Credit and Capital Markets, Volume 53, Issue 4, pp. 493–512
Scientific Papers

Drivers of Socially Responsible Investments Across Europe

Janina Rochell*, Thomas Cauthorn**, André Höck***
and Bernhard Zwergel****

Abstract

The European Union wants to foster the sustainable growth of the economy by using the financial markets as an intermediary. Thus, politicians need to know which factors account for differences in socially responsible investments (SRI) between countries to create an efficient framework, which supports SRI across Europe. This study aims to provide important insights about the drivers of SRI markets for politicians as well as academics. To the best of our knowledge, this is the first study that provides quantitative evidence on the framework established by *Scholtens/Sievänen* (2013) using a comparatively large data sample comprising 13 European countries during a period from 2005 to 2015. Our results can be summarized as follows: Firstly, we show that economic wealth and the size of the pension market of a country influence the size of the SRI market per capita. In particular, it seems that countries need a certain level of wealth and pension market size to start adopting basic sustainability strategies like negative screening. Secondly, we provide evidence that the differences in national SRI evolvement stem from the individual cultural characteristics of a nation. For example, masculinity, as seen by the revenue orientation of a country, prevents the emergence of more advanced SRI strategies, like engagement or integration. However, femininity, which relates to a more societal and environmental orientation, drives the emergence of more advanced SRI strategies. In this context, the recommendation to European policymakers is to opt for a minimum standard for the integration of more advanced SRI strategies, so that non-feminine countries also implement a deep-rooted sustainable investment behavior.

Keywords: Socially Responsible Investment; Economic Growth; Financial Markets; Institutional Systems; Culture

JEL Classification: A13; G11; G15; M14

---

* Janina Rochell MSc (corresponding author), University of Kassel, Department of Sustainable Finance, Henschelstr. 4, 34127 Kassel, j.rochell@t-online.de.

** Thomas Cauthorn MSc, University of Kassel, Department of Sustainable Finance, Henschelstr. 4, 34127 Kassel, thomas.cauthorn@uni-kassel.de.

*** André Höck, MSc, University of Kassel, Department of Sustainable Finance, Henschelstr. 4, 34127 Kassel, andrehoeck@googlemail.com.

**** Dr. Bernhard Zwergel, University of Kassel, Department of Sustainable Finance, Henschelstr. 4, 34127 Kassel, b.zwergel@uni-kassel.de.

The authors would like to thank the anonymous reviewer for the helpful and constructive comments, which greatly contributed to improving the final version of this paper.

I. Introduction

The European Union recently declared the goal to foster the sustainable development of the European economy using the financial markets as an intermediary. Accordingly, knowledge about which factors influence SRI have become increasingly important for politicians. Therefore, we investigate the driving forces behind SRI and analyze why countries across Europe have different levels of SRI adoption.

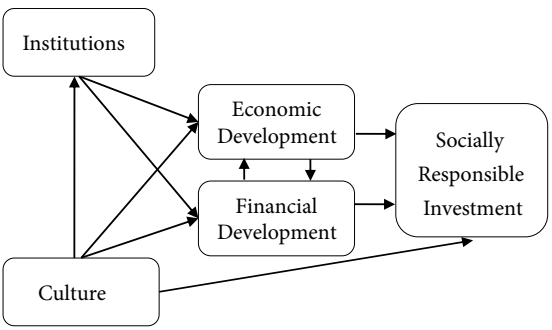
Despite the surge in academic literature regarding SRI, there is a lack of empirical evidence on the general drivers for the SRI market. The only other study, which we know of in this field of research, was conducted by *Scholtens*/*Sievänen* (2013). They developed the foundation for an international theory of SRI that is based on the impact of economic, financial, cultural and institutional influence. However, their study faced limitations due to a lack of available data, which is why there is a need for further research. This study tries to overcome these shortcomings by analyzing the effect of economic, financial and cultural factors on the SRI market using a relatively large dataset covering 13 European countries from 2005 to 2015. Hence, this is the first empirical study which provides evidence on the theory from *Scholtens*/*Sievänen* (2013) regarding the driving forces of SRI markets in different countries.

Our results show that economic, financial and cultural factors account for differences in the SRI market between countries. In more detail, the results suggest that wealthier countries with bigger financial systems are more likely to adopt basic SRI strategies, namely negative screens. Hence, it seems that countries have to exceed a certain threshold in terms of wealth and financial market size to start adopting basic SRI strategies. Additionally, a strong focus on profitability measured by masculinity is found to be detrimental to the evolution of more advanced SRI strategies, meaning that revenue-oriented nations do not perceive those strategies to be value adding. We conclude that institutional policies regarding the incorporation of more advanced SRI strategies are a powerful tool to overcome those cultural imprints. Furthermore, these policies foster a culture of sustainable development (*Busch* et al. 2015) by anchoring sustainable investment practices in European countries.

The remainder of this paper has the following structure. The next section provides a detailed overview of the current academic literature, which provides the basis for the formulation of our research questions. Section 3 explains the data and methodology used in the empirical analysis followed by a section that outlines the limitations of this study. Section 5 describes the main findings of our analysis. Finally, the paper concludes with a short summary of the results and a discussion on the implications for European policymakers as well as an outlook on further research needs.

II. Literature Review and Hypothesis Development

A large stream of academic literature focuses on the impact of the adoption of environmental, social and governance (ESG) criteria on risk and return characteristics of investments (e.g. *Renneboog* et al. 2008; *Duuren* et al. 2015; *Lean* et al. 2015; *Friede* et al. 2015; *Wallis/Klein* 2015; *Leite/Cortez* 2016; *Höck* et al. 2020). Nevertheless, there is a lack of research on the drivers of the SRI market on a country level. Even though a few studies were conducted on the personal or institutional motives of sustainable investors (e.g. *Nilsson* 2008; *Scholtens* 2006; *Jansson/Biel* 2011; *Wins/Zwergel* 2015), there is only one study which aims to develop a framework to describe the factors that influence the development of SRI markets in countries. This study, by *Scholtens/Sievänen* (2013), identified the economic and financial development as well as the culture of a country to be crucial for SRI. Their model is displayed in Figure 1.



Source: Scholtens/Sievänen 2013.

Figure 1: Model of the Relationship Between Economics, Finance, Culture, Institutions and SRI

These researchers base their model on a case study from Denmark, Finland, Norway and Sweden and analyze the differences in size and composition of the SRI market in each of those countries using EUROSIF[1] data. The size and composition of the respective SRI markets is measured as the sustainable investments of a country in absolute terms, per capita and as a percentage of GDP. In addition, they investigate differences between broad and core SRI strategies and compare the growth of the SRI market.[2] Their findings suggest that the econom-

[1] EUROSIF (European Sustainable Investment Forum) is the European umbrella association for sustainability on financial markets.

[2] According to EUROSIF, core SRI strategies comprise at least three exclusion criteria and positive screening, whereas broad SRI strategies are composed of at most two exclu-

ic openness, size of the financial industry and cultural factors can explain differences in both the size and composition of SRI between those countries. In contrast, they could not find evidence of a relationship between institutions and SRI. Even though their study provides important insights and the basis for this field of research, it is limited due to the data quality[3] and the small sample size in terms of countries and duration. Additionally, the four Nordic countries are very homogenous regarding their economic and financial development as well as their institutional framework and cultural background, which makes it difficult to transfer *Scholtens*/*Sievänen*'s findings to other countries. This study tries to overcome these limitations and provides empirical evidence for their theory using a panel dataset. Hence, we focus on the factors suggested to have a direct impact on SRI. Based upon the findings of *Scholtens*/*Sievänen* (2013) our hypotheses are as follows:

H1: Economic and financial development accounts for differences in the size of the SRI market across countries

When determining the factors that account for differences in the size of the SRI market across countries, we first aim to demonstrate the influence of economic wealth and the size of the pension market which are both assumed to positively impact the size of the SRI market across countries.

H1a: Economic development proxied by gross domestic product (GDP) per capita has a positive impact on the size of the SRI market.

Scholtens/*Sievänen* (2013) claim that economic openness and wealth represent crucial factors when it comes to explaining differences in the size of SRI markets across countries. This is supported by the study conducted by *Gjølberg* (2009), which provides evidence of a strong influence of macroeconomic variables on CSR. We claim that economic wealth measured by GDP per capita is a relevant driver for the size of the SRI market. For instance, since low economic output places pressure on a society's level of wealth, it leaves little incentive for additional investment, especially for SRI. Consequently, economic wealth is hypothesized to be a prerequisite for SRI. Hence, we claim that GDP per capita is relevant when it comes to the emergence of SRI.

---

sion criteria, engagement and integration. EUROSIF stopped distinguishing between broad and core strategies in 2012. Therefore, this study focusses on single strategies, which are classified as negative screening, positive screening, engagement and voting as well as integration.

[3] The EUROSIF data is self-reported and compiled using different sources which do not necessarily use the same definition as the SRI strategies. However, EUROSIF is the best available source for SRI data on a country level. For further remarks see *Scholtens* (2014).

H1b: The size of the pension market per capita (Pens), an indicator of financial development, has a positive impact on the size of the SRI market.

The literature provides various arguments about the impact of the financial system on sustainability. For example, *Scholtens* (2006) argues that financial markets can force companies to adopt CSR policies and act as a vehicle to accelerate sustainable economic development. *Sievänen* et al. (2013) find, that the legal origin, the ownership of the pension fund and size related variables drive SRI. This supports the view that the size and structure of the pension industry as a part of financial market composition matters for the adoption of SRI. *Giamporcaro/Gond* (2016) also identify the market structure as influential on SRI via the selected pension system and the pension reform policy. Earlier, *Sandberg* (2010) states that some social and environmental considerations are not in opposition to the fiduciary duty of the management of pension funds. This view is also shared by *Friede* et al. (2015) who conclude that the orientation towards long-term responsible investing should be important for all kinds of rational investors in order to fulfill their fiduciary duties. We follow this argumentation and hypothesize that the size of the pension market is positively correlated with the size of the SRI market, because SRI supports the fulfillment of the fiduciary duty due to the long-term orientation of the investments of pension funds.[4]

H2: Cultural factors account for national differences in the emergence of SRI

On the national level, culture can be defined as "the collective programming of the mind which distinguishes the members of one human group from another" (*Hofstede* 1984). *Dutta/Mukherjee* (2012) view culture as an informal institution identified by norms, conventions, grassroots, institutions, and trust. With regards to SRI, *Dumas/Louche* (2016) argue that responsible investment emerges once the group members form joint preferences, referred to as collective beliefs. *Sandberg* (2008) and *Sandberg* et al. (2009) investigate the cultural and ideological differences in the SRI market while the common denominator of intrinsic social preferences in a country is assumed to influence the SRI level (*Riedl/Smeets* 2015). Following *Scholtens/Sievänen* (2013), Uncertainty Avoidance (UAI) and masculinity (MAS) are hypothesized to specifically relate to SRI. The following two hypotheses are based on those two cultural factors:

H2a: The level of Uncertainty Avoidance (UAI) positively impacts the size of the SRI market.

[4] The size of the pension market highly depends on the pension system of a country. A pay-as-you-go (PAYG) pension system, as found in Germany, Austria, Italy and Spain, is financed intra-generationally with contributions from the working population going to the retired population. The PAYG system bypasses the financial market, whereas in prefunded pension systems, e. g. the system in the Netherlands, Norway, Denmark or Sweden, pensions are managed through long-term oriented asset vehicles.

UAI measures the extent to which a society feels threatened by uncertain and ambiguous situations, by consequently trying to avoid these situations through the establishment of additional formal rules (*Hofstede* 1980). A vast stream of literature, including *Kwok/Tadesse* (2006) and *Lavezzolo* et al. (2018) propose that the level of UAI plays an influential role in the financial market architecture, linking a high level of UAI to the preference for a bank-based system as opposed to a market-based system and explain their findings with national risk preferences. For pension funds, *Jansson* et al. (2014) conclude that investors' beliefs about the financial risk and returns drive SRI. However, the authors emphasize that both financial and value-based motives are important and there is no indication that the financial motives dominate. *Scholtens/Sievänen* (2013) find that for the Nordic countries a high UAI leads to a preference for SRI strategies based on positive and negative screenings and *Duuren* et al. (2015) find that ESG information is used to red flag and manage risk. We follow *Scholtens/Sievänen* (2013) and *Duuren* et al. (2015) and hypothesize that a high level of UAI positively affects the national size of the SRI market, because the impact of SRI strategies on the risk characteristics of investments is perceived to be positive.

H2b: The masculinity of a country negatively impacts the size of the SRI market.

The dimension "masculinity versus femininity" (MAS) measures to which extent the dominant values of a society are "masculine" meaning that a culture values achievement, assertiveness, money and material success over social relationships, interpersonal harmony and environmental concerns which are considered to be "feminine" characteristics (*Hofstede* 1980). *Scholtens/Sievänen* (2013) as well as *Bauer/Smeets* (2015) find a strong positive relation between the femininity of the society and the SRI level, indicating that SRI goes along with a feminine cultural focus. In line with previous literature, *Riedl/Smeets* (2015) find that masculine societies are rather revenue oriented and therefore focus on the financial performance of their investments. Thus, we hypothesize that a high level of MAS has a negative impact on the size of the national SRI market since a masculine society shares the collective belief that SRI lowers the expected return.

Summarizing the predicted cultural influence on SRI, we expect a negative impact on SRI when country levels for MAS are high and a positive impact on SRI, when country levels for UAI are high. The remaining cultural factors, power distance (PDI) and individualism (IDV) defined by *Hofstede* (1980), are employed as control variables.

III. Data and Methodology

The original study by *Scholtens*/*Sievänen* (2013) relies on a case study of four Nordic countries. Their study faced two sorts of data limitations. First, the depth of data was limited to a short period and it only covered four countries. Second, the quality of the data suffered due to both a lack of transparency and clearly defined categories of sustainable investing (*Scholtens*/*Sievänen* 2013; *Scholtens* 2014). We extend the data set from *Scholtens*/*Sievänen* (2013) in terms of duration and number of countries. This study covers 13 European countries[5] from 2005 to 2015 using biennial data in order to establish an empirical research design which extends the case study of *Scholtens*/*Sievänen* (2013). Additionally, we use four SRI strategies[6] as dependent variables: Negative Screens (Excl), Positive Screens (Pos), Engagement and Voting (EV) and Integration (Int). The SRI strategies are denoted in euros per capita and are derived from the EUROSIF reports[7]. The usage of the same data source as *Scholtens*/*Sievänen* (2013) is seen as the main limitation of this study. Section 4 elaborates on the limitations of this study in more detail.

The explanatory variables, comprising economic, financial and cultural factors, are defined below. First, the economic development factor is measured by annual Gross Domestic Product (GDP) taken from Eurostat. Second, the financial development factor is assessed by the book value of pension funds at year's end (Pens), based on "Private Pension Assets" and "Assets Life Insurance" data from the OECD database. The economic and financial development factors are scaled by the country population at the end of the year provided by Eurostat. Additionally, data are winsorized per country and year at the 10 % level in order to control for the influence of outliers. Third, the cultural factors are derived from the homepage of *Hofstede*[8]. They range from 0 to 100 with a high score indicating a strong presence of the respective cultural factor in a society. It must be noted that the cultural factors are time-invariant and thus can only explain differences in the cross-section. The SRI evolvement over time is considered to be partly captured by the development factors GDP and Pens. With this in mind, we do not address additional considerations on the time dimension as the obtained SRI strategy sample sizes are comparatively small, which is why the incorporation of time effects is not appropriate.

[5] An overview of the descriptive data for the whole sample can be found in Table 1 and on a country-level in Table A.2 in the Appendix.

[6] Definitions of the SRI strategies are outlined in the Appendix.

[7] The EUROSIF reports do not account for any double counting. Thus, the assets of one fund that applies more than one SRI strategy is counted in every relevant category. Accordingly, it would be an overestimation to add the sum of the strategies and to use this sum as a variable to proxy the total level of the SRI market.

[8] www.geerthofstede.com.

The following table summarizes the correlation between the different dependent and independent variables that are proposed to have direct relationships:

Table 1

Pearson Correlation Coefficients for the Employed Variables

	Negative Screens	*Positive Screens*	*Engagement and Voting*	*Integration*
Negative Screens (Excl)	1			
Positive Screens (Pos)	0.57***	1		
Engagement and Voting (EV)	0.55***	0.81***	1	
Integration (Int)	0.29**	0.54***	0.74***	1
Gross Domestic Product (GDP)	0.77***	0.47***	0.42***	0.12
Pensions (Pens)	0.60***	0.57***	0.64***	0.36**
Uncertainty Avoidance (UAI)	–0.32**	–0.57***	–0.66***	–0.29**
Masculinity (MAS)	–0.31**	–0.72***	–0.63***	–0.38***
Individualism (IDV)	0.10	0.22*	0.43***	0.44***
Power Distance (PDI)	–0.25*	–0.27**	–0.34***	0.04

Note: This table presents the Pearson correlation between the dependent (SRI strategies) and independent variables (economic, financial and culture factors) used in the regression. ***, **, * denote statistical significance at the 1 %, 5 % and 10 % level, respectively.

All SRI strategies are significantly positively correlated with one another. The highest correlation among the SRI strategies can be found between the strategies Pos and EV (0.81***), Int and EV (0.74***) and Pos and Excl (0.57***) indicating that investors with a preference for positive screens are likely to add engagement and voting to their strategy and that investors using an engagement and voting strategy are likely to incorporate an integration strategy as well. Additionally, negative screens are positively correlated to the second screening strategy, positive screens, meaning that these strategies are often applied together[9].

The economic and financial factors show significant positive correlations with almost all SRI strategies. Hence, these results support the respective hypotheses that the wealthier countries with bigger pension markets have a higher level of SRI. The only SRI strategy which is not affected by GDP is Integration. Thus,

[9] Additionally, Table A.2 in the Appendix shows that the level of negative screens is high in almost every country, whereas only countries with well-developed SRI markets have high values for the other, more complex SRI strategies. A reason could be that negative screens are included as a basic strategy to classify investments as socially responsible due to their low integration costs.

the integration of ESG data in the investment process would, in our model, only depend on the pension system of a nation. A reason for the lack of importance of wealth (GDP) could be that this strategy is not perceived to lower the expected return, because it can be used to enhance the risk valuation. Furthermore, MAS shows the expected direction and thus supports H2b while the direction of UAI stands in opposition to our hypothesis and the results of *Scholtens*/*Sievänen* (2013).

In the remainder of this study, the estimated direct effects are derived from a random effects (RE) regression due to the time-invariance of the cultural factors. Additionally, we report Arellano-clustered robust standard errors (in parentheses) due to autocorrelation and heteroscedasticity. An observation enters the regression if full model data in terms of the explanatory variables is given, following the "complete observations" approach. Two kinds of robustness checks are conducted. First, we regress the development and culture variables separately on the SRI strategies. Second, we add the Gini coefficient as an additional control variable. The results of these regressions are in line with the outcomes in section 5 and can be found in Tables A.4 to A.6 in the Appendix.

IV. Limitations of the Study

First, we note that the usage of the EUROSIF dataset does not overcome the limitations in terms of data quality as outlined by *Scholtens*/*Sievänen* (2013). However, retrospectively no better data can be obtained. For lack of a better alternative, EUROSIF is still the best available data source and with regards to future research, we hope that historical data limitations will be overcome with the broadening and harmonization of the EUROSIF database.

Second, the conceptual model depicted in Figure 1 suggests that culture also has an indirect impact on SRI through a country's economic and financial development. However, we analyze the direct effects of economic and financial development and cultural factors on SRI in order to obtain initial confirmation of the theoretical connections. Our regression is, due to the size of the data set, limited in the number of regressors and sharply restricts the simultaneous inclusion of direct and indirect effects. Nevertheless, the correlations between the development factors and cultural factors indicate the existence of indirect connections. UAI, MAS and PDI have significant negative correlations with GDP and Pens, while IDV has a positive significant correlation with Pens. Therefore, we encourage further research that addresses the indirect connections that contribute to an international theory of SRI. An overview of the correlations can be found in Table A.3 in the Appendix. In addition to the indirect effects, the time component is also neglected in the present study design and should likewise be addressed in further research.

Third, we omit the analysis and identification of institutions that drive the emergence of SRI. Literature including *Sandberg* et al. (2008), *Tabellini* (2008) as well as *Jackson/Apostolakou* (2009) provide insights on possible relationships between institutions and SRI or CSR. *Renneboog* et al. (2008) state that governments in Western countries have taken many regulatory initiatives to stimulate SRI. *Steurer* et al. (2008) even conduct a survey on governmental SRI initiatives in Europe. However, there is no source available that measures the initiatives numerically and the country initiatives are highly diverse, including but not limited to legal, economic or fiscal instruments. We encourage the algebraic assessment of institutional impact on the emergence of SRI to overcome this shortage.

Due to the many effects and influencing factors that we cannot consider in this study, our research should only be understood as an initial contribution to an international theory of SRI and not as a final result.

V. Empirical Results

In general terms, the results presented below empirically support the hypotheses that economic and financial development as well as cultural factors influence the size and the composition of the SRI market across the 13 European countries in our dataset.

The results of our regression analysis are discussed in more detail in the context of the respective hypothesis.

H1: Macroeconomic drivers account for the evolvement of SRI

The first hypothesis, "Economic development proxied by gross domestic product (GDP) per capita has a positive impact on the size of the SRI market", is confirmed for the negative screening strategy, which could be used as an estimate for the overall SRI market. Hence, a certain level of wealth could be seen as a prerequisite for the evolution of SRI. Furthermore, the positive impact of GDP is present for the other SRI strategies as well, though it is not significant. A similar pattern can be detected for the second hypothesis: "The size of the pension market per capita (Pens), an indicator of financial development, has a positive impact on the size of the SRI market". The size of the pension market seems to be an important factor in explaining the level of SRI for the negative screening strategy as well as for the engagement and voting strategy, whereas it is not significant for the two other SRI strategies. Our results support earlier findings from *Scholtens/Sievänen* (2013) who point out that the size of the pension industry matters. The fact that the pension market is significant in engagement and voting strategies could be explained by the fiduciary duty of the pension funds, which use this SRI strategy to ensure the sustainable growth of the companies in which they are invested.

Table 2

Regression Results

$$Strategy_i = \beta_0 + \beta_1 Economic\ Development_i + \beta_2 Financial\ Development_i + \beta_3 Uncertainty\ Avoidance_i + \beta_4 Masculinity_i + \beta_5 Individualism_i + \beta_6 Power\ Distance_i + \varepsilon_i$$

	Negative Screens	*Positive Screens*	*Engagement and Voting*	*Integration*
GDP	1.933***	0.200	0.131	0.017
	(0.254)	(0.170)	(0.207)	(0.099)
Pens	0.247**	0.100	0.166**	0.093
	(0.108)	(0.063)	(0.072)	(0.068)
UAI	55.759	231.042**	242.212	172.804
	(383.529)	(114.606)	(227.174)	(200.184)
MAS	–44.408	–433.271***	–281.509**	–162.104*
	(152.259)	(96.518)	(143.075)	(83.405)
IDV	–137.183	349.574*	577.313**	489.443**
	(398.510)	(205.696)	(288.083)	(191.812)
PDI	391.766	–244.828	–264.996	12.403
	(363.922)	(178.558)	(258.197)	(220.764)
Constant	–65,978.320**	–9,058.886	–33,198.010*	–33,451.310**
	(31,182.170)	(10,632.150)	(18,923.660)	(14,896.570)
FE Country	Yes	Yes	Yes	Yes
FE Year	No	No	No	No
Observations	52	56	53	49
Adj. R^2	0.646	0.527	0.46	0.118
SE of Regression	16,440.502	7,145.94	6,493.496	6,921.864
F Statistic	16.479***	11.218***	8.374***	2.064*

Notes: This table presents the estimation results from the random effects model on the SRI strategies (Negative Screens, Positive Screens, Engagement and Voting and Integration) on the economic and financial development and culture variables. Arellano-clustered standard errors (in parentheses) are applied to account for heteroscedasticity and autocorrelation. ***, **, * denote statistical significance at the 1 %, 5 % and 10 % level, respectively.

In summary, GDP and Pens have a significant positive impact on the adoption of negative screens. This finding could also be relevant for the dissemination of more enhanced SRI strategies if negative screens are assumed to be the basic strategy to enter the SRI market. However, we can only partially confirm the first two hypotheses due to the fact that just 3 of 8 coefficients are significant.

H2: Cultural factors account for national differences in the emergence of SRI

The UAI of a society has a partly significant impact and the direction is as expected. The risk mitigating impact of implementing an SRI strategy is perceived to be positive which would drive the level of SRI in societies with high UAI. Hypothesis H2a, "The level of Uncertainty Avoidance (UAI) positively impacts the size of the SRI market", is therefore confirmed with respect to positive screens as the dependent variable. We assume that SRI strategies are perceived as an instrument to measure risk more precisely, which could be why societies with high UAI favor SRI. Hypothesis H2b, "The masculinity of a country negatively impacts the size of the SRI market", is widely supported by our results: For all strategies, MAS shows the expected direction and is significant for the strategies Positive Screens, Engagement and Voting and Integration. We therefore confirm the negative impact of the masculinity of a nation on the size of its SRI market. For example, very masculine countries like Austria, Switzerland and Italy tend to have a smaller SRI market than more female countries like Denmark, Sweden and Norway. We therefore conclude that the natural evolvement of SRI in the Nordic countries is based on a deep-rooted set of feminine values such as social relationships, interpersonal harmony and environmental concerns. Our results for the cultural factors confirm the findings from *Scholtens/Sievänen* (2013). The masculinity of a country especially seems to prevent the adoption of SRI in a country.

Additionally, the results for IDV support the thesis that culture has an impact on SRI as well. The degree of individuality seems to affect the preference for the more advanced SRI strategies like positive screens, engagement and voting as well as integration as the results are significant and all show a positive impact. Culture, in the sense of a collective programming of the mind (*Hofstede* 1984) in addition to joint preferences and collective beliefs (*Dumas/Louche* 2016), seems to have an impact on the application of complex SRI strategies on a national level at least with respect to MAS and IDV.

Moreover, the results suggest that economic and financial factors are more important for the adoption of negative screens, which penalize unsustainable businesses. In contrast, some cultural factors are crucial for the integration of positive screens, engagement and voting as well as integration, which tend to benefit sustainable business practices.

Politicians must keep these findings in mind when they discuss further regulations that aim to foster sustainable growth. If regulators want sustainable companies to benefit in order to foster a sustainable development culture, they must tackle cultural imprints with laws. Based on our results, regulations seem to be the only way to promote more advanced SRI strategies like positive screens, engagement and voting as well as integration.

VI. Interpretation and Conclusion

This paper provides general empirical support for the theoretical model from *Scholtens/Sievänen* (2013) with data for SRI markets from 13 European countries. We contribute to their international theory of SRI and show that the SRI market size of a country is to some extent driven by economic and financial development factors as well as various cultural dimensions.

The development factors, GDP and the size of the pension market, measured by private pensions, affect the adoption of negative screening strategies, which constitute the largest SRI strategy in terms of assets under management per capita, and thus have an impact on the overall size and composition of the SRI market across countries. In contrast, GDP has no effect on more advanced SRI strategies like positive screens, engagement and voting and integration. The size of the pension market positively affects the adoption of engagement and voting strategies which can be explained by the long-term orientation and the fiduciary duty of pension funds.

In addition to the mentioned development factors, some cultural factors are important for the evolvement of more advanced SRI strategies according to our results. Social preferences regarding Uncertainty Avoidance help explain the different levels of positive screening strategies across countries. Moreover, our results show that revenue orientation (proxied by MAS) prevent countries from the implementation of positive screens, engagement and voting as well as integration strategies. Thus, countries with a masculine set of values such as revenue orientation instead of societal and environmental orientation are less likely to adopt these more advanced strategies, which would benefit sustainable business conduct instead of just penalizing unsustainable business models.

Hence, supranational regulatory authorities like the European Commission must set binding guidelines if European capital markets are to overcome the simple exclusion of non-sustainable companies and make a contribution to a culture of sustainable development. This cultural change would contribute to the long-term stability of the European Union by rewarding sustainable corporate behavior. Furthermore, it would help anchor the presence of sustainable investment practices in European countries.

To better examine the impact of advanced SRI strategies, there should be more in-depth analyses to give politicians and regulators more detailed information on how to foster sustainable growth in Europe by regulating the financial market and embedding deep-rooted sustainable investment behavior in European countries.

Appendix

Definitions of SRI strategies according to EUROSIF (2012):

Negative Screens: An approach that excludes specific investments or classes of investment from the investible universe such as companies, sectors, or countries.

Positive Screens: Sustainable themed investments, Best-in-Class selection and norms-based screening are defined as positive screens. Sustainable themed investments are investments in themes or assets linked to the development of sustainability. Thematic funds focus on specific or multiple issues related to ESG. Best-in-Class selection is defined as an approach where leading or best-performing investments within a universe, category, or class are selected or weighted based on ESG criteria. Norms-based screening comprise investments if they are screened according to their compliance with international standards and norms.

Engagement and voting: Engagement activities and active ownership through voting of shares and engagement with companies on ESG matters. This is a long-term process, seeking to influence behavior or increase disclosure.

Integration: The explicit inclusion by asset managers of ESG risks and opportunities into traditional financial analysis and investment decisions based on a systematic process and appropriate research sources.

Table A.1

Descriptive Statistics for Relevant Variables

	Variables	*Mean*	*Median*	*SD*	*Minimum*	*Maximum*	*N*
SRI Strategies	*Negative Screens*	24.525	13.290	27.076	1.844	93.063	62
	Positive Screens	10.777	4.267	11.967	218	30.945	72
	Engagement and Voting	9.640	2.256	11.070	133	27.967	69
	Integration	7.466	5.790	6.884	114	22.250	62
Development Factors	*GDP*	37.894	35.380	11.567	22.682	64.831	78
	Pens	39.065	28.074	42.292	2.395	134.393	57
Cultural Factors	*UAI*	60	59	22	23	94	13
	IDV	70	71	10	51	89	13
	MAS	43	43	27	5	79	13
	PDI	39	35	17	11	68	13

Notes: This table shows key descriptive statistics of all dependent (SRI strategies) and independent (economic, financial and culture factors) variables in our regression analysis for the 13 countries for every second year from 2005 to 2015. The SRI strategies and the economic (GDP) and financial (Pens) variables are denominated in euros and scaled per capita. The cultural factors are based on the methodology from *Hofstede* (1980) and range from 0 to 100.

Table A.2

Average of the Variables on a Country-Level

Variables	*AT*	*BE*	*CH*	*DE*	*DK*	*ES*	*FI*
Negative Screens	2,446	14,547	93,063	9,985	30,648	1,844	13,290
Positive Screens	392	1,863	1,801	218	30,945	230	11,635
Engagement and Voting	197	2,256	1,709	133	22,611	184	6,854
Integration	114	5,370	3,432	167	8,815	973	5,790
GDP	35,526	33,311	56,602	32,425	43,674	22,682	35,380
Pens	2,395	2,650	99,366	12,926	134,393	2,928	28,074
UAI	70	94	58	65	23	86	59
MAS	79	54	70	66	16	42	26
IDV	55	75	68	67	74	51	63
PDI	11	65	34	35	18	57	33

Variables	*FR*	*IT*	*NL*	*NO*	*SE*	*UK*
Negative Screens	3,532	6,823	41,221	56,344	39,422	5,658
Positive Screens	9,425	3,153	18,215	29,466	28,486	4,267
Engagement and Voting	347	325	27,967	22,305	22,965	17,463
Integration	14,018	927	22,250	6,919	14,500	13,777
GDP	30,817	26,776	37,548	64,831	40,055	33,000
Pens	8,735	4,367	74,670	28,914	55,932	52,496
UAI	86	75	53	50	29	35
MAS	43	70	14	8	5	66
IDV	71	76	80	69	71	89
PDI	68	50	38	31	31	35

Notes: This table presents the average of all dependent (SRI strategies) and independent (economic, financial and culture factors) variables in our regression analysis for the countries in our sample. The SRI strategies and the economic (GDP) and financial (Pens) variables are denominated in euros and scaled per capita. The cultural factors are based on the methodology from Hofstede (1980) and range from 0 to 100. Our sample contains observations from 13 countries for every second year from 2005 to 2015. All SRI strategies are winsorized per country and year at the 10 % level in both tails of the distribution.

Table A.3

Pearson Correlation Coefficients for Development Factors and Cultural Factors

	GDP	*Pens*
Gross Domestic Product (GDP)	1	
Pensions (Pens)	0.53***	1
Uncertainty Avoidance (UAI)	–0.42***	–0.75***
Masculinity (MAS)	–0.32***	–0.38***
Individualism (IDV)	0.08	0.42***
Power Distance (PDI)	–0.41***	–0.41***

Note: This table presents the Pearson correlation between the economic, financial and culture factors. ***, **, * denote statistical significance at the 1 %, 5 % and 10 % level, respectively.

Table A.4

Robustness Test Development Factors

$Strategy_i = \beta_0 + \beta_1 Economic\ Development_i + \beta_2 Financial\ Development_i + \varepsilon_i$

	Negative Screens	*Positive Screens*	*Engagement and Voting*	*Integration*
GDP	1.828***	0.302	0.247	0.025
	(0.195)	(0.351)	(0.304)	(0.128)
Pens	0.168*	0.215**	0.300***	0.108
	(0.096)	(0.109)	(0.086)	(0.072)
Constant	–51,512.190***	–7,367.572	–10,539.380	3,744.386
	(7,752.156)	(10,219.230)	(10,148.770)	(5,252.550)
FE Country	Yes	Yes	Yes	Yes
FE Year	No	No	No	No
Observations	52	56	53	49
Adj. R^2	0.655	0.27	0.428	0.09
SE of Regression	16,617.854	6,704.224	5,494.310	6,842.709
F Statistic	49.446***	11.173***	20.468***	2.213

Notes: This table presents the estimation results from the random effects model on the SRI strategies (Negative Screens, Positive Screens, Engagement and Voting and Integration) on the economic and financial development variables. Arellano-clustered standard errors (in parentheses) are applied to account for heteroscedasticity and autocorrelation. ***, **, * denote statistical significance at the 1 %, 5 % and 10 % level, respectively.

Table A.5

Robustness Test Culture Factors

$$Strategy_i = \beta_0 + \beta_1 Uncertainty\ Avoidance_i + \beta_2 Masculinity_i + \beta_3 Individualism_i + \beta_4 Power\ Distance_i + \varepsilon_i$$

	Negative Screens	*Positive Screens*	*Engagement and Voting*	*Integration*
UAI	2.272	99.977	–19.021	36.619
	(707.970)	(109.248)	(129.224)	(153.436)
MAS	–372.284	–459.199***	–292.366***	–160.848**
	(469.947)	(61.843)	(65.754)	(72.762)
IDV	487.135	424.023***	576.744***	515.979***
	(619.171)	(127.562)	(198.754)	(191.080)
PDI	–467.218	–307.652***	–240.513*	22.463
	(625.153)	(109.001)	(144.199)	(170.676)
Constant	24,865.590	8,749.621	–6,120.752	–22,999.050
	(48,148.990)	(10,276.120)	(13,898.490)	(14,973.410)
FE Country	No	No	No	No
FE Year	No	No	No	No
Observations	52	56	53	49
Adj. R^2	0.115	0.687	0.67	0.359
Sof Regression	29,981.495	8,252.816	7,804.348	8,174.994
F Statistic	2.663**	31.150***	27.359***	7.716***

Notes: This table presents the estimation results from the ordinary least squares model on the SRI strategies (Negative Screens, Positive Screens, Engagement and Voting and Integration) on the time invariant cultural variables. Arellano-clustered standard errors (in parentheses) are applied to account for heteroscedasticity and auto-correlation. ***, **, * denote statistical significance at the 1 %, 5 % and 10 % level, respectively.

Table A.6

Robustness Test Gini Index

$$Strategy_i = \beta_0 + \beta_1 Economic\ Development_i + \beta_2 Financial\ Development_i + \beta_3 Uncertainty\ Avoidance_i + \beta_4 Masculinity_i + \beta_5 Individualism_i + \beta_6 Power\ Distance_i + \beta_7 Gini\ Index_i + \varepsilon_i$$

	Negative Screens	*Positive Screens*	*Engagement and Voting*	*Integration*
GDP	2.107***	0.270*	0.238	0.081
	(0.204)	(0.150)	(0.174)	(0.112)
Pens	0.220**	0.083	0.129**	0.078
	(0.087)	(0.055)	(0.055)	(0.062)
UAI	534.936	489.057***	593.660**	412.543*
	(329.557)	(167.413)	(246.515)	(216.659)
MAS	–445.044**	–644.766***	–596.246***	–351.781**
	(186.252)	(156.030)	(195.973)	(157.262)
IDV	456.498	661.779**	1,036.758***	783.665***
	(322.333)	(283.455)	(325.309)	(242.698)
PDI	–246.536	–599.038**	–759.975**	–321.260
	(321.464)	(237.995)	(304.825)	(276.791)
Gini Index	3,414.749***	1,789.014**	2,667.658**	1,580.467
	(1,267.335)	(788.534)	(1,257.000)	(1,211.556)
Constant	–203,855.900***	–79,995.220**	–137,478.700**	–97,325.830**
	(56,257.460)	(31,071.500)	(54,072.490)	(49,083.350)
FE Country	Yes	Yes	Yes	Yes
FE Year	No	No	No	No
Observations	52	56	53	49
Adj. R^2	0.655	0.55	0.544	0.132
SE of Regression	15,971.122	6,932.529	6,035.5	6,796.989
F Statistic	14.846***	10.595***	9.862***	2.040*

Notes: This table presents the estimation results from the random effects model on the SRI strategies (Negative Screens, Positive Screens, Engagement and Voting and Integration) on the economic and financial development (including the Gini index) and culture variables. Arellano-clustered standard errors (in parentheses) are applied to account for heteroscedasticity and autocorrelation. ***, **, * denote statistical significance at the 1 %, 5 % and 10 % level, respectively.

References

Bauer, R./*Smeets*, P. (2015): Social identification and investment decisions. Journal of Economic Behavior & Organization, Vol. 117, 121 – 134.

Busch, T./*Bauer*, R./*Orlitzky*, M. (2015): Sustainable Development and Financial Markets. Business & Society, Vol. 55(3), 303 – 329.

Dumas, C./*Louche*, C. (2016): Collective beliefs on responsible investment. Business & Society, Vol. 55(3), 427 – 457.

Dutta, N./*Mukherjee*, D. (2012): Is culture a determinant of financial development? Applied Economics Letters, Vol. 19(6), 585 – 590.

Duuren, E. van/*Plantinga*, A./*Scholtens*, B. (2015): ESG Integration and the Investment Management Process: Fundamental Investing Reinvented. Journal of Business Ethics, Vol. 138(3), 525 – 533.

Eurosif (2006): European SRI Study 2006. Brussels, Belgium: Eurosif A.I.S.B.L. Retrieved from https://www.eurosif.org/research/.

Eurosif (2016): European SRI study 2016. Brussels, Belgium: Eurosif A.I.S.B.L. Retrieved from https://www.eurosif.org/research/.

Friede, G./*Busch*, T./*Bassen*, A. (2015): ESG and financial performance: aggregated evidence from more than 2000 empirical studies. Journal of Sustainable Finance & Investment, Vol. 5(4), 210 – 233.

Giamporcaro, S./*Gond*, J.-P. (2016): Calculability as Politics in the Construction of Markets: The Case of Socially Responsible Investment in France. Organization Studies, Vol. 37(4), 465 – 495.

Gjolberg, M. (2009): The origin of corporate social responsibility: global forces or national legacies? Socio-Economic Review, Vol. 7(4), 605 – 637.

Höck, A./*Klein*, C./*Landau*, A./*Zwergel*, B. (2020): The effect of environmental sustainability on credit risk. Journal of Asset Management, 1 – 9.

Hofstede, G. (1980): Culture's consequences: International differences in work-related values. Beverly Hills, Sage Publications.

Hofstede, G. (1984): Culture's consequences: International differences in work-related values (Vol. 5). Sage.

Jackson, G./*Apostolakou*, A. (2009): Corporate Social Responsibility in Western Europe: An Institutional Mirror or Substitute? Journal of Business Ethics, Vol. 94(3), 371 – 394.

Jansson, M./*Biel*, A. (2011): Motives to engage in sustainable investment: a comparison between institutional and private investors. Sustainable Development, Vol. 19(2), 135 – 142.

Jansson, M./*Sandberg*, J./*Biel*, A./*Gärling*, T. (2014): Should pension funds' fiduciary duty be extended to include social, ethical and environmental concerns? A study of beneficiaries' preferences. Journal of Sustainable Finance & Investment, Vol. 4(3), 213 – 229.

Kwok, C. C. Y./*Tadesse*, S. (2006): National culture and financial systems. Journal of International Business Studies, Vol. 37(2), 227 – 247.

Lavezzolo, S./*Rodríguez-Lluesma*, C./*Elvira*, M. M. (2018): National culture and financial systems: The conditioning role of political context. Journal of Business Research, Vol. 85, 60 – 72.

Lean, H. H./*Ang*, W. R./*Smyth*, R. (2015): Performance and performance persistence of socially responsible investment funds in Europe and North America. The North American Journal of Economics and Finance, Vol. 34, 254 – 266.

Leite, P./*Cortez*, M. C. (2016): The Performance of European Socially Responsible Fixed-Income Funds. Working Paper.

Nilsson, J. (2008): Investment with a Conscience: Examining the Impact of Pro-Social Attitudes and Perceived Financial Performance on Socially Responsible Investment Behavior. Journal of Business Ethics, Vol. 83(2), 307 – 325.

Renneboog, L./*Horst*, J. T./*Zhang*, C. (2008): Socially responsible investments: Institutional aspects, performance, and investor behavior. Journal of Banking & Finance, Vol. 32(9), 1723 – 1742.

Riedl, A./*Smeets*, P. (2017): Why do investors hold socially responsible mutual funds? The Journal of Finance, Vol. 72(6), 2505 – 2550.

Sandberg, J. (2008): The Ethics of Investing: Making Money or Making a Difference?

Sandberg, J. (2010): Socially Responsible Investment and Fiduciary Duty: Putting the Freshfields Report into Perspective. Journal of Business Ethics, Vol. 101(1), 143 – 162.

Sandberg, J./*Juravle*, C./*Hedesström*, T. M./*Hamilton*, I. (2009): The Heterogeneity of Socially Responsible Investment. Journal of Business Ethics, Vol. 87(4), 519 – 533.

Scholtens, B. (2006): Finance as a Driver of Corporate Social Responsibility. Journal of Business Ethics, Vol. 68(1), 19 – 33.

Scholtens, B. (2014): Indicators of responsible investing. Ecological Indicators, Vol. 36, 382 – 385.

Scholtens, B./*Sievänen*, R. (2013): Drivers of Socially Responsible Investing: A Case Study of Four Nordic Countries. Journal of Business Ethics, Vol. 115(3), 605 – 616.

Sievänen, R./*Rita*, H./*Scholtens*, B. (2013): The drivers of responsible investment: The case of European pension funds. Journal of Business Ethics, Vol. 117(1), 137 – 151.

Steurer, R./*Margula*, S./*Martinuzzi*, A. (2008): Socially Responsible Investment in EU Member States: Overview of government initiatives and SRI experts' expectations towards governments. Analysis of national policies on CSR, in support of a structured exchange of information on national CSR policies and initiatives. Final report to the EU High-Level Group on CSR provided by the Research Institute for Managing Sustainability. Vienna University of Economics and Business

Tabellini, G. (2008): Institutions and culture. Journal of the European Economic Association, Vol. 6(2 – 3), 255 – 294.

Wallis, M. von/*Klein*, C. (2015): Ethical requirement and financial interest: a literature review on socially responsible investing. Business Research, Vol. 8(1), 61 – 98.

Wins, A/*Zwergel*, B. (2015): Private ethical fund investors across countries and time: a survey-based review. Qualitative Research in Financial Markets, Vol. 7(4), 379 – 411.