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The impact of socially responsible investments on sinful firms

An empirical analysis of the UN Principles of Responsible Investment and sin stocks

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Abstract

We study the effects of the United Nations Principles of Responsible Investment (UN-PRI) on sinful firms, in which we examine whether monthly returns and the Environmental, Social and Corporate Governance (ESG) performance have changed due to an increase in socially concerned investors. We find evidence suggesting that increased commitment to Socially Responsible Investments (SRI) has a negative effect on sinful firms, estimated to reduce monthly returns by 0.040 percent. This corresponds to a 4.4 percent decrease in the average monthly return. Our findings for ESG performance indicate that the ESG score is unaffected by the additional commitment to the UN-PRI. We conduct the analysis on geographical location and industrial affiliation to determine if these effects are uniform across all samples. Our results suggest that regions and industries have differentiating results.

Keywords:
United Nations, Socially Responsible Investment, ESG, sinful stocks

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1. Introduction

In recent decades, growing awareness around sustainability and social issues has triggered a shift towards socially responsible investments. Consequentially, it has caused a divestment campaign against sinful firms. This thesis aims to investigate whether increased commitment by institutional investors for social responsible investment has implications on sin[1] stocks' returns and ESG rating.

Previous literature presents contradicting results on sin stocks' performance. Research conducted by Hong & Kacperczyk (2009) shows that sin stocks yield a return premium compared to comparable stocks. In contrast, Blitz & Fabozzi (2017) negates abnormal returns of sin portfolios by controlling for additional risk factors. Given the contradicting results, we study whether the growing popularity of socially responsible investments has mitigated the sinful premium. As a proxy for measuring public commitment, we use the UN Principles of Responsible Investment Signatory Directory. We find evidence suggesting that the monthly returns of sinful firms are decreased by 0.04 percent when additional investors sign up for the ethical principles of the UN. When we investigate whether firms take action to improve their ESG rating due to the implications of increased commitment, we do not find any evidence to suggest that the attitude of firms has changed.

To the best of our knowledge, the analysis of public commitment for SRI and sinful stocks is a new research area that we have touched upon. At the time of writing, the limited research on sin firms and responsible investments has addressed the valuation and ESG performance of sinful firms, independently. Most of these papers[2] highlights that the investment landscape has experienced an increase in socially responsible investments, but have not considered how these changes affect the sin market. Nevertheless, increased focus on ESG and sustainability in the last years have sparked rapid changes in the investors' perspectives. Social responsibility and non-financial aspects of investing have become an integrated part of investors' strategies for asset and wealth management (PwC, 2019).

[1] A term used to define companies which have activities that are considered unethical.

[2] Some relevant papers; Trinks & Scholtens (2015), Fabozzi et al. (2008), Liu et al. (2014), Fauver & McDonald (2014) and Renneboog et al. (2008)

Secondly, our findings for sin stocks' performance based on Hong & Kacperczyk's (2009) are expanded to include regional and industrial effects. Additionally, we utilize a different time span that accounts for the possibility of periodic results in the latter paper. The time-series regression with the application of the Fama-French five-factors model plus momentum suggests a significant sin premium of 0.31% monthly. This is consistent with the findings of Hong & Kacperczyk (2009), which suggests a sin premium of 0.29%. Furthermore, the estimates showcase a significant positive alpha for the alcohol and gambling industry, at 0.60% and 0.80%, respectively. In contrast, the tobacco industry has a significant negative alpha of -0.78%. The alphas on regional affiliation are all insignificant. On the contrary, when we investigate sin stocks with Fama and MacBeth, we do not find any evidence to suggest the existence of an unethical premium. The difference in the weighting of these two methodologies suggests that only value-weighted portfolios provide abnormal returns.

Our analysis is meaningful for all parties interested in the stock market, such as investors, employees, researchers, and policymakers. The findings suggest a decline in the returns of sinful firms as a result of increased awareness about socially responsible investment, which varies depending on regions and industries. Hence, policymakers should take social norms and cultural characteristics into account while forming new policies. The findings we present help to explain contradicting results from several papers[3] regarding this topic.

The relevant regions in this study are Europe, the Americas, and Asia. Additionally, we segment our sample based on industries such as alcohol, gambling, and tobacco. Our period of investigation follows the establishment of the UN-PRI between 2006 - 2021. To perform the analysis, we retrieve data from Refinitiv Eikon equity screener, Orbis, and Kenneth R. French Data Library. We examine both active and inactive companies in order to mitigate the survivorship bias, as companies are periodically being listed and unlisted from the world's stock exchanges.

[3] Hong & Kacperzyk (2009), Blitz & Fabozzi (2017), Hudson (2005), and Lobe & Walkshausl (2011).

To carry out our analysis we investigate whether the sin premium is diminished because of increased commitment to SRI. We incorporate the UN-PRI signatories into the Fama and MacBeth methodology to showcase whether the establishment of the signatories has made an impact on sinful firms. Furthermore, we study whether increased commitment forces companies to improve their ESG rating as investors pledge to incorporate ESG criteria when signing the agreement of the UN. We also perform these analyses with a fixed effect model in order to control for omitted variable bias. The results of the analyses are somewhat different depending on the underlying methodology of the analyses.

The structure of the thesis is as follows. Section 2 provides an overview of the background of socially responsible investment and sin stocks. Furthermore, we present the findings of previous literature on sin stocks and the related hypotheses to our research questions. Section 3 describes the approach for data collection and the methods we use to structure our data. Section 4 introduces the methodology and the regression models used in this thesis. Section 5 presents some descriptive statistics and the empirical findings of our models, as well as a discussion of the results. Finally, section 6 summarizes the thesis with our conclusion on the matter.

2. Literature Review

This chapter presents the origin and fundamental concept behind investment strategies such as SRI, ESG, and negative screening. Next, we present the definition of sin stocks, which includes the selection of sin industries and our proxy for measuring increased awareness toward SRI. As such, we review existing literature on sin stocks' performance and socially responsible investment. The chapter ends by presenting the relevant hypotheses of this thesis.

2.1 Social Responsible Investment

The vast number of publicly listed companies have given birth to trading strategies such as socially responsible investment and negative screening. The origin of socially responsible investment dates back several hundred years. In the early biblical years, the Jewish laws laid down directives for ethical investment. For generations, religious investors have avoided supporting companies whose actions could be deemed as immoral. This effect can still be seen in the widespread avoidance of sin stocks by the majority of socially concerned investors in the US. Especially companies that operate in activities such as alcohol, tobacco, and gaming (Schueth, 2003).

Schueth (2003) further states that the modern application of SRI could be traced back to the 1960s, during the decade of political and social concerns stemming from the campaigns of the anti-Vietnam war and the anti-nuclear sentiment. As of 1999, social investing accounted for 1 in every 8 dollars under professional management (Schueth, 2003). In 2019, the monetary amount accumulated by SRI strategies was estimated to make up 1 in every 3 dollars in the US. This increase illustrates the impact of SRI strategies in recent times (USSIF, 2020).

The most frequently used definition regarding SRI revolves around "Integrating personal values and societal concerns with investment decisions" (Statman, p.3, 2006; Schueth, p.190, 2003; Shank et al., p.1, 2005). Chen (2020) states that social investments aim to exclude companies that operate in activities that would be considered immoral or unethical. Specifically, the addictive characteristics of products from industries like gambling, tobacco, and alcohol are the most prominent exclusion criteria. Furthermore, Chen (2020, para.2) argues that socially responsible investors would favor companies "engaged in social justice, environmental sustainability, and technological advances for clean energy".

The US SIF (2020) has defined SRI as a discipline that generates long-term financial returns and positive social impact by considering ESG factors in the companies.

However, the general perception among investors is that the relationship between SRI and financial returns is negative. It is believed that since the size of the pie gets small, the pieces will also get smaller. Chen (2021) argues that impact investments and financial returns do not go hand in hand. However, an analysis by the asset-management firm Arabesque Partners in 2020 shows that the majority of the reviewed studies suggest that sustainable practices positively impact financial returns (O'Shea & Benson, 2022). Edmans (2022) argues that companies which deliver more value to society are also more profitable. Hence, SRI is profitable for both society and investors. The awareness about SRI and possible financial returns has gained much popularity. According to a survey executed by Morgan Stanley in 2019, sustainable investing captures the interest of 85% of individual investors (O'Shea & Benson, 2022).

Sandbu (2011) expresses that there are three main approaches to ethical investment; positive screening, negative screening, and engagement; i) Negative screening, which is the most used technique for SRI, revolves around the elimination of unethical businesses. ii) Positive screening or "best-in-class" selects companies based on their relative performance against corporate governance, environmental, or any ethical criteria. iii) Engagement requires an investor to take an active position in a company to create mutual dialog on future actions. Institutional investors mostly use this method as it requires extensive funds to gain enough influence. These investment strategies are often referred to as ESG integration as it encourages investors to make responsible investments based on the environmental, social, and corporate governance of their targets (van Duuren, Plantinga, Scholtens, 2015).

The financialization of ethics and corporate social responsibility (CSR) led by the scientific community to determine if ethical investment is profitable has led the community to forget the initial objective of excluding unethical practices (Revelli, 2017). He further states that the introduction of ESG criteria and ratings has pushed investors to think in terms of risk management by considering ethics as a tool of financial constraints.

Supported by findings in Thomsons` Reuters Datastream (2022), we identify companies in typically negatively screened industries such as tobacco, alcohol, and gambling with relatively high ESG rating compared to ethical industries. The scoring of companies such as British American Tobacco PLC and Japan Tobacco Ltd have received a rating of 91.3 and 88.4, respectively. There is no doubt that the tobacco industry could be deemed unethical as its contribution to society consists of providing substances of addictiveness and health concerns. The American Cancer Society (2020) estimates that the tobacco industry is the leading cause of preventable deaths, accounting for 1 out of 5 deaths every year. Hence, too much focus on ESG criteria in investment decisions will lead to a diversion from the initial objective of SRI to exclude these types of businesses.

One could argue that reporting high ESG scores for questionable business practices is a failure of the current ESG assessment, contributing to misinterpretation among investors about whether an industry is morally good or bad. Taparia (2021, p.1), a prominent critic of the current ESG system, states that ESG investing is "a greater force for destabilizing society and the planet than if it did not exist at all". The main problem associated with ESG investing is the system in which rating agencies compute ESG scoring (Taparia, 2021). The current system rates companies based on numerous criteria ranging in the Environmental, Social, and Governance pillars. Therefore, companies with substantial gas emissions could still receive a good rating if the rating agencies see the pollution as well managed or non-threatening to the company's financial value. Such a case could be argued for the inclusion of Philip Morris International, a company that sells over 700 billion cigarettes a year, into the Dow Jones Sustainability Index for North America (PMI, 2022). Clearly, the company would receive a low score on several ESG criteria, but the system allows other criteria to overshadow the unethical practice of selling tobacco. This issue with ESG has been identified by Taparia (2021, p.2), "If a company's core business model does so much harm, the cover-up through good behavior on other parameters should not be so easy".

At the forefront of promoting responsible investment is the UN Principles for Responsible Investment (UN-PRI). Since its founding in 2006, the global organization has encouraged institutional investors and asset owners to sign the PRI agreement that specifies six principles that investors need to fulfill. These principles encourage investors to incorporate ESG factors in their decision-making and ownership policies.

The organization states the following: “In signing the Principles, we as investors publicly commit to adopt and implement them, where consistent with our fiduciary responsibilities” (UN-PRI, 2022, para.4). According to the signatories' data collected from their database, it took the organization ten years to achieve more than 1000 signatories. The increased awareness and popularity of ESG investing in recent years has put its mark on the UN-PRI as the number of signatories has skyrocketed. In 2021 the number of reported signatories reached its all-time high with 1213 signatories during a single calendar year. The UN-PRI has gained over 3118 signatories during the last four years, more than doubling the total number of signatories. The majority of these signatories originate from European and North American investors, expressing the demand from the public for responsible investments in the “Western world”. A definition typically used to express developed countries in North America and Europe (Shvili, 2021).

As part of this thesis, we use signatories’ data from the UN Principles for Responsible Investment as a proxy for measuring increased awareness of SRI. Because of the public commitment associated with the PRI agreements, we can measure the attention towards SRI on multiple dimensions. Since the majority of the signatories are identified as institutional investors and asset managers, any increase in the number of signatories will reflect a substantial amount of funds delegated towards SRI.

2.2 Sin Stocks

Sin stocks share similarities with socially responsible investing in the sense that the interpretation of sin stocks is subjective and driven by social norms. Various philosophical theories help explain the norms. For instance, utilitarianism theory advocates actions that foster happiness and oppose actions that cause unhappiness (Tardi, 2021). The Western world considers debt as a sound business practice, whereas the act of borrowing money in Asia and the Middle East implies the inability to live within one’s means (Fabozzi et al., 2008). The subjective assessment of the term “sin” is highly influenced by cultures (Dorsainvil, 2019). Muslim countries regard meat from pork as a sinful product, whereas the majority of the Western world does not share the same opinion. Another example is the acceptance of prostitution and cannabis in a country like the Netherlands compared to Saudi Arabia.

A study conducted by Liu et al. (2014, p.1) shows "a strong interaction effect between social norms and financial incentives, which significantly influence the behavior of market participants". They use the alcohol, gambling, and tobacco industries as a proxy for sin industries to investigate the relationship. The views on sin stocks might change over time due to changes in social norms and business activities. Therefore, companies might migrate into or out of a sin industry (Blitz & Fabozzi, 2017). Nevertheless, a sin company is defined as "a company involved in or associated with an activity that is considered immoral or unethical" (Kenton, 2020, p.1).

The term "sin" has been interpreted differently in previous research, and thus the analyses are based on different data. However, the majority of researchers[4] are aligned on alcohol, gambling, and tobacco as sin industries - collectively known as the "Triumvirate of Sin". One of the most comprehensive works on sin stocks, by Hong and Kacperczyk (2009), is based on these three industries. The Sin Stock Report's (2015) sub-categorization of sinfulness supports the notion of these industries as sinful. The report further states that industries such as adult entertainment, weapons, and cannabis can also be recognized as sin industries, but there are split views on their sinfulness. In addition to the "Triumvirate of Sin", there are various combinations of sin industries used in literature. Ahrens (2004) proposed "the so-called 4Bs portfolio of booze, bets, bombs, and butts", which reflects the alcohol, gambling, weapons, and adult entertainment industries. Another combination of sin industries is called "the Sextet of Sin portfolio", which expands on the 4Bs with the inclusion of nuclear power and tobacco (Lobe & Walkshausl, 2011).

2.3 Sin Performance

Several hypotheses contribute to the belief that sinful industries provide abnormal returns. In the following section, we look into some of the most prominent theories.

[4] The inclusion of these industries is evident in Hong & Kacperzcyk (2009), Trinks & Scholtens (2015), and Fabozzi et al. (2008).

The most frequently used argument for sinful investing is the hypothesis of exclusion, which causes a systematic underpricing of sinful industries as more investors use negative screening techniques to deviate from such industries. According to traditional financial theory, a company's valuation should only be determined by its unique properties of risk and return (Fabozzi et al., 2008). Hence, sinful companies' bad reputations will include a subjective evaluation that consequently leads to systematic underpricing (Blitz & Fabozzi, 2017). Hong and Kacperczyk's paper (2009) found that the overperformance of sin stocks was more attributable to the neglect effect than to litigation risk. Furthermore, the paper suggests that investors are willing to forgo higher returns and pay a potential economic opportunity cost to uphold their social norms.

Sin stocks are often considered to yield high dividends. The findings of Hong & Kacperczyk (2009) show that sin stocks pay more dividends than average. The rationale for this could be that sin stocks have an additive effect and thus continue to churn out steady cash flows (Aaron, 2016). Additionally, sin stocks have limited growth potential as innovations into new segments are strictly regulated by the government. Previous studies support these findings and suggest that sin stocks have other advantages besides stability, such as lower valuations and excellent dividends (Berman, D., 2002). Furthermore, Fabozzi et al. (2008) argue that dividend is preferred over other sources of income in some countries. For instance, the Quran bans giving and receiving interest payments. Consequently, in most Arab countries, investors can only receive dividends rather than interest (Alam et al., 2017).

Due to stable dividends and earnings, regardless of the state of the economy, investors consider sin stocks as "defensive stocks" (Chen, 2020). Especially industries such as tobacco and alcohol have products characterized as consumer staples, known for their ability to be recession-proof. Even though consumers have less money available during an economic recession, research show that consumers shift towards less-expensive products leading to an increase in the quantity of these products (Smith, 2011). Fabozzi and Ma (2008) estimated that the average sin stock beta was around 0.45 and that sin stocks overperformed the general market, especially during a recession. Secondly, the addictive effect of tobacco, alcohol, and gambling makes consumers less prone to changes during an economic recession (Drobes, 2002). The addictive nature of alcohol and smoking leads to such products becoming less price-sensitive, making sin industries inelastic towards pricing (Harris, 2018).

Significant industry barriers to entry, strict rules and regulations restricting the existence and operations of sin firms lead to a monopolistic position for the firms that manage to exist and survive (Fabozzi et al. 2008). For instance, research and development in gaming and pharmaceuticals require sufficient funds, leading to an economic barrier to new firms. Additionally, sinful industries, are known to undergo tedious scrutiny. This involves getting permits, licenses, and enduring public hearings. Hence, the barriers and regulations in the market make it challenging to enter and innovate. This monopolistic character can be observed in some industries, where a handful of companies make up most of the market share. For instance, companies like Anheuser-Beush and Smith & Wesson, both established in 1852, have gained a dominant position from their early engagement in their respective industries.

In addition, beverages are high-margin products and the largest companies in this sector have recently acquired many beer and spirits brands from all over the world (Rosenberg, 2022). Some of the largest companies in this sector are Anheuser Busch, InBev SA, and Ambev. All of these have a diversification of their product lines that makes them sellers of both high and low-cost products. Hence, it is difficult for new competitors to take advantage of existing customer segments.

2.4 Historical Findings

The notion of sustainability and responsible investment have received considerable attention in recent years. Consequently, the debate around sin stocks has raised interest among different types of investors. Through the years, several working papers on sin stocks have been published. These papers have empirically investigated sin stocks' financial performance, institutional investors' views on these stocks, and the characteristics of sin firms.

Hong and Kacperczyk (2009) conducted a study to analyze whether the "Triumvirate of Sin" was subject to social norms, which was confirmed by the findings. It was empirically shown that sin stocks yield higher expected returns and are generally considered undervalued compared to comparable industries. They expressed that the rationale for the undervaluation of sin stocks is due to high litigation risk, low coverage by analysts, and avoidance by institutional investors. The reason for low sin stock ownership among institutions such as universities, insurance companies, pension funds, and religious organizations is due to pressure from social norms.

On the contrary, individual investors, hedge funds, and mutual funds are willing to invest in sin stocks, as they keep their positions out of view from the public. By analyzing both prices and returns in the US, the research promotes three important results. When controlling for both time and cross-sectional characteristics, sin stocks outperform comparable firms by an estimation of 0.26 and 0.29 percent each month, respectively. Lastly, sin stocks are shown to have 15 to 20 percent lower valuation ratios than comparable firms after controlling for similar firm characteristics. Furthermore, the researchers extended the sample period and size by including the weapon industry. The conclusion remained the same. As the paper suggests, investors who are willing to be affiliated with sinful investing receive a premium.

Following Hong & Kacperczyk`s (2009) research on sin stocks and their performance, Trinks & Scholtens (2015) used previous findings to elaborate on the term "sin" to capture the performance of sinful portfolios. In their research, they have increased the number of controversial issues regarded as sinful behavior by common ESG rating agencies and SRI funds. The full list of controversial issues is compromised of "abortion, adult entertainment, alcohol, animal testing, contraceptives, controversial weapons, fur, gambling, genetic engineering, meat, nuclear power, pork, (embryonic) stem cells, and tobacco" (Trinks & Scholtens, 2015, p.10). As discussed previously, the views on sinful industries are influenced by social and cultural norms. Hence, the authors refrain from uniformly defining these industries as sinful, but state that they can be regarded as controversial issues in different nations and cultures around the world. The findings show that practically all compromised portfolios outperformed the market in the relevant period. This is in line with previous findings, but with different combinations of sin industries, as of Fabozzi et al. (2008). This study was based on a sample consisting of the "Triumvirate of Sin", weapon, adult entertainment, and biotech industries for 21 countries. The sin portfolio outperformed common benchmarks, with an annual return of 19 percent. Other relevant papers in support of this notion are Liu et al. (2014) and Fauver & McDonald (2014).

However, these findings are challenged by Hudson (2005), which shows the risk-adjusted returns of ethical and unethical firms are the same. Research executed by Lobe & Walkshausl (2011) showed no compelling evidence of sin stocks leading to higher financial performance compared to the comparables. Blitz & Fabozzi (2017) is in support of the findings which negate abnormal returns of sin portfolios by extending the Fama French Carhart four-factor model with profitability (RMW) and investment (CMA) factors.

There is empirical evidence suggesting that geography plays a significant role in sin stocks' financial performance. Salaber (2009) studied sin stocks in the European market and concluded that the performance of sin stocks is influenced substantially by the legal, cultural, and religious characteristics of a country. Fauver & McDonald's (2014, p.181) also found evidence that "sin stocks are treated differently in different countries, depending on the societal norms present in the country" (i.e., the valuation of the company depends on social views in a country). Arguably, the findings could be specific to a country due to cultural factors, investor characteristics, and a specific period. Thus, we need to interpret the results with caution (Kumar et al., 2011; Durand et al., 2013; Scholtens & Sievanen, 2012).

In accordance with recent trends supporting public transparency of firm activities through measurement tools such as ESG and CSR scoring, companies are affected by public acknowledgment of their actions. Several studies have researched how firms may benefit from good ESG and CSR practices in both the consumer market and the stock market. Commonly, these benefits are associated with improved reputation and limitations to a firm's risk exposure. However, critics of the recent development in rating policies ask the question: "Can firms in controversial industries be socially responsible while contributing to products seen as harmful to society?" (Cai et al., 2012, p.1)

Furthermore, Cai et al. (2012) examine the relationship between firm value and CSR engagement in sinful industries. Similar to other papers on sin firms and returns, it uses the "Triumvirate of sin" to determine sinful industries with the inclusion of firms that operate in questionable ethical practices such as weapons, oil, cement, and biotech. Measuring both the combined CSR scoring and the relative difference between strengths and weaknesses, evidence shows that CSR engagement has a positive effect on firm valuation. Their findings suggest that an interquartile increase in the CSR index is associated with an increase of 9% in firm value. Hence, their evidence suggests that firms are affected by the reputational risk that corresponds to their recent activities.

2.5 Research Questions

In our thesis, we investigate the sin market using the "Triumvirate of sin" as defined by Hong & Kacperczyk (2009). Our goal is to determine if sin stocks are influenced by increased awareness of socially responsible investment. Based on previous research, we identify that there is a lack of information regarding this topic.

Previous papers have investigated the performance of sin investing and socially responsible investment by creating portfolios based on negative screening and best-in-class strategies, in which investors choose stocks based on their relative performance (Jo et al., 2010; Lobe & Walkshausl, 2011). Typically, this approach makes use of indicators of good corporate responsibility, such as ESG and CSR ratings. Criticism of this strategy focuses on the measurement practices used in these ratings as some of the major firms involved in sinful activities have received good ratings even though their contribution to society is deemed harmful. Instead, we seek to identify the relation between SRI and sin firms by using the public commitment from institutional investors and asset owners to make use of ethical criteria. As such, we make use of the UN-PRI signatory directory as a proxy for public commitment to seek further disclosure. We state the following hypothesis:

H1: Increased public commitment to responsible investment has a negative effect on sinful firms' returns.

Society has long pushed investors to act responsibly in terms of investment, demanding that large institutional investors take responsibility by refraining from sinful investment. As discussed, Cai et al. (2012) found evidence that sinful firms with better CSR ratings received higher valuations. In line with these findings, we investigate if increased public commitment effectively leads to sin firms engaging in ESG activities.

H2: Increased public commitment to responsible investment has a positive effect on the ESG rating of sinful firms.

3. Data

In the following chapter, we present the data for our empirical research. The chapter is divided into subsections in order to provide an overview of our data collection. First, we present the data used in this thesis, which includes the financial data, collection of Fama-French factors, PRI signatories, and the selection process of sin stocks and comparable stocks. Furthermore, we discuss the exclusion of possible sin industries and the steps taken to resolve any issues with the reliability of the data.

3.1 Data Sources

We utilize Refinitiv Eikon equity screener, Orbis, and Kenneth R. French Data Library to retrieve data. Additionally, we extract signatories` data from the United Nations Principles of Responsible Investments Signatory Directory.

3.1.1 Refinitiv Eikon and Orbis

Refinitiv Eikon is a platform that provides global information about the financial markets (Refinitiv, 2022). Companies' data is primarily collected from this platform. It is noteworthy that we include both active and inactive companies from the platform in order to mitigate the survivorship bias. Orbis is a database for companies and entities across the globe (Orbis, 2022). The purpose of utilizing two platforms is to screen sin firms across both data sources and include the missing firms that are not present in Refinitiv. This approach provides 66 additional companies to our sample. After the process of selecting sin firms and comparables, we extract financial data and ESG performance from Refinitiv Eikon. However, there has been variation in historical reporting, inflicted on the basis of companies being listed and unlisted from the world's stock exchanges. This is especially noticeable for ESG, where only 36% of the firms in our sample have reported ESG performance.

3.1.2 Fama and French

We collect data on the Fama-French factors from the Kenneth R. French Data Library, which provides historical benchmarks of return. The factors are constructed using value-weighted portfolios based upon size, profitability, book-to-market, excess market return, and investment. The risk-free rate is contingent upon the returns of the one-month US treasury bill. To conduct research on geographical differences, we make use of the Fama-French 5 factors for regions such as North America, Europe, the Asia Pacific excluding Japan, and the global factors (French, 2020).

3.1.3 UN Principles of Responsible Investment

The UN-PRI provides a complete list of signatories, updated at the end of each quarter. As of January 2022, the list contains signatories from 4681 investors, of which 668 are asset owners (UNPRI, 2022b). The organization uses identification such as the name of the signatory, country, business category, and date of signing. The number of signatories is concentrated in areas commonly referred to as the Western world. The Western culture, often practiced in English-speaking countries, could imply a higher degree of public commitment to responsible investment policies. In this regard, further examination of the data shows that 218 out of 254 signatories in Oceania are located in Australia. However, institutional investors are not limited to regional investments, and stocks in undeveloped countries are tradable for most participants in the stock market. In 2022, institutional investors are estimated to account for 80% of the total equity market capitalization, making these investors highly influential (Palmer, 2022). Table 1 illustrates the global distribution of the UN-PRI agreement.

Table 1: Summary of the UN Signatory Directory

The table presents the distribution of yearly UN-PRI signatories in different regions.

Year	Africa(%)	Asia(%)	Europe(%)	North America(%)	Oceania(%)	South America(%)	Total(%)
2006	2	6	41	19	12	1	**81(1,7%)**
2007	8	4	31	8	16	4	**71(1,5%)**
2008	3	3	48	17	16	1	**88(1,9%)**
2009	6	4	60	23	12	2	**107(2,3%)**
2010	0	3	60	18	14	3	**98(2,1%)**
2011	3	4	71	22	12	3	**115(2,5%)**
2012	8	8	82	27	6	4	**135(2,9%)**
2013	7	8	62	28	3	7	**115(2,5%)**
2014	3	6	85	44	5	1	**144(3,1%)**
2015	2	14	75	44	7	1	**143(3,1%)**
2016	6	22	99	51	7	1	**186(4,0%)**
2017	7	29	141	75	20	8	**280(6,0%)**
2018	5	34	214	99	13	9	**374(8,0%)**
2019	13	62	329	170	27	21	**622(13,3%)**
2020	12	70	504	247	27	49	**909(19,4%)**
2021	29	139	602	328	57	58	**1213(25,9%)**
Total(%)	**114(2,4%)**	**416(8,9%)**	**2504(53,5%)**	**1220(26,1%)**	**254(5,4%)**	**173(3,7%**	**4681 (100%)**

3.2 Sin Sampling

The sin companies are selected based on The Refinitiv Business Classification codes (TRBC) in Refinitiv, the North American Industry Classification System codes (NAICS), and the Nomenclature of Economic Activities codes (NACE) in Orbis. These codes are unique and provide identification for the main activity of the firms. As a result, this method provides 480 companies in the relevant sin industries.

3.2.1 Tobacco

The tobacco industry is well-classified in both Refinitiv Eikon and Orbis. We decide to focus on all areas of the supply chain. Therefore, we include companies involved in the distribution, manufacturing, and sales of these products. In addition to traditional tobacco firms, there are some companies related to electronic cigarettes in the sample, such as Bang Holdings Corp. A study conducted by Jankowski et al. (2019) states that e-cigarettes contain nicotine which results in addiction by consumers. Based on the similarities between these products, we refer to these firms as a part of the tobacco industry.

3.2.2 Alcohol

The firm selection in this industry is based on several sub-categories in Refinitiv Eikon, such as “Distillers & Wineries”, “Beer, Wine & Liquor Stores”, “Brewers”, and “Pubs, Bars & Nightclubs”. However, some companies are classified as alcoholic producers but do not have alcoholic beverages as an essential part of their businesses. In order to get precise data, we use TRBC Activity Names on the companies to detect the firm's core business. Subsequentially, we compare TRBC Activity names with NAICS International Industry names to select the ones for which both classification codes indicate an alcoholic business. This process is complex as it requires a manual screen of each company's financial data. A meaningful discussion could be whether responsible investors care about the degree of sinfulness in a company (i.e., whether a firm is exclusively sinful or not). For the exclusion criteria for this thesis, we include companies where alcoholic beverages make up more than 30% of the total sales.

3.2.3 Gambling

The selection of firms in this industry is based on the same approach as in the alcohol industry. We select sub-categories from the industry classification “Casinos & Gaming”, which include “Horse and Dog race tracks” and “Lottery Operators” besides ordinary gambling. There is a great number of companies in the sub-categories, specializing in offering hotel services and casinos. We strongly believe these companies are targeting a large segment of the market who are interested in gambling. Hence, we include these companies in the sample.

3.3 Comparables

There are several approaches to distinguish a comparable sample for this thesis. For instance, it is typical to choose a comparable criteria when selecting industries and businesses in financial valuation. These criteria are often determined by the financial nature of the industry or the categorization of its activity. Among these criteria, we find industry classification, size, geography, growth rate, beta, profitability, and capital structure (CFI, 2022). Based on the number of criteria, there are split views on the comparable samples used in both valuation and research papers.

In support of Hong & Kasperczyk (2009) and Salaber (2009), we chose to use multiple criteria for firm characteristics. These criteria are industry classification and geography to create regional samples for both sin and comparable firms. The reasoning behind this is to capture the effects of similar consumption patterns. Non-alcoholic beverages are a natural substitute for alcoholic drinks and are well identified by TRBC codes. This category includes industry activity names such as “Fruit Drinks”, “Bottled water and Ice”, “Carbonated soft drinks”, “Energy drinks”, and “Coffee & tea”, which includes farming. More complicated is the identification of similar industries in regard to tobacco. However, a well-documented effect of tobacco is that increased intake of nicotine alters food intake. Scientists also claim that tobacco can act as a regulator to depress the human need for food (Chen et al., 2004). Consequently, humans that quit smoking or other substances that contain nicotine will increase their food intake, making food items a comparable industry for our thesis.

Furthermore, we determine that food items commonly used in making proper meals, such as breakfasts, lunch, and dinner, are excluded from our sample. Hence, we only include light meals, including “Snack food & Non-chocolate Confectionery”, “Bread and Bakery product manufacturing”, “Cookie, Cracker & Pasta manufacturing”, “Dairy Products", “Fruit and Vegetable Processing”, “Chocolate & Confectionery”, and “Sugar & Artificial Sweeteners". While screening sinful industries, we identify that most gambling activity on the stock market is associated with casinos that act as hotels. When considering gambling as the distinction between ordinary hotels and casinos & gambling hotels, we include the industry classification “Hotel, motels, and cruise line” as a comparable industry in this thesis. Subsequently, selecting industry activity codes representing “Hotels & Motels”, “Luxury Hotels”, “Resort Operators”, and “Cruise lines”.

Table 2: Distribution and summary statistics of sinful and comparable firms

Panel A provides an overview of the number of companies by industrial and regional distribution. Panel B provides some summary statistics for the firm characteristics of our sample, in which we report the mean, standard deviation, and the results from two-sided t-tests comparing the means of sinful and comparable firms.

Panel A: Number of firms

	Regions			
Industries	Americas	Asia	Europe	Total
Alcohol	53	137	81	271
Tobacco	29	32	8	69
Gambling	48	58	34	140
Non-alcoholic	48	120	13	181
Food Items	30	227	51	308
Hotels & Motels	19	189	49	257
Total	227	763	236	1226

Panel B: Summary statistics

N = 149 854	Sin		Comp		
Variables	Mean	St.Dev	Mean	St.Dev	T-test
Excess return	0.917	12.878	0.849	12.878	(0.175)
LogMCAP	19.570	2.543	18.298	2.263	(79.218)***
Beta	0.679	0.578	0.591	0.885	(14.517)***
PB	3.495	1.901	2.103	3.307	(62.599)***
Debt(%)	0.318	0.148	0.360	4.571	(1.149)
LogTurnover	8.852	10.144	7.716	5.541	(23.172)***

Panel A shows that Asia is the dominant region in terms of the number of companies included in the sample. Moreover, firms are concentrated in the alcoholic industry. One concern about the data is the lack of firms within the tobacco industry. A small sample size could potentially lead to high variance and inflict unreliable results in this industry. Additionally, we have compromised North America and South America into the same regional categorization as there is a lack of companies originating from South America. The distribution of the comparable sample in Panel A indicates that the sample is well diversified within the different industry sectors in terms of the number of companies. A considerable concern with our data is the lack of companies in the Americas and Europe, relative to Asia. Thus, the result of the total sample might be influenced by regional effects from Asian firms.

The results from our t-tests in Panel B indicate that characteristics such as market capitalization, beta, price-to-book, and turnover are statistically different between sinful and comparable firms.

Sizeable measurements which include market capitalization and turnover, show that sinful firms are statistically larger than comparable firms. The price-to-book ratio of sinful firms is shown to be considerably greater than comparables. Based on the theory of exclusion, sinful firms should be underpriced as investors use negative screening techniques to exclude certain industries. Our initial t-tests, however, do not support this theory. Moreover, the beta of comparable firms is statistically less than sinful firms, which indicates that ethical firms are less volatile. Our theory of sinful firms being more recession-proof than comparables based on the addictive effects of sinful products is rejected by this result.

3.4 Exclusion of Industries

We take special consideration concerning the industry "Adult Entertainment". Because of the nature of the industry, which includes activities such as strip clubs, brothels, and pornography, this is arguably one of the most sinful industries. These types of businesses are often subsidiaries of conglomerate firms. For instance, most strip clubs are part of a chain of bars and restaurants. Hence, business identification codes in Refinitiv such as "Adult entertainment" and "Adult product retailers" can not identify such firms precisely. Thus, only five listed companies operating within the industry are identified by the use of classification codes. Additionally, elaborate internet searches on adult companies wrongly identify sinfulness as firms selling preventual products such as condoms and tablets. In our assessment, these products are essential to prevent pregnancies. The screening of adult entertainment has been limited and resulted in the exclusion of this industry.

Since the legalization of cannabis began in the US during the 2010s, the country has seen a growing popularity in medical and recreational drug use. Consequently, this has led to a formal legalization of recreational use in 18 states and medical use in 37 as of February 3, 2022 (NCSL, 2022). As a result, the acceptance of cannabis farming on American farmlands has been accepted as a legal industry. Previously, the legal use of cannabis has been accepted in several countries around the world. Most recognized is the legalization in countries like Canada, Mexico, and the Netherlands making North America the largest market for cannabis in the world (Ghaedi, 2021). The global cannabis market is expected to increase its sales from $13.4 billion in 2020 to $33.6 billion by 2025 (Johnsen, 2021). The current growth has resulted in a long list of IPOs, start-ups, and M&A activity in relation to the industry (Thomson Reuters, 2022).

Cannabis and tobacco can be seen as substitutes in the smoking industry, both of which can be identified as sinful businesses (Hong & Kacperczyk, 2009). One significant difference in these industries, however, is their products` business life cycle. The tobacco industry has a long history of usage, and firms are typically seen as mature with less expectation of growth. On the contrary, cannabis is a growing industry with many opportunities to diversify its product lines and increase its consumption as recreational drug use is experiencing public acceptance. As authors of this paper, we acknowledge the definition of cannabis as a sinful industry that should be included in studies on the topic. However, limitations on reliable information regarding firm returns and characteristics are not documented in databases such as Thomsons Reuters. Hence, we cannot include this industry in our thesis.

In 2015, members of the United Nations (UN) adopted the 2030 agenda of sustainability. Following this agreement, members pledged to reduce their carbon footprint in the world, effectively reducing the amount of energy and products extracted from fossil fuels (UN, 2021). As of 2022, the oil and coal industry has been experiencing excessive positive returns and increased its production worldwide (Statista, 2022a). The proposed substitute, renewable energy, produced with climate-friendly production has also seen an increase in recent years. The latter energy source is forecasted to increase consumption from 27 exajoules in 2018 to 161 exajoules by 2050 (Statista, 2020). Both effects indicate that the global need for energy is rapidly increasing, leading to mass production of climate and non-climate-friendly energy.

Climate change and the effects of excessive emissions into the atmosphere have long been recognized as a problem in the present and in the years to come. As both governments and public advocates for climate change are being proactive as environmentalists, the increased popularity will eventually lead to public consensus of fossil fuels as a sinful industry. Currently, society is too reliant on products stemming from oil production to deem the industry as sinful. This paper does not consider oil and gas production as a sinful industry. However, future research might want to include this industry when other substitutes have gained the capability to maintain the global need for energy.

3.5 Data Cleansing

We clean the dataset due to missing and unreliable data on returns, market capitalization, and ESG rating. As a result, our sample contains 1226 companies with monthly returns and 455 companies with annual ESG ratings. Noteworthy, we use the specifications of Salaber (2009) to only include companies with a return series covering at least 9-months of continuous data. Additionally, stocks with more than three continuous zero-returns periods are either adjusted or discarded from the sample, as suggested by Trinks & Scholtens (2015). If the zero-returns period does not persist for more than three months, we interpret the zero-returns as "incidental" and replace them with the market return. However, if the condition is not satisfied, we adjust the series by deleting up to the point for which the condition is satisfied or remove the stock altogether. Return data that exceeds 200% monthly is investigated manually, and all observations that are not credible are removed. After this process, we are left with the data as listed in Table 2.

4. Methodology

In this section, we present the methods we use in order to estimate the results from our two hypotheses. First, we describe how we construct the difference portfolio for our summary statistic. Second, we present the regression models and the sets of control variables for each regression.

4.1 Difference Portfolio

We run a difference portfolio in line with Hong & Kacperczyk (2009) to determine if sin stocks outperform their comparables. Additionally, we expand the initial analysis by running tests on both geographical location and industrial affiliation.

In accordance with the Fama-French factors retrieved from the Kenneth French data site, which uses a value-weighted approach for estimation, we have decided to choose the same method. The value-weighted approach is applied by taking notice of each company's market capitalization and its current market return to estimate a single return or portfolio value. This implies that large companies with high market capitalization are going to have a greater influence on the series return data. The choice of a value-weighted approach is in line with previous research on the topic (Hong & Kacperczyk, 2009; Salaber, 2009; Trinks & Scholtens, 2015).

Returns are calculated using the monthly return index retrieved from Refinitiv. The total return index is calculated by incorporating the price change and any relevant dividends for the specific period. Compounded daily return for the specified period is used to calculate total return and it is effectively the dividend reinvested (Reuters, 2022). We construct difference portfolios for the total sample, industries, and regions. The value-weighted portfolios are constructed the following way:

$$Portfolio\ Weighting\ (w_{ij,t}) = \frac{Company`s\ market\ capitalization\ (Cap_{i,t})}{Portfolio`s\ market\ capitalization\ (Cap_{j,t})}$$

$$Portfolio\ return\ (r_{p,t}) = \sum_{i=1}^{N} (r_{i,t} * w_{ij,t})$$

Where:
$Cap_{i,t}$ = Market Capitalization of company at time t
$Cap_{j,t}$ = Market Capitalization of industry/region/total sample
$r_{i,t}$ = Monthly return of company at time t
$r_{p,t}$ = Monthly return of portfolio at time t
$w_{ij,t}$ = Weighting of company within the specific portfolio at time t

(4.1)

The difference portfolios take the value-weighted returns from the sin portfolios net the returns from the comparable portfolios. The excess return is then used as the dependent variable in the Fama-French regressions. In line with Blitz & Fabozzi (2017), we apply the Fama-French 5-factor plus momentum model to include all risk factors in our regressions. Additionally, we subtract each factor stepwise to illustrate the effects of additional risk factors.

4.2 Fama and MacBeth

We follow the model used by Hong & Kacperczyk (2009) and employ the method of Fama-MacBeth (1973) with the inclusion of the Newey and West (1987) standard errors to mitigate serial correlation in the error term. Fama and MacBeth represent a method to account for time-varying characteristics and cross-sectional correlation in panel data. Our study is based on several firms' development over time, which implies that there is a possibility of cross-sectional correlation. For instance, firms exposed to a similar environment might make similar decisions at the same point in time. The method implies a two stage-regression. First, each asset's dependent variable is regressed on the model factors in N time-series regressions to estimate the betas of the asset. Second, the dependent variable is regressed over a fixed time period against the proposed betas to estimate the risk factor premium. Finally, we calculate the mean of all the T risk factor premiums to get a single estimate for each risk factor. As such, we implement an equally-weighted approach to determine our coefficient.

1. $y_{it} = \alpha_i + \beta_{i,F1}F_{1,t} + \beta_{i,F2}F_{2,t} + \ldots + \beta_{i,Fm}F_{m,t} + \varepsilon_{i,t}$
2. $y_{it} = \gamma_{t,0} + \gamma_{t,1}\hat{\beta}_{i,F1} + \gamma_{t,2}\hat{\beta}_{i,F2} + \ldots + \gamma_{t,m}\hat{\beta}_{i,Fm} + \varepsilon_{i,t}$
3. $\hat{\gamma} = \frac{1}{T}\sum_{t=1}^{T}\hat{\gamma}_{t,m}$

(4.2)

The implementation of the method requires a series of regressions on the cross-section of companies' stocks. With monthly and yearly data, this will involve a single regression on each time period. To extract the coefficient of the Fama and MacBeth regression we take the time-series averages and standard errors from each time period's cross-sectional regression. Utilizing a t-test we determine if the mean of the cross-sectional coefficients is equal to zero.

The model proposed for estimating the effects of UN-PRI Signatories on sin stocks' returns is as follows:

$$R_{it} - R_{ft} = a_0 + a_1 SinStocks_{it} + a_2 PRI_{t-1} + a_3(PRI_{t-1} * SinStocks_{it}) + aX_{it-1} + e_{it}, i = 1 \ldots N$$

(4.3)

R_{it} and R_{ft} is the monthly return of each asset and the risk-free rate. $Sinstocks_{it}$ is a factorial variable, which is 1 if the asset is a sin stock or 0 if otherwise. PRI_{t-1} is the number of signatories in the UN-PRI during one month lagged by one time period. We construct two versions of the latter variable. At first, we apply the change in signatories for each time period. Secondly, we calculate the accumulated number of signatories from the start of the initiative to the respective period. (PRI_{t-1}*$Sinstocks_{it}$) is the interaction term between sin stocks and signatories. This is the important variable of these regressions, and the basis of our hypothesis. X_{it-1}includes several of our control variables lagged by one month. These control variables consist of Debt, Price to Book, Beta, the natural logarithm of Market capitalization, and Turnover. Beta is constructed using a nine-month rolling average of the previous stock returns against the market.

To test our second hypothesis, whether the ESG performance of a firm is unaffected by UN-PRI signatories, we implement the same Fama-MacBeth model with slight modifications.

$$ESG_{it} = a_0 + a_1 SinStocks_{it} + a_2 PRI_{t-1} + a_3 (PRI_{t-1} * SinStocks_{it}) + aX_{it-1} + e_{it}, i = 1 \dots N \quad (4.4)$$

ESG_{it} is the yearly ESG score of each asset. $Sinstocks_{it}$, PRI_{t-1} and (PRI_{t-1}*$Sinstocks_{it}$) have the same interpretation as stated in Equation 4.3 but with an annual calculation. X_{it-1} includes several of our control variables lagged by one year. These control variables consist of Price to Book, Beta, Debt ratio and the natural logarithm of market capitalization. Beta is constructed using a three-year rolling average of the previous stock returns against the market.

4.3 Fixed Effect Panel Regression

In addition to Fama and MacBeth, we estimate our model with the application of fixed effect estimators. Wooldridge (2018) argues that Fixed Effect estimators are preferred when dealing with unbalanced data. Thus, our sample which contains companies that frequently leave or enter the market is suitable for this estimation method. More importantly, fixed effect provides a way of dealing with unobserved time-invariant heterogeneity and effectively reduces omitted variable bias when controlling for firm-specific effects. This process removes the within-time averages of all the variables included in the model. As such, it removes the unobserved time-invariant heterogeneity in addition to all the other fixed effects. Subsequently, this method proves to be effective when controlling for industrial and regional effects.

5. Analysis

In this chapter, we present the findings of the analysis. First, we present descriptive statistics related to our chosen regions and industry groups, both with the intent to illustrate the distribution of stock performance and ESG scoring. This presentation is based on a combination of graphical displays and tabular form to provide evidence of a sin premium. Thereafter, we analyze the results from our first hypothesis, which seeks to provide evidence of a socially responsible effect on sinful returns. Lastly, we interpret the results from our second hypothesis, which investigates the relation between UN-PRI signatories and ESG performance. In addition, we include Fama French regressions to determine if financial risk factors can identify a sinful premium.

5.1 Descriptive Statistics

In this section, we present evidence that sinful firms historically have outperformed comparables in terms of excess return on the stock market. As such, we present summary statistics for the cumulative returns of our portfolios and individual stock performance. Additionally, we highlight the ESG performance of sinful and ethical firms in different time periods. The chosen period for our investigation follows the establishment of the UN-PRI and its initiative to encourage socially responsible investment, 2006-2021.

5.1.1 Overview of Return and ESG Performance

Panel A shows that the total sin portfolio has yielded higher returns than the comparable portfolio with an average premium of 0.35% (Table 3). This results in a higher Sharpe ratio, which corresponds to a higher risk-adjusted return. This is in line with the previous studies conducted by Hong & Kacperczyk (2009) and Fabozzi et al. (2008). However, the European and Asian comparable portfolios have outperformed their respective sin portfolios. Overall, the sin portfolios have higher Sharpe ratios than the comparable portfolios, except for Asia. The greatest sin premium is associated with the American sin portfolio, which historically has provided an abnormal return of 0.88% monthly.

Table 3: Return Statistics

Panel A reports the value-weighted return statistics for portfolios constructed on market capitalization, which is used in the Fama and French models to determine a sinful premium. Panel B is the equally-weighted return statistic for the application of panel data regression used in Fama and MacBeth, and fixed effect.

Panel A: Value-weighted performance

Summary statistic	Mean	Std. dev	Sharpe Ratio	Min	Max
Total sample					
Comparable firms	1,21	3,55	0,32	-17,24	11,87
Sin firms	1,56	4,01	0,36	-13,41	12,26
Americas					
Comparable firms	1,10	3,98	0,25	-18,35	12,48
Sin firms	1,98	5,10	0,37	-16,94	14,95
Asia					
Comparable firms	1,70	4,32	0,37	-14,27	15,06
Sin firms	1,51	4,92	0,28	-15,18	18,72
Europe					
Comparable firms	1,91	4,85	0,17	-17,90	20,19
Sin firms	1,16	4,32	0,24	-11,73	14,68

Panel B: Equally-weighted performance

Summary statistic	Mean	Std. dev	Min	Max
Total sample				
Comparable firms	0,85	12,88	-44,06	75,13
Sin firms	0,92	12,88	-44,23	75,00
Americas				
Comparable firms	0,65	13,49	-43,95	75,00
Sin firms	0,84	15,65	-44,17	75,00
Asia				
Comparable firms	0,91	13,16	-43,83	75,13
Sin firms	1,02	12,88	-44,23	74,89
Europe				
Comparable firms	0,66	11,06	-44,06	74,19
Sin firms	0,77	10,68	-43,91	75,00

The risk of sinful firms, measured by the standard deviation of the portfolios, is generally higher than the comparable portfolios. We believe this effect is due to the risk associated with heavy regulations on sinful products and services.

It is shown in Panel B that the historical individual performance of sin stocks has outperformed ethical firms, both as a whole and regional. Our sample has been winsorized at the 1% level in order to reduce the effect of possible spurious outliers. Hence, the possible combinations of extreme maximum and minimum values have been limited. Following the discussion of the value-weighted portfolios, we identify that sinful firms still outperform comparable firms on an individual level.

Additionally, the greatest average sin premium is achieved in the Americas, at 0.19% monthly. Interestingly, sinful firms in Asia and Europe are considered less volatile despite having higher average returns.

Table 4: ESG statistics

The table presents descriptive statistics of ESG performance in different time periods. The numbers are constructed with annually reported ESG statistics.

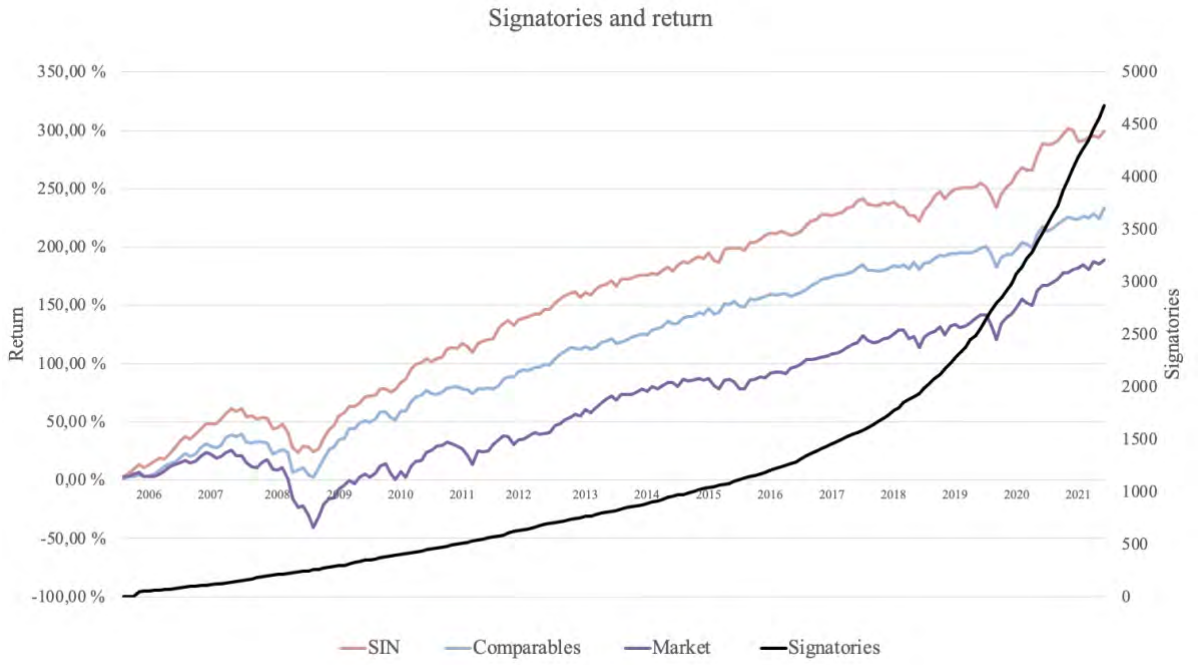
Summary statistic	Mean	Median	Min	Max	Observations
2006-2010					
Comparable firms	41,18	36,03	3,29	88,48	318
Sin firms	41,13	38,38	4,44	92,27	281
2011-2015					
Comparable firms	46,29	46,76	0,99	92,64	491
Sin firms	44,90	43,32	2,99	87,38	438
2016-2021					
Comparable firms	49,50	52,00	0,78	93,57	1008
Sin firms	46,82	46,62	0,66	92,12	934

Table 4 indicates that the average ESG rating of both, sin and comparable firms have increased during our sample period. However, the increase does not necessarily mean that the firms are less sinful. As discussed in sub-chapter 2.1, the rating system in which ESG scores are computed is questionable. Nevertheless, the green shift has led to improvement in ESG performance and increased the number of firms receiving ratings. The table further highlights a significant difference between the minimum and maximum values of ESG. Nevertheless, it is noteworthy that firms with low ratings initially have improved throughout the years. For instance, Beijing Shunxin Agriculture Co Ltd improved its rating from 0.66 in 2019 to 31.64 by 2021.

Additionally, the number of companies that receive ESG ratings has tripled from the beginning of our sample period. We believe this increase could be explained by the growing popularity of ESG-related funds and investing strategies that implement ESG criteria when selecting firms. In relation, it is predicted that ESG investing will reach $50 trillion by 2025, which accounts for a third of all global investments (Maxwell, 2022). Lastly, we have constructed descriptive statistics on regions using similar time periods. The results are reported in appendix A.

5.1.2 Cumulative Returns

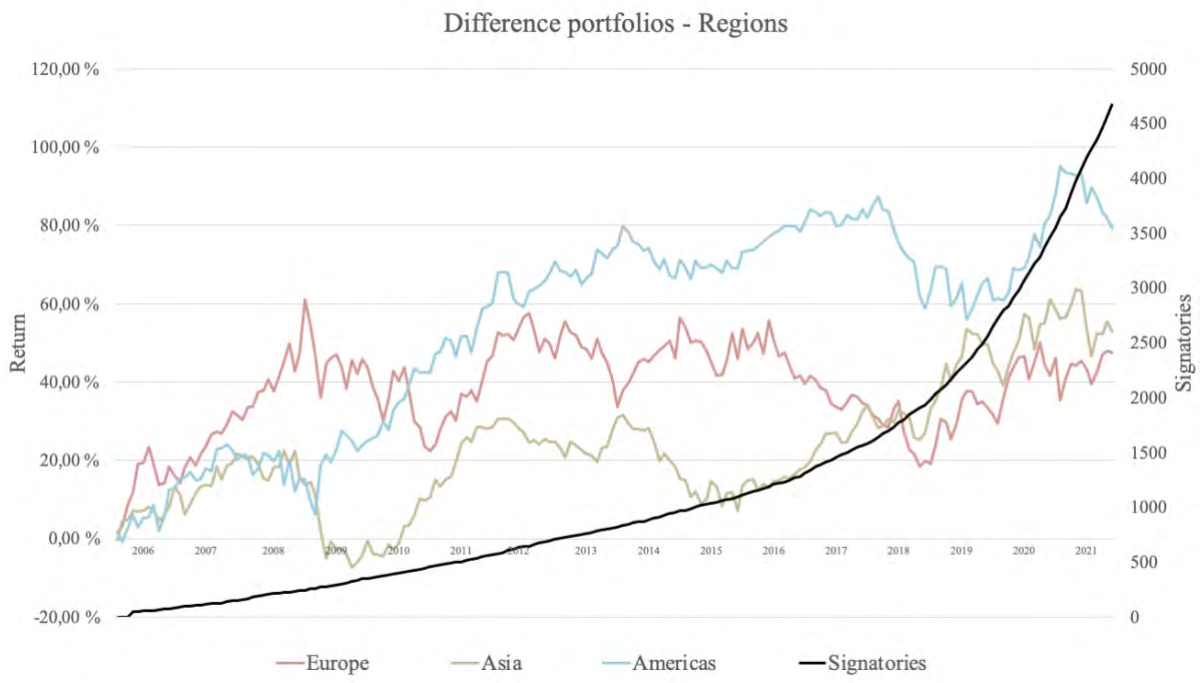
Figure 1: Total portfolios and UN-PRI signatories
The figure illustrates the development of sinful and comparable returns, as well as the market in the selected time range. The development in the UN-PRI signatories is also highlighted.



The most prominent finding in Figure 1 is that the sin portfolio has outperformed the ethical portfolio from 2006 until the end of 2021. The figure further shows that both the sin portfolio and the ethical portfolio, have outperformed the market. It is noteworthy that the fluctuations of all portfolios are similar. This is evident during the financial crisis occurring from late-2007 until mid-2009, and the outbreak of the coronavirus in late 2019. Interestingly, the relative drop from the peak before the financial crisis suggests that both the sin and ethical portfolios have defensive traits. The number of UN-PRI signatories has increased significantly since 2018. However, we cannot identify a clear indication of a decrease in the growth rate of sin stock.

Figure 2: Regional portfolios and UN-PRI signatories

The figure shows the development of difference portfolios in Europe, Asia, and the Americas. The portfolios are constructed by going long in the sinful firms and short in the comparable firms. Additionally, the development in the global UN-PRI signatories is illustrated.

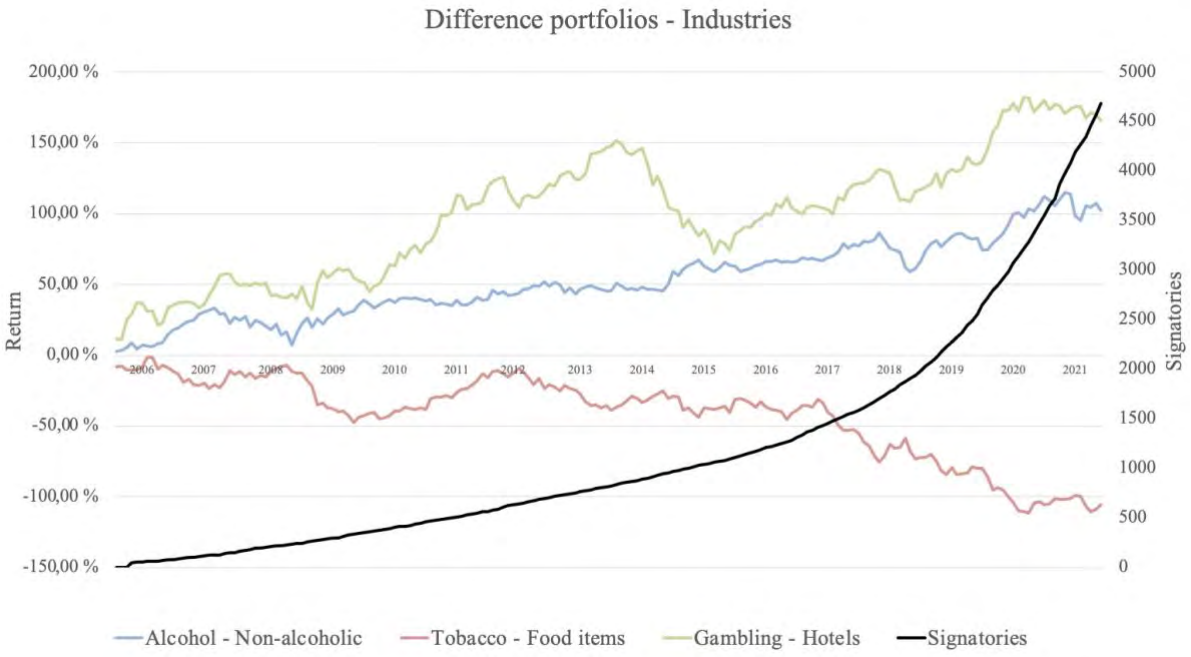


In order to investigate the difference between sinful and ethical investment further, we take a look at the regional difference portfolios. Figure 2 illustrates that investing in sinful stocks has provided a premium in all regions. However, the European premium has not increased since late 2008. Historically it is shown that the outperformance of sin stocks is contingent on specific time periods. Regional differences between the portfolios could possibly reflect that American sin firms are less affected by the SRI movement.

Moreover, American and European signatories are accountable for around 30 and 54 percent of all the signatories, respectively. As such, there is likely a stronger initiative toward SRI in Europe than in other regions. As of the second quarter of 2021, $1.83 trillion of European assets were placed into sustainable funds. In comparison, this number was just $300 billion of American assets (Salmon, 2021).

Figure 3: Industrial portfolios and UN-PRI signatories

The figure highlights the development in the industrial difference portfolios. The portfolios are constructed by going long in the sinful industries and short in the ethical industries. The development in the UN-RPI signatories is also highlighted.



Furthermore, we construct difference portfolios based on industries in order to identify possible premiums for industrial affiliation. We observe that alcohol and gambling have outperformed their respective comparable industries. On the contrary, tobacco has not outperformed food items. This is especially noticeable after 2012, where tobacco has gone from -5% to around -107% in accumulated return. A possible explanation could be a decrease in the number of tobacco users due to stronger regulations and increased awareness of health issues associated with smoking. According to the World Health Organization, the percentage of tobacco users in the world has decreased from 32.7% in 2000 to 22.3% in 2020. Additionally, we identify that the recent performance of all portfolios has stabilized. Thus, it can be suggested that both sinful and comparable industries are equally affected by Covid-19. For instance, travel restrictions have specifically targeted hotels and casinos due to fewer visitors, while lockdown has decreased alcohol consumption in bars and restaurants.

5.2 Regression Results

In the following section, we present the results from our regressions. Our objective is to determine if the loss of institutional ownership reduces total return and induces changes in the ESG rating of sinful businesses. In order to achieve this, we apply the Fama-MacBeth method and fixed effect model. Specifically, we are most interested in the interaction term between the categorization of sin and the UN-PRI signatories. First, we will present the regression result from the analysis of stock return. Lastly, we will present the regression results from the ESG rating in a similar fashion.

5.2.1 Return

In this subsection, we present the findings regarding the PRI signatories' effect on sin firms' stock returns. The main analysis is performed on the total sample based on the Fama-MacBeth regression and fixed effect models. The reason for utilizing two methods is to reduce the omitted variable bias of the analysis. First, we present the results of the full sample based on the methodology of Fama-MacBeth. As such, we report the results of an initial model where we seek to identify a sinful premium. Thereafter, we present the effects of the UN-PRI initiative from our main regression model.

Initially, our findings indicate that sinful firms have outperformed comparables between 2006-2021 (See Table 5). The alphas estimated from the Fama-French models are significant at the 10% level and are consistent with the results from Hong & Kacperczyk (2009). However, these results only hold when estimated with at least five risk factors. The suggested premium for investing in sin stocks yields an average monthly return of 0.31%. In comparison, the latter paper proposed a premium of 0.29%. Nevertheless, when estimated with the Fama and MacBeth method and an equally-weighted portfolio, it seems that the existence of a sin premium is neither supported nor contradicted. The latest finding is supported by Blitz & Fabozzi (2017) who are unable to identify any premium for unethical investments.

Table 5: Initial Regression on the Sinful Premium

Panel A reports the results from a value-weighted Fama French regression using the difference approach. As such it takes the sinful return net the comparables return in a zero-net investing strategy. **Panel B** reports the regression result from the methodology of Fama and MacBeth (1973) with Newey-West standard errors (1987). SIN_Dummy is a factorial variable and refers to either 1 if the firm is sinful or 0 otherwise. All remaining variables control for firm characteristics such as the natural logarithm of market capitalization, beta, price to book (PB), debt ratio, and the natural logarithm of turnover. The return has been regressed on the previous monthly value of all variables.

Panel A: Difference Portfolio

	Alpha	MKT-rf	SMB	HML	RMW	CMA	MOM
Sin - Comp	0.314*	0.022	0.195**	-0.075	-0.060	-0.122	0.027
	(0.182)	(0.044)	(0.079)	(0.079)	(0.103)	(0.131)	(0.058)
Sin - Comp	0.323*	0.018	0.194**	-0.090	-0.059	-0.114	
	(0.181)	(0.044)	(0.079)	(0.072)	(0.103)	(0.130)	
Sin - Comp	0.278	0.030	0.210***	-0.127**			
	(0.174)	(0.042)	(0.075)	(0.061)			

Panel B: Excess return of SIN

	Total	Europe	Americas	Asia	Alcohol	Tobacco	Gambling
SIN_Dummy	-0.073	0.114	0.375	-0.112	-0.042	-0.303	-0.058
	(0.112)	(0.168)	(0.279)	(0.133)	(0.183)	(0.249)	(0.228)
Beta	0.024	-0.088	0.217	0.026	0.248	0.200	-0.216
	(0.130)	(0.192)	(0.330)	(0.150)	(0.175)	(0.197)	(0.132)
LogMCAP	0.298***	0.223***	0.471***	0.355***	0.193***	0.384***	0.330***
	(0.054)	(0.068)	(0.180)	(0.064)	(0.067)	(0.075)	(0.063)
PB	-0.045***	-0.050*	-0.778**	-0.056***	-0.021	-0.063***	-0.030
	(0.016)	(0.027)	(0.329)	(0.019)	(0.027)	(0.023)	(0.024)
Debt	0.330	-0.078	1.195	0.354	0.173	0.587	0.264
	(0.226)	(0.398)	(1.008)	(0.260)	(0.406)	(0.417)	(0.254)
LogTurn	-0.061**	-0.043	-0.031	-0.080*	-0.020	-0.113***	-0.071**
	(0.030)	(0.036)	(0.084)	(0.040)	(0.040)	(0.039)	(0.034)
Constant	-4.115***	-2.930**	-7.806**	-4.808***	-2.588**	-5.149***	-4.717***
	(0.933)	(1.131)	(3.333)	(1.111)	(1.146)	(1.214)	(1.031)

These findings could arguably indicate that the sinful premium from previous papers of Hong & Kacperczyk (2009) and Fabozzi et al. (2008) is not coherent with current historical evidence as both papers are estimated within a sample period of 1965-2006 and 1970-2007, respectively. Based on our sample period of 2006-2021, the negated effects of a sinful premium could possibly be explained by the growing popularity of socially responsible investments that occurred after the initial papers were written. Alternatively, the independent variables in Fama and MacBeth are unable to control for common risk factors as proposed by Fama and French (2015).

Table 6: Fama and MacBeth regression on Return – full sample

The table reports coefficients obtained from cross-sectional regressions of return and their coherent standard errors. **Panel A** reports the monthly signatory effect on stock return using the Fama and MacBeth methodology (1973) estimated with Newey-West standard errors (1987). **Panel B** applies the same methodology with the use of the total number of signatories that have been accumulated during the sample period: 2006-2021. SIN_Dummy is a factorial variable and refers to either 1 if the firm is sinful or 0 otherwise. Monthly PRI is the monthly signatories from the UN-PRI, whereas Total PRI is the accumulated amount. The coefficient for SIN_PRI M and SIN_PRI_T is the interaction term between the categorization of sin and UN-PRI signatories. All remaining variables control for firm characteristics such as the natural logarithm of market capitalization, beta, price to book (PB), debt ratio, and the natural logarithm of turnover. The return has been regressed on the previous month's value of all variables.

Panel A: Monthly Signatories

	1	2	3	4	5	6
SIN_Dummy	-0.012	-0.012	-0.011	-0.008	0.000	-0.003
	(0.013)	(0.012)	(0.012)	(0.010)	(0.011)	(0.009)
Monthly PRI	0.012	-0.132	-0.213*	-0.323***	0.075	0.072
	(0.136)	(0.116)	(0.121)	(0.110)	(0.046)	(0.050)
SIN_PRI M	-0.040***	-0.040***	-0.037**	-0.023	0.007	0.002
	(0.013)	(0.015)	(0.015)	(0.014)	(0.015)	(0.015)
Beta	0.128	0.142	0.107	0.056	0.091	
	(0.137)	(0.124)	(0.123)	(0.109)	(0.107)	
LogMCAP	-0.101*	0.101***	0.125***	0.192***		
	(0.057)	(0.035)	(0.036)	(0.033)		
PB	0.145***	0.158***	0.174***			
	(0.018)	(0.018)	(0.019)			
Debt	-1.429***	-1.019***				
	(0.224)	(0.180)				
Log Turn	0.151***					
	(0.034)					
Constant	0.052	-0.000	-0.022	-0.093	0.031	0.033
	(0.047)	(0.032)	(0.049)	(0.085)	(0.026)	(0.029)

Panel B: Total Signatories

	1	2	3	4	5	6
SIN_Dummy	-0.001	-0.002	-0.002	-0.003	0.008	0.005
	(0.007)	(0.007)	(0.007)	(0.008)	(0.008)	(0.005)
Total PRI	-0.002	-0.007*	-0.009**	-0.012***	0.002	0.001
	(0.004)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)
SIN_PRI T	-0.002***	-0.002***	-0.001**	-0.001*	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
Beta	0.128	0.142	0.107	0.056	0.091	
	(0.137)	(0.124)	(0.123)	(0.109)	(0.107)	
LogMCAP	-0.101*	0.101***	0.125***	0.192***		
	(0.057)	(0.035)	(0.036)	(0.033)		
PB	0.145***	0.158***	0.174***			
	(0.018)	(0.018)	(0.019)			
Debt	-1.429***	-1.019***				
	(0.224)	(0.180)				
Log Turn	0.151***					
	(0.034)					
Constant	0.052	-0.000	-0.022	-0.093	0.031	0.033
	(0.047)	(0.032)	(0.049)	(0.085)	(0.026)	(0.029)

Panel A and B imply that the return of sinful firms is negatively affected by an increase in the UN-PRI signatories (Table 6). Both monthly and total signatories are highly significant at the 1% level when controlling for multiple independent variables. An increase in the number of monthly and total signatories is estimated to reduce returns of sinful firms by a monthly average of -0.040% and -0.002%, respectively. The economical size of these estimates suggests that 10 signatories monthly, will reduce the average return by 0.400%. Effectively, this is a reduction of almost half the average monthly return of 0.917%. The coefficients of price to book, debt, and the natural logarithm of turnover are all highly significant. Price to book and turnover is positively correlated, while an increase in debt to assets ratio inflicts a negative effect on return. The latter results are consistent with modern valuation practices.

In sum, we fail to reject our initial hypothesis that sinful firms are negatively affected by increased public commitment to responsible investment. This supports our theory that the sinful return premium has diminished as institutional investors have incorporated the use of ethical criteria when selecting stocks. For instance, investing strategies that rely on the use of measurements such as ESG could potentially be the underlying cause.

To verify our results, we estimate the model using the fixed effects method with clustered standard errors that are able to remove firm-specific effects from the error terms. Fama and MacBeth traditionally weight each time period equally, whereas fixed effects have a tendency to give greater weights to time periods with more observations. Therefore, in an unbalanced dataset, these two methods will differ when estimating the coefficients (Petersen, 2008). Nevertheless, regression results from Table 7 report highly significant results when we account for firm, regional, industrial, and two-way fixed effects. We estimate the two-way fixed effect by incorporating both firm and time fixed effects. Both the monthly and the total signatories' effects on sin stocks are significant at the 1% level. The total signatories' effect on industrial and regional fixed effect are significant at the 5% level. However, fixed effects suggest that the magnitude of the coefficients is exaggerated in Fama and MacBeth. The fixed effect regression suggests a negative effect on sin stocks by an estimate of -0.011% for each monthly signatory. This effect is reduced when we account for regional and industrial effects, in which the estimates suggest a negative effect of –0.0068% monthly. Thus, the latter results diminish the economic significance of the initiative.

Table 7: Fixed effect regression on Return – full sample

The table reports panel data regression result with fixed effect estimators. We perform multiple analyses that emphasize firm, regional, industrial and two-way fixed effects. **Panel A** reports the monthly signatory effect on stock return. **Panel B** applies the same methodology with the use of the total number of signatories that have been accumulated during the sample period: 2006-2021. PRI M is the monthly signatories from the UN-PRI, whereas Total PRI is the accumulated amount. The coefficient for SIN_PRI M and SIN_PRI_T is the interaction term between the categorization of sin and UN-PRI signatories. All remaining variables control for firm characteristics such as the natural logarithm of market capitalization, beta, price to book (PB), debt ratio, and the natural logarithm of turnover. The return has been regressed on the previous monthly value of all variables.

Panel A: Monthly Signatories

	1	2	3	4
Monthly PRI	0.0041**	0.0022	0.0025*	-0.0246***
	(0.0017)	(0.0015)	(0.0015)	(0.0069)
SIN_PRI M	-0.0114***	-0.0068***	-0.0068***	-0.0114***
	(0.0028)	(0.0025)	(0.0025)	(0.0027)
Beta	0.0685	0.0098	0.0186	-0.0099
	(0.0635)	(0.0524)	(0.0520)	(0.0620)
LogMCAP	1.2394***	0.1125***	0.1361***	1.1775***
	(0.0824)	(0.0208)	(0.0218)	(0.0835)
PB	0.2011***	0.1506***	0.1582***	0.1971***
	(0.0230)	(0.0167)	(0.0161)	(0.0220)
Debt	0.0129	0.0090	0.0092	0.0090
	(0.0106)	(0.0117)	(0.0117)	(0.0104)
Log Turn	0.0732***	0.0156**	0.0176**	0.0477***
	(0.0120)	(0.0074)	(0.0075)	(0.0118)
Constant	-23.5579***	-1.9436***	-1.6917***	-16.4067***
	(1.5398)	(0.4147)	(0.3743)	(1.6039)

Panel B: Total Signatories

	1	2	3	4
Total PRI	0.0001***	0.0001***	0.0001***	-0.0005***
	(0.0000)	(0.0000)	(0.0000)	(0.0002)
SIN_PRI T	-0.0003***	-0.0001**	-0.0001**	-0.0003***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Beta	0.0674	0.0070	0.0163	-0.0103
	(0.0633)	(0.0523)	(0.0520)	(0.0620)
LogMCAP	1.2325***	0.1062***	0.1301***	1.1793***
	(0.0825)	(0.0209)	(0.0218)	(0.0834)
PB	0.2013***	0.1506***	0.1582***	0.1969***
	(0.0231)	(0.0166)	(0.0161)	(0.0220)
Debt	0.0129	0.0089	0.0091	0.0090
	(0.0106)	(0.0117)	(0.0117)	(0.0104)
Log Turn	0.0768***	0.0210***	0.0226***	0.0475***
	(0.0123)	(0.0075)	(0.0076)	(0.0118)
Constant	-23.5021***	-1.9248***	-1.6967***	-16.4368***
	(1.5382)	(0.4151)	(0.3738)	(1.6030)
Model specifications:				
Fixed Effect	Firm	Region	Industry	Twoway
Cluster	Firm	Firm	Firm	Firm
Observations	149 854	149 854	149 854	149 854

The rationale for performing fixed effects on regions and industries is to reduce any effects that are specific to certain industries and locations. As such, we are able to control for omitted variable bias in the model. Table 7 indicates that the significance of the interaction term is not contingent on regional and industrial differences. Due to the range of our time period, we run a two-sided regression to control for fixed effects in both time and firm. As such, we are able to remove any financial event that is not attributable to the morality of the firm. For instance, it is reasonable to believe that an event such as the coronavirus will reduce the financial performance of casinos and hotels in a similar fashion. The results of the two-sided regression support the initial finding. Hence, controlling for the additional time-specific effects does not change neither the significance nor the estimate of the interaction term.

5.2.2 ESG

In this section, we present the findings regarding the PRI signatories' effect on the sin firms' ESG score. The approach for performing the analysis is the same as in the previous sub-chapter. We run regressions on the main sample with the application of two models (See Section 5.2.1 for more details).

Table 8 shows no significant relationship between the PRI signatories and the ESG score of sin firms. Moreover, market capitalization and debt are significant in both panels. This seems reasonable, as there is an incredible amount of pressure on large firms to become sustainable. Assumingly, firms with high levels of debt would probably be required to improve their ESG scores in order to borrow capital from ESG-conscious banks and investors. Lastly, the variable of PRI signatories itself is significant in all models. Thus, it could be suggested that a negative effect on ESG exists, regardless of the state of morality. Alternatively, ESG rating agencies could have revised their scoring system and implemented stricter policies. Nevertheless, based on the results in the table we reject our second hypothesis, which implies that increased public commitment measured by UN-PRI signatories does not affect the ESG rating of sinful firms. Furthermore, our base regression in Table 8 tests whether there is any significant difference in the ESG scores of sinful and comparable firms. Surprisingly, the result indicates that the sinfulness of the company has no effect on the ESG rating.

Table 8: Fama and Macbeth regression on ESG – full sample

The table reports coefficients obtained from cross-sectional regressions of ESG scores and their coherent standard errors. **Panel A** reports the yearly signatory effect on ESG scores using the Fama and Macbeth methodology (1973) estimated with Newey-West standard errors (1987). **Panel B** applies the same methodology with the use of the total number of signatories that have been accumulated during the sample period: 2006-2021. SIN_D is a factorial variable and refers to either 1 if the firm is sinful or 0 otherwise. Yearly PRI is the yearly signatories from the UN-PRI, whereas Total PRI is the accumulated amount. The coefficient for SIN_PRI Y and SIN_PRI_T is the interaction term between the categorization of sin and UN-PRI signatories. All remaining variables control for firm characteristics such as the natural logarithm of market capitalization, beta, price to book (PB), and debt ratio. ESG score has been regressed on the previous year's value of all variables.

Panel A: Yearly Signatories

	1	2	3	Base
SIN_D	0.208	0.220	0.214	0.061
	(0.207)	(0.219)	(0.213)	(1.142)
Yearly PRI	-1.266***	-1.103***	-1.093***	
	(0.309)	(0.257)	(0.254)	
SIN_PRI Y	0.007	0.009	0.009	
	(0.010)	(0.010)	(0.010)	
MCAP (log)	9.448***	8.712***	8.657***	9.448***
	(0.565)	(0.486)	(0.485)	(0.565)
Beta	-0.890	-0.754	-0.762	-0.890
	(0.514)	(0.480)	(0.475)	(0.514)
PB	-0.008	-0.018		-0.008
	(0.024)	(0.024)		(0.024)
Debt	3.659**			3.659***
	(1.151)			(1.151)
Constant	-13.086	-12.794	-12.684	-167.890***
	(13.013)	(12.722)	(12.613)	(15.328)

Panel B: Total Signatories

	1	2	3	Base
SIN_D	0.208	0.220	0.214	0.061
	(0.207)	(0.219)	(0.213)	(1.142)
Total PRI	-0.457*	-0.402*	-0.399*	
	(0.216)	(0.193)	(0.192)	
SIN_PRI T	0.007	0.007	0.007	
	(0.006)	(0.006)	(0.006)	
MCAP (log)	9.448***	8.712***	8.657***	9.448***
	(0.565)	(0.486)	(0.485)	(0.565)
Beta	-0.890	-0.754	-0.762	-0.890
	(0.514)	(0.480)	(0.475)	(0.514)
PB	-0.008	-0.018		-0.008
	(0.024)	(0.024)		(0.024)
Debt	3.659**			3.659***
	(1.151)			(1.151)
Constant	-13.086	-12.794	-12.684	-167.890***
	(13.013)	(12.722)	(12.613)	(15.328)
Observation	3 210	3 271	3 272	3 210

Table 9: Fixed effect regression on ESG – full sample

The table reports panel data regression result with fixed effect estimators. We perform multiple analyses that emphasize firm, regional, industrial and two-way fixed effects. **Panel A** reports the monthly signatory effect on ESG performance. **Panel B** applies the same methodology with the use of the total number of signatories that have been accumulated during the sample period: 2006-2021. PRI M is the monthly signatories from the UN-PRI, whereas Total PRI is the accumulated amount. The coefficient for SIN_PRI M and SIN_PRI_T is the interaction term between the categorization of sin and UN-PRI signatories. All remaining variables control for firm characteristics such as the natural logarithm of market capitalization, beta, price to book (PB), debt ratio, and the natural logarithm of turnover. The return has been regressed on the previous monthly value of all variables.

Panel A: Yearly Signatories

	1	2	3	4
Yearly PRI	0.027***	0.018***	0.016***	0.041***
	(0.002)	(0.002)	(0.002)	(0.002)
SIN_PRI Y	-0.001	-0.005	-0.004	-0.000
	(0.002)	(0.003)	(0.004)	(0.003)
logMCAP	3.133***	8.104***	7.979***	-0.106
	(0.977)	(0.511)	(0.546)	(0.876)
Beta	-0.163	-0.487*	-0.571*	0.105
	(0.148)	(0.293)	(0.310)	(0.136)
PB	-0.002***	-0.003***	-0.003***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Debt	0.684**	1.120**	1.403***	-0.010
	(0.309)	(0.453)	(0.458)	(0.229)
Constant	-31.153	-140.653***	-138.801***	25.410
	(21.844)	(11.770)	(12.582)	(19.629)

Panel B: Total Signatories

	1	2	3	4
Total PRI	0.009***	0.005***	0.005***	0.011***
	(0.001)	(0.001)	(0.001)	(0.001)
SIN_PRI T	-0.001	-0.002	-0.001	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)
logMCAP	1.126	8.162***	8.019***	-0.102
	(0.881)	(0.511)	(0.548)	(0.875)
Beta	0.022	-0.416	-0.507	0.107
	(0.132)	(0.295)	(0.311)	(0.136)
PB	-0.001***	-0.003***	-0.003***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Debt	0.197	1.110**	1.400***	-0.019
	(0.258)	(0.460)	(0.465)	(0.229)
Constant	10.203	-144.014***	-141.439***	25.319
	(19.650)	(11.776)	(12.634)	(19.599)
Model specifications:				
Fixed Effect	Firm	Region	Industry	Twoway
Cluster	Firm	Firm	Firm	Firm
Observations	3 210	3 210	3 210	3 210

The fixed effect models report that the estimates for both, yearly and total signatories have no effect on the ESG rating of sinful firms. Hence, the results from the fixed effect models are in accordance with the results of Fama and MacBeth. Moreover, the fixed effect models showcase that the variable of PRI signatories itself is highly significant. As prementioned, it could suggest that the rating system used by ESG agencies has become more advanced as institutional investors pledge to incorporate ESG criteria in their firm selection.

5.3 Robustness Check

In this chapter, we identify key differences between our study and prior studies. Additionally, we perform robustness checks to investigate differences between regional and industrial samples. Moreover, we run regressions based on regional signatories to analyze the effects of regional affiliation amongst investors. The coefficients are estimated using Fama and MacBeth and firm-specific fixed effect methodologies. All regression results for the sub-samples of regions and industries are attached in appendix B.

5.3.1 Comparison to Hong & Kacperczyk (2009)

Our initial analysis of sin stocks' performance relative to ethical firms is based on the methodology of Hong & Kacperczyk (2009). However, the latter researchers found a significant positive premium of 0.29% at a 5% level, whereas our analysis is unable to identify any premium for unethical investment.
The difference in the findings could be explained by the following key differences.

Time range: As prementioned in Section 5.1.1. Hong & Kacperczyk estimated the sin premium within the period of 1965-2006, which is different from our research. The growing popularity of socially responsible investments occurred after their research period, which could explain the negated effects on the sinful premium in our analysis. Government interventions occurring after 2006 could also influence the findings. For instance, smoking in American bars was banned in most states as of 2009 (IOM, 2010).

Sample firms: Our sample is based on the "Triumvirate of Sin", which is the same as Hong & Kacperczyk. However, they have conducted their research on 193 American firms whereas we have a global sample.

Our regional sample of the Americas is concentrated around US firms. Hence, it shares some similarities with the previous study. Nonetheless, it considers both South American and North American firms. Hong & Kacperczyk expanded their research to include additional countries between 1985-2006, but their international sample consisted of only developed countries in Europe and North America such as the UK, Canada, and Germany.

These two key differences provide an explanation for why our findings differ from the previous study. We have divided the American sample into two time periods to investigate whether our results change due to periodic events. Table 10 reports that the sin premium is still insignificant between 2006-2014, whereas it is positively significant at the 10% level between 2015-2021. This estimate suggests a premium of 0.569%, whereas Hong and Kacperczyk (2009) found a premium of 0.290%. This implies that sinful investments have been more profitable in recent years than in the time range of the latter study. Moreover, the contradicting result from our two periods, indicates that the sinful premium is dependent on the period of investigation.

Table 10: Fama and MacBeth regressions – two periods

Panel A reports the regression result from the methodology of Fama and MacBeth (1973) with Newey-West standard errors (1987). SIN Dummy is a factorial variable and refers to either 1 if the firm is sinful or 0 otherwise. All remaining variables control for firm characteristics such as the natural logarithm of market capitalization, beta, price to book (PB), debt ratio, and the natural logarithm of turnover. The return has been regressed on the previous monthly value of all variables.

Panel A: Excess return of SIN

	2006-2014	**2015-2021**
SIN_Dummy	-0.060	0.569*
	(0.288)	(0.331)
Beta	0.183	-0.037
	(0.248)	(0.246)
LogMCAP	0.213**	0.314***
	(0.099)	(0.083)
PB	0.126**	0.064**
	(0.053)	(0.030)
Debt	-0.326	0.675
	(0.784)	(0.673)
LogTurn	0.015	-0.021
	(0.033)	(0.025)
Constant	-4.012*	-6.115***
	(2.121)	(1.830)
Model	FM	FM
Region	Americas	Americas

5.3.2 Regressions on regional and industrial samples

In this section, we expand Hong & Kacperczyk's (2009) findings of sinful premium with Fama French risk factors, to include regional and industrial effects. In relation to our hypotheses, we report the results of Fama and Macbeth and fixed effect regressions specified to control for firm-specific effects. To conduct these analyses, we construct multiple samples based on regions and industries. Furthermore, we only present the variable of interest, the interaction term between PRI signatories and the categorization of sinfulness.

Table 11: Sin premium in Fama French regressions

This table reports the summary of the monthly sinful premium estimated in both regional and industrial samples with the application of the Fama French five-factor model plus momentum.

Total Portfolio	0.314*
American Portfolio	0.375
Asian Portfolio	0.034
European Portfolio	0.131
Alcohol Portfolio	0.604**
Tobacco Portfolio	-0.781***
Gambling Portfolio	0.800*

The time-series regression with the application of Fama-French five-factors model plus momentum showcases a significant monthly sin premium of 0.60% and 0.80% for the alcohol and gambling industry respectively. Moreover, the tobacco industry has a significant negative alpha of -0.78%. As prementioned, the findings of Hong & Kacperczyk (2009) suggests a sin premium of 0.29%. Our findings indicate that the alcoholic and gambling industries have a strong influence on the total portfolio, which estimates a premium of 0.314%. In contrast, Table 11 reports that the alphas on regional affiliation are all insignificant.

Table 12: Summary of the interaction terms – Return

Panel A reports the result of the Fama and MacBeth model, whereas **Panel B** highlights the fixed effect model. The coefficient of the interaction terms is estimated for all portfolios, which include the total, regional and industrial samples. The column, Monthly, states that the coherent variable is the monthly number of signatories that have been reported during the previous month. Similarly, the columns Total, Regional Monthly, and Regional Total are the accumulated total number of signatories, the regional monthly signatories for each region, and the accumulated regional number of signatories for each region, respectively.

Panel A: Summary of the interaction term in Fama-Macbeth regressions

	Monthly	Total	Regional Monthly	Regional Total
Total Portfolio	-0.040***	-0.002***		
American Portfolio	0.010	-0.001	-0.006	-0.002
Asian Portfolio	-0.030**	-0.001	-0.041	-0.009*
European Portfolio	-0.038*	-0.002	-0.085**	-0.003
Alcohol	-0.033	-0.001		
Tobacco	-0.038	-0.002		
Gambling	-0.048*	-0.003**		

Panel B: Summary of the interaction term in Fixed-effect regressions

	Monthly	Total	Regional Monthly	Regional Total
Total Portfolio	-0.0114***	-0.0003***		
American Portfolio	-0.0049	0.0000	-0.0181	-0.0000
Asian Portfolio	-0.0134***	-0.0004***	-0.1164***	-0.0042***
European Portfolio	-0.0060	-0.0002*	-0.0094	-0.0004**
Alcohol	-0.0060	-0.0001		
Tobacco	-0.0187**	-0.0005**		
Gambling	-0.0211***	-0.0005***		

Panel A reports the results from Fama and MacBeth regression (Table 12). We identify that the main results of the total sample could be influenced by the significant results from Asian and European firms in particular. Monthly signatories are estimated to have a significant negative effect of –0.030% and –0.038% at the 5% and 10% levels, respectively. Moreover, these regions also provide significant results when we apply regional signatories to the model. The coefficient for European monthly signatories is -0.085 at the 5% significance level. This corresponds to a decrease of 0.085% in sinful firms' monthly return for each signatory.

This estimate provides the steepest decline in return for any interaction term, suggesting that European sin firms are more affected by additional signatories if the signatory is European. The possible explanation could be that institutional investors in Europe are more likely to be exposed to ownership within the region.

However, the economic significance is dependent on the month in question. Due to fewer signatories in the early stages of our research period, the effects are negligible. It is only in recent years that the number of signatories has increased substantially, meaning that the effects of the initiative are relatively large. The significance of the total signatories, which is an accumulated version of the monthly number of signatories suggests a similar economic interpretation.

Additionally, gambling is the only industry that provides significant results. This is supported by the significance of the coefficients of both the monthly and the accumulated total number of signatories. These estimates indicate a negative impact of -0.048% and -0.003% on monthly returns with a significance level of 10% and 5%, respectively. Interestingly, most of the coefficients indicate a negative relationship between signatories and sin firms, suggesting that there has been a difference in the performance of sinful firms after the establishment of the UN-PRI.

The fixed effect regression results presented in Panel B, have removed all significance from the monthly and regional monthly effects in Europe (Table 12). Instead, the running total is now significant. Fixed effects have a tendency to give greater weights to time periods with more observations (Peterson, 2018). Thus, a possible explanation could be that the European portfolio has more observations in recent times than at the beginning of our sample period. The most notable difference between the two models stems from the Asian portfolio. This region is highly significant in all versions of the interaction term, all indicating a negative effect on sin stocks at a 1% significance level. The coefficient of monthly signatories suggests an effect of -0.0134% and -0.1164% for global and regional affiliation in Asia, respectively. The considerable difference between the estimates of global and Asian signatories can possibly be explained by the relative difference between regional pledges. The average monthly number of signatories in Asia is 2.2, whereas the European and American averages are 13.0 and 5.3, respectively. Thus, the economic significance of regional signatories is dependent on the region itself.

Industries such as tobacco and gambling are highly significant. The latter industry has increased its level of significance and is highly significant even at the 1% level. Additionally, the estimates suggest that the economic significance of industrial grouping is greater than regional.

Table 13: Summary of the interaction terms – ESG

Panel A reports the ESG performance with the methodology of Fama and MacBeth, whereas **Panel B** highlights the fixed effects model. The coefficient of the interaction terms is estimated for all portfolios, which include the total sample, regional and industrial samples. The column, Yearly, states that the coherent variable is the yearly number of signatories that have been reported during the previous month. Similarly, the columns Total, Regional Yearly, and Regional Total are the accumulated total number of signatories, the regional yearly signatories for each region, and the accumulated regional number of signatories for each region, respectively.

Panel A: Summary of the interaction term in Fama-Macbeth regressions

	Yearly	Total	Regional Yearly	Regional Total
Total Portfolio	0.007	0.007		
American Portfolio	-0.031***	-0.011*	-0.127***	-0.046*
Asian Portfolio	-0.010	0.006	-0.166	0.066
European Portfolio	0.029**	0.012*	0.055**	0.025*
Alcohol	-0.014	-0.002		
Tobacco	0.069***	0.028*		
Gambling	-0.154***	-0.047***		

Panel B: Summary of the interaction term in Fixed-effect regressions

	Yearly	Total	Regional Yearly	Regional Total
Total Portfolio	-0.001	-0.001		
American Portfolio	0.003	0.001	0.007	0.002
Asian Portfolio	-0.003	-0.001	-0.030	-0.010
European Portfolio	-0.006	-0.002	-0.011	-0.003
Alcohol	0.000	0.000		
Tobacco	-0.003	-0.001		
Gambling	0.003	0.001		

The first notable finding in Panel A is that the UN-PRI signatories have significant effects on the ESG performance of American and European sin firms (Table 13). American sin firms' ESG score is affected by both, global and American signatories. For instance, the ESG score of American sin firms decreases by 0.127 for each American signatory. The estimates for yearly signatories are significant at a 1% level, and at a 10% level for total signatories. Despite being statistically significant, the estimates have limited economic significance. As the rating system of ESG ranges from 0 to 100, the result suggests that an increase in the yearly number of signatories globally decreases the ESG performance of American firms by 0.031. Thus, it would require at least 100 signatories to make an impact of 3.1 points. Surprisingly, the signatories have a negative effect on the ESG score of American firms.

The descriptive statistics in Appendix A showcases that the average ESG rating of American firms has decreased since 2015. A possible explanation could be that there was a significant increase in the number of firms receiving ESG ratings during the last stage of the research period. Initially, most of these companies received low ESG scores.

A similar pattern is shown in Europe, where the sin firms' ESG score is affected by global and European signatories. The estimates for the yearly signatories, both globally and European are significant at a 5% level, whereas the running total signatories are significant at a 10% level. However, the relationship is positive (i.e., the UN-PRI positively affects the ESG score of the European sin firms). As such, it might suggest that European firms are encouraged to improve their scores as more investors sign up for the UN-PRI, whereas American firms do not take any action. It is noteworthy that the regional differences could be caused by several factors. For instance, an ECGI study identified 25 countries that introduced mandates to disclose ESG information between 2000 and 2017 (Goby, 2021). Countries such as China and the United Kingdom were among those countries. It is reasonable to believe that such regulations have given incentives to improve the ESG rating in certain locations. Lastly, the regional signatories have a larger impact on the ESG scores than the global signatories. A reasonable explanation is that investors have a home bias, where they tend to favor regional firms over global investments (Iseli & Wallmeier, 2022).

Regarding the industries, the PRI signatories have a positive effect on the tobacco firms' ESG score and a negative effect on the gambling firms' ESG score. The yearly signatories are estimated to have an effect of 0.069 and –0.154, respectively. Both coefficients are significant at a 1% level. In comparison, the running total signatories are significant at a 10% level for the tobacco firms and at a 1% level for the gambling firms. The size of the coefficient indicates that the effects on ESG are more attributable to industries than regions.

Panel B shows an insignificant relationship between the PRI signatories and the ESG score of sin firms in all portfolios (Table 13). The fixed effect model with clustered standard errors provides unbiased and asymptotically normally distributed estimates. Additionally, it allows for autocorrelation within entities. Hence, the results in this table seem to indicate that the Fama and MacBeth model cannot uniformly determine the effects of the interaction. Another explanation could be along the lines of the discussion following Table 7.

The fixed effect model has given greater weight to the last period as the number of observations increased significantly from 2016 to 2021. Our data includes 1942 observations in the period 2016-2021 compared to 599 observations in the period 2006-2010. This makes the regression results noticeably influenced by the last period's ESG performance.

Moreover, the suitability of the models depends on the dependence structure of the residuals. The Fama-MacBeth procedure is more suitable for the time-series dependence of residuals, whereas the fixed effect model is more appropriate for the cross-sectional dependence of residuals (Petersen, 2008). Nevertheless, both models make us arrive at the same conclusion, which is that there is no significant relationship between the PRI signatories and the ESG score of sinful firms when estimating the whole sample.

5.3.3 Robustness test of clustered standard errors

We perform robustness checks on the clustering of the standard errors of our main analysis. As such, we select clustered standard errors on firms, regions, and a two-way clustering on firm and time. We incorporate these estimation methods into the fixed effect models of both, return and ESG performance. Furthermore, we specify our panel data to control for firm-specific effects.

The application of one-way clustering aims to control for autocorrelation within entities. Additionally, it makes the standard errors robust for heteroscedasticity within and across entities. However, there might be factors that autocorrelate within firms and over time. Hence, we have also used two-way clustered standard errors to control both the time and the entity dimensions. Table 14 shows that the estimate for the interaction term is still insignificant when we alter the clustering of the standard errors for the ESG score. The two-way clustering is only sensible when there is a sufficient amount of clusters across both dimensions. Our model on ESG only contains 16 time periods. This limitation suggests that one-way clustering is suitable for the study of ESG performance.

Table 14: Clustered standard errors on ESG and return – full sample

The table reports the coefficient using a fixed effect model controlling for firm-specific effects. Yearly PRI is the yearly signatories from the UN-PRI on ESG, whereas it is the monthly signatories on return. The coefficient for SIN_PRI Y is the interaction term between the categorization of sin and UN-PRI signatories. All remaining variables are controlled for firm characteristics such as the natural logarithm of market capitalization, beta, price to book (PB), debt ratio, and the natural logarithm of turnover. The independent variable has been regressed on the previous value of all dependent variables.

Panel A: Tests on clustered standard errors

	ESG	ESG	ESG	Return	Return	Return
PRI	0.027**	0.027***	0.027***	0.004	0.004	0.004
	(0.004)	(0.001)	(0.005)	(0.003)	(0.003)	(0.010)
SIN_PRI	-0.001	-0.001	-0.001	-0.011**	-0.011**	-0.011**
	(0.003)	(0.002)	(0.002)	(0.002)	(0.005)	(0.005)
logMCAP	3.133*	3.133	3.133**	1.239***	1.239***	1.239***
	(0.827)	(1.668)	(1.380)	(0.081)	(0.156)	(0.205)
Beta	-0.163	-0.163	-0.163	0.069	0.069	0.069
	(0.139)	(0.248)	(0.234)	(0.056)	(0.068)	(0.126)
PB	-0.002**	-0.002**	-0.002***	0.201***	0.201***	0.201***
	(0.000)	(0.000)	(0.000)	(0.017)	(0.031)	(0.026)
Debt	0.684	0.684**	0.684**	0.013**	0.013	0.013
	(0.284)	(0.130)	(0.240)	(0.002)	(0.011)	(0.011)
logTurnover				0.073	0.073***	0.073***
				(0.047)	(0.021)	(0.026)
Constant	-31.153	-31.153	-30.791	-23.558***	-23.558***	-23.558***
	(17.754)	(37.174)	(31.083)	(1.892)	(3.080)	(3.827)
Model specifications:						
Fixed Effect	Firm	Firm	Firm	Firm	Firm	Firm
Cluster	Region	Industry	Twoway	Region	Industry	Twoway
Observations	3 210	3 210	3 168	149 854	149 854	149 848
Firms	410	410	410	1125	1125	1125

Additional tests are performed on return. We identify that the interaction term becomes less significant when we change the clustering. In some cases, one-way clustering would be appropriate. For instance, with error terms clustered by firm and time, correlations could possibly be due to common shocks. As such, we might have an overly restrictive approach to the estimation of the model. As we conduct our analysis on multiple samples across regions and industries, we deem one-way clustering on firms suitable.

5.4 Concerns

5.4.1 Fama and French

We are only able to extract Fama and French factors for North America, Europe, and the Asia Pacific excluding Japan, along with global factors. Continents outside of the designated regions in Fama French are assigned to either the nearest extracted continental factors or to the global factors. For instance, we combine the returns and signatories' data for North America and South America. Subsequently, we associate it with the North American Fama-French factors as market capitalization in North America accounts for 96% of the total capitalization in the region. We apply this approach to make the factors as applicable as possible for the data.

5.4.2 Refinitiv Eikon

Despite being a well-recognized financial database, there are possibilities of some weaknesses in the dataset. First, there is a concern about the reliability of the information from the platform, as we identify multiple values which are misleading. The platform provides ESG ratings for just 36% of the firms in our sample. Possible reasons could be that the data is not up to date or eventually the firms have not received any rating. The rating agencies have different policies when evaluating companies, hence we decide to extract information from one source. In our case, we use ratings provided by Refinitiv Eikon. Additionally, there are many incidents where the reported returns exceed 200% monthly. As such, the data extracted from Refinitiv requires a substantial amount of filtering in order to diminish these problems. Furthermore, there might be some relevant companies that are not included in our sample. However, we have made an effort to mitigate the latter concern by comparing the firms from Refinitv Eikon and Orbis. Second, we discover that some firms were misclassified into sinful industries. These companies are removed from our data sample. Nevertheless, Refinitv Eikon is a trusted and well-recognized platform across the globe.

5.4.3 Isolation effect

Another concern we highlight is related to the signatories' effect across the continents. For instance, Goldman Sachs Asset Management signed the principles in 2011 and is assumed to have an impact beyond the borders of the North American continent. Another reasonable assumption is that many asset management firms distinctly choose to invest in other regions. For instance, institutional investors in Asia are able to invest in American companies. Iseli & Wallmeier (2022) show that the home bias, where investors have a preference to invest in domestic equities, has decreased over time.

5.4.4 UN Principles of Responsible Investment

The information on UN-PRI signatories' is limited as we are unable to extract data on the relative size of each participant. We believe that large institutional investors have a greater impact than smaller investors. As such, there are arguably different effects from the action of each participant.

6. Conclusion

The aim of this research is to study whether increased commitment to socially responsible investments affects the financial and ESG performance of sinful firms. Limited research on sinful firms with contradicting conclusions, led us to shed light on the performance of sinful firms in a modern time span. Additionally, we study how the performance of sinful firms could be explained by differences within geographical areas and industries. With a starting point in the research conducted by Hong & Kacperczyk (2009) and Blitz & Fabozzi (2017), we study whether the contradicted results from these papers could be explained by controlling for an increase in socially concerned investors.

First, the time-series regression performed with the application of Fama-French factors, suggests that sin stocks outperform the comparables by a monthly premium of 0.310% for models with at least five risk factors. This is in line with the initial findings of Hong & Kacperczyk (2009), as well as with the findings of Fabozzi et al. (2008). On the contrary, we do not find any evidence suggesting a sinful premium when we utilize the Fama and MacBeth methodology. By exposing the firms to the UN-PRI signatory directory, we find that the returns of sinful firms are negatively affected when additional investors sign up to the ethical principles of the UN. Thus, we fail to reject hypothesis 1, which states that sin stocks return diminishes as a result of increased commitment. When we investigate whether firms take action to improve their ESG rating as more investors incorporate ESG criteria, we do not find any evidence to suggest that the attitude of firms regarding ESG has changed. Subsequently, we reject hypothesis 2, which states that the ESG performance of sinful firms is positively affected by increased commitment. Moreover, similar analyses are performed on sub-samples of different regions and industries. As such, we identify that the effects of increased commitment for SRI depend on both regional and industrial affiliation. The results are somewhat different depending on the underlying methodology of the analysis.

Regarding the sinful firms' returns, the estimates based on the Fama-MacBeth model suggest a significant negative effect on Asian and European firms in relation to their respective regional signatories, as well as global signatories. Furthermore, the regression analysis indicates a significant negative effect on the gambling industry.

The estimates based on the fixed effect methodology confirm the previous findings after controlling for omitted variable bias. Additionally, this methodology also suggests that the signatories have a negative effect on the tobacco industry.

The estimate based on the Fama-MacBeth model suggests an insignificant effect on sinful firms' ESG rating, based on the whole sample. However, the estimates suggest a significant negative effect on American sin firms and a significant positive effect on European sin firms, in relation to their respective regional signatories, as well as global signatories. Moreover, there is a significant positive effect on the tobacco industry and a significant negative effect on the gambling industry. On the contrary, the estimates based on the fixed effect methodology suggest no significant estimates.

Our analysis is meaningful for all parties interested in the stock market, such as investors, employees, researchers, and policymakers. As our result suggests, sinful industries have diminishing returns when investors take greater consideration towards SRI. Our findings should give greater incentives to financial institutions to become a part of the UN's Principles for Responsible Investment, to alleviate some of the concerns associated with unethical products.

The effect of SRI on sinful stocks is a new research area that we have touched upon. Hence, there is great potential for further research and exploration. There is limited information regarding the characteristics of each participant in the signatory directory. If more information becomes publicly available, the financial value of each participant should be included to distinguish the effects of their relative size. Additionally, we believe that eventually industries such as fossil fuels and cannabis should be included as sinful industries. We propose the inclusion of these industries in later research on sin stocks.

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Appendices

Appendix A: Summary of firm characteristics

Table A1: Summary statistics

Panel A: reports the descriptive statistics of sinful companies. Panel B: reports the statistics for the comparable sample. Panel C - H reports the statistics of the regional samples. Panel: I - N reports the statistics of the industrial samples.

Panel A: Total sin portfolio

N = 55,810	Mean	Median	St. Dev	1st quartile	3rd quartile
Excess return	0.917	0.223	12.878	-5.430	6.168
LogMCAP	19.570	19.523	2.543	17.868	21.239
Beta	0.679	0.578	0.907	0.186	1.107
PB	3.495	1.901	4.991	0.920	3.895
Debt (%)	0.318	0.148	8.529	0.014	0.366
LogTurnover	8.852	10.144	6.448	0.000	14.635
ESG	45.564	44.507	22.824	25.822	63.923

Panel B: Total comparable portfolio

N = 94,044	Mean	Median	St. Dev	1st quartile	3rd quartile
Excess return	0.849	-0.258	12.878	-5.776	5.916
LogMCAP	18.298	18.132	2.263	16.686	19.849
Beta	0.591	0.519	0.885	0.142	1.013
PB	2.103	1.165	3.307	0.614	2.350
Debt (%)	0.360	0.248	4.571	0.065	0.503
LogTurnover	7.716	8.420	5.541	0.480	12.171
ESG	47.180	48.127	23.683	27.378	67.520

Panel C: American sin portfolio

N = 10,431	Mean	Median	St. Dev	1st quartile	3rd quartile
Excess return	0.841	0.215	15.654	-6.351	6.872
LogMCAP	19.288	19.462	3.174	17.309	21.510
Beta	0.846	0.716	1.167	0.225	1.419
PB	3.444	1.911	5.304	0.942	4.138
Debt (%)	0.356	0.212	4.393	0.064	0.435
LogTurnover	4.781	4.214	6.718	2.879	11.209
ESG	42.094	40.238	20.545	24.495	59.269

Panel D: American comparable portfolio

N = 9,741	Mean	Median	St. Dev	1st quartile	3rd quartile
Excess return	0.648	0.194	13.488	-5.503	6.057
LogMCAP	19.672	19.774	2.992	17.717	21.751
Beta	0.659	0.565	0.924	0.193	1.065
PB	2.850	1.827	4.541	0.644	3.496
Debt (%)	0.259	0.199	0.251	0.047	0.380
LogTurnover	6.370	5.652	6.667	4.012	13.000
ESG	49.249	52.785	23.309	29.565	70.803

Panel E: European sin portfolio

N = 15,953	Mean	Median	St. Dev	1st quartile	3rd quartile
Excess return	0.773	0.436	10.683	-4.321	5.208
LogMCAP	19.480	19.320	2.453	17.840	20.860
Beta	0.549	0.498	0.727	0.161	0.885
PB	3.296	1.957	4.368	0.939	3.678
Debt (%)	0.259	0.194	0.275	0.021	0.409
LogTurnover	8.802	9.467	5.793	4.371	13.368
ESG	55.754	58.520	22.019	38.779	74.736

Panel F: European comparable portfolio

N = 15,398	Mean	Median	St. Dev	1st quartile	3rd quartile
Excess return	0.658	0.020	11.055	-4.684	5.115
LogMCAP	18.700	18.400	2.222	16.970	20.430
Beta	0.537	0.467	0.790	0.141	0.907
PB	1.616	1.025	2.147	0.559	1.892
Debt (%)	0.355	0.297	0.295	0.114	0.540
LogTurnover	7.723	8.099	5.264	3.828	11.538
ESG	54.570	57.725	21.694	38.345	71.656

Panel G: Asian sin portfolio

N = 29,426	Mean	Median	St. Dev	1st quartile	3rd quartile
Excess return	1.021	0.048	12.876	-5.805	6.643
LogMCAP	19.720	19.690	2.319	18.040	21.360
Beta	0.690	0.596	0.880	0.188	1.148
PB	3.620	1.864	5.186	0.902	3.974
Debt (%)	0.336	0.092	11.449	0.007	0.306
LogTurnover	10.320	11.870	6.053	6.630	15.430
ESG	38.847	35.695	22.201	20.430	58.524

Panel H: Asian comparable portfolio

N = 68,905	Mean	Median	St. Dev	1st quartile	3rd quartile
Excess return	0.912	-0.418	13.165	-6.092	6.103
LogMCAP	18.010	17.930	2.058	16.490	19.520
Beta	0.592	0.523	0.899	0.136	1.032
PB	2.100	1.147	3.294	0.626	2.291
Debt (%)	0.374	0.242	5.337	0.060	0.512
LogTurnover	7.904	8.681	5.398	3.196	12.220
ESG	40.266	38.379	22.878	21.600	59.000

Panel I: Alcohol sin portfolio

N = 31,706	Mean	Median	St. Dev	1st quartile	3rd quartile
Excess return	1.043	0.380	12.080	-4.867	6.019
LogMCAP	19.457	19.370	2.525	17.700	21.153
Beta	0.566	0.510	0.782	0.162	0.933
PB	3.203	1.918	4.236	0.951	3.652
Debt (%)	0.336	0.148	10.485	0.015	0.368
LogTurnover	9.055	10.067	6.367	0.695	14.908
ESG	44.194	42.845	22.080	25.455	62.060

Panel J: Alcohol comparable portfolio

N = 21,260	Mean	Median	St. Dev	1st quartile	3rd quartile
Excess return	0.964	0.049	12.673	-5.415	5.893
LogMCAP	18.568	18.428	2.686	16.526	20.343
Beta	0.538	0.499	0.831	0.159	0.947
PB	2.524	1.496	3.602	0.781	2.805
Debt (%)	0.253	0.186	0.331	0.039	0.394
LogTurnover	7.550	8.150	5.897	0.437	12.680
ESG	49.521	51.467	23.270	29.724	70.772

Panel K: Tobacco sin portfolio

N = 7,212	Mean	Median	St. Dev	1st quartile	3rd quartile
Excess return	0.605	0.097	13.995	-5.634	5.665
LogMCAP	19.725	19.945	3.226	17.414	21.738
Beta	0.538	0.400	1.032	0.079	0.905
PB	5.242	2.296	7.714	0.930	6.735
Debt (%)	0.197	0.116	0.283	0.006	0.303
LogTurnover	7.253	7.632	6.654	3.617	13.013

Panel L: Tobacco comparable portfolio

N = 39,338	Mean	Median	St. Dev	1st quartile	3rd quartile
Excess return	0.991	0.050	12.858	-5.490	6.010
LogMCAP	18.480	18.400	2.167	16.900	20.070
Beta	0.610	0.526	0.917	0.138	1.020
PB	2.146	1.217	3.169	0.676	2.443
Debt (%)	0.385	0.277	4.070	0.089	0.549
LogTurnover	8.232	9.365	5.755	4.839	12.903
ESG	46.998	47.425	23.484	26.857	66.826

Panel M: Gambling sin portfolio

N = 16,892	Mean	Median	St. Dev	1st quartile	3rd quartile
Excess return	0.812	-0.197	13.796	-6.460	6.865
LogMCAP	19.720	19.710	2.211	18.210	21.280
Beta	0.951	0.874	1.004	0.322	1.520
PB	3.297	1.741	4.660	0.858	3.710
Debt (%)	0.335	0.159	5.823	0.015	0.404
LogTurnover	9.152	11.221	6.412	4.672	14.548
ESG	37.913	36.685	19.956	21.650	52.573

Panel N: Gambling comparable portfolio					
N = 33,446	**Mean**	**Median**	**St. Dev**	**1st quartile**	**3rd quartile**
Excess return	0.606	-0.703	13.027	-6.147	5.827
LogMCAP	17.910	17.680	2.013	16.600	19.120
Beta	0.600	0.524	0.878	0.136	1.053
PB	1.784	0.928	3.236	0.481	1.939
Debt (%)	0.397	0.263	6.259	0.055	0.527
LogTurnover	7.214	7.606	4.966	3.368	10.807
ESG	54.349	60.490	22.288	39.666	70.886

Table A2: Summary statistics of ESG performance – regional

The table highlights descriptive statics on ESG performance between regions and time periods. Panel A reports descriptive statistics from 2006-2010. Panel B shows the statistics from 2011-2015, whereas Panel C describes the period from 2016-2021.

Appendix B: Cross-sectional regression results – Return

Table B1: Industrial results from Fama and MacBeth

Panel A reports the results from a value-weighted Fama French regression using the difference approach. As such, it takes the sinful return net the comparable return in a zero-net investing strategy. **Panel B** reports the monthly signatory effect on stock return using the Fama and MacBeth methodology (1973) estimated with Newey-West standard errors (1987). **Panel C** applies the same methodology with the use of the total number of signatories that have been accumulated during the sample period: 2006-2021. SIN_Dummy is a factorial variable and refers to either 1 if the firm is sinful or 0 otherwise. Monthly PRI is the monthly signatories from the UN-PRI, whereas Total PRI is the accumulated amount. The coefficient for SIN_PRI M and SIN_PRI_T is the interaction term between the categorization of sin and UN-PRI signatories. All remaining variables control for firm characteristics such as the natural logarithm of market capitalization, beta, price to book (PB), Debt ratio, and the natural logarithm of turnover. The return has been regressed on the previous monthly value of all variables.

Panel A: Difference Portfolio

	Alpha	MKT-rf	SMB	HML	RMW	CMA	MOM
Sin - Comp	0.604**	-0.034	0.386***	-0.049	-0.268*	-0.321	0.094
(Alcohol)	(0.272)	(0.066)	(0.118)	(0.118)	(0.154)	(0.196)	(0.087)
Sin - Comp	-0.781***	0.142**	-0.265**	0.019	0.338**	0.338*	-0.020
(Tobacco)	(0.278)	(0.068)	(0.121)	(0.120)	(0.158)	(0.200)	(0.089)
Sin - Comp	0.800*	0.065	0.161	-0.502***	-0.035	0.016	-0.329**
(Gambling)	(0.442)	(0.108)	(0.192)	(0.191)	(0.251)	(0.318)	(0.141)

Panel B: Monthly Signatories

	Alcohol	Alcohol	Tobacco	Tobacco	Gambling	Gambling
SIN_Dummy	-0.003	-0.002	-0.023	-0.018	-0.044	-0.048
	(0.025)	(0.026)	(0.028)	(0.025)	(0.034)	(0.035)
Monthly PRI	-0.078	-0.199	-0.034	-0.058	0.089	-0.128
	(0.183)	(0.156)	(0.164)	(0.120)	(0.170)	(0.161)
SIN_PRI M	-0.033	-0.029	-0.038	-0.049	-0.048*	-0.033
	(0.021)	(0.022)	(0.043)	(0.041)	(0.029)	(0.028)
Beta	0.346*	0.291*	0.345*	0.114	-0.176	0.075
	(0.187)	(0.163)	(0.197)	(0.171)	(0.146)	(0.139)
LogMCAP	-0.128*	0.080*	-0.075	0.088**	-0.074	0.130**
	(0.076)	(0.040)	(0.072)	(0.043)	(0.065)	(0.052)
PB	0.163***	0.169***	0.125***	0.132***	0.138***	0.181***
	(0.029)	(0.029)	(0.023)	(0.022)	(0.026)	(0.025)
Debt	-2.073***	-1.287***	-1.461***	-0.806**	-1.411***	-1.192***
	(0.407)	(0.363)	(0.434)	(0.338)	(0.237)	(0.254)
Log Turn	0.112**		0.124***		0.201***	
	(0.044)		(0.043)		(0.039)	
Constant	0.050	-0.052	0.169	0.062	-0.044	-0.008
	(0.054)	(0.105)	(0.138)	(0.064)	(0.100)	(0.077)

Panel C: Total Signatories

	Alcohol	Alcohol	Tobacco	Tobacco	Gambling	Gambling
SIN_Dummy	-0.000	-0.001	-0.012	-0.010	-0.013	-0.017
	(0.025)	(0.025)	(0.026)	(0.024)	(0.015)	(0.018)
Total PRI	0.001	-0.005	-0.004	-0.005	-0.004	-0.009
	(0.005)	(0.004)	(0.006)	(0.004)	(0.006)	(0.006)
SIN_PRI T	-0.001	-0.001	-0.002	-0.002	-0.003**	-0.003**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Beta	0.346*	0.291*	0.345*	0.114	-0.176	0.075
	(0.187)	(0.163)	(0.197)	(0.171)	(0.146)	(0.139)
LogMCAP	-0.128*	0.080*	-0.075	0.088**	-0.074	0.130**
	(0.076)	(0.040)	(0.072)	(0.043)	(0.065)	(0.052)
PB	0.163***	0.169***	0.125***	0.132***	0.138***	0.181***
	(0.029)	(0.029)	(0.023)	(0.022)	(0.026)	(0.025)
Debt	-2.073***	-1.287***	-1.461***	-0.806**	-1.411***	-1.192***
	(0.407)	(0.363)	(0.434)	(0.338)	(0.237)	(0.254)
Log Turn	0.112**		0.124***		0.201***	
	(0.044)		(0.043)		(0.039)	
Constant	0.034	-0.052	0.169	0.062	-0.044	-0.008
	(0.051)	(0.105)	(0.138)	(0.064)	(0.100)	(0.077)
Observations	52966	52966	46550	46550	50338	50338

Table B2: Regional result from Fama and MacBeth - global signatories

Panel A reports the results from a value-weighted Fama French regression using the difference approach. As such it takes the sinful return net the comparable return in a zero-net investing strategy. **Panel B** reports the monthly signatory effect on stock return using the Fama and MacBeth methodology (1973) estimated with Newey-West standard errors (1987). **Panel C** applies the same methodology with the use of the total number of signatories that have been accumulated during the sample period: 2006-2021. SIN_Dummy is a factorial variable and refers to either 1 if the firm is sinful or 0 otherwise. Monthly PRI is the monthly signatories from the UN-PRI, whereas Total PRI is the accumulated amount. The coefficient for SIN_PRI M and SIN_PRI_T is the interaction term between the categorization of sin and UN-PRI signatories. All remaining variables control for firm characteristics such as the natural logarithm of market capitalization, beta, price to book (PB), Debt ratio, and the natural logarithm of turnover. The return has been regressed on the previous monthly value of all variables.

Panel A: Difference Portfolio

	Alpha	MKT-rf	SMB	HML	RMW	CMA	MOM
Sin - Comp	0.131	0.032	-0.528***	-0.469**	0.127	0.125	0.066
(Europe)	(0.295)	(0.067)	(0.155)	(0.225)	(0.277)	(0.265)	(0.093)
Sin - Comp	0.375	0.089	0.369***	0.029	0.043	-0.394**	-0.175**
(Americas)	(0.233)	(0.057)	(0.113)	(0.126)	(0.152)	(0.182)	(0.068)
Sin - Comp	0.034	0.113***	-0.072	-0.250**	0.187	0.495***	0.091
(Asia)	(0.223)	(0.042)	(0.088)	(0.125)	(0.125)	(0.137)	(0.061)

Panel B: Monthly Signatories

	Europe	Europe	Americas	Americas	Asia	Asia
SIN_Dummy	0.005	0.010	-0.034	-0.035	0.014	0.012
	(0.020)	(0.023)	(0.028)	(0.031)	(0.014)	(0.012)
Monthly PRI	-0.005	-0.138	-0.746***	-0.475**	0.159	0.094
	(0.163)	(0.124)	(0.261)	(0.191)	(0.141)	(0.206)
SIN_PRI M	-0.038*	-0.035	0.010	0.013	-0.030**	-0.030**
	(0.023)	(0.023)	(0.023)	(0.024)	(0.014)	(0.014)
Beta	0.081	0.211	0.321	0.106	0.189	0.167
	(0.192)	(0.183)	(0.380)	(0.178)	(0.155)	(0.141)
LogMCAP	-0.034	0.091**	0.073	0.278***	-0.245***	0.035
	(0.076)	(0.043)	(0.247)	(0.066)	(0.069)	(0.054)
PB	0.134***	0.140***	0.528*	0.096***	0.146***	0.172***
	(0.029)	(0.025)	(0.291)	(0.033)	(0.021)	(0.021)
Debt	-1.746***	-1.753***	-1.614	0.123	-1.661***	-1.296***
	(0.420)	(0.386)	(1.090)	(0.531)	(0.270)	(0.217)
Log Turn	0.064*		-0.023		0.233***	
	(0.038)		(0.081)		(0.047)	
Constant	-0.103	-0.136	-0.054	-0.105	0.338	0.079
	(0.103)	(0.103)	(0.150)	(0.089)	(0.241)	(0.140)

Panel C: Total Signatories

	Europe	Europe	Americas	Americas	Asia	Asia
SIN_Dummy	0.016	0.022	-0.032	-0.034	0.016	0.014
	(0.017)	(0.020)	(0.028)	(0.031)	(0.014)	(0.012)
Total PRI	-0.008	-0.006	-0.020**	-0.013*	0.007	-0.003
	(0.007)	(0.005)	(0.008)	(0.007)	(0.005)	(0.005)
SIN_PRI T	-0.002	-0.002	-0.001	-0.000	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Beta	0.081	0.211	0.321	0.106	0.189	0.167
	(0.192)	(0.183)	(0.380)	(0.178)	(0.155)	(0.141)
LogMCAP	-0.034	0.091**	0.073	0.278***	-0.245***	0.035
	(0.076)	(0.043)	(0.247)	(0.066)	(0.069)	(0.054)
PB	0.134***	0.140***	0.528*	0.096***	0.146***	0.172***
	(0.029)	(0.025)	(0.291)	(0.033)	(0.021)	(0.021)
Debt	-1.746***	-1.753***	-1.614	0.123	-1.661***	-1.296***
	(0.420)	(0.386)	(1.090)	(0.531)	(0.270)	(0.217)
Log Turn	0.064*		-0.023		0.233***	
	(0.038)		(0.081)		(0.047)	
Constant	-0.011	-0.089	-0.054	-0.038	0.171	0.079
	(0.047)	(0.093)	(0.150)	(0.059)	(0.176)	(0.140)
Observations	31,351	31,351	20,172	20,172	98,331	98,331

Table B3: Regional result from Fama and MacBeth - regional signatories

Panel A reports the results from Fama French regression using the difference approach. As such it takes the sinful return net the comparable return in a zero-net investing strategy. **Panel B** reports the monthly signatory effect on stock return using the Fama and MacBeth methodology (1973) estimated with Newey-West standard errors (1987). **Panel C** applies the same methodology with the use of the total running number of signatories. SIN_Dummy is a factorial variable and refers to either 1 if the firm is sinful or 0 otherwise. Regional PRI M is the monthly signatories from the UN-PRI from the region, whereas Regional PRI T is the accumulated amount. The coefficient for SIN_PRI Regional M and SIN_PRI Regional T is the interaction term between the categorization of sin and UN-PRI signatories. All remaining variables control for firm characteristics such as the natural logarithm of market capitalization, beta, price to book (PB), debt ratio, and the natural logarithm of turnover. The return has been regressed on the previous monthly value of all variables.

Panel A: Difference Portfolio

	Alpha	MKT-rf	SMB	HML	RMW	CMA	MOM
Sin - Comp	0.131	0.032	-0.528***	-0.469**	0.127	0.125	0.066
(Europe)	(0.295)	(0.067)	(0.155)	(0.225)	(0.277)	(0.265)	(0.093)
Sin - Comp	0.375	0.089	0.369***	0.029	0.043	-0.394**	-0.175**
(Americas)	(0.233)	(0.057)	(0.113)	(0.126)	(0.152)	(0.182)	(0.068)
Sin - Comp	0.034	0.113***	-0.072	-0.250**	0.187	0.495***	0.091
(Asia)	(0.223)	(0.042)	(0.088)	(0.125)	(0.125)	(0.137)	(0.061)

Panel B: Monthly Signatories

	Europe	Europe	Americas	Americas	Asia	Asia
SIN_Dummy	0.059	0.054	0.031	0.017	-0.205**	-0.201**
	(0.049)	(0.050)	(0.100)	(0.106)	(0.094)	(0.090)
Regional PRI M	0.186	-0.267	-1.788**	-1.032**	0.587	-0.398
	(0.325)	(0.278)	(0.755)	(0.441)	(0.421)	(0.489)
SIN_PRI Regional M	-0.085**	-0.078**	-0.006	0.012	-0.041	-0.035
	(0.037)	(0.037)	(0.065)	(0.058)	(0.029)	(0.024)
Beta	0.081	0.211	0.321	0.106	0.189	0.167
	(0.192)	(0.183)	(0.380)	(0.178)	(0.155)	(0.141)
LogMCAP	-0.034	0.091**	0.073	0.278***	-0.245***	0.035
	(0.076)	(0.043)	(0.247)	(0.066)	(0.069)	(0.054)
PB	0.134***	0.140***	0.528*	0.096***	0.146***	0.172***
	(0.029)	(0.025)	(0.291)	(0.033)	(0.021)	(0.021)
Debt	-1.746***	-1.753***	-1.614	0.123	-1.661***	-1.296***
	(0.420)	(0.386)	(1.090)	(0.531)	(0.270)	(0.217)
Log Turn	0.064*		-0.023		0.233***	
	(0.038)		(0.081)		(0.047)	
Constant	-0.343	-0.138	-1.724**	-1.257**	1.170	0.149
	(0.244)	(0.128)	(0.676)	(0.534)	(0.865)	(0.753)

Panel C: Total Signatories

	Europe	Europe	Americas	Americas	Asia	Asia
SIN_Dummy	0.016	0.022	-0.032	-0.034	0.012	0.009
	(0.017)	(0.020)	(0.028)	(0.031)	(0.011)	(0.008)
Regional PRI T	-0.014	-0.012	-0.085***	-0.056**	0.071	-0.032
	(0.014)	(0.009)	(0.032)	(0.028)	(0.047)	(0.048)
SIN_PRI Regional T	-0.003	-0.003	-0.002	-0.001	-0.009*	-0.009
	(0.002)	(0.002)	(0.004)	(0.004)	(0.005)	(0.005)
Beta	0.081	0.211	0.321	0.106	0.189	0.167
	(0.192)	(0.183)	(0.380)	(0.178)	(0.155)	(0.141)
LogMCAP	-0.034	0.091**	0.073	0.278***	-0.245***	0.035
	(0.076)	(0.043)	(0.247)	(0.066)	(0.069)	(0.054)
PB	0.134***	0.140***	0.528*	0.096***	0.146***	0.172***
	(0.029)	(0.025)	(0.291)	(0.033)	(0.021)	(0.021)
Debt	-1.746***	-1.753***	-1.614	0.123	-1.661***	-1.296***
	(0.420)	(0.386)	(1.090)	(0.531)	(0.270)	(0.217)
Log Turn	0.064*		-0.023		0.233***	
	(0.038)		(0.081)		(0.047)	
Constant	-0.011	-0.089	-0.054	-0.038	0.217	0.180
	(0.047)	(0.093)	(0.150)	(0.059)	(0.198)	(0.164)
Observations	31,351	31,351	20,172	20,172	98,331	98,331

Table B4: Result from fixed effect on industries

Panel A reports the monthly signatory effect on stock return using the fixed effect model. **Panel B** applies the same methodology with the use of the total number of signatories that have been accumulated during the sample period: 2006-2021. PRI M is the monthly signatories from the UN-PRI, whereas Total PRI is the accumulated amount. The coefficient for SIN_PRI M and SIN_PRI_T is the interaction term between the categorization of sin and UN-PRI signatories. All remaining variables control for firm characteristics such as the natural logarithm of market capitalization, beta, price to book (PB), Debt ratio, and the natural logarithm of turnover. The return has been regressed on the previous monthly value of all variables.

Panel A: Monthly Signatories on Industries

	Alcohol	Alcohol	Tobacco	Tobacco	Gambling	Gambling
Monthly PRI	0.0049	0.0023	0.0010	-0.0014	0.0072***	0.0039
	(0.0035)	(0.0034)	(0.0026)	(0.0025)	(0.0027)	(0.0027)
SIN_PRI M	-0.0060	-0.0061	-0.0187**	-0.0187**	-0.0211***	-0.0225***
	(0.0044)	(0.0044)	(0.0076)	(0.0075)	(0.0049)	(0.0049)
Beta	0.1608	0.1625	0.0024	0.0104	0.0499	0.0619
	(0.1171)	(0.1171)	(0.1108)	(0.1109)	(0.1033)	(0.1034)
LogMCAP	1.1876***	1.1721***	1.3404***	1.3572***	1.2386***	1.2501***
	(0.1448)	(0.1444)	(0.1302)	(0.1291)	(0.1487)	(0.1471)
PB	0.1803***	0.1796***	0.1381***	0.1394***	0.2791***	0.2812***
	(0.0357)	(0.0358)	(0.0396)	(0.0396)	(0.0415)	(0.0413)
Debt	0.0202***	0.0200***	0.0624***	0.0624***	-0.0182	-0.0185*
	(0.0027)	(0.0028)	(0.0151)	(0.0154)	(0.0114)	(0.0112)
Log Turn	0.0661***		0.0671***		0.0842***	
	(0.0176)		(0.0213)		(0.0244)	
Constant	-22.8893***	-21.9627***	-24.9682***	-24.6845***	-23.5940***	-23.0577***
	(2.7574)	(2.7107)	(2.4237)	(2.4019)	(2.7261)	(2.7020)

Panel B: Total Signatories on Industries

	Alcohol	Alcohol	Tobacco	Tobacco	Gambling	Gambling
Total PRI	0.0000	-0.0001	0.0000	-0.0001	0.0004***	0.0002***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
SIN_PRI T	-0.0001	-0.0001	-0.0005**	-0.0005**	-0.0005***	-0.0005***
	(0.0001)	(0.0001)	(0.0002)	(0.0002)	(0.0001)	(0.0001)
Beta	0.1679	0.1697	0.0000	0.0050	0.0430	0.0528
	(0.1170)	(0.1170)	(0.1111)	(0.1113)	(0.1022)	(0.1025)
LogMCAP	1.2034***	1.1992***	1.3508***	1.3745***	1.2173***	1.2444***
	(0.1462)	(0.1463)	(0.1299)	(0.1288)	(0.1497)	(0.1475)
PB	0.1799***	0.1791***	0.1388***	0.1399***	0.2819***	0.2832***
	(0.0357)	(0.0357)	(0.0393)	(0.0391)	(0.0421)	(0.0418)
Debt	0.0202***	0.0201***	0.0624***	0.0625***	-0.0186*	-0.0189*
	(0.0027)	(0.0027)	(0.0151)	(0.0154)	(0.0113)	(0.0111)
Log Turn	0.0596***		0.0641***		0.1090***	
	(0.0179)		(0.0216)		(0.0252)	
Constant	-23.0638***	-22.3843***	-25.1055***	-24.9503***	-23.6433***	-23.1131***
	(2.7715)	(2.7385)	(2.4125)	(2.3899)	(2.7512)	(2.7098)
Observations	52966	52966	46550	46550	50338	50338

Table B5: Result from fixed effect on regions - global signatories

Panel A reports the monthly signatory effect on stock return using the fixed effect model. **Panel B** applies the same methodology with the use of the total number of signatories that have been accumulated during the sample period: 2006-2021. PRI M is the monthly signatories from the UN-PRI, whereas Total PRI is the accumulated amount. The coefficient for SIN_PRI M and SIN_PRI_T is the interaction term between the categorization of sin and UN-PRI signatories. All remaining variables control for firm characteristics such as the natural logarithm of market capitalization, beta, price to book (PB), Debt ratio, and the natural logarithm of turnover. The return has been regressed on the previous monthly value of all variables.

Panel A: Monthly Signatories on Regions

	Europe	Europe	Americas	Americas	Asia	Asia
Monthly PRI	0.0020	0.0013	-0.0042	-0.0040	0.0069***	0.0024
	(0.0030)	(0.0029)	(0.0056)	(0.0055)	(0.0021)	(0.0020)
SIN_PRI M	-0.0060	-0.0057	-0.0049	-0.0049	-0.0134***	-0.0152***
	(0.0040)	(0.0040)	(0.0085)	(0.0085)	(0.0038)	(0.0037)
Beta	-0.1650	-0.1647	0.1906	0.1893	0.0975	0.0994
	(0.1500)	(0.1497)	(0.2060)	(0.2052)	(0.0700)	(0.0701)
LogMCAP	0.8125***	0.8249***	1.1281***	1.1317***	1.2901***	1.3281***
	(0.1566)	(0.1570)	(0.2140)	(0.2086)	(0.1084)	(0.1084)
PB	0.2074***	0.2066***	0.1609***	0.1609***	0.2139***	0.2170***
	(0.0520)	(0.0519)	(0.0359)	(0.0359)	(0.0339)	(0.0342)
Debt	-1.6780***	-1.6764***	-0.0085**	-0.0084**	0.0140	0.0137
	(0.6186)	(0.6171)	(0.0041)	(0.0041)	(0.0107)	(0.0107)
Log Turn	0.0198		-0.0031		0.1302***	
	(0.0255)		(0.0194)		(0.0183)	
Constant	-14.8411***	-14.8984***	-21.6709***	-21.7636***	-24.7641***	-24.2164***
	(3.0520)	(3.0514)	(4.2090)	(4.0665)	(1.9851)	(1.9779)

Panel B: Total Signatories on Regions

	Europe	Europe	Americas	Americas	Asia	Asia
Total PRI	0.0003***	0.0002***	-0.0001	-0.0001	0.0002***	0.0000
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
SIN_PRI T	-0.0002*	-0.0002*	0.0000	0.0000	-0.0004***	-0.0004***
	(0.0001)	(0.0001)	(0.0002)	(0.0002)	(0.0001)	(0.0001)
Beta	-0.1725	-0.1737	0.1717	0.1708	0.0999	0.0978
	(0.1482)	(0.1478)	(0.2043)	(0.2032)	(0.0700)	(0.0701)
LogMCAP	0.7382***	0.7654***	1.1089***	1.1106***	1.2943***	1.3472***
	(0.1597)	(0.1595)	(0.2141)	(0.2105)	(0.1078)	(0.1075)
PB	0.2108***	0.2091***	0.1608***	0.1607***	0.2141***	0.2165***
	(0.0520)	(0.0517)	(0.0359)	(0.0359)	(0.0338)	(0.0340)
Debt	-1.8118***	-1.8058***	-0.0087**	-0.0087**	0.0140	0.0138
	(0.6386)	(0.6356)	(0.0042)	(0.0042)	(0.0107)	(0.0107)
Log Turn	0.0398		-0.0020		0.1267***	
	(0.0257)		(0.0202)		(0.0187)	
Constant	-13.7772***	-13.9216***	-21.3146***	-21.3643***	-24.7974***	-24.5095***
	(3.1091)	(3.1012)	(4.2004)	(4.0882)	(1.9679)	(1.9593)
Observations	31,351	31,351	20,172	20,172	98,331	98,331

Table B6: Result from fixed effect on regions - regional signatories

Panel A reports the monthly signatory effect on stock return using the fixed effect model. **Panel B** applies the same methodology with the use of the total number of signatories that have been accumulated during the sample period: 2006-2021. PRI M is the monthly signatories from the UN-PRI, whereas Total PRI is the accumulated amount. The coefficient for SIN_PRI M and SIN_PRI_T is the interaction term between the categorization of sin and UN-PRI signatories. All remaining variables control for firm characteristics such as the natural logarithm of market capitalization, beta, price to book (PB), Debt ratio, and the natural logarithm of turnover. The return has been regressed on the previous monthly value of all variables.

Panel A: Monthly Regional Signatories on Regions

	Europe	Europe	Americas	Americas	Asia	Asia
Monthly PRI	-0.0003	-0.0013	-0.0059	-0.0059	0.1467***	0.0975***
	(0.0056)	(0.0056)	(0.0178)	(0.0175)	(0.0200)	(0.0188)
SIN_PRI M	-0.0094	-0.0089	-0.0181	-0.0181	-0.1164***	-0.1332***
	(0.0075)	(0.0076)	(0.0260)	(0.0260)	(0.0351)	(0.0342)
Beta	-0.1615	-0.1614	0.1828	0.1828	0.0995	0.1006
	(0.1501)	(0.1499)	(0.2053)	(0.2045)	(0.0699)	(0.0700)
LogMCAP	0.8274***	0.8369***	1.1205***	1.1208***	1.2524***	1.2984***
	(0.1556)	(0.1561)	(0.2129)	(0.2071)	(0.1099)	(0.1101)
PB	0.2064***	0.2058***	0.1608***	0.1608***	0.2149***	0.2191***
	(0.0521)	(0.0519)	(0.0359)	(0.0359)	(0.0343)	(0.0347)
Debt	-1.6483***	-1.6475***	-0.0086**	-0.0086**	0.0137	0.0133
	(0.6132)	(0.6120)	(0.0042)	(0.0042)	(0.0107)	(0.0108)
Log Turn	0.0157		-0.0002		0.1591***	
	(0.0257)		(0.0196)		(0.0185)	
Constant	-15.0582***	-15.0968***	-21.5905***	-21.5978***	-24.5114***	-23.8702***
	(3.0336)	(3.0338)	(4.1912)	(4.0399)	(2.0130)	(2.0096)

Panel B: Total Regional Signatories on Regions

	Europe	Europe	Americas	Americas	Asia	Asia
Total PRI	0.0005***	0.0004***	-0.0004	-0.0004	0.0022***	0.0007
	(0.0001)	(0.0001)	(0.0005)	(0.0005)	(0.0007)	(0.0006)
SIN_PRI T	-0.0004**	-0.0004*	-0.0000	-0.0000	-0.0042***	-0.0048***
	(0.0002)	(0.0002)	(0.0008)	(0.0008)	(0.0012)	(0.0012)
Beta	-0.1718	-0.1732	0.1719	0.1715	0.0993	0.0996
	(0.1481)	(0.1477)	(0.2049)	(0.2038)	(0.0700)	(0.0701)
LogMCAP	0.7356***	0.7632***	1.1090***	1.1097***	1.2869***	1.3358***
	(0.1598)	(0.1596)	(0.2143)	(0.2106)	(0.1081)	(0.1079)
PB	0.2109***	0.2092***	0.1608***	0.1608***	0.2142***	0.2168***
	(0.0519)	(0.0516)	(0.0360)	(0.0359)	(0.0340)	(0.0341)
Debt	-1.8166***	-1.8105***	-0.0088**	-0.0087**	0.0140	0.0137
	(0.6393)	(0.6362)	(0.0042)	(0.0042)	(0.0107)	(0.0107)
Log Turn	0.0405		-0.0008		0.1311***	
	(0.0256)		(0.0201)		(0.0188)	
Constant	-13.7404***	-13.8869***	-21.3489***	-21.3693***	-24.7285***	-24.3456***
	(3.1122)	(3.1040)	(4.2056)	(4.0923)	(1.9768)	(1.9673)
Observations	31,351	31,351	20,172	20,172	98,331	98,331

Appendix C: Cross-sectional regression results - ESG

Table C1: Results from Fama and MacBeth on industries

The table reports coefficients obtained from cross-sectional regressions of ESG scores and their coherent standard errors. **Panel A** reports the yearly signatory effect on ESG scores using the Fama and MacBeth methodology (1973) estimated with Newey-West standard errors (1987). **Panel B** applies the same methodology with the use of the total number of signatories that have been accumulated during the sample period: 2006-2021. SIN_D is a factorial variable and refers to either 1 if the firm is sinful or 0 otherwise. Yearly PRI is the yearly signatories from the UN-PRI, whereas Total PRI is the accumulated amount. The coefficient for SIN_PRI Y and SIN_PRI_T is the interaction term between the categorization of sin and UN-PRI signatories. All remaining variables control for firm characteristics such as the natural logarithm of market capitalization, beta, price to book (PB), and debt ratio. ESG score has been regressed on the previous value of all variables.

Panel A: Yearly Signatories on industries

	Alcohol	**Alcohol**	**Tobacco**	**Tobacco**	**Gambling**	**Gambling**
SIN_D	-0.122	-0.005	0.789	0.832	-0.928	-1.075
	(0.122)	(0.005)	(0.789)	(0.832)	(0.928)	(1.075)
Yearly PRI	-1.198***	-1.026***	-1.470***	-1.295***	-0.383**	-0.337**
	(0.218)	(0.202)	(0.263)	(0.226)	(0.156)	(0.138)
SIN_PRI Y	**-0.014**	**0.006**	**0.069*****	**0.072*****	**-0.154*****	**-0.166*****
	(0.008)	**(0.009)**	**(0.016)**	**(0.017)**	**(0.032)**	**(0.035)**
MCAP (log)	9.142***	8.041***	10.544***	9.744***	5.764***	5.310***
	(0.530)	(0.498)	(0.413)	(0.397)	(0.877)	(0.847)
Beta	-0.720	-0.731	-0.214	-0.112	-0.544	-0.339
	(0.758)	(0.727)	(0.474)	(0.503)	(0.458)	(0.412)
PB	0.257	0.088	0.073	0.035	-0.074	0.062
	(0.165)	(0.154)	(0.073)	(0.073)	(0.137)	(0.121)
Debt	10.343***		3.671***		2.463*	
	(0.878)		(0.697)		(1.112)	
Constant	-17.078	-14.885	-12.948	-12.590	-1.977	-0.302
	(17.078)	(14.885)	(12.948)	(12.590)	(1.977)	(0.302)

Panel B: Total Signatories on industries

	Alcohol	**Alcohol**	**Tobacco**	**Tobacco**	**Gambling**	**Gambling**
SIN_D	-0.122	-0.005	0.789	0.832	-0.928	-1.075
	(0.122)	(0.005)	(0.789)	(0.832)	(0.928)	(1.075)
Total PRI	-0.418**	-0.378**	-0.522**	-0.463**	-0.049	-0.079*
	(0.151)	(0.145)	(0.196)	(0.181)	(0.056)	(0.036)
SIN_PRI T	**-0.002**	**0.005**	**0.028***	**0.030***	**-0.047*****	**-0.058****
	(0.002)	**(0.003)**	**(0.013)**	**(0.014)**	**(0.013)**	**(0.020)**
MCAP (log)	9.142***	8.041***	10.544***	9.744***	5.764***	5.310***
	(0.530)	(0.498)	(0.413)	(0.397)	(0.877)	(0.847)
Beta	-0.720	-0.731	-0.214	-0.112	-0.544	-0.339
	(0.758)	(0.727)	(0.474)	(0.503)	(0.458)	(0.412)
PB	0.257	0.088	0.073	0.035	-0.074	0.062
	(0.165)	(0.154)	(0.073)	(0.073)	(0.137)	(0.121)
Debt	10.343***		3.671***		2.463*	
	(0.878)		(0.697)		(1.112)	
Constant	-17.078	-14.885	-12.948	-12.590	-1.977	-0.302
	(17.078)	(14.885)	(12.948)	(12.590)	(1.977)	(0.302)
Observations	970	998	1 749	1 768	491	505

Table C2: Results from Fama and MacBeth on regions – global signatories

The table reports coefficients obtained from cross-sectional regressions of ESG scores and their coherent standard errors. **Panel A** reports the yearly signatory effect on ESG scores using the Fama and MacBeth methodology (1973) estimated with Newey-West standard errors (1987). **Panel B** applies the same methodology with the use of the total number of signatories that have been accumulated during the sample period: 2006-2021. SIN_D is a factorial variable and refers to either 1 if the firm is sinful or 0 otherwise. Yearly PRI is the yearly signatories from the UN-PRI, whereas Total PRI is the accumulated amount. The coefficient for SIN_PRI Y and SIN_PRI_T is the interaction term between the categorization of sin and UN-PRI signatories. All remaining variables control for firm characteristics such as the natural logarithm of market capitalization, beta, price to book (PB), and debt ratio. ESG score has been regressed on the previous value of all variables.

Panel A: Yearly Signatories on Regions

	Europe	**Europe**	**Americas**	**Americas**	**Asia**	**Asia**
SIN_D	0.137	0.154	-0.342	-0.334	1.033	0.549
	(0.137)	(0.154)	(0.342)	(0.334)	(1.033)	(0.549)
Yearly PRI	-1.113***	-0.940***	-1.293***	-1.188***	-1.400***	-1.308***
	(0.205)	(0.163)	(0.245)	(0.218)	(0.337)	(0.314)
SIN_PRI Y	0.029**	0.028***	-0.031***	-0.029***	-0.010	-0.005
	(0.009)	(0.009)	(0.008)	(0.007)	(0.012)	(0.010)
MCAP (log)	9.226***	8.479***	9.837***	9.355***	9.132***	8.817***
	(0.406)	(0.358)	(0.418)	(0.410)	(0.808)	(0.818)
Beta	1.081	1.132**	-0.872**	-0.516	-1.296*	-1.230*
	(0.659)	(0.480)	(0.342)	(0.290)	(0.599)	(0.560)
PB	-0.450**	-0.481**	-0.084	-0.021	-0.258	-0.745*
	(0.150)	(0.152)	(0.131)	(0.070)	(0.586)	(0.386)
Debt	3.780**		3.285**		6.180***	
	(1.275)		(1.012)		(0.975)	
Constant	-16.748	-15.479	-15.298	-16.447	-9.169	-10.644
	(16.748)	(15.479)	(15.298)	(16.447)	(9.169)	(10.644)

Panel B: Total Signatories on Regions

	Europe	**Europe**	**Americas**	**Americas**	**Asia**	**Asia**
SIN_D	0.137	0.154	-0.342	-0.334	1.033	0.549
	(0.137)	(0.154)	(0.342)	(0.334)	(1.033)	(0.549)
Total PRI	-0.412**	-0.344**	-0.478**	-0.442**	-0.529**	-0.506**
	(0.168)	(0.143)	(0.185)	(0.177)	(0.217)	(0.212)
SIN_PRI T	0.012*	0.012*	-0.011*	-0.011*	0.006	0.006
	(0.006)	(0.005)	(0.005)	(0.005)	(0.010)	(0.008)
MCAP (log)	9.226***	8.479***	9.837***	9.355***	9.132***	8.817***
	(0.406)	(0.358)	(0.418)	(0.410)	(0.808)	(0.818)
Beta	1.081	1.132**	-0.872**	-0.516	-1.296*	-1.230*
	(0.659)	(0.480)	(0.342)	(0.290)	(0.599)	(0.560)
PB	-0.450**	-0.481**	-0.084	-0.021	-0.258	-0.745*
	(0.150)	(0.152)	(0.131)	(0.070)	(0.586)	(0.386)
Debt	3.780**		3.285**		6.180***	
	(1.275)		(1.012)		(0.975)	
Constant	-16.748	-15.479	-15.298	-16.447	-9.169	-10.644
	(16.748)	(15.479)	(15.298)	(16.447)	(9.169)	(10.644)
Observations	1 066	1 088	1 146	1 162	998	1 021

Table C3: Result from Fama and MacBeth on regions - regional signatories

The table reports coefficients obtained from cross-sectional regressions of ESG scores and their coherent standard errors. **Panel A** reports the yearly signatory effect on ESG scores using the Fama and MacBeth methodology (1973) estimated with Newey-West standard errors (1987). **Panel B** applies the same methodology with the use of the total number of signatories that have been accumulated during the sample period: 2006-2021. SIN_D is a factorial variable and refers to either 1 if the firm is sinful or 0 otherwise. Regional Yearly PRI is the yearly signatories from the UN-PRI, whereas Regional Total PRI is the accumulated amount. The coefficient for SIN_PRI Y and SIN_PRI_T is the interaction term between the categorization of sin and UN-PRI signatories. All remaining variables control for firm characteristics such as the natural logarithm of market capitalization, beta, price to book (PB), and debt ratio. ESG score has been regressed on the previous year value of all variables.

Panel A: Yearly regional Signatories on Regions

	Europe	**Europe**	**Americas**	**Americas**	**Asia**	**Asia**
SIN_D	0.137	0.154	-0.342	-0.334	1.033	0.549
	(0.137)	(0.154)	(0.342)	(0.334)	(1.033)	(0.549)
Regional Yearly PRI	-2.076***	-1.748***	-5.676***	-5.144***	-27.637***	-25.752***
	(0.419)	(0.329)	(1.309)	(1.117)	(6.942)	(6.493)
SIN_PRI Y	0.055**	0.054**	-0.127***	-0.119***	-0.166	-0.071
	(0.018)	(0.017)	(0.036)	(0.031)	(0.191)	(0.156)
MCAP (log)	9.226***	8.479***	9.837***	9.355***	9.132***	8.817***
	(0.406)	(0.358)	(0.418)	(0.410)	(0.808)	(0.818)
Beta	1.081	1.132**	-0.872**	-0.516	-1.296*	-1.230*
	(0.659)	(0.480)	(0.342)	(0.290)	(0.599)	(0.560)
PB	-0.450**	-0.481**	-0.084	-0.021	-0.258	-0.745*
	(0.150)	(0.152)	(0.131)	(0.070)	(0.586)	(0.386)
Debt	3.780**		3.285**		6.180***	
	(1.275)		(1.012)		(0.975)	
Constant	-16.748	-15.479	-15.298	-16.447	-9.169	-10.644
	(16.748)	(15.479)	(15.298)	(16.447)	(9.169)	(10.644)

Panel B: Total regional Signatories on Regions

	Europe	**Europe**	**Americas**	**Americas**	**Asia**	**Asia**
SIN_D	0.137	0.154	-0.342	-0.334	1.033	0.549
	(0.137)	(0.154)	(0.342)	(0.334)	(1.033)	(0.549)
Regional Total PRI	-0.806**	-0.670**	-2.094**	-1.929**	-8.624**	-8.197**
	(0.336)	(0.285)	(0.782)	(0.739)	(3.083)	(2.990)
SIN_PRI T	0.025*	0.023*	-0.046*	-0.045*	0.066	0.076
	(0.012)	(0.010)	(0.021)	(0.020)	(0.136)	(0.105)
MCAP (log)	9.226***	8.479***	9.837***	9.355***	9.132***	8.817***
	(0.406)	(0.358)	(0.418)	(0.410)	(0.808)	(0.818)
Beta	1.081	1.132**	-0.872**	-0.516	-1.296*	-1.230*
	(0.659)	(0.480)	(0.342)	(0.290)	(0.599)	(0.560)
PB	-0.450**	-0.481**	-0.084	-0.021	-0.258	-0.745*
	(0.150)	(0.152)	(0.131)	(0.070)	(0.586)	(0.386)
Debt	3.780**		3.285**		6.180***	
	(1.275)		(1.012)		(0.975)	
Constant	-16.748	-15.479	-15.298	-16.447	-9.169	-10.644
	(16.748)	(15.479)	(15.298)	(16.447)	(9.169)	(10.644)
Observations	1 066	1 088	1 146	1 162	998	1 021

Table C4: Result from fixed effect regressions on industries

The table reports coefficients obtained from cross-sectional regressions of ESG scores and their coherent standard errors. **Panel A** reports the yearly signatory effect on ESG scores using the fixed effect. **Panel B** applies the same methodology with the use of the total number of signatories that have been accumulated during the sample period: 2006-2021. Yearly PRI is the yearly signatories from the UN-PRI, whereas Total PRI is the accumulated amount. The coefficient for SIN_PRI Y and SIN_PRI_T is the interaction term between the categorization of sin and UN-PRI signatories. All remaining variables control for firm characteristics such as the natural logarithm of market capitalization, beta, price to book (PB), and debt ratio. ESG score has been regressed on the previous year value of all variables.

Panel A: Yearly Signatories on industries

	Alcohol	**Alcohol**	**Tobacco**	**Tobacco**	**Gambling**	**Gambling**
Yearly PRI	0.023***	0.024***	0.027***	0.028***	0.030***	0.030***
	(0.005)	(0.005)	(0.002)	(0.002)	(0.005)	(0.005)
SIN_PRI Y	0.000	0.000	-0.003	-0.004	0.003	0.003
	(0.005)	(0.005)	(0.003)	(0.003)	(0.006)	(0.006)
logMCAP	1.538	0.980	5.388***	4.350***	0.616	0.820
	(1.457)	(1.212)	(1.500)	(1.377)	(2.191)	(1.622)
Beta	-0.120	-0.103	-0.448**	-0.437**	0.519	0.463
	(0.221)	(0.214)	(0.182)	(0.178)	(0.374)	(0.357)
PB	-0.009	-0.008	-0.017***	-0.017***	-0.001***	-0.001***
	(0.007)	(0.007)	(0.005)	(0.005)	(0.000)	(0.000)
Debt	1.536		0.889***		0.097	
	(1.181)		(0.322)		(1.127)	
Constant	3.639	16.180	-79.414**	-55.818*	17.433	12.906
	(32.785)	(27.017)	(33.638)	(30.755)	(48.599)	(35.520)

Panel B: Total Signatories on industries

	Alcohol	**Alcohol**	**Tobacco**	**Tobacco**	**Gambling**	**Gambling**
Total PRI	0.007***	0.007***	0.009***	0.009***	0.010***	0.010***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
SIN_PRI T	0.000	0.000	-0.001	-0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)
logMCAP	-0.510	-0.690	3.251**	2.681**	-0.999	-0.136
	(1.374)	(1.126)	(1.313)	(1.138)	(1.932)	(1.475)
Beta	0.110	0.128	-0.242	-0.233	0.526*	0.432
	(0.207)	(0.199)	(0.166)	(0.162)	(0.289)	(0.286)
PB	-0.009	-0.009	-0.015***	-0.015***	-0.001***	-0.001***
	(0.007)	(0.007)	(0.004)	(0.004)	(0.000)	(0.000)
Debt	0.442		0.453		-0.814	
	(1.097)		(0.284)		(0.973)	
Constant	46.659	50.243**	-34.882	-22.025	48.228	29.016
	(30.832)	(25.050)	(29.389)	(25.432)	(42.700)	(32.005)
Observations	970	998	1 749	1 768	491	505

Table C5: Results from fixed effect on regions - global signatories

The table reports coefficients obtained from cross-sectional regressions of ESG scores and their coherent standard errors. **Panel A** reports the yearly signatory effect on ESG scores using the fixed effect model. **Panel B** applies the same methodology with the use of the total number of signatories that have been accumulated during the sample period: 2006-2021. Yearly PRI is the yearly signatories from the UN-PRI, whereas Total PRI is the accumulated amount. The coefficient for SIN_PRI Y and SIN_PRI_T is the interaction term between the categorization of sin and UN-PRI signatories. All remaining variables control for firm characteristics such as the natural logarithm of market capitalization, beta, price to book (PB), and debt ratio. ESG score has been regressed on the previous year value of all variables.

Panel A: Yearly Signatories on Regions

	Europe	**Europe**	**Americas**	**Americas**	**Asia**	**Asia**
Yearly PRI	0.030***	0.031***	0.020***	0.020***	0.030***	0.032***
	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)
SIN_PRI Y	-0.006	-0.007	0.003	0.002	-0.003	-0.003
	(0.004)	(0.004)	(0.005)	(0.004)	(0.004)	(0.004)
logMCAP	3.716**	3.146**	4.843***	4.119***	2.858	1.805
	(1.838)	(1.530)	(1.623)	(1.312)	(1.819)	(1.503)
Beta	0.100	0.076	-0.351	-0.294	-0.173	-0.155
	(0.294)	(0.285)	(0.257)	(0.246)	(0.198)	(0.192)
PB	-0.018***	-0.018***	-0.001***	-0.001***	-0.183	-0.167
	(0.004)	(0.004)	(0.000)	(0.000)	(0.149)	(0.145)
Debt	0.469*		1.322		2.466	
	(0.269)		(0.936)		(1.684)	
Constant	-35.908	-23.226	-69.325*	-52.600*	-33.737	-9.780
	(40.793)	(33.815)	(36.733)	(29.431)	(40.679)	(33.284)

Panel B: Total Signatories on Regions

	Europe	**Europe**	**Americas**	**Americas**	**Asia**	**Asia**
Total PRI	0.009***	0.009***	0.007***	0.007***	0.009***	0.010***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
SIN_PRI T	-0.002	-0.002	0.001	0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
logMCAP	1.830	1.774	1.593	1.474	1.903	1.025
	(1.665)	(1.330)	(1.530)	(1.216)	(1.570)	(1.322)
Beta	0.318	0.296	-0.213	-0.193	0.006	0.016
	(0.242)	(0.237)	(0.241)	(0.229)	(0.189)	(0.183)
PB	-0.017***	-0.016***	-0.001***	-0.001***	-0.159	-0.144
	(0.004)	(0.004)	(0.000)	(0.000)	(0.133)	(0.130)
Debt	0.076		0.175		2.090	
	(0.248)		(0.757)		(1.576)	
Constant	2.965	3.961	0.364	2.981	-16.357	3.579
	(36.843)	(29.345)	(34.484)	(27.184)	(35.067)	(29.193)
Observations	1 066	1 088	1 146	1 162	998	1 021

Table C6: Result from fixed effect on regions using regional signatories

The table reports coefficients obtained from cross-sectional regressions of ESG scores and their coherent standard errors. **Panel A** reports the yearly signatory effect on ESG scores using the fixed effect model. **Panel B** applies the same methodology with the use of the total number of signatories that have been accumulated during the sample period: 2006-2021. Yearly PRI is the yearly signatories from the UN-PRI, whereas Total PRI is the accumulated amount. The coefficient for SIN_PRI Y and SIN_PRI_T is the interaction term between the categorization of sin and UN-PRI signatories. All remaining variables control for firm characteristics such as the natural logarithm of market capitalization, beta, price to book (PB), and debt ratio. ESG score has been regressed on the previous year value of all variables.

Panel A: Yearly Regional Signatories on Regions

	Europe	**Europe**	**Americas**	**Americas**	**Asia**	**Asia**
Yearly PRI	0.055***	0.057***	0.058***	0.060***	0.378***	0.394***
	(0.007)	(0.006)	(0.008)	(0.008)	(0.035)	(0.034)
SIN_PRI Y	-0.011	-0.012	0.007	0.005	-0.030	-0.030
	(0.008)	(0.008)	(0.013)	(0.013)	(0.049)	(0.050)
logMCAP	3.707**	3.110**	4.893***	4.157***	2.609	1.682
	(1.837)	(1.531)	(1.636)	(1.319)	(1.652)	(1.378)
Beta	0.041	0.015	-0.331	-0.273	-0.030	-0.006
	(0.293)	(0.285)	(0.257)	(0.246)	(0.188)	(0.181)
PB	-0.018***	-0.018***	-0.001***	-0.001***	-0.183	-0.168
	(0.004)	(0.004)	(0.000)	(0.000)	(0.148)	(0.144)
Debt	0.491*		1.342		2.216	
	(0.270)		(0.967)		(1.597)	
Constant	-35.653	-22.369	-69.745*	-52.745*	-28.803	-7.660
	(40.786)	(33.851)	(37.039)	(29.571)	(36.916)	(30.456)

Panel B: Total Regional Signatories on Regions

	Europe	**Europe**	**Americas**	**Americas**	**Asia**	**Asia**
Total PRI	0.017***	0.017***	0.022***	0.022***	0.105***	0.109***
	(0.002)	(0.002)	(0.003)	(0.003)	(0.010)	(0.009)
SIN_PRI T	-0.003	-0.003	0.002	0.002	-0.010	-0.010
	(0.002)	(0.002)	(0.005)	(0.004)	(0.013)	(0.014)
logMCAP	1.732	1.693	2.358	2.081*	2.313	1.435
	(1.662)	(1.328)	(1.555)	(1.239)	(1.623)	(1.353)
Beta	0.319	0.297	-0.238	-0.210	-0.041	-0.024
	(0.240)	(0.235)	(0.244)	(0.232)	(0.186)	(0.180)
PB	-0.017***	-0.016***	-0.001***	-0.001***	-0.167	-0.152
	(0.004)	(0.004)	(0.000)	(0.000)	(0.140)	(0.137)
Debt	0.064		0.453		2.099	
	(0.249)		(0.798)		(1.600)	
Constant	5.093	5.701	-15.429	-9.161	-22.978	-2.979
	(36.777)	(29.295)	(35.088)	(27.722)	(36.286)	(29.911)
Observations	1 066	1 088	1 146	1 162	998	1 021