of the top finance journals. *Journal of Banking and Finance* tops the list with 16 publications since the year 2000. On average, only 0.80 % of the journals'

Table 3 Major eJournals in sustainability research and policy

Social Responsibility of Business	*659*
CSR and Management Practice	*90*
CSR and Process Issues	
CSR Enforcement Issues	
Codes of Conduct	
Other CSR and Management Practice	
Consumer Social Responsibility	*100*
Advertising and Communication Issues	
Consumer Behavior Issues	
Consumer Ethics Issues	
Other Consumer Social Responsibility	
Product Demand Issues	
Social Media Issues	
Corporate Social Responsibility (CSR)	*332*
Accountability	
Compliance	
Corporate Governance	
Corporate Reporting	
Corporate Social Responsibility Issues	
Fair Trade	
Other Corporate Social Responsibility (CSR)	
Regulation	
Reputation Issues	
Stakeholders	
Standards	
Triple Bottom Line	
Employee Social Responsibility and HR Practices	*73*
Human Resources Issues	
Labor Market Issues	
Labor Performance Issues	
Other Employee Social Responsibility and HR Practices	
Human Rights and the Corporation	*65*
Human Rights Issues	
Legal and Enforcement Issues	
Other Human Rights and the Corporation	
Investment and Social Responsibility	*66*
Law, International Affairs and CSR	*114*
International Affairs Issues	
Legal Issues	
Other Law, International Affairs and CSR	
NGO and Non-Profit Organizations	*45*
Social Innovation	*91*
Innovation Performance Issues	

Table 3 continued

Social Responsibility of Business	*659*
Innovation Process Issues	
Other Social Innovation	
Social Responsibility in Production and Supply Chain Management	*62*
Other Social Responsibility in Production and Supply Chain Management	
Production Issues	
Supply Chain Issues	
Stakeholder Management and Stakeholder Responsibilities	*48*
Socially Responsible Investment	*367*
Carbon Finance	
Carbon Trading (Socially)	
Environmental Finance	
Green Investment	
Microcredit	
Microfinance	
Other Socially Responsible Investment	
Social Enterprise	
Sustainable Development	
Sustainability and Economics	*849*
Developing World	
Globalization (Sustainability)	
Other Sustainability and Economics	
Poverty	
Social Economics	
Sustainable Capitalism	
Sustainable Growth	
World Trade Organization	

The table lists major eJournals (in italics) and topics in the Sustainability Research & Policy Network and the number of distributed papers

publications occurred in the field of sustainability, which means roughly that only one out of a hundred articles is dedicated to such issues.

We compare the evolution of the concept of environmental and social responsibility in the finance literature with other literatures. We therefore extend our search in the EBSCOhost database to other social sciences journals ranked A+, where four are from the field of marketing, four are from the management area, and three belong to economics. Figure 3 yields the results of our analysis. The concept of sustainability has gained a prominent position in the general management literature. The Academy of Management journals rank high in our dataset; both of their journals have published more than 20 articles during the last few years. The median number of articles that have appeared in the 16 journals in the field of sustainability is seven. A considerable amount of papers have also been published in

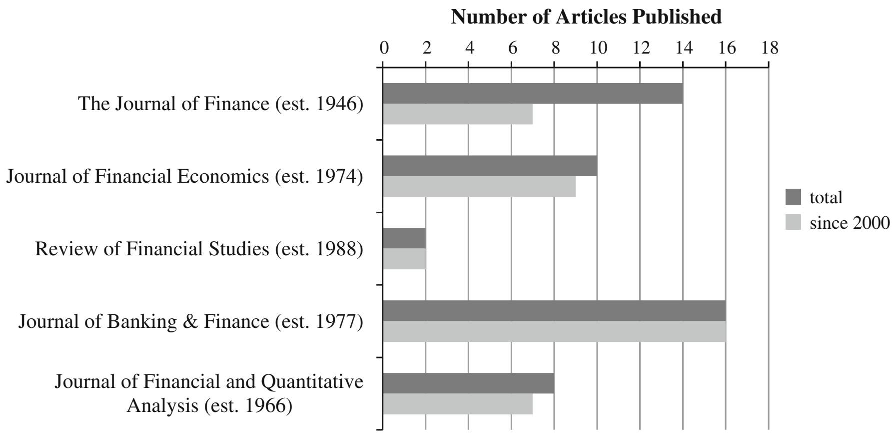

Fig. 2 Sustainability in leading Finance Journals. The graph charts the number of articles concerning sustainability issues that have been published in the top five finance journals

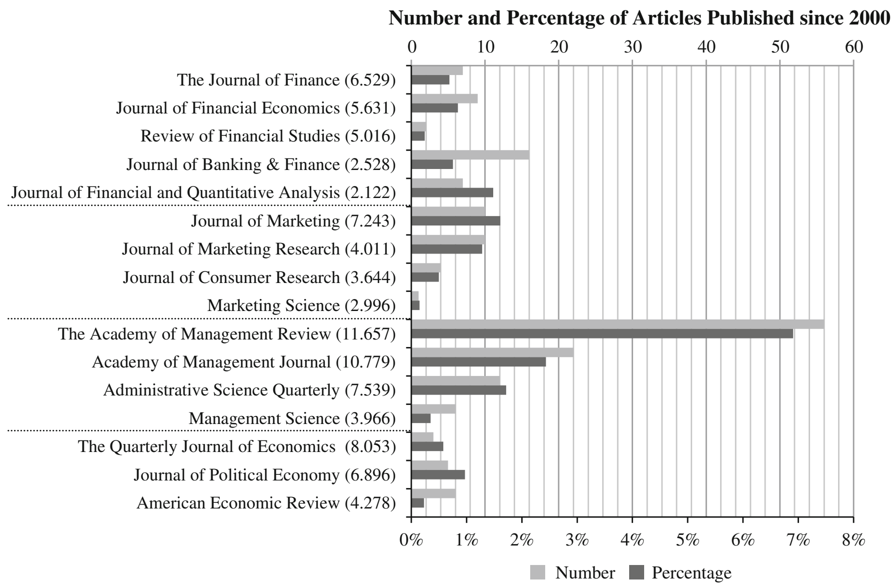

Fig. 3 Sustainability in leading (Business-) Economics Journals. The graph charts the number and percentage of articles concerning sustainability issues that have been published in the top business economics and economics journals since 2000. Journals are grouped according to their research field. SSCI five-year-impact factors are given in *brackets*

the field of marketing. Meanwhile, the discipline of economics has even shown less interest in sustainability issues than the finance literature.

These observations need to be put into context when we evaluate the number of articles published in the field of sustainability versus the total number of articles published by the journals since 2000. The bars in dark grey in Fig. 3 exhibit the percentage of articles published on sustainability for each journal. The overall interest in the subject remains low. The median share of publications is 0.80 % among the 16 top journals of business research. *Journal of Financial Economics* and *Journal of Financial and Quantitative Analysis* therefore appear to exhibit superior interest in the area of sustainability, as they exhibit above median scores.

We provide the *Social Sciences Citation Index* (SSCI) five-year impact factor for each of the journals for the year 2010. The impact factor is a measure of the frequency with which the "average article" in a journal has been cited in a particular period. It is calculated by dividing the number of citations in the year 2010 by the total number of articles published in that journal during the previous 5 years. The impact factor is often used to provide a rough assessment of the prestige of journals. Overall, it appears that the higher rated journals attach more importance to the subject. The correlation between the SSCI five-year impact factor of the journals and the percentage of publications in the field of sustainability is 0.6980 and highly significant ($p = 0.0025$). Though this is definitely a noteworthy relationship, the implications of this finding are ambiguous. One could conjecture that the more distinguished journals attach a higher importance to the area of sustainability. But it might also indicate that only the more reputable journals venture to publish papers exploring novel and less established research fields.

The lack of presence of sustainability in the top finance journals is demonstrated when we make a comparison of the journals of other disciplines in which papers on sustainability issues have appeared. The specialist journal *Journal of Business Ethics* has published a large number of articles on this issue. To assess whether the finance literature has evolved in this journal, we search the EBSCOhost database for "finance" as a subject term. *Journal of Business Ethics* yields 103 results since 2000. Apparently, a lot of research on sustainability and finance uses this journal as a publication outlet.

Subsequently, we perform a citation analysis for the articles on sustainability issues from the five major finance journals since 2000. Citation patterns are important to examine the influence of publications on the literature. Information about the number of times a paper has been cited in later publications is available through the *Publish or Perish* software. The program retrieves and analyzes academic citations using *Google Scholar* to obtain the raw citations, and then analyzes these to calculate several statistics. Table 4 exhibits the results of our citation analysis. We additionally compare the number of citations for the articles on sustainable finance with the average number of citations for articles from the same journal from the same year. If the latter articles had received considerably more citations, this could explain the journals' limited interest in sustainability issues. However, we do not find such a difference. The average number of citations for publications on sustainability in finance journal is 91.68 and is even higher than the average number of 63.07 for citations from these journals.

3 Aspects of corporate social responsibility

The following section introduces CSR as the underlying framework for sustainable finance. The literature has already extensively elaborated on this issue. We provide a definition of the concept and briefly recap major understandings of the field.

Table 4 Sustainability in Finance Journals

Rank	Authors	Journal	Years	Cites/year
1	Djankov et al.	JFE	(2008)	199.20
2	Aboody and Lev	JF	(2000)	49.46
3	Jenter	JF	(2005)	25.13
4	Dyck et al.	JF	(2010)	23.67
5	Renneboog et al.	JBF	(2008)	22.60
6	Bollen	JFQA	(2007)	18.17
7	Mehran and Stulz	JFE	(2007)	16.33
8	Perry and Peyer	JF	(2005)	15.00
9	Heinkel et al.	JFQA	(2001)	13.92
10	Kaustia and Torstila	JFE	(2011)	11.50
11	Bettis et al.	JFQA	(2001)	10.58
12	Goss and Roberts	JBF	(2011)	10.50
13	Galema et al.	JBF	(2008)	10.00
14	Kouwenberg and Ziemba	JBF	(2007)	9.83
15	Louis and White	JFE	(2007)	9.17
16	Van Bommel	JF	(2003)	9.10
17	Matvos and Ostrovsky	JFE	(2008)	8.40
18	Garfinkel and Nimalendran	JFQA	(2003)	8.00
19	Clarke et al.	JFQA	(2001()	7.83
20	Derwall et al.	JBF	(2011)	7.00
21	Garmaise and Moskowitz	JF	(2006)	6.86
22	Lowry and Murphy	JFE	(2007)	6.83
23	Brickley et al.	JBF	(2002)	6.18
24	Benson and Humphrey	JBF	(2008)	6.00
25	Rose-Ackermann	JBF	(2002)	5.82
26	Chernykh	JFE	(2008)	5.80
27	Tsyplakov	JFE	(2008)	5.00
28	Cheng et al.	RFS	(2007)	5.00
29	Kane	JBF	(2002)	3.91
30	Donaldson and Dunfee	JBF	(2002)	3.73
31	Perotti and von Thadden	JFQA	(2003)	3.70
32	Chemmanur et al.	RFS	(2010)	3.67
33	Aktas et al.	JBF	(2011)	3.50
34	Kang and Liu	JFE	(2007)	3.00
35	Chami et al.	JBF	(2002)	2.91
36	Khorana et al.	JFQA	(2002)	2.18
37	Hausman	JBF	(2002)	1.91
38	Bear and Maldonado-Bear	JBF	(2002)	0.91
39	Moshirian	JBF	(2008)	0.80
40	Sohn	JBF	(2010)	0.67
41	Dyck et al.	JF	(2008)	0.00

The table lists the publications that have appeared in the five major finance journals since 2000

3.1 Definition and concepts

The *World Bank* defines the concept of CSR as "the commitment of businesses to behave ethically and to contribute to sustainable economic development by working with all relevant stakeholders to improve their lines in ways that are good for business, the sustainable development agenda, and society at large". Firms that comply with this principle integrate public interest into corporate decision-making using a three-dimensional goal function, focusing on the so-called "triple bottom line": people, planet, and profit (Norman and MacDonald 2004). CSR has thus been established as a form of self-regulation integrated into a business model that implies a commitment to contribute to economic, environmental, and social sustainability (Baker and Nofsinger 2012).

The concept of CSR is immanently vague and ambiguous, both in theory and in practice (Schwartz and Saiia 2012). CSR is an umbrella term embracing a myriad of conceptions of business-society relations, with loose boundaries, multitudinous memberships and distinct perspectives (Matten and Moon 2008). Some key elements found in most definitions of the concept of CSR are business ethics, stakeholder management, sustainability, and corporate citizenship. However, confusion among the concepts is obviously apparent: each of the constructs has been theorized to incorporate one or more of the others, whereas in other cases, the constructs are freely used interchangeably (Schwartz and Carroll 2008).

The roots of economic discourse in CSR date back to the 1950s in the United Stated. Bowen (1953) pioneered this field, denoting that social responsibilities of corporations should be geared to the expectations and values of the society. Early work on CSR addressed the incapacity of markets to ensure the provision of public goods or the reduction of negative externalities. Friedman (1970) argues that shareholders only hold interest in financial returns and thus the only concern of corporations is profit maximization. Therefore, unless required by the rule of law, private firms will not have sufficient incentives to internalize the costs that their business might cause. Scholars then began to recognize the firm as an actor, indicating that firms should not just respond toward societal expectations, but play an active role through promoting real development. At that time, Freeman (1984) details the stakeholder theory, which claims that stakeholders play a central part in the management of organizations. This theory extends the traditional view of shareholder value, maintaining that there are other parties involved in corporate activities. Stakeholders play a central part in the management of organizations and firms need to adhere to the interest of these groups.

In the late 20th century, increasing globalization forced corporations worldwide to think about their impact on society at large. As the ability of the law and state to regulate business activities is decreasing and consumer awareness of corporate activities around the world is growing, CSR has gained significance in the view of public policy and management practice (Holderness and Sheehan 1991). More recently, traditional theory has expanded towards a broader set of attitudes and preferences (Becker 1993), and research has shown that CSR does not necessarily conflict with profit maximization, as it can help to contend nonclassical preferences of investors, consumers, or employees. These preferences are often rooted in the social environment as locally accepted norms, views, and values (Kitzmueller and Shimshack 2012).

3.2 The problem of justification

Corporate social responsibility is a much debated and fiercely controversial subject. The concept has changed throughout the last few decades and is characterized by several distinctions. Garriga and Melé (2004) provide a comprehensive review of existing approaches towards CSR.

Generally, ethical preferences can be intrinsic or extrinsic in nature (Graafland et al. 2010; Brief and Aldag 1977). Extrinsic (monetary) incentives can function as a substitute for intrinsic motivation. This conception also adheres to the four levels of corporate social responsibility introduced by Carroll (Caroll 1991):

- *Economic responsibility*: It is important to perform in a manner that is consistent with maximizing shareholder value.
- *Legal responsibility*: It is important to perform in a manner that is consistent with expectations of government and the law.
- *Ethical responsibility*: It is important to perform in a manner that is consistent with the expectations of societal moral and ethical norms.
- *Philanthropic responsibility*: It is important to perform in a manner that is consistent with the philanthropic and charitable expectations of society.

The first two levels appear to be more on the extrinsic side, whereas the last two may be classified as intrinsically driven. In a similar way, Schwartz and Saiia (2012) argue that possible understandings of CSR appear to categorize into two broad schools of thought: the *narrow* neoclassical economic view versus the *broad* view beyond profits.

The narrow CSR approach leads to an entirely instrumental interpretation of corporate responsibility that suits the classical theory of the firm (Margolis and Walsh 2003). This notion presumes that the corporation is an instrument for wealth creation and that this is its sole responsibility. The firm objective is the maximization of shareholder value, as measured by the share price. Supporters of this view maintain that a strong business case exists for CSR, and firms can achieve competitive advantages which would induce long-term benefits (Garriga and Melé 2004). To that effect, recent work suggests that companies commit themselves to CSR, due to anticipated profits from this behavior. For a company to engage in CSR, the benefits of undertaking certain activities must compensate the costs associated with it. The payoff of participating in CSR can be substantial, as societies often penalize firms that are conceived as conflicting with their underlying societal values (Paul and Siegel 2006). Literature identifies two broad theoretical channels through which CSR can arise: politics and markets.

The political channel can be divided into private and public politics. Private politics stands for engagement by NGOs or society, while public politics refers to government activism via law. Private politics influence CSR through protests, boycotts, letter writing campaigns, proxy votes, or citizen suits (Eesley and Lenox 2006). Extant evidence acknowledges the role of private politics as a driver for

CSR. Financial event studies find that such pressures of social activism result in economically important and statistically significant stock price decline (Davidson et al. 1995). Evidence also supports a role for public politics as an important factor for CSR. Public politics can manage market imperfections through taxation and regulation because private firms will generally comply with these guidelines (e.g. quotas for pollution).

The market channel distinguishes labor markets, product markets, and capital markets. CSR might influence the relation between employers and employees and help to attract a motivated workforce (Greening and Turban 2000). CSR can soothe competition in product markets, as consumers are willing to pay their share of the total cost for environmentally friendly or socially responsible products (Bagnoli and Watts 2003). CSR can reduce agency problems, signal a firm's project quality, and improve reputation, enhancing the firm's access to capital (Renneboog et al. 2008b).

The analysis of stakeholder relationships in order to address issues of sustainability and corporate success is at the core of instrumental stakeholder theory. The stakeholder network is regarded as a means to the end of wealth creation, suggesting that superior stakeholder management will result in superior financial outcomes. In this vein, Jones (1995) exhibits instrumental stakeholder theory as a synthesis of economic theory and ethical thought. He claims that firms which maintain good societal and environmental behavior will have a competitive advantage over companies that do not make such efforts. Though the idea that companies with superior stakeholder management will achieve superior firm performance is intuitively appealing, its implementation is, however, challenging. Kurtz (2012) concludes that resting stakeholder theory on purely instrumental justifications is insufficient, and calls for some normative extension.

Likewise, Donaldson and Preston (1995) separate stakeholder theory into three distinct approaches, with each theory focusing on a different purpose: descriptive, instrumental, and normative. Descriptive stakeholder theory describes actual firm behavior and management conduct. It reflects past, present, and future states of the corporation in the real world. Instrumental stakeholder theory explains what will happen if companies behave in particular ways. It identifies connections between stakeholder approaches and the achievement of commonly desired corporate objectives, such as profitability. Normative stakeholder theory demonstrates what corporations should do to maintain appropriate ethical behavior in society. It idealizes organizational behavior through a certain philosophical viewpoint and outlines an explicit value-based CSR framework.

The broad CSR approach posits that firms have ethical obligations that go beyond the purely economic role of businesses. It understands that the relationship between business and society is embedded with ethical values, and prosocial behavior is driven by genuine, intrinsic altruism. The framework parallels Donaldson/Preston (Donaldson and Preston 1995), who contend that the central core of stakeholder theory is normative and that inherent moral values and obligations provide its ultimate conception. Swanson (1999) proposes a framework which includes morality explicitly through a theory of values. Similarly, Schwartz and Saiia (2012) suggest five philosophical standards which all corporations should attempt to comply with: core values, utilitarianism, Kantianism, moral rights, as well as justice and fairness. One should note that in case an individual has ethically or morally oriented preferences, it becomes entirely rational to behave ethically. Hargreaves Heap (2009) provides considerable evidence that individual preferences are frequently unselfish and reviews several rational choice models which account for personal preferences that exhibit ethical properties.

One most important distinction between the narrow and the broad CSR approach lies in the understanding of what constitutes moral or ethical decision making. The question of motive or motivation is central to many definitions of CSR. Is some corporate activity providing social good motivated by a genuine ethical concern? Or is the ethical outcome the result of a disguised business strategy as a means to increase firm performance? Note that the latter case does not require ethical motives behind the corporate social expenditure (Dunfee 2008). The mechanism through which corporate behavior turns into morally right action depends considerably on the institutional framework, formal rules as well as informal values. According to the institutional design, morally proper action can occur only because of prudence, but does not necessitate ethical considerations (Haigh and Jones 2006).

In practice, the dividing line between the two perspectives of CSR motivation may be elusive. Dyckhoff and Kirchgeorg (2012) claim that sustainable development is not easy to grasp without ethics—and necessitates a rethinking in the traditional economic paradigm. Classical economic theory states that a firm's first priority is to make profits, but corporations may voluntarily commit themselves to a particular set of ethical issues. Brickley et al. (2002) thus acknowledge the limits of the neoclassical view and argue that its judicious role is to complement traditional discussions of CSR strategies rather than to supplant them. In this vein, Kurtz (2012) suggests that a revised form of instrumental stakeholder theory appears to comply best with investor concerns. In this approach, resources should be efficiently allocated to stakeholders, provided that a large surplus remains for owners and management.

4 A more complete view of sustainable finance

The following part delineates perspectives on sustainable finance from the foundations of financial theory. The most basic approach involves some investors as providers of capital (e.g. households) who face some entrepreneurs seeking capital (e.g. corporations). The investors aim to invest their money sustainably, whereas the entrepreneurs conduct themselves in a sustainable manner to gain a competitive edge. Financial markets join the surpluses of capital with the shortages of capital, either directly or indirectly through financial institutions. Depending on the viewpoint, the emerging connections can be characterized as SRI, sustainable banking, or sustainable corporate finance. Figure 4 summarizes the relationship between the main actors in this field.

4.1 Socially responsible investing

During the last decade, socially responsible investments have grown rapidly around the world, reflecting the increasing awareness of the financial community to social,

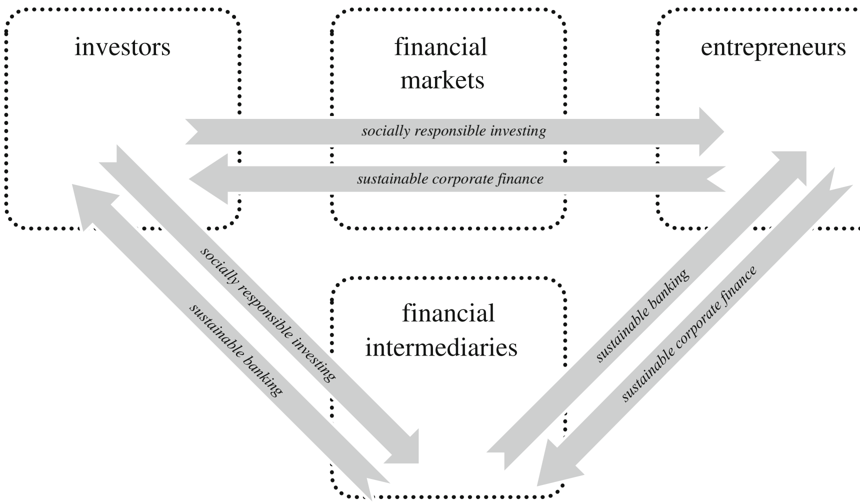

Fig. 4 A Framework for sustainable finance. The figure delineates perspectives on sustainable finance from the foundations of financial theory

environmental, ethical, and governance concerns. The *European Sustainable Investment Forum* defines sustainable and responsible investing as an "investment process that combines investors' financial objectives with their concerns about environmental, social and governance issues". The terms sustainable, social, responsible, socially conscious, green, or ethical investments are used in a myriad of ways to approach the field of SRI. Environment, social justice, and corporate governance (ESG) have been recognized as the three central areas of concern in determining the sustainability of an investment. The three fields include a broad set of considerations, which have become known as ESG criteria. The framework of ESG is intimately linked to the concept of SRI. The United Nations-backed *Principles for Responsible Investment* (PRI) provide a voluntary approach by which participating investors can incorporate ESG issues into their decision-making and so better align their objectives with those of society at large.

Whereas ethical investing originates from ancient Jewish, Christian, and Islamic religious traditions, modern SRI rests upon the varying ethical convictions of individual investors. Bollen (2007) contends that investors may have a multi-dimensional utility function that is not only based on the standard risk-return optimization of financial returns, but also includes personal values and societal ethics. When investors generate non-financial utility from investing in CSR firms, they attune less to financial performance than non-SRI investors, and may be agreeable with a lower rate of return.

Haigh and Hazelton (2004) observe different strategies for ethical investing. First, cause-related investment describes depositing money into savings accounts where the funds are then lent to needy organizations or countries. Second, active investment is characterized by individuals investing directly in companies for the purposes of entering into a dialog with the management. Third, investors can make passive investments in CSR companies directly by purchasing their securities or indirectly through ethical mutual funds. The last strategy is the most widespread form of SRI.

Over the years, a number of different investment screens to select ethical stocks have emerged. On the one hand, the oldest and most simple approach is based on negative screens. Unethical industries, such as alcohol, tobacco, gambling, and defense industries, or companies with poor performance in environmental protection or labor relations, are excluded from the SRI portfolio. Further negative screens may refer to irresponsible foreign operations, porno-graphy, workplace conditions, violation of human rights, and animal testing. Recently, portfolio selection based on positive screens has gained popularity. In this case, investment criteria aim at companies meeting superior CSR standards with regards to corporate governance, the environment, labor relations, and sustainability of investment. Additionally positive screens apply to firms using renewable energy or companies with high community involvement (Renneboog et al. 2008a).

4.2 Sustainable banking

A sustainable bank—also known as ethical, social, alternative, or civic bank—attends to the social and environmental effects of its investments and loans. The profession of lending money has been historically subjected to much moral criticism. Yet it is widely accepted that finance plays an important role in the economic development of nations (Sen 1993). Societal movement toward more social and environmental responsibility has increased awareness about the impact banks can exert through their lending policies, imposing pressure upon them to expand their operations beyond traditional business management (Harvey 1995). Because of their intermediary role in an economy, banks have a profound opportunity to contribute toward sustainable development. This impact can be both of qualitative and quantitative nature. First, banks can advance sustainability through price differentiation, where firms with poor CSR performance would pay a higher interest rate. Second, banks can foster SRI by promoting more sustainable products (Jeucken 2002).

Banks have adopted efficient mechanisms in assessing the nature and quality of potential debtors. This provides banks with a comparative advantage in evaluating not only financial risks, but also societal and environmental risks related to certain projects or corporations. At that point, banks can price the risk accordingly through their interest rates and thereby promote a “carrot-and-stick” approach. Clients with high societal and environmental risks would pay a higher interest rate, whereas sustainable outriders would pay less interest than the market lending rate. Such price differentiation will stimulate the internalization of social and environmental costs in market prices. The potential for tariff differentiation would be even higher if banks could raise cheaper money, paying reduced interest rates for their own funding (Jeucken and Bouma 1999).

Due to their intermediary role, banks may also be able to channel funds to certain niche markets. Corporations pursuing sustainable innovation (for example, in the business segments of renewable energy, organic farming, or social public housing) are widely recognized as non bankable and generally neglected by financial intermediaries. With lending and venture financing to such companies, banks can have a substantial effect on the sustainability of economic performance (Scholtens 2006).

In this sense, microfinance has developed as a movement for poverty alleviation through finance around the world. Microfinance is generally understood as the provision of financial services to low-income households and small businesses, which lack access to the formal banking sector. These programs usually do not require borrowers to put up collateral (Sengupta and Aubuchon 2008). Group lending has taken the most prominent mechanism for the delivery of financial services. This approach makes a borrower's neighbors co-signers to loans, thereby effectively mitigating agency problems of asymmetric information between borrower and lenders through mutual monitoring. Among the remarkable accomplishments of microfinance are high rates of loan repayment above 95 percent. However, as banks incur substantial costs to manage a loan, assuring profitably is often difficult, and most microfinance programs rely on subsidies (Morduch 1999). Other criticism microfinance has to face focuses on the impact of poverty reduction, high interest rates charged to borrowers, suicides caused by aggressive lending practices as well as working conditions of poor households.

The economic disadvantages of speculation are further topics in this field that have received a great deal of attention. As the activities of financial speculators in commodity markets (particularly options and futures) can have a huge effect on the daily lives of the general public, recent increases in commodity prices have resulted in a fierce debate (Sanders and Irwin 2010). Commodity speculators are often perceived as irresponsible and profit-driven in the public opinion. While these accusations may not be entirely unwarranted, a lot of controversy has revolved around this field in academic research (Szado 2011).

4.3 Sustainable corporate finance

Firm value constitutes the most important performance measurement for corporations. In a sustainable approach, maximizing long-term firm value should therefore not contradict maximizing long-term social welfare, including the welfare of all stakeholders like employees, society, environment, and so forth. Under the existence of externalities, i.e. when an agent's action affects the welfare of other (external) agents in an economy, the interests of these stakeholders need to be taken explicitly into account. Economic solutions to the externality problem build upon internalizing externalities, which results in the maximization of stakeholder value including environmental and social value (Renneboog et al. 2008b).

Some scholars claim that sustainable companies can operate at a reduced cost of capital. The cost of capital argument is however twofold. When an SRI fund selects a company with exceptional CSR and channels its funds to this corporation, the company has increased supply of capital, hence reducing its cost of capital, allowing the firm to engage in more projects. Conversely, divesting from a company with poor CSR decreases its capital supply and therefore increases its cost of capital. For listed firms using funding through capital markets, the validity of this argument depends on the relative size of SRI funds to alternative capital providers. Socially responsible investors can reduce the cost of capital to CSR companies only in the absence of abundant conventional investors who provide capital at the same cost (Haigh and Hazelton 2004).

Heinkel et al. (2001) present an equilibrium model on the effect of ethical investing on the firm's cost of capital. They show that in the presence of exclusively ethical investors, an unethical firm has fewer investors, resulting in reduced risk sharing among its unethical investors. Therefore, the unethical firm has a lower stock price and hence an increased cost of capital. If the higher cost of capital exceeds the cost of reforming its operations to meet the demands of ethical funds, then the unethical firms will eventually become ethical. A substantial factor of the incentive to reform is the fraction of funds issued by ethical investors. Heinkel et al. (2001) indicate that their model requires more than 20 % ethical investors to induce a reformation process. However, existing empirical evidence indicates that in all regions SRI funds have a negligible market share, and that at most 10 % of funds are invested by ethical investors.

Financial markets provide ex ante information about possible investments, mobilize and pool savings, allocate capital, monitor investments, and exert corporate governance after providing finance (Levine 2005). This focus provides a further mechanism of finance on corporate policy. Financial markets govern business policies and can therefore change business practices in a more sustainable direction (Scholtens 2006).

An extensive literature explores the relationship between corporate social and financial performance. Margolis and Elfenbein (2008) performed a meta-analysis of 167 studies in this field to determine whether CSR enhances profitability. Their research reveals only a weak positive link between socially responsible corporate behavior and good financial performance, detecting a median correlation between corporate social performance and corporate financial performance of 0.08.

5 Conclusion

Where do our results lead to? We started this paper by indicating that progress has been slow in certain fields of sustainability and finance. Although corporate social and environmental responsibility have evolved as a much debated topic in the academic research during the past years, the finance literature has generally neglected these concepts.

The main finding of the preceding survey is, that while some research on sustainability issues has been undertaken in the finance literature, several research puzzles remain that require further analysis. The following section focuses on how this research field could move forward by suggesting a number of open questions for further discourse.

1. *Do socially and environmentally responsible companies have better or worse financial performance than companies that do not comply with the same sustainability criteria?* Existing studies have examined the relationship between CSR and financial performance, but results have been ambiguous. The analysis of

McWilliams and Siegel (2000) finds no significant relationship, Waddock and Graves (1997) and Margolis and Elfenbein (2008) report a positive relationship, whereas Wright and Ferris (1997) indicate a negative relationship (see Roman et al. 1999 for a review of existing studies on the interrelation between corporate social and financial performance).

2. *Do SRI investors care less about financial performance than conventional investors?* Empirical evidence on the risk and return characteristics of SRI funds is mixed (see Renneboog et al. 2008a for a review of recent studies). Yet SRI can have significant implications for asset pricing. If investors show preferences of "aversion to unsustainable corporate behavior" in addition to standard risk aversion, conventional asset pricing theory may lead to incorrect predictions, as investors may request a lower rate of return than implied by standard models (Renneboog et al. 2008a).

3. *Can the financial sector take a lead role in sustainable development?* While some banks have already made some attempts in assuming responsibility towards society and environment, up until now these goals can only be regarded as niche activities. In order for banks to assume a more constructive role, we must witness a paradigm shift from the concept of a high financial rate of return towards a high sustainable rate of return. At the moment, the demand for sustainability in society is not sufficiently developed for this shift to occur (Jeucken and Bouma 1999). Within this issue lies also the problem of whether CSR raises shareholder value and whether investors are willing to pay for corporate social expenditure (Renneboog et al. 2008b). A closely related question is how to measure CSR. Genuine advancements to influence corporate activities will most likely require combined efforts by governmental policy as well as the banking sector and shareholder activists (Haigh and Hazelton 2004).

4. *What is the impact of SRI on the real economy?* If investors require an additional return for investing in firms with poor CSR, it is important to examine the effects on the cost of capital as well as firm investment and lending in financial markets. Heinkel et al. (2001) model that if a significant amount of investors divest their capital from companies not complying with their personal values related to social and environmental responsibility, this would incur a higher cost of capital for these companies, eventually resulting in lesser investments in such firms. Yet, to date there is no evidence that companies with superior CSR performance have lower cost of capital. This is an important area for future research. A closely related puzzle is whether CSR is priced by the capital market and incorporated in the share prices. Renneboog et al. (2008b) find that CSR is associated with a higher shareholder value, though the issue of causality remains unsolved. Moreover, if SRI investing did yield superior abnormal returns, this would question economic efficiency, as CSR is usually public information.

Our literature review suggests that sustainable finance is an overarching research field, comprising CSR as the theoretical foundation, evolving in several substreams of financial research. The aforementioned research directions suggest how future analysis could address the literature's current limitations and how the research field of sustainable finance might advance. The neoclassical paradigm appears insufficient as ultimate justification of sustainable development, but longs for some normative perspective. In this vein, Aguilera et al. (2007) consider instrumental as well as moral motives and recognize that corporate social initiatives are very likely to be based upon mixed motives. The debate over sustainability issues will certainly not disappear in the near future, and one should expect that the concept of CSR and its relation to the discipline of finance will provoke further reflection and discussion.

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