Nijmegen School of Management
Department of Economics and Business Economics
Master's Thesis Economics (MAN-MTHEC)

Environmental Regulation and FDI Inflows: Evidence from OECD countries

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Vorden, 29 June 2025

Program: Master's Program in Economics
Specialisation: Global Economics and Business
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Abstract

This thesis investigates the effect of environmental regulations on foreign direct investment (FDI) inflows. Existing literature provides mixed evidence, and this thesis aims to contribute to the academic debate. It does this by disaggregating environmental regulations into market-based, nonmarket-based and technology support policies and conducting a regional, sectoral and income group analysis. A two-way fixed effects model is employed on a panel dataset of 33 OECD countries from 2002 to 2020. The results show that there is no significant overall effect of environmental policy stringency (EPS) on FDI inflows. However, the heterogeneity analysis reveals that there is significant heterogeneity across regions and sectors. In some regions, EPS and its subcomponents do attract FDI and in other regions there is no significant relationship. Furthermore, the sectoral analysis shows that in most sectors there is no significant relationship, in other sectors the results reveal that there are significant positive and negative effects of EPS on FDI inflows. These results offer important insights into the relationship between environmental regulations and FDI, as the relationship is shown to be context dependent.

No Generative AI tools were used during the development and writing of this thesis. By submitting this thesis I declare that I am fully responsible for the accuracy and completeness of its content.

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1 Introduction

Environmental regulations have been put in place by countries all over the globe to tackle issues like air pollution, resource depletion, and climate change. These environmental regulations, such as carbon pricing, emission standards and subsidies for clean technologies, are crucial for meeting the targets set by the Paris Agreement and the United Nations Sustainable Development Goals. However, there is no consensus yet in the academic field whether these environmental policies either harm or benefit countries economically, particularly by affecting attractiveness for Foreign Direct Investments (FDI). FDI is seen as a key driver of economic development and for this reason, it is important to understand how it is affected by stricter environmental regulations.

According to the Pollution Haven Hypothesis, environmental regulations may raise costs for businesses and therefore deter foreign direct investment (Copeland & Taylor, 2003). On the other hand, the Porter Hypothesis suggests that environmental policies may foster innovation, increasing productivity and therefore increasing attractiveness for FDI (Porter & Van Der Linde, 1995). While both perspectives offer theoretical sound explanations, existing empirical literature remains inconclusive on the relationship between environmental regulations and FDI inflows. Furthermore, previous literature mainly examined the effect on country and aggregate level. Hence there is limited insight into how the effect of environmental regulation on FDI differs across sectors, geographic location and income groups.

To address these gaps, this study seeks to empirically examine the relationship between environmental regulation and FDI. The primary aim is to test whether stricter environmental regulations deter or encourage the inflow of FDI. Next to overall environmental regulations, this thesis tests how market-based, nonmarket-based and technology support policies affect FDI inflows. Furthermore, the study looks at how these regulations affect FDI inflows across different sectors. Additionally, we test whether the relationship between strictness of environmental regulations and FDI inflows varies across geographic regions and income groups. By including this heterogeneity analysis, this study seeks to go beyond the overall relationship and identify if FDI inflows in certain regions or industries respond differently to changes in stringency of

environmental regulations. Given the scope of the research, it gives following research question: *What is the effect of Environmental Policy Stringency and its subcomponents on Foreign Direct Investment Inflows and does this effect differ across sectors, geographic regions and income groups?* To answer the research question, five testable hypotheses are derived from the literature review.

To test these hypotheses, this study employs a two-way fixed effects model, while examining 33 out of the 38 OECD countries from 2003 to 2020. We grouped countries into different geographic regions: Western Europe, Northern Europe, Southern Europe, Eastern Europe, Americas and Asia Pacific. Furthermore, countries are separated into low-, middle- and high-income groups. The dependent variable in the study is the annual FDI inflows in US dollars, which is further disaggregated by sector, allowing for comparison of eight different sectors. To capture environmental regulations, this study uses the Environmental Policy Stringency index (EPS) as the key independent variable. It is developed by the OECD, which scores every country based on the stringency of their environmental policies and offers a disaggregation into three subcomponents: EPS Market, EPS Nonmarket and EPS Technology. To isolate the relationship between the dependent and independent variable, the study uses a set of control variables. These are the determinants of FDI that stem from the literature review: Gross domestic product (GDP), trade openness, regulatory quality and tax rate. All the data is sourced from OECD, UNCTAD and the World Bank, ensuring trustworthy data.

The results of this analysis show that there is no overall effect of EPS on FDI inflows. The same holds for the three subcomponents. Moreover, looking at the effects of EPS on FDI inflows across the three income groups, still no significant relationship is found. However, when disaggregating the sample into geographic regions, this thesis found that the effect of EPS and its subcomponents differs across regions. In most regions EPS or one of its subcomponents either attracted FDI or there was no significant relationship. Similarly, the sectoral analysis showed that although in most sectors there was no significant relationship, in specific sectors there was found a significant effect of EPS on FDI inflows. Also, this effect has opposing directions depending on the sector.

The results show that the effect of EPS on FDI is not uniform, but context dependent. The findings of the regional and sectoral analysis are a significant contribution to literature in this field and offer a new insight into the current debate. Furthermore, for policy makers the results are important as they reveal that the impact of environmental regulations is dependent on the region or sector. Given the role that FDI plays in driving economic development, understanding how it responds to environmental regulations is crucial.

The remainder of this thesis is organized in the following way. The next part, chapter 2 gives an overview of the literature relevant to this study. It provides theoretical perspectives and empirical findings on environmental regulation, FDI and its relationship. In chapter 3 the methodology and data are discussed, describing the approach, variables and data in detail. Chapter 4 reports the results of the empirical analysis, where the baseline results are followed by the heterogeneity analysis. In the end, chapter 5 summarizes the findings, discusses implications, offers directions for future research and finally concludes the thesis.

2 Literature review

This chapter aims to ground the analysis in relevant theory, clarify and define key concepts central to this thesis and providing a structured review of the relevant literature in the field. By doing so, underlying mechanisms are revealed, major contributions and gaps in research are highlighted and ultimately testable hypotheses are derived to guide the empirical analysis. This approach ensures that this thesis is firmly rooted in extant literature, while addressing ongoing theoretical debates.

2.1 Theoretical Perspectives

To study the relationship between environmental policy stringency and foreign direct investment inflows, it is crucial to understand why firms engage in FDI. The most pronounced theory that sheds light on this question is the ‘Eclectic Paradigm’ from John Dunning (1980). He argues that firms engage in FDI when they can simultaneously exploit three advantages: ownership, location

and internalization. Hence it is also known as the OLI paradigm, where ownership advantages refer to the capabilities that a company possesses, which gives it an advantage compared to local companies. The internalization refers to the advantage that a company has when it internalizes activities, so keeps activities within the firm, rather than outsourcing or licensing it to external firms.

The other advantage is location, which is important for this thesis, as it refers to the advantages that a country has to offer to the company. Generally, this advantage is shaped by factors such as infrastructure, availability of natural resources and costs of labour. When such factors are available it affects the location advantage positively, according to Dunning. Environmental regulations, also fall in this category, as stricter regulations might be improving or worsening the location advantage.

Copeland & Taylor (2003) proposed their 'Pollution Haven Hypothesis', which states that firms are more likely to relocate their operations to countries with laxer environmental regulations. They do this to avoid the high costs to comply with environmental regulations in the country with stricter policies. This theory builds on the idea that environmental regulations are a factor in determining the location advantage in the OLI paradigm by Dunning, as it argues that stricter environmental regulations lead to a decreased location advantage. Following this reasoning, increased environmental policy stringency would lead to lower foreign direct investment inflows.

On the other hand, the Porter hypothesis suggests that environmental regulations can improve the location advantage of a country (Porter & Van Der Linde, 1995). It suggests that well-designed environmental regulations can foster innovation and hereby improve the competitiveness of a country. These regulations can lead to cost reductions, quality improvements and can create new market opportunities. Hence, based on this hypothesis, increased environmental regulations can increase foreign direct investment inflows. This thesis examines the applicability of the Pollution Haven Hypothesis and Porter Hypothesis.

2.2 Environmental Policy Stringency

Empirical research on environmental regulations and its implications is highly dependent on the measurement of the stringency of the environmental regulations as different operationalizations lead to dissimilar results as stated by Brunel & Levinson (2016). In this light they identified five dominant methods to measure environmental policy and their drawbacks.

The first method is to look at the abatement costs that the private-sector makes to comply with environmental obligations (Brunel & Levinson, 2016). Often this is measured using calculations based on financial data or company surveys. Still, there are problems with this approach, mainly because it is difficult to compare between countries and not all abatement costs necessarily come from environmental regulations.

Another method is the direct assessment of regulations, where most studies focus on specific pollutants and use natural experiments or instrumental variables to address simultaneity problems (Brunel & Levinson, 2016). For instance, several studies have used the National Ambient Air Quality Standards (NAAQS) as proxy for environmental policies (Henderson, 1996; Becker & Henderson, 2000). Problems with this approach arise when trying to analyze multiple cases at a time and it is impossible to compare results over time.

Another approach is the use of the emission of greenhouse gases or pollution as a proxy (Brunel & Levinson, 2016). For example, Smarzynska and Wei (2004) use declines in lead, carbon dioxide and water pollution as proxies for environmental policy stringency. Although it seems to be simple to compare over time and between countries, problems arise when assessing whether the changes in emissions or pollution stem from stricter environmental regulations.

The fourth type of measurement involves using expenditures of enforcement of the public sector (Brunel & Levinson, 2016). For example, Gray (1997) used state budgets for natural and environmental resources as a proxy. Furthermore, a study from Shadbegian and Gray (2009) took public enforcement efforts as a proxy. The major drawback of these approaches is that

government engagement in environmental challenges might mean that it takes over environmental efforts in the private sector. Therefore, the relationship between government expenditure and policy stringency is not straightforward.

The last type of approach is the use of a composite index to allow for cross-country comparisons (Brunel & Levinson, 2016). There have for example been indexes based on surveys on government officials (Tobey, 1990), assessments of environmental reports (Dasgupta et al., 2001) and indexes bases on counts of environmental regulations (Smarzynska and Wei, 2004). Still, these indexes often lack objectivity, comparability and interpretability.

Previous attempts seemed to suffer from a variety of issues, but Botta and Koźluk (2014) identified the four key challenges in measuring stringency of environmental regulations: multidimensionality, sampling, identification and lack of data. Multidimensionality refers to the fact that it is difficult to make an index of all the different types of policy instruments and the multitude of environmental goals they try to achieve. Sampling problems arise when policies shape industrial structures, which distorts assessments of stringency. Identification challenges appear when trying to isolate the effects of environmental policy stringency from other factors that also influence environmental outcomes. Lastly, lack of data is often a practical problem when trying to measure environmental regulations. To overcome these challenges, Botta and Koźluk (2014) created a composite index that allows for cross-country analysis of economic effect of environmental policies, which this thesis utilizes as measurement for environmental regulations, the environmental policy stringency index.

2.3 Determinants of FDI Inflows

Besides that EPS might influence FDI, there are also other determinants of FDI inflows, which previous literature has already identified. Firstly, the size of the economy of the receiving country is a strong predictor of FDI (Chakrabarti, 2001; Asiedu, 2002). Large economies often offer large consumer bases and scale advantages, also they reflect economic resilience as well as the

availability of labour in a country. These factors reduce risk of investment and increase profit potential.

Next to GDP, the openness to trade of a country is a determinant of FDI, as it is shown to positively influence FDI (Benabdennour et al., 2024; Nikolina and Panagiotis, 2000). Trade openness signals a country's willingness to engage in international trade and investment and therefore maintains low entry barriers for foreign firms. Hence, it becomes more attractive for firms to engage in FDI in countries with high openness to trade.

Moreover, literature argues that higher levels of regulatory quality positively influence FDI inflows (Globerman & Shapiro, 2002; Bénassy-Quéré et al., 2007). Regulatory quality represents the strength of the institutional framework of a country, which creates a transparent and predictable regulatory environment. This may lower the costs and risks of doing business. Therefore, higher regulatory quality tends to attract more FDI inflows.

Lastly, as firms constantly seek for the best returns on investment, lower corporate tax rates are shown to be an incentive for FDI inflows (Lesmana, 2023; Mooij & Ederveen, 2008). When a country has a relatively low corporate tax rate, it leads to higher profits for firms and therefore it attracts FDI inflows.

2.4 Environmental Policy Stringency and FDI

While there is consensus about traditional determinants of FDI, studies on the effect of environmental regulations on FDI remain rather inconclusive. Firstly, looking at studies supporting the pollution haven hypothesis, Borozan et al. (2022) in their study using an autoregressive distributed lag model on G7 and BRICS countries from 2000 to 2015, found that environmental policy stringency has a marginal negative effect on FDI inflows in the long run. This study used the OECD EPS index. In the short run, they found no significant relationship between EPS and FDI inflows. Using the environmental performance index of Yale University, Sarmidi et al. (2015) examined the effect of environmental regulations on FDI inflows in a sample of 110 countries

from 2005 to 2012. Using dynamic panel GMM estimation, they found that stringent environmental regulations deter FDI inflows. However, with low levels of corruption, environmental policy stringency increases FDI inflows, highlighting the importance of regulatory quality in the relationship. Gorus and Karagol (2022) employed a Durbin-Hausman panel cointegration and Granger causality tests to study the long-term relationship between EPS and FDI inflows. They found that higher EPS deters FDI, thus supporting the Pollution Haven Hypothesis.

In contrast, Pienknagura (2024) in their study on 174 countries from 2003 to 2019, find using a fixed effects approach that a higher amount of active environmental regulations has a positive effect on FDI inflows in all sectors, providing weak evidence for the Porter Hypothesis. Rahul and Viswanathan (2018) employed a random and fixed effects model for the period from 2005 to 2015 on a sample of 33 countries of which most are part of OECD. Their results show that having higher levels of EPS attracts FDI inflows. Satoğlu and Salmon (2024) also support the Porter Hypothesis as they find that, using a random effects model on a panel of 38 countries, there is a positive relationship between EPS and FDI inflows.

To go beyond the baseline effects, Satoğlu and Salmon (2024) dive deeper into EPS, as they also look at the subcomponents of EPS. The EPS index from OECD offers a disaggregation into three components: market-based policies, nonmarket-based policies and technology support policies (Kruse et al,. 2022). Satoğlu and Salmon (2024) find that nonmarket-based policies positively affect FDI inflows, as well as technology support policies. Market-based policies however show a negative coefficient, but insignificant. Further research on this disaggregation of environmental policy remains scarce as this disaggregation has been published in 2022.

Additionally, Satoğlu and Salmon (2024) find that high-income countries with strict environmental policies attract more FDI into their countries, compared to countries with lower income levels. Furthermore, Pienknagura (2024) found that stricter climate policies boost green FDI, especially

in middle- and high-income countries. These studies highlight the necessity to consider income differences in countries when studying the relationship between EPS and FDI.

Although Poelhekke and Van der Ploeg (2015) found that there is no strong evidence on the overall relationship between EPS and FDI, in their study using a Heckman two-step selection model they did find substantial sectoral heterogeneity. They find that sectors that are clean or less-polluting are inclined to invest more in countries with stricter environmental regulations, whereas pollution-intensive sectors show no significant relationship. Pienknagura (2025) separated green sectors from other sectors and found that in such sectors stricter climate policies do increase FDI inflows. This highlights that there exists sectoral heterogeneity in the effect of EPS on FDI. Although these studies have shown that there are sectoral differences, no studies have analyzed FDI in different sectors in combination with the EPS index from OECD yet, leaving a gap in the research.

Overall, the findings on the baseline effect of EPS on FDI remain inconclusive as evidence is pointing in different directions. Therefore, the debate is far from settled. Furthermore, only recent work has been able to use the disaggregated components of the EPS index. Due to the scarcity of empirical work on these subcomponents of EPS in relation to FDI inflows, there remains a gap. Furthermore, some studies found sectoral heterogeneity of the relationship between environmental regulations and FDI inflows. Nevertheless, there exists no research that used the EPS index in combination with a sectoral breakdown of FDI. Lastly, regional heterogeneity of the relationship between EPS and FDI inflows remains unexplored. This thesis aims to contribute to literature by providing new evidence and addressing several gaps identified in this literature review.

2.5 Hypotheses

Based on previously discussed theories and empirical work, this thesis conceptualizes that the relationship between FDI and EPS is context dependent. EPS might deter or attract FDI depending

on the type of policy, sector, income-group and per region. The following testable hypotheses are derived from the results of the reviewed literature.

H1: There is a significant relationship between EPS and FDI inflows.

H2: The three subcomponents of EPS have different effects on FDI inflows

H3: The relationship between EPS and FDI differs across income groups.

H4: The relationship between EPS and FDI differs across regions.

H5: The relationship between EPS and FDI differs across sectors.

3 Data and methodology

3.1 Data description

To test the hypotheses, a dataset for the countries and variables involved has been compiled. The data utilized is a panel dataset, which combines cross-sectional data and time series data. The panel is balanced, such that it follows the same countries throughout the time frame. Furthermore, there is no missing data in the dataset. Data is collected from OECD Data, UNCTAD Data and World Bank Data, which are widely known as trusted sources.

The dataset includes 33 of the 38 countries that comprise the Organisation for Economic Co-operation and Development. Specifically, the dataset includes the following countries: Australia, Austria, Belgium, Canada, Chile, Czechia, Denmark, Estonia, Germany, Finland, France, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, Slovenia, Slovakia, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States. Although Colombia, Costa Rica, Latvia, Luxembourg and Lithuania are OECD members, data was not available, thus they are left out of the sample. Additionally, we separate countries based on their geographic location. We create a group for Western Europe, Northern Europe, Southern Europe, Eastern Europe, Americas and Asia-Pacific. Moreover, countries will be grouped based on their level of income, creating a group for lower-income countries and higher-income countries.

The timespan in the study covers the years from 2002 to 2020, which gives 19 time periods. This provides a comprehensive view of the changes in the variables of the years. Although a longer period would allow for a longer-term perspective, data on Foreign Direct Investment and Environmental Policy Stringency is not available outside these periods, which limits our timespan. Still, major events are captured in this timeframe, like the Kyoto protocol entering into force in 2005 and the Paris Agreement being signed in 2015.

3.2 Variable definitions

To operationalize the model, measurable variables that capture the relationship between environmental regulation and foreign direct investment are selected. The dependent variable is Foreign Direct Investment Inflows measured in millions. It is sourced from UNCTADstat and it is described as an investment made by an enterprise in one country with the objective of establishing a lasting interest in an enterprise in another country (*UNCTADStat Data Centre*, n.d.). A 10 percent voting power threshold is used to ensure there is a significant degree of influence over the enterprise. We use the annual flow of FDI that a country receives. Furthermore, in the analysis the natural logarithmic transformation of FDI is used to normalize the distributions as levels of FDI differ greatly across countries, as shown in table 3.2. To account for the negative values for FDI, a constant is added the size of the lowest observation, to ensure that all observations have a positive value.

The main independent variable this study utilizes is the strictness of environmental regulation in a country. This thesis operationalizes this by using the Environmental Policy Stringency Index (EPS) (Kruse et al. 2022; OECD, n.d.-b). It is a tool developed by the OECD to measure the stringency of environmental policy across countries. It focuses on climate change and air pollution mitigation policies. On a scale from 0 (least stringent) to 6 (most stringent), it gives a score to OECD countries per year. So, a higher value indicates that a country implemented stricter environmental policies. This index enables this thesis to compare countries over time.

The EPS index not only covers the overall strictness, but it is also broken down in 3 types of policy, as it considers market based, non-market based and technology support policies in the index (Kruse et al. 2022). Market-based policies are measures that use market mechanisms. Examples of this are CO2 trading schemes, CO2 tax, nitrogen tax and diesel tax. On the other hand, nonmarket-based policies capture the policies that go outside of the market. These are for instance emission limits on sulphur and nitrogen. Lastly, the technology support policies cover the support for clean technologies, for instance in the form of financial support for clean technology initiatives, for example in the form of support for wind and solar energy.

In figure 3.1 a scatterplot of EPS against log-transformed FDI inflows is displayed. The red line shows the linear trend, which shows that there is a slight positive trend, suggesting a weak positive relationship between EPS and FDI inflows. Furthermore, we see that there is substantial variation in both FDI inflows and EPS. In figure 3.2 average EPS and FDI inflows are plotted across the timespan. Here we see that up until 2010, EPS seems to be increasing. After this it remains relatively flat, and from 2019 it starts increasing again. For FDI there is different pattern, mostly around 2007 and 2015 there are high FDI inflows. From this chart no initial relationship between the variables comes to the light, highlighting the necessity to include other factors in this analysis to isolate the effect of EPS on FDI inflows.

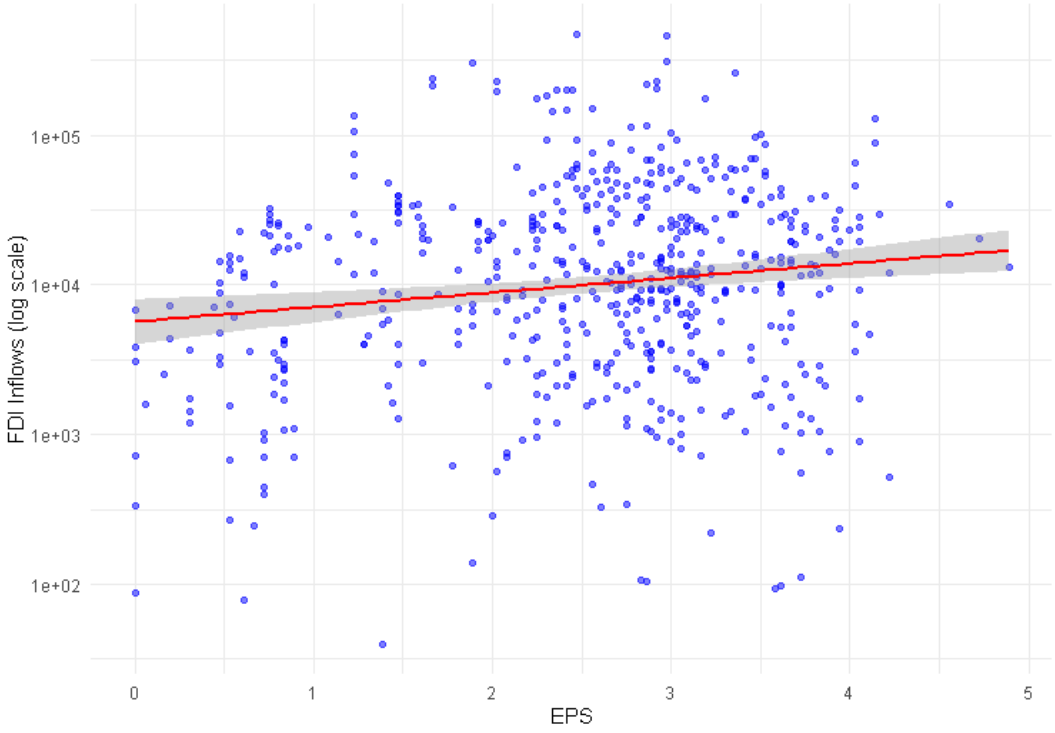

Figure 3.1: Scatterplot: ln(FDI) Inflows and EPS

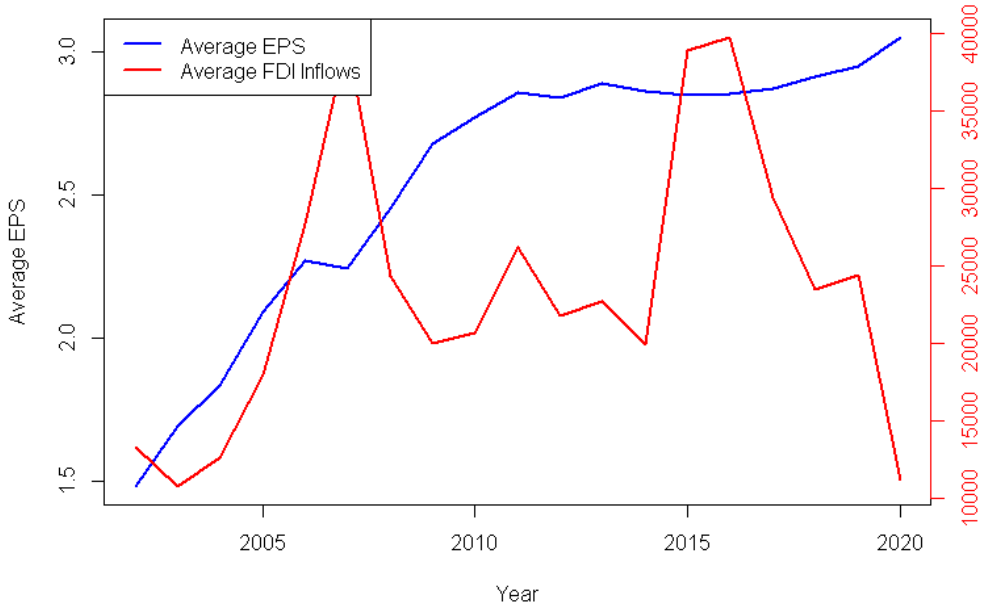

FIGURE 3.2: AVERAGE EPS AND FDI INFLOWS OVER TIME

Therefore, to better estimate the relationship between EPS and FDI inflows, this study will include control variables to account for determinants of FDI inflows, which were discussed in the literature review. This way, the study aims to enhance internal validity by limiting the influence

of confounding variables. The first variable this thesis will control for is the gross domestic product (GDP), which measures that value added created through the production of goods and services in a country during a year (OECD, n.d.-d). It is collected from OECD data and is measured in millions of US dollars. As shown in table 3.2, levels of GDP differ much, therefore we use the natural logarithmic transformation of GDP, to create a better interpretable distribution of observations. We add this to the model to filter out the effect that market size has on FDI inflows.

Next to GDP, the openness to trade is included in the model. As shown in the literature review, it is expected to influence FDI inflows, as it signals lower barriers for investments, highlighting the necessity to control for this variable. To operationalize this variable, we use the amount of trade as a percentage of GDP (World Bank, n.d.-b). Trade is the sum of annual exports and imports in a country and the data is collected from the World Bank Databank.

Furthermore, following from the previously mentioned literature, including the regulatory environment of countries a variable is necessary to control for the effect it has on FDI inflows. Therefore, this thesis uses the Regulatory Quality index from the World Bank Databank (World Bank, n.d.-a). It captures the ability of governments to formulate and implement sound policies and regulations. It gives an annual estimate per country ranging from -2.5 to 2.5.

Lastly, we use the corporate tax rate of a country as it might negatively influence FDI inflows, as shown in the literature review. To incorporate this variable in the model we collected corporate tax rate data from OECD Data (OECD, n.d.-a). It is the top marginal rate for corporate income tax, thus the maximum possible rate that an enterprise must pay in income taxes.

In table 3.1 the key variables in this study are once more presented in a structured way, along with a description, the data source and the unit of measurement. In table 3.2 the descriptive statistics for these variables are displayed. The values emphasize the necessity to transform the FDI and GDP variables. Furthermore, it shows that Nonmarket EPS policies are mostly implemented, followed by technology support and market-based measures. The descriptive

statistics reassure there is sufficient variation in the variables, which is important for the econometric analysis.

Table 3.1: Variable Descriptions:

Variable	Description	Source	Unit
FDI Inflows	Annual FDI Inflows	UNCTAD	Millions USD
EPS	Environmental Policy Stringency	OECD	Index (0-6)
EPS Market	Market-based environmental policy stringency	OECD	Index (0-6)
EPS Nonmarket	Nonmarket-based environmental policy stringency	OECD	Index (0-6)
EPS Technology	Technology support environmental policy stringency	OECD	Index (0-6)
GDP	Annual gross domestic product	OECD	US Dollars
Trade Openness	Openness to trade of countries	World Bank	Percent (%)
Regulatory Quality	Regulatory quality of governments	World Bank	Index
Tax Rate	Corporate income tax rate	World Bank	Percent (%)

TABLE 3.2: DESCRIPTIVE STATISTICS

Variable	N	Mean	Std. Dev.	Min	Max
FDI Inflows	627	23417	48191	-100954	467625
Ln(FDI Inflows)	627	11,67	0,542	0	13,251
EPS	627	2,552	1	0	4,889
EPS Market	627	1,342	0,884	0	4,167
EPS Nonmarket	627	4,333	1,507	0	6
EPS Technology	627	1,982	1,345	0	6
GDP	627	1,35^12	2,90^12	7,37^9	2,15^13
Ln(GDP)	627	26,941	1,378	23,88	30,702
Trade Openness	627	87,991	42,185	20,447	250,108
Regulatory Quality	627	1,269	0,456	-0,025	2,082
Tax Rate	627	24,397	6,612	8,5	44,433

3.3 Research method

For this econometric analysis, this thesis employs a two-way fixed effects regression model, to test the hypotheses. This approach allows examining a panel data dataset, while controlling for unobserved, time-invariant country-specific characteristics. By including country fixed effects, country specific factors, like political and cultural factors, that influence the dependent variable, are accounted for. In a similar vein, year fixed effects filter out the time-specific shocks or global trends, i.e. events that affect countries simultaneously, like economic crises and pandemics.

The fixed effects model is chosen over pooled OLS as Pooled OLS ignores the panel structure of the dataset. Furthermore, pooled OLS works with assumptions that are not held with this type of study, which would lead to inconsistent estimates. Another panel data technique is the random effects model, which assumes that unobserved country-specific effects are uncorrelated with the independent and control variables. This is unlikely, as country-specific factors are expected to

influence the variables. Hence, the fixed effects model with both country and year fixed effects offers the most robust results.

To ensure robustness of the econometric model, several diagnostic tests were conducted. To assess multicollinearity, a test was performed in table A.1 in the form of a Variance Inflation Factor (VIF). All the key variables showed values below 2, which suggests that there is no multicollinearity present. Next, in table A.2 Breusch-Pagan test for heteroskedasticity is presented. It reveals that there is weak evidence that heteroskedasticity is present. Furthermore, the Wooldridge test in table A.3 is displayed, which shows that serial correlation is present. The results of these tests show that in a normal fixed effects model standard errors might be underestimated and lead to biased statistical results. To address this, this thesis uses clustered standard error at the country level to adjust for the heteroskedasticity and serial correlation that is present in the model.

The baseline econometric model is shown in equation 3.1.

EQUATION 3.1. BASELINE MODEL

$$FDI_{it} = \beta_0 + \beta_1 EPS_{it} + \beta_2 \ln(GDP)_{it} + \beta_3 TradeOpen_{it} + \beta_4 RegQual_{it} + \beta_5 TaxRate_{it} + \mu_i + \lambda_t + \varepsilon_{it}$$

Where:

FDI_{it}: Foreign direct investment inflows for country i at time t.

EPS_{it}: Environmental policy stringency for country i at time t.

$Ln(GDP)_{it}$: GDP for country *I* at time *t.*

$TradeOpen_{it}$: Trade Openness for country *I* at time *t.*

$RegQual_{it}$: Regulatory Quality for country *I* at time *t.*

$TaxRate_{it}$: Tax Rate for country *I* at time *t.*

μ_i: Country fixed effects.

λ_t: Time fixed effects.

ε_{it}: Idiosyncratic error term.

In addition to the baseline model, several heterogeneity analyses are conducted. Firstly, not only the overall EPS is studied, but also subcomponents EPS Market, EPS Nonmarket and EPS Technology. Also, countries are divided into income-groups and geographic regions. Moreover, besides overall FDI, the model will also be estimated with FDI in specific sectors. These heterogeneity analyses follow the same two-way fixed effects model that is presented in equation 3.1. Although this study assumes exogeneity of the model, to address potential endogeneity in the form of reverse causality a 1-year lag of EPS is introduced. This will also reveal if EPS has a delayed effect on FDI Inflows.

4 Results

In this chapter the results of the different models are presented. First the baseline regression is shown, together with the model with lagged EPS. Next, results are presented for the sample splits based on the income level of countries. In the following part, the regression based on regions is shown. Hereafter, the sectoral results are displayed, and the chapter closes with a summary of the results. The full regression results and tables of this chapter are shown in Appendix B.

4.1 Baseline results

In table 4.1 we can see the results of the two-way fixed effects models with clustered standard errors assessing the correlation between EPS and FDI inflows. Also, the three subcomponents of EPS, market-based, nonmarket-based and technology support, are displayed. In the model with EPS, the coefficient is negative (-0.138) but insignificant, as the P-value is higher than 10%. This suggests that there is no relationship between EPS and FDI inflows when looking at the full sample. In the same vein, the three subcomponents also show a negative relationship. Market reveals a coefficient of -0.006, Nonmarket -0.016, Technology -0.084. Nevertheless, these are also statistically insignificant, indicating that specific environmental policies do not influence FDI Inflows in the full sample. When looking at the control variables, ln(GDP) has a positive coefficient across all the models, but insignificant. Trade Openness also shows a positive relation across the

models but is also statistically insignificant. Regulatory Quality and Tax Rate reveal a negative correlation in the models, but they both remain statistically insignificant.

Table 4.1 also shows the regression results with a 1 year lagged version of EPS and its subcomponents, aiming to show a potential lagged effect of EPS on FDI inflows. The coefficients for the lagged versions of EPS, EPS Market and EPS Technology are consistent with the baseline model, as they remain negative and statistically insignificant. The lagged version of EPS Nonmarket now shows a positive coefficient, but its p-value also remains above significance thresholds. These findings suggests that there also is no delayed effect of EPS and its subcomponents on FDI Inflows for the full sample. Looking at the control variables, the results are in line with the baseline model as they remain insignificant.

To assess the sensitivity of the relationship of FDI Inflows and EPS to the specification of the model, a control variable substitution analysis was conducted. In the appendix B, table B.3 shows the results of this analysis. All possible combinations of the control variables have been used, but the coefficient of EPS remained stable across all the different configurations. No significant effect has been found in the analysis, suggesting that the model is not sensitive to a different configurations of control variables.

The findings of the baseline model, lagged model and substitution analysis are broadly consistent. They provide evidence that, in the full sample of 33 OECD countries from the years 2002 to 2020, no significant relationship exists between environmental policy stringency and FDI inflows.

TABLE 4.1: BASELINE MODEL AND LAGGED MODEL REGRESSION RESULTS

	Baseline	**Lagged**
EPS	-0.138	-0.107
	(0.135)	(0.101)
EPS Market	-0.006	-0.066
	(0.022)	(0.060)
EPS Nonmarket	-0.016	0.018
	(0.028)	(0.018)
EPS Technology	-0.084	-0.083
	(0.076)	(0.075)
Observations	627	627

Notes: *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

4.2 Income grouping

In addition to the baseline model, the sample of countries has been split into 3 different groups, based on their level of income. This allows for an examination of whether the effect of EPS on FDI inflows differs across different levels of economic development. In table B.4 the partition of countries as well as the mean GDP per capita is shown. In figure 4.1 we can see the average EPS and FDI inflows per income group. This figure shows that there are substantial differences in the levels of EPS and FDI between the income groups. FDI in high-income countries seems to be higher than the other two groups but shows the same movements as the middle-income group. The low-income group shows less variation in FDI inflows. Looking at EPS, we see that all groups have similar patterns throughout time, but still there remains heterogeneity. Given these first indications for heterogeneity, we continue with the regression results.

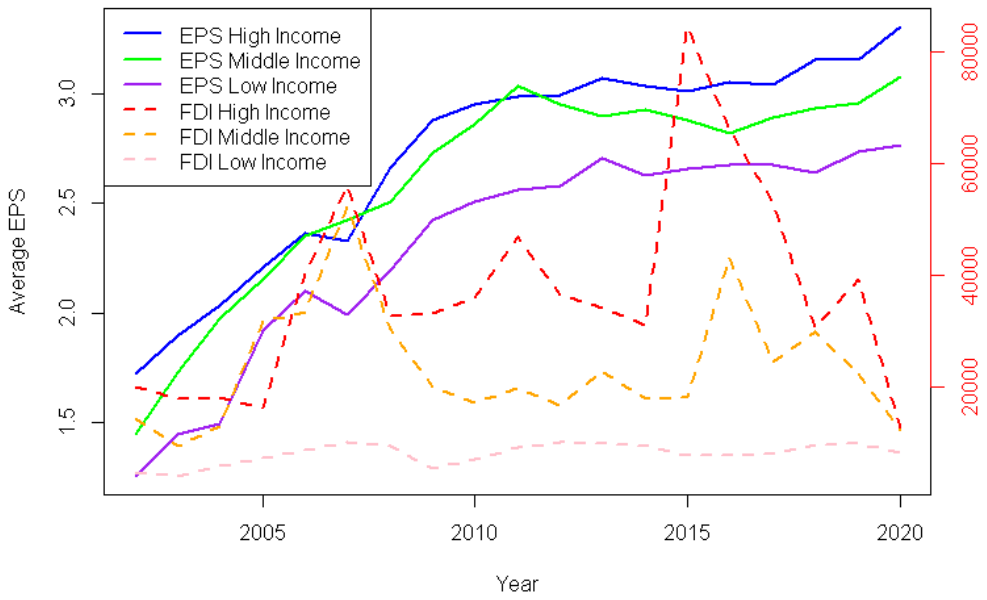

FIGURE 4.1: EPS AND FDI PER INCOME GROUP

In table 4.2 the results of the regression for the different income groups are shown. The coefficient of EPS is negative (-0.581), EPS Market is positive (0.008), EPS Nonmarket is negative (-0.093) and EPS Technology is also negative (-0.345). However, they are all statistically insignificant. This suggests that in high income countries, EPS and its subcomponents do not shape FDI inflows. This is also the case for the control variables, as they are statistically insignificant as well.

Compared to the high-income countries, the coefficient of EPS in middle-income countries shows a different pattern. The results reveal a positive coefficient (0.019), but it is still insignificant. All the other three subcomponents, EPS Market (0.021), EPS Nonmarket (0.010) and EPS Technology (0.003) are positive, yet insignificant. An exception in the model of middle-income countries is that ln(GDP) is significant at the 10% level, with a positive coefficient of 0.091, which we see in Table B.6 in the Nonmarket model. The other control variables do remain statistically insignificant.

Looking at the results for low-income countries, Table 4.5 reveals that the coefficient of EPS (-0.001), EPS Market (-0.006), EPS Nonmarket (-0.002) and EPS Technology (0.001) are statistically insignificant. Indicating that also in low-income countries, no relationship exists between EPS and FDI inflows. However, Trade Openness does show a significant positive relationship across all the four models with a negative coefficient (-0.001). This suggests that in low-income countries openness to trade is associated with lower FDI inflows, which is counterintuitive, but the effect is small. Furthermore, Regulatory Quality also shows a statistically significant and positive relationship in all the four models. This indicates that stronger institutions attract FDI in lower-income contexts. The effect of Tax Rate and ln(GDP) stays insignificant across the models.

Overall, the grouping based on income-level does reveal differences in the drivers of FDI inflows, but EPS and its subcomponents remain insignificant across all the groups. Still, Trade Openness and Regulatory Quality arise as significant predictors of FDI inflows when looking at low-income countries, and only GDP emerged as predictor of FDI in the EPS model in middle-income countries. The models for high-income countries have shown no significant drivers of FDI.

TABLE 4.2: RESULTS PER INCOME GROUP

	High Income	**Middle Income**	**Low Income**
EPS	-0.624	0.004	-0.001
	(0.528)	(0.032)	(0.007)
EPS Market	0.003	0.015	-0.006
	(0.082)	(0.025)	(0.010)
EPS Nonmarket	-0.112	0.017	-0.002
	(0.183)	(0.013)	(0.003)
EPS Technology	-0.370	-0.009	0.001
	(0.270)	(0.020)	(0.005)
Percentage	33.33%	33.33%	33.33%
Observations	209	209	209

Notes: *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

4.3 Regional grouping

To show whether the effect of EPS and its subcomponents differs between geographic regions, the sample is split into six groups: Americas, Asia Pacific, Northern Europe, Eastern Europe, Southern Europe and Western Europe. The division of countries is shown in table B.8. In figure 4.2 average EPS and FDI are shown per region throughout the timespan. We can see that there are substantial differences in the level and movements of FDI inflows between all the regions. Although the movements of EPS are relatively similar across regions, there are still substantial differences. The heterogeneity shown in the graph indicates that the regression results might show significant differences.

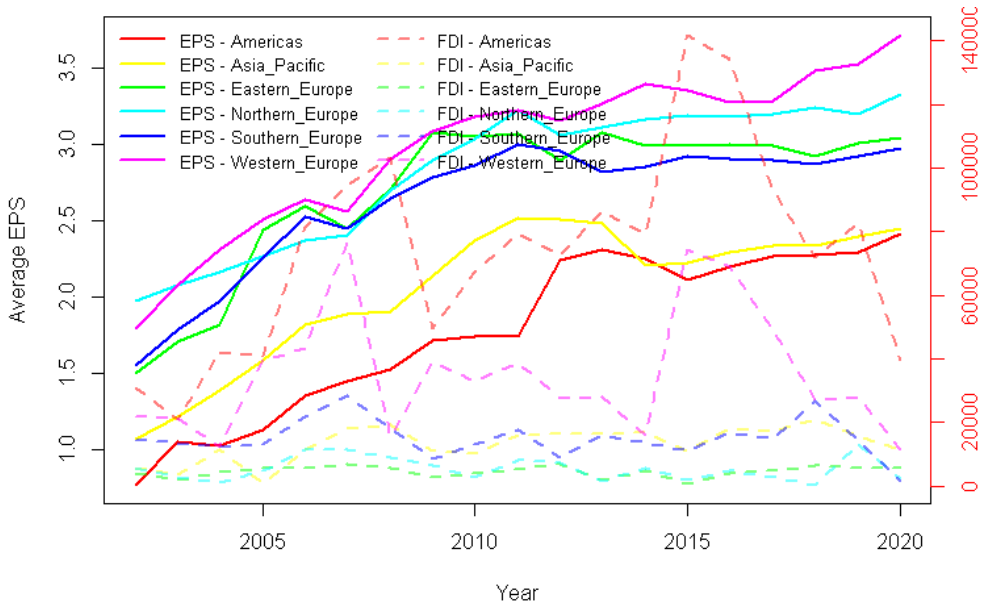

FIGURE 4.2: EPS AND FDI PER REGION

Table 4.3 reveals the results for the different regions. It shows that the coefficient for EPS is positive and significant at the 10% level (0.147) in the Americas. An increase of EPS by one-unit is associated with a 15.9% increase in FDI inflows. This indicates that stricter environmental policy might attract FDI inflows in the Americas. It is mainly driven by market-based EPS, as its coefficient is both large and significant for the 1% level (0.637), meaning that an increase of market-based

EPS by one-unit is associated with a 89.1% increase in FDI inflows. Furthermore, EPS Technology also shows a positive, but smaller, significant relationship at the 5% level (0.065). EPS Nonmarket is not significantly associated with FDI in this model. Looking at the control variables in table B.9, ln(GDP) is significant across all the models, but negative (around -0.5), suggesting that in the Americas, a higher level of GDP is associated with lower FDI, which is counterintuitive. Tax Rate reveals a significant positive impact on FDI at the 1% level (around 0.01), which is surprising as one would expect lower FDI inflows when tax rates rise. Trade Openness and Regulatory Quality remain statistically insignificant across the four models.

When looking at the Asia Pacific countries' model overall EPS shows a positive, but insignificant coefficient (0.057). EPS Market has a negative, but insignificant coefficient (-0.003) and EPS Nonmarket has a positive coefficient, but insignificant (0.005). Nevertheless, EPS Technology does show a positive relationship at the 10% level (0.028), meaning that a one point increase in technology support policies correlates with a 2.8% increase in FDI inflows. This indicates that only technology support measures do drive FDI marginally in this region. In table B.10, we see that Ln(GDP) shows a positive and significant relationship across all the models (around 0.15 – 0.2). Regulatory Quality is only significantly positively related to FDI inflows in the EPS Technology model (0.142). Tax Rate and Trade Openness are insignificant in all models.

In Northern Europe the overall EPS is insignificant, but when looking at EPS Market and Nonmarket there is a significant relationship. EPS Market is significant at the 1% level and positively related to FDI inflows (0.034) and EPS Nonmarket is significant at the 10% level and negatively related to FDI inflows (-0.027). These are opposing patterns, but they are relatively small relationship. EPS Technology is insignificant in the model. Control variables in the models are broadly insignificant, as displayed in table B.11. Only Regulatory Quality is negatively correlated to FDI inflows and significant at the 5% level, which is rather counterintuitive, as one would expect that higher regulatory quality attract FDI inflows.

For Eastern Europe, EPS shows no significant relationship and EPS Nonmarket and Technology follow this pattern. Nevertheless, EPS Market does show a positive relationship at the 1% level (0.023). This is highly significant, and a one-unit increase in market-based policies correlates with a 2.3% increase in FDI inflows. Regulatory Quality also shows a significant positive relation in Eastern Europe across three of the four models (around 0.03 – 0.04) in table B.12. Furthermore, Tax Rate shows a significant negative relationship across all the models (around -0.003). The other controls do not reveal a significant relationship with the dependent variable.

Out of the groupings, Southern Europe displays the strongest relationship between EPS and FDI inflows in table 4.10. The coefficient for EPS is positive and highly significant at the 1% level (0.053). EPS market also shows a positive coefficient, which is significant at the 5% level (0.039). EPS Technology is significant at the 1% level and has a positive coefficient of 0.028. The coefficient for EPS Nonmarket is negative but remains insignificant. Thus, EPS, EPS market and EPS Technology associate with a 5.3%, 3.9% and 2.8% increase in FDI inflows respectively. Tax Rate and Regulatory Quality both show a positive and significant relationship with FDI inflows, as shown in table B.13. This suggests that a better institutional environment and higher tax rates attract FDI. Ln(GDP) only shows a significant relationship with FDI in two of the four models (around -0.023). Trade Openness is not shown to be significantly related to FDI.

In contrast to the other regions in Europe, Western Europe shows no significant relationship between EPS and FDI (-0.522) in table 4.11. Also EPS Market (0.187), EPS Nonmarket (-0.222) and EPS Technology (-0.395) are insignificant. What is interesting is that this is also the only model where Trade Openness is significantly related to FDI. It shows a positive relationship across all the models (around 0.008 – 0.018), shown in table B.14. Out of the other controls only ln(GDP) is significant in two of the models.

Overall, the regional division of the sample has shown substantial heterogeneity in the relationship between environmental policy stringency and FDI inflows. In the Americas and

Southern Europe there are positive and significant effects of EPS on FDI inflows. These particularly stem from market-based and technology support-based measures.

The Asia Pacific region, Eastern Europe and Northern Europe also show significant relationships, but they are concentrated in specific subcomponents of EPS. In Asia-Pacific only technology-based measures seem to attract FDI inflows. Whereas in Northern Europe and Eastern Europe it is market-based measures that attract FDI. On the other hand, in Northern Europe nonmarket based measures deter FDI inflows. Lastly, Western Europe shows no evidence of an effect of EPS on FDI inflows.

TABLE 4.3: RESULTS PER REGION

	Americas	**Asia Pacific**	**EU North**	**EU East**	**EU South**	**EU West**
EPS	0.147*	0.057	0.025	0.013	0.053***	-0.522
	(0.076)	(0.036)	(0.027)	(0.009)	(0.016)	(0.399)
EPS Market	0.637***	-0.003	0.034***	0.023***	0.039**	0.197
	(0.132)	(0.039)	(0.012)	(0.007)	(0.015)	(0.202)
EPS Nonmarket	0.044	0.005	-0.027*	0.002	-0.012	-0.222
	(0.031)	(0.013)	(0.015)	(0.004)	(0.017)	(0.196)
EPS Techology	0.065**	0.028*	0.014	0.003	0.038***	-0.395
	(0.031)	(0.016)	(0.012)	(0.003)	(0.006)	(0.245)
Percentage	12.12%	18.18%	15.15%	18.18%	12.12%	24.24%
Observations	76	114	95	114	76	152

4.4 Sectoral Analysis

Whereas in the models discussed before FDI was used as an aggregate number, in the upcoming regressions, FDI per sector has been used. In this way it can be revealed how different industries respond the changes in stringency of environmental policy. Whereas in the baseline model the data source for FDI was UNCTAD, in this sectoral analysis we collected data from OECD, as they offer a sectoral breakdown (OECD, n.d.-c). The sectors that are investigated are the following: Agriculture, forestry & fishing; mining and quarrying, manufacturing, electricity, water supply,

construction and services. As discussed in the previous chapter, this dataset has a shorter time span and follows less countries than the baseline model, because sectoral data has limited availability. To still ensure a dataset without missing observations, the sectoral analysis looks at the years 2013 to 2020. Although shorter, it still includes major events like the Paris agreements. As for the countries, we follow 14 countries: Austria, Chile, Estonia, France, Greece, Hungary, Iceland, Italy, Korea, Poland, Slovenia, Spain, Sweden and Türkiye. In figure 3 we can see EPS throughout these years, and FDI inflows per sector. We see that there is substantial heterogeneity in the pattern of the FDI flows in the different sectors.

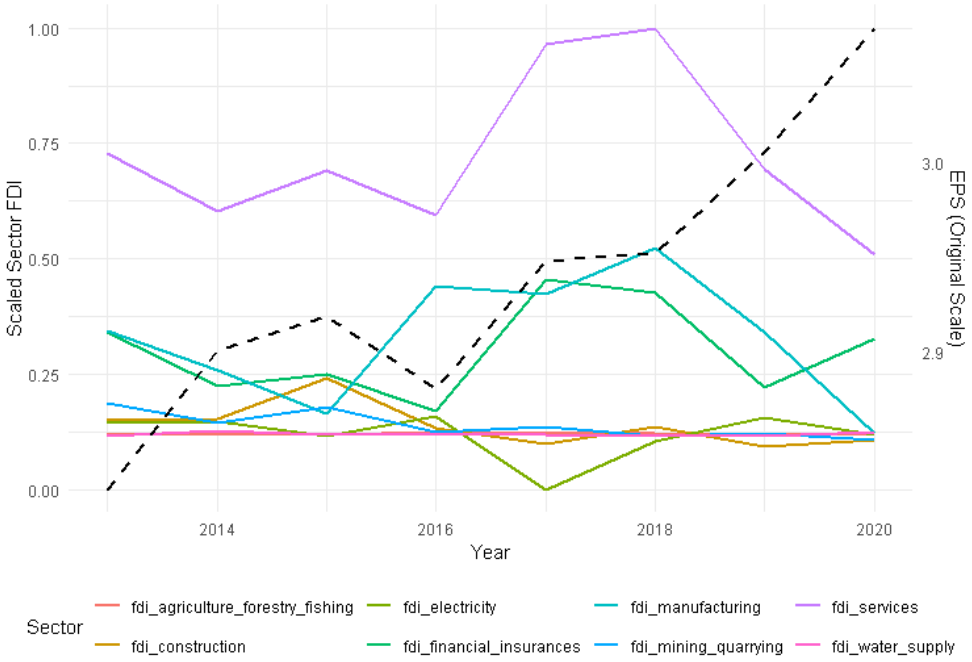

FIGURE 4.3: EPS AND FDI PER SECTOR

Looking at the results for the electricity, gas, steam and air conditioning supply sector in table 4.4, it shows that EPS is positively but not significantly related to FDI inflows in this sector. Also, none of the subcomponents of EPS are significant. The same holds for all the control variables in table B.15. These results indicate that the Electricity, gas, steam and air conditioning supply sector is not affected in terms of FDI inflows by environmental regulations.

When looking at the results for the construction sector in table 4.13, it reveals that the effect of EPS on FDI inflows is negative and statistically significant at the 10% level. The coefficient for EPS

is -1.094, meaning a one-unit increase in EPS correlated with a 66.5% decrease in FDI inflows in this sector. This effect mainly runs through the EPS market component of EPS, as this coefficient is also negative and significant at the 10% level (-0.710). EPS Nonmarket and Technology are statistically insignificant. Hence, market-based environmental policies seem to deter FDI in the construction sector. Looking at the controls in table B.16, they are all insignificant.

The results of the regression for the agricultural, forestry and fishing sector reveal that EPS does not affect FDI inflows in this sector, as the coefficient is insignificant. However, EPS Technology is statistically significant at the 10% level with a negative coefficient (-0.133). This means that in this sector technology-based environmental policies may deter FDI, where a one-unit increase in technology-based measures decreases FDI inflows by 14.2%. The other subcomponents, EPS Market and Nonmarket, are insignificant, as well as most of the controls, as shown in table B.17.

Looking at the results for the manufacturing, services and mining and quarrying sector, none of the EPS variables show a significant relationship with FDI inflows in these sectors. Also, table B.18 displays that none of the control variables show a significant relationship with FDI inflows in the three sectors.

In the water supply, sewerage, waste management and remediation activities sector, the overall relationship between EPS and FDI is negative, but insignificant (-0.325). Subcomponents EPS Nonmarket and EPS Technology also show no significant relationship. Nevertheless, EPS Market reveals a positive and statistically significant coefficient at the 10% level (0.110), so that a one-unit increase in market-based policies is associated with a 11.6% increase in FDI inflows. The control variables in table B.19 mostly display an insignificant relationship with the dependent variable. Still, in the EPS Market model, Regulatory Quality shows a negative and statistically significant effect (-0.278).

The regression results for the financial and insurance sector reveal that EPS overall shows an insignificant coefficient, but subcomponent EPS Market does show a positive and significant

effect at the 10% level (0.522). This is a large effect as a one-unit increase in market-based stringency relates to a 68.6% increase in FDI in this sector. This suggests that market-based measures, like emission trading schemes, attract FDI into this sector. Other subcomponents, EPS Nonmarket and EPS Technology are both insignificant, as well as all the control variables in table B.22.

Overall, this sectoral analysis shows that the impact of environmental policy stringency on FDI inflows varies across different sectors. Although the main EPS indicator often reveals insignificant effects, when disaggregating it into the three subcomponents differences emerge. When looking at EPS, in most sectors it does not deter or attract FDI. However, in the construction sector there is a significant relationship, suggesting that stricter regulations deter FDI. Mainly market-based measures are responsible for this effect in the construction sector, as it shows a significant negative relationship. On the other hand, market-based measures do attract FDI inflows in the Water supply, sewerage, waste management and remediation sector and the financial and insurance sector. In the agriculture, forestry and fishing sector only technology support policies seem to influence the FDI inflows, as increased technology support measures deter FDI in this sector. For the remaining sectors, electricity, manufacturing, mining and services, EPS displays no significant coefficients, suggesting that stricter environmental policies do not attract nor deter foreign direct investments in these sectors.

TABLE 4.4: RESULTS PER SECTOR

	Electr.	Constr.	Agricu.	Manufa.	Water	Mining	Service.	Financ.
EPS	0.417	-1.094*	-0.402	-0.424	-0.325	-0.468	0.592	0.819
	(0.475)	(0.592)	(0.279)	(0.450)	(0.404)	(0.377)	(0.529)	(0.506)
Market	0.226	-0.710*	0.038	-0.709	0.110*	-0.345	0.457	0.522*
	(0.243)	(0.399)	(0.079)	(0.512)	(0.060)	(0.289)	(0.328)	(0.306)
Nonmarket	0.251	0.215	-0.607	0.351	-0.259	-0.276	0.417	0.522
	(0.187)	(0.188)	(0.603)	(0.329)	(0.305)	(0.274)	(0.380)	(0.361)
Technology	0.023	-0.060	-0.133*	0.192	-0.168	0.024	-0.046	-0.0001
	(0.095)	(0.079)	(0.080)	(0.173)	(0.156)	(0.084)	(0.106)	(0.130)
Observations	112	112	112	112	112	112	112	112

Notes: *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

4.5 Summary of Results

In this chapter the results of the different models and samples were shown and discussed. Specifically, the baseline model, lagged model, income and regional groupings and sectoral breakdowns. The baseline models showed that there exists no significant relationship between EPS and its subcomponents and FDI inflows in the full sample. Additionally, the lagged model showed that EPS does not affect FDI inflows with a delayed effect. Splitting our sample into three income groups, we saw that in all the groups, high, middle and low, EPS and its subcomponents did not significantly affect FDI inflows.

On the other hand, the regional analysis revealed that there exists heterogeneity. Significantly positive effects were found in the Americas and Southern Europe. These were particularly driven by technology-support and market-based measures. In Asia-Pacific, Northern Europe, and Eastern Europe, some subcomponents showed significant positive relationships. These effects mainly run through market-based and technology-based policies. In contrast, Western Europe showed no significant relationship. So, although in most regions there exists are significant positive

relationship with FDI in at least one of the subcomponents of FDI, this relationship is not present in all regions.

The sectoral analysis further supports the idea of heterogeneity. Although most sectors did not show a significant relationship, opposing patterns were found in other sectors. In the construction sector, the results show that EPS and especially market-based EPS significantly deter FDI. Moreover, in the agricultural sector, although overall EPS is not significant, technology-based EPS still is responsible for deterring inflows of FDI. On the other hand, in the financial and insurance sector, market-based EPS seems to attract FDI inflows.

5 Discussion and Conclusion

5.1 Main Findings

The objective of this thesis was to explore the relationship between environmental policy stringency (EPS) and foreign direct investment (FDI) inflows. A set of 5 hypotheses was derived from the literature review and empirically tested using a two-way fixed effects model.

The results of the baseline and lagged regressions revealed that there is no significant effect of EPS on FDI inflows in the full sample. This contradicts hypothesis 1 that stated that an increase in EPS would be significantly related to FDI inflows. Therefore hypothesis 1 is rejected. Moreover, these findings are both inconsistent with literature supporting the Pollution Haven Hypothesis (Borozan et al., 2022; Sarmidi et al., 2015; Gorus and Karagol, 2022), as with studies supporting the Porter Hypothesis (Pienknagura, 2024; Satoğlu & Salmon, 2024; Rahul & Viswanathan, 2018). In the same baseline and lagged regression, the coefficients were presented for the subcomponents of EPS. Nevertheless, they also showed no significance. Hence, hypothesis 2 is also rejected. Looking at previous literature the results on the subcomponents are partially in line with Satoğlu and Salmon (2024), as they found that market-based policy had no significant influence. Still, this thesis contradicts the findings of nonmarket and technology support policies of the mentioned study. Possible explanations for the fact that these results are not in line with

previous literature are that this thesis adopted a different methodological approach, used different operationalization of variables and looked at a different sample of countries in a different timespan.

Looking at the sample split by income level, no statistically significant results were revealed. Hypothesis 3 stated that there would be a different relationship between EPS and FDI for the different income groups, but following the results of the analysis, this hypothesis is rejected. The results also contradict the literature on income differences, that find that there is a heterogeneity of the effect of EPS on FDI Inflows across different income-groups (Pienknagura, 2024; Satoğlu & Salmon, 2024).

In contrast, the regional analysis did find heterogeneity. In the Americas and Southern Europe EPS is shown to positively influence FDI, especially market-based policies and technology support policies. These findings suggest that in these regions such environmental policies attract FDI inflows. For the regions Asia Pacific, Northern Europe and Eastern Europe showed that some subcomponents also positively influence FDI inflows. On the other hand, the analysis revealed evidence that in Northern Europe nonmarket-based policies deters FDI. In Western Europe no significance was found with any of the EPS variables. These results show that regional context is important in the relationship between EPS and FDI inflows. Hypothesis 4 stated that there are differences in the relationship between EPS and FDI across regions, and based on the results of the analysis this hypothesis is accepted. These findings are novel in this research field and present a significant contribution.

Lastly, a sectoral analysis was conducted, where FDI inflows per sector were the dependent variable. The results of this analysis showed that although most of the sectors did not respond significantly to EPS and its subcomponents, there were exceptions. In the construction sector EPS emerged as a deterrent of FDI inflows, especially market-based policies. This could be because of the higher costs firms in this sector have to make because of the increased regulations. On the other hand, the water supply sector and financial sector benefit from increased market-based

policy stringency, possibly because of innovation incentives. Moreover, in the agricultural sector technology-support policies deter FDI, as higher levels of technology support may signal higher costs for this sector to comply with regulations. The findings of this analysis do support hypothesis 5 that stated that there is heterogeneity in the relationship between EPS and FDI across sectors, and therefore it is accepted. Also, these findings align with literature, as it also finds sectoral heterogeneity (Poelhekke & van der Ploeg, 2015; Pienknagura, 2025).

5.2 Policy Implications

It is often theorized that environmental regulations either deter FDI, as proposed by the Pollution Haven Hypothesis, or that it attracts FDI, as argued by the Porter Hypothesis. However, the results of this study show that there is no uniform relationship between EPS and FDI, thus challenging traditional perspectives. Instead, the results show that the effect of environmental regulations on FDI inflows are context-dependent, as the relationship varies across sectors and regions.

Therefore, for policymakers it is important to understand that the effect of stricter environmental regulation depends on sectoral or regional context. Also, it is important to consider what kind of policy it is they implement, as market-based policies, nonmarket-based polices and technology support policies do not affect FDI inflows in the same way, depending on the context. This thesis highlights that environmental regulations should be made with precision and while considering the context-dependence of its effects.

More specifically, policymakers in Americas and Southern Europe can expect higher FDI inflows when increasing stringency of environmental regulations. This is especially the case when implementing market-based environmental regulations and technology support policies. Also, policymakers in Eastern Europe and Northern Europe can expect a rise in FDI when increasing market-based environmental. In Asia Pacific only technology support policies seem to increase FDI inflows. In Western Europe policymakers cannot steer FDI inflows with environmental regulations, as they are not significantly related.

Furthermore, in all countries policymakers should consider that the construction sector receives less FDI inflows with increased environmental regulations, mainly with stricter market-based regulations. Conversely, the same market-based regulations do increase FDI inflows in the water supply sector and the financial sector. When introducing stricter technology support policies, only the agricultural sector is negatively affected. Other sectors are not affected by any policies and non-market-based policies do not affect any sector.

5.3 Limitations and Future Research Directions

While this thesis provides valuable insights, some limitations must be discussed. Firstly, the panel of 33 countries all are OECD countries, limiting the generalizability of the findings for countries outside the OECD, which mainly are developing countries. These countries have different characteristics and therefore may have a different relationship between environmental regulations and FDI inflows. Furthermore, the sectoral analysis was even limited to 14 countries, which limits generalizability even more. Also, it has a shorter time span, 2013 to 2020, due to data constraints, but this does affect the robustness of the findings. Additionally, this thesis assumed that EPS is the same for each sector, but this might not be the case in practice, as not all rules apply for each sector.

The research design allowed this thesis to examine whether there exists a linear and direct effect of EPS and FDI, however there is the possibility that the relationship might be nonlinear or that threshold effects are at play, which are not captured in the current methodological approach. Moreover, this thesis included control variables to address the potential effect of confounding factors, but there might be other variables that do play a role in the relationship but are not included. The limitations highlight that although this thesis has interesting findings, they must be interpreted with caution and offer opportunities for future research.

Future studies could extend the analysis of the relationship between EPS and FDI inflows to non-OECD countries, especially developing countries. Currently data availability is an issue, but it would provide a more comprehensive view of how FDI responds to environmental regulations. In the same vein, studies could use a longer time horizon to better grasp the effect of environmental regulations. Moreover, the sectoral analysis can be improved by including more countries and covering a larger time span. Additionally, including sector specific data on environmental regulations may improve the understanding of the relationship. Future work could also explore if the relationship between EPS and FDI might be non-linear, by for example testing thresholds of EPS. Finally, as this study highlights the context-dependence of the relationship between EPS and FDI inflows, future research could dive into other contextual variables that shape the relationship.

5.4 Conclusion

The objective of this thesis is to answer the research question: *What is the effect of Environmental Policy Stringency Stringency and its subcomponents on Foreign Direct Investment Inflows and does this effect differ across sectors, geographic regions and income groups?* To answer it, five hypotheses were derived based on literature, which were than tested by a two-way fixed effects model on a panel dataset of OECD countries.

The findings of this thesis show that there is no overall relationship of EPS, EPS Market, EPS Nonmarket and EPS Technology with FDI Inflows, rejecting hypotheses 1 and 2. This indicates that environmental regulations do not deter nor attract FDI. In the same vein, splitting the sample by income groups revealed that there still is no significant relationship, thus rejecting hypothesis 3.

In contrast, the regional analysis provided evidence that in most regions EPS or subcomponents of EPS significantly positively influence FDI inflows and that in others there is no effect. Therefore hypothesis 4 is accepted. Likewise, the sectoral analysis showed that effects vary across sectors. In some sectors EPS deterred FDI and in other EPS appeared to attract FDI. Hence, hypothesis 5 is accepted as well.

Overall, this thesis concludes that there is no uniform effect of environmental regulations on foreign direct investment inflows. Instead, this effect varies across regions and sectors, but not across income groups. The results highlight that the economic consequences of environmental regulations are context dependent and context should therefore be considered when designing environmental policies.

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Appendix A: Methodology

TABLE A.1 : MULTICOLLINEARITY (VIF) TEST

EPS	LN(GDP)	TRADE OPENNESS	REGULATORY QUALITY	TAX RATE
1.438697	1.876778	1.863591	1.048483	1.310632

TABLE A.2: HETEROSKEDASTICITY TEST

studentized Breusch-Pagan test

data: fixedeff_EPS

BP = 9.5242, df = 5, p-value = 0.0899

TABLE A.3: SERIAL CORRELATION TEST

Wooldridge's test for serial correlation in FE panels

data: plm.model
F = 40.937, df1 = 1, df2 = 592, p-value = 3.197e-10
alternative hypothesis: serial correlation

Appendix B: Results

TABLE B.1: BASELINE REGRESSION RESULTS

	EPS	Market	Nonmarket	Technology
EPS	-0.138			
	(0.135)			
EPS Market		-0.006		
		(0.022)		
EPS Nonmarket			-0.016	
			(0.028)	
EPS Technology				-0.084
				(0.076)
Ln(GDP)	0.163	0.139	0.162	0.088
	(0.103)	(0.090)	(0.108)	(0.102)
Trade Openness	0.001	0.001	0.001	0.001
	(0.003)	(0.003)	(0.003)	(0.003)
Regulatory Quality	-0.054	-0.051	-0.075	-0.002
	(0.117)	(0.121)	(0.148)	(0.082)
Tax Rate	-0.001	-0.002	-0.002	-0.005
	(0.007)	(0.008)	(0.008)	(0.010)
Observations	627	627	627	627
R^2	0.010	0.002	0.002	0.014
Adjusted R^2	-0.086	-0.095	-0.094	-0.081
Note:				*p<0.1 **p<0.05 ***p<0.01

TABLE B.2: LAGGED REGRESSION RESULTS

	EPS Lagged	Market Lagged	Nonmarket Lagged	Technology Lagged
EPS	-0.107			
	(0.101)			
EPS Market		-0.066		
		(0.060)		
EPS Nonmarket			0.018	
			(0.018)	
EPS Technology				-0.083
				(0.075)
Ln(GDP)	0.147	0.118	0.117	0.072
	(0.092)	(0.084)	(0.095)	(0.103)
Trade Openness	0.001	0.001	0.002	0.001
	(0.003)	(0.003)	(0.003)	(0.003)
Regulatory Quality	-0.054	-0.016	-0.033	0.0002
	(0.117)	(0.089)	(0.104)	(0.084)
Tax Rate	-0.002	-0.001	-0.003	-0.005
	(0.008)	(0.007)	(0.009)	(0.010)
Observations	627	627	627	627
R^2	0.007	0.003	0.002	0.014
Adjusted R^2	-0.089	-0.093	-0.094	-0.081

Note: *p<0.1 **p<0.05 ***p<0.01

TABLE B.3: CONTROL VARIABLE SUBSITUTION ANALYSIS

Controls	**Coefficient**	**Std. Error**	**P-value**
none	-0.14	0.14	0.31
Ln(GDP)	-0.14	0.14	0.30
Trade Openness	-0.13	0.14	0.33
Regulatory Quality	-0.14	0.13	0.31
Tax Rate	-0.14	0.13	0.30
Ln(GDP) + Trade Openness	-0.14	0.14	0.32
Ln(GDP) + Regulatory Quality	-0.14	0.14	0.30
Ln(GDP) + Tax Rate	-0.14	0.13	0.29
Trade Openness + Regulatory Quality	-0.13	0.14	0.33
Trade Openness + Tax Rate	-0.13	0.13	0.32
Regulatory Quality + Tax Rate	-0.14	0.13	0.30
Ln(GDP) + Trade Openness + Regulatory Quality	-0.14	0.13	0.32
Ln(GDP) + Trade Openness + Tax Rate	-0.14	0.14	0.31
Ln(GDP) + Regulatory Quality + Tax Rate	-0.14	0.14	0.29
Trade Openness + Regulatory Quality + Tax Rate	-0.13	0.13	0.31
Ln(GDP) + Trade Openness + Regulatory Quality + Tax Rate	-0.14	0.13	0.31

Table B.4: Grouping of countries by mean GDP per Capita

High	**Mean**	**Middle**	**Mean**	**Low**	**Mean**
Norway	58.352	Belgium	41.943	Czechia	30.597
Switzerland	56.585	Canada	41.745	Slovenia	29.791
Ireland	56.124	Finland	40.184	Portugal	27.788
Unites States	51.499	United Kingdom	38.828	Greece	27.200
Netherlands	47.523	France	37.903	Estonia	25.520
Iceland	45.316	Japan	36.712	Slovakia	24.857
Denmark	44.781	Italy	36.303	Hungary	23.621
Austria	44.686	Korea	34.506	Poland	22.628
Sweden	43.892	New Zealand	33.533	Türkiye	19.573
Australia	43.712	Spain	33.237	Chile	19.035
Germany	43.469	Israel	31.667	Mexico	16.903

TABLE B.5: HIGH INCOME COUNTRIES

	EPS	Market	Nonmarket	Technology
EPS	-0.624			
	(0.528)			
EPS Market		0.003		
		(0.082)		
EPS Nonmarket			-0.112	
			(0.183)	
EPS Technology				-0.370
				(0.270)
Ln(GDP)	0.801	0.299	0.481	0.492
	(0.633)	(0.226)	(0.438)	(0.391)
Trade Openness	0.002	0.005	0.005	0.003
	(0.004)	(0.004)	(0.004)	(0.003)
Regulatory Quality	-0.081	-0.022	-0.217	0.438
	(0.301)	(0.191)	(0.391)	(0.433)
Tax Rate	-0.016	-0.020	-0.022	-0.021
	(0.026)	(0.031)	(0.034)	(0.027)
Observations	209	209	209	209
R^2	0.043	0.008	0.012	0.057
Adjusted R^2	-0.138	-0.179	-0.174	-0.121
Note:				*p<0.1 **p<0.05 ***p<0.01

TABLE B.6: MIDDLE INCOME COUNTRIES

	EPS	Market	Nonmarket	Technology
EPS	0.004			
	(0.032)			
EPS Market		0.015		
		(0.025)		
EPS Nonmarket			0.017	
			(0.013)	
EPS Technology				-0.009
				(0.020)
Ln(GDP)	0.008	0.010	-0.001	-0.018
	(0.077)	(0.074)	(0.069)	(0.096)
Trade Openness	-0.004	-0.004	-0.004	-0.004
	(0.003)	(0.003)	(0.003)	(0.003)
Regulatory Quality	0.066	0.062	0.085**	0.072
	(0.043)	(0.046)	(0.042)	(0.047)
Tax Rate	0.001	0.001	0.002	0.001
	(0.003)	(0.003)	(0.003)	(0.004)
Observations	209	209	209	209
R^2	0.051	0.053	0.055	0.054
Adjusted R^2	-0.127	-0.126	-0.123	-0.125
Note:				*p<0.1 **p<0.05 ***p<0.01

TABLE B.7: LOW INCOME COUNTRIES

	EPS	Market	Nonmarket	Technology
EPS	-0.001			
	(0.007)			
EPS Market		-0.006		
		(0.010)		
EPS Nonmarket			-0.002	
			(0.003)	
EPS Technology				0.001
				(0.005)
Ln(GDP)	0.005	0.004	0.007	0.005
	(0.026)	(0.024)	(0.025)	(0.025)
Trade Openness	-0.001***	-0.001***	-0.001***	-0.001***
	(0.0003)	(0.0003)	(0.0003)	(0.0003)
Regulatory Quality	0.042*	0.047**	0.041*	0.041*
	(0.024)	(0.022)	(0.024)	(0.024)
Tax Rate	-0.001	-0.0004	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)
Observations	209	209	209	209
R^2	0.116	0.118	0.117	0.117
Adjusted R^2	-0.051	-0.048	-0.050	-0.050
Note:				*p<0.1 **p<0.05 ***p<0.01

Table B.8: Grouping of countries by region

Americas	**Asia-Pacific**	**EU East**	**EU South**	**EU West**	**EU North**
Canada	Australia	Czechia	Greece	Austria	Denmark
Chile	Israel	Estonia	Italy	Belgium	Finland
Mexico	Japan	Hungary	Portugal	France	Iceland
US	Korea	Poland	Spain	Germany	Norway
	NZ	Slovakia		Ireland	Sweden
	Türkiye	Slovenia		NL	
				Switzerland	
				UK	

TABLE B.9: AMERICAS

	EPS	Market	Nonmarket	Technology
EPS	0.147*			
	(0.076)			
EPS Market		0.637***		
		(0.132)		
EPS Nonmarket			0.044	
			(0.031)	
EPS Technology				0.065**
				(0.031)
Ln(GDP)	-0.551***	-0.486***	-0.526**	-0.374***
	(0.203)	(0.093)	(0.212)	(0.127)
Trade Openness	-0.0001	0.002	-0.001	-0.002
	(0.003)	(0.002)	(0.002)	(0.004)
Regulatory Quality	0.094	0.039	0.031	0.042
	(0.071)	(0.151)	(0.109)	(0.093)
Tax Rate	0.010***	0.007***	0.008**	0.011***
	(0.004)	(0.001)	(0.003)	(0.004)
Observations	76	76	76	76
R^2	0.171	0.284	0.107	0.142
Adjusted R^2	-0.269	-0.096	-0.367	-0.313
Note:				*p<0.1 **p<0.05 ***p<0.01

TABLE B.10: ASIA PACIFIC

	EPS	Market	Nonmarket	Technology
EPS	0.057			
	(0.036)			
EPS Market		-0.003		
		(0.039)		
EPS Nonmarket			0.005	
			(0.013)	
EPS Technology				0.028*
				(0.016)
Ln(GDP)	0.145**	0.179**	0.169*	0.196***
	(0.057)	(0.090)	(0.099)	(0.067)
Trade Openness	-0.0003	0.001	0.0004	0.001
	(0.001)	(0.001)	(0.001)	(0.001)
Regulatory Quality	0.126	0.086	0.089	0.142*
	(0.078)	(0.065)	(0.064)	(0.083)
Tax Rate	0.004	0.002	0.002	0.005
	(0.007)	(0.007)	(0.007)	(0.007)
Observations	114	114	114	114
R^2	0.156	0.115	0.116	0.170
Adjusted R^2	-0.122	-0.177	-0.176	-0.103
Note:				*p<0.1 **p<0.05 ***p<0.01

TABLE B.11: NORTHERN EUROPE

	EPS	Market	Nonmarket	Technology
EPS	0.025			
	(0.027)			
EPS Market		0.034***		
		(0.012)		
EPS Nonmarket			-0.027*	
			(0.015)	
EPS Technology				0.014
				(0.012)
Ln(GDP)	0.184	0.185	0.179	0.184
	(0.121)	(0.121)	(0.125)	(0.123)
Trade Openness	0.002	0.002	0.002	0.002
	(0.001)	(0.001)	(0.001)	(0.001)
Regulatory Quality	-0.061	-0.070	-0.092**	-0.072
	(0.043)	(0.043)	(0.036)	(0.047)
Tax Rate	-0.001	-0.002	-0.001	0.0002
	(0.003)	(0.002)	(0.003)	(0.003)
Observations	95	95	95	95
R^2	0.062	0.075	0.068	0.067
Adjusted R^2	-0.316	-0.298	-0.307	-0.309
Note:				*p<0.1 **p<0.05 ***p<0.01

TABLE B.12: EASTERN EUROPE

	EPS	Market	Nonmarket	Technology
EPS	0.013			
	(0.009)			
EPS Market		0.023***		
		(0.007)		
EPS Nonmarket			0.002	
			(0.004)	
EPS Technology				0.003
				(0.003)
Ln(GDP)	0.001	0.019	-0.014	-0.016
	(0.065)	(0.055)	(0.065)	(0.063)
Trade Openness	-0.0002	-0.0001	-0.0003	-0.0003
	(0.0002)	(0.0002)	(0.0002)	(0.0002)
Regulatory Quality	0.031*	0.016	0.039**	0.036*
	(0.017)	(0.022)	(0.020)	(0.019)
Tax Rate	-0.003***	-0.004***	-0.003***	-0.002***
	(0.001)	(0.001)	(0.001)	(0.001)
Observations	114	114	114	114
R^2	0.100	0.125	0.082	0.085
Adjusted R^2	-0.196	-0.163	-0.221	-0.217
Note:				*p<0.1 **p<0.05 ***p<0.01

TABLE B.13: SOUTHERN EUROPE

	EPS	Market	Nonmarket	Technology
EPS	0.053***			
	(0.016)			
EPS Market		0.039**		
		(0.015)		
EPS Nonmarket			-0.012	
			(0.017)	
EPS Technology				0.038***
				(0.006)
Ln(GDP)	0.019	-0.209**	-0.258*	0.103
	(0.119)	(0.089)	(0.132)	(0.099)
Trade Openness	0.002	-0.002	-0.003	0.002
	(0.004)	(0.004)	(0.004)	(0.003)
Regulatory Quality	0.236***	0.240***	0.267***	0.251***
	(0.040)	(0.049)	(0.062)	(0.045)
Tax Rate	0.007**	0.008**	0.008**	0.007**
	(0.003)	(0.004)	(0.004)	(0.003)
Observations	76	76	76	76
R^2	0.120	0.104	0.103	0.147
Adjusted R^2	-0.348	-0.372	-0.374	-0.305
Note:				*p<0.1 **p<0.05 ***p<0.01

TABLE B.14: WESTERN EUROPE

	EPS	Market	Nonmarket	Technology
EPS	-0.522			
	(0.399)			
EPS Market		0.197		
		(0.202)		
EPS Nonmarket			-0.222	
			(0.196)	
EPS Technology				-0.395
				(0.245)
Ln(GDP)	-0.593	-0.883*	-0.706*	-0.539
	(0.558)	(0.514)	(0.426)	(0.438)
Trade Openness	0.011***	0.018**	0.015***	0.008**
	(0.002)	(0.007)	(0.004)	(0.004)
Regulatory Quality	-0.069	-0.338	-0.427	0.348
	(0.078)	(0.547)	(0.431)	(0.277)
Tax Rate	-0.021	-0.040	-0.027	-0.032
	(0.027)	(0.038)	(0.029)	(0.031)
Observations	152	152	152	152
R^2	0.052	0.039	0.042	0.073
Adjusted R^2	-0.183	-0.200	-0.195	-0.157
Note:				*p<0.1 **p<0.05 ***p<0.01

TABLE B.15: ELECTRICITY, GAS, STEAM AND AIR CONDITIONING

	EPS	Market	Nonmarket	Technology
EPS	0.417			
	(0.475)			
EPS Market		0.226		
		(0.243)		
EPS Nonmarket			0.251	
			(0.187)	
EPS Technology				0.023
				(0.095)
Ln(GDP)	-0.311	0.004	-0.293	-0.474
	(0.811)	(0.639)	(0.801)	(0.899)
Trade Openness	-0.013	-0.008	-0.012	-0.012
	(0.015)	(0.010)	(0.013)	(0.014)
Regulatory Quality	-0.667	-0.839	-0.569	-0.566
	(0.642)	(0.791)	(0.564)	(0.563)
Tax Rate	-0.013	-0.010	-0.015	-0.015
	(0.013)	(0.010)	(0.015)	(0.015)
Observations	112	112	112	112
R^2	0.015	0.017	0.011	0.010
Adjusted R^2	-0.271	-0.269	-0.277	-0.278
Note:				*p<0.1 **p<0.05 ***p<0.01

TABLE B.16: CONSTRUCTION

	EPS	Market	Nonmarket	Technology
EPS	-1.094*			
	(0.592)			
EPS Market		-0.710*		
		(0.399)		
EPS Nonmarket			0.215	
			(0.188)	
EPS Technology				-0.060
				(0.079)
Ln(GDP)	4.027	2.971	4.480	4.454
	(2.852)	(2.114)	(3.551)	(3.496)
Trade Openness	0.024	0.010	0.020	0.021
	(0.020)	(0.015)	(0.021)	(0.022)
Regulatory Quality	-1.432	-0.845	-1.659	-1.695
	(1.196)	(0.880)	(1.394)	(1.413)
Tax Rate	0.037	0.028	0.044	0.044
	(0.024)	(0.021)	(0.034)	(0.034)
Observations	112	112	112	112
R^2	0.144	0.175	0.104	0.104
Adjusted R^2	-0.104	-0.064	-0.157	-0.157
Note:				*p<0.1 **p<0.05 ***p<0.01

TABLE B.17: AGRICULTURE, FORESTRY AND FISHING

	EPS	Market	Nonmarket	Technology
EPS	-0.402			
	(0.279)			
EPS Market		0.038		
		(0.079)		
EPS Nonmarket			-0.607	
			(0.603)	
EPS Technology				-0.133*
				(0.080)
Ln(GDP)	-1.764*	-1.568	-1.991	-1.427
	(0.981)	(1.096)	(1.354)	(0.922)
Trade Openness	-0.001	-0.002	-0.001	0.001
	(0.008)	(0.006)	(0.006)	(0.008)
Regulatory Quality	0.956	0.825	0.849	0.806
	(1.040)	(1.003)	(0.988)	(0.959)
Tax Rate	0.007	0.011	0.009	0.010
	(0.014)	(0.015)	(0.014)	(0.015)
Observations	112	112	112	112
R^2	0.049	0.040	0.052	0.048
Adjusted R^2	-0.227	-0.239	-0.224	-0.229
Note:				*p<0.1 **p<0.05 ***p<0.01

TABLE B.18: MANUFACTURING

	EPS	Market	Nonmarket	Technology
EPS	-0.424			
	(0.450)			
EPS Market		-0.709		
		(0.512)		
EPS Nonmarket			0.351	
			(0.329)	
EPS Technology				0.192
				(0.173)
Ln(GDP)	1.127	-0.129	1.456	0.945
	(0.915)	(1.017)	(1.130)	(0.738)
Trade Openness	-0.011	-0.023	-0.013	-0.018
	(0.011)	(0.019)	(0.013)	(0.017)
Regulatory Quality	-0.746	-0.016	-0.825	-0.745
	(0.757)	(0.259)	(0.862)	(0.766)
Tax Rate	-0.005	-0.018	-0.002	-0.003
	(0.007)	(0.012)	(0.007)	(0.007)
Observations	112	112	112	112
R^2	0.027	0.082	0.024	0.030
Adjusted R^2	-0.255	-0.185	-0.259	-0.252
Note:				*p<0.1 **p<0.05 ***p<0.01

TABLE B.19: WATER SUPPLY; SEWERAGE, WASTE MANAGEMENT AND REMEDIATION ACTIVITIES

	EPS	Market	Nonmarket	Technology
EPS	-0.325			
	(0.404)			
EPS Market		0.110*		
		(0.060)		
EPS Nonmarket			-0.259	
			(0.305)	
EPS Technology				-0.168
				(0.156)
Ln(GDP)	0.403	0.716	0.352	0.773
	(0.652)	(0.698)	(0.642)	(0.933)
Trade Openness	0.002	0.003	0.001	0.005
	(0.006)	(0.004)	(0.004)	(0.007)
Regulatory Quality	-0.081	-0.278*	-0.159	-0.231
	(0.202)	(0.156)	(0.144)	(0.171)
Tax Rate	0.007	0.012	0.009	0.010
	(0.009)	(0.012)	(0.011)	(0.012)
Observations	112	112	112	112
R^2	0.011	0.008	0.007	0.018
Adjusted R^2	-0.276	-0.281	-0.282	-0.267
Note:				*p<0.1 **p<0.05 ***p<0.01

TABLE B.20: MINING AND QUARRYING

	EPS	Market	Nonmarket	Technology
EPS	-0.468			
	(0.377)			
EPS Market		-0.345		
		(0.289)		
EPS Nonmarket			-0.276	
			(0.274)	
EPS Technology				0.024
				(0.084)
Ln(GDP)	-0.626	-1.158	-0.644	-0.524
	(1.388)	(1.668)	(1.346)	(1.350)
Trade Openness	0.011	0.005	0.010	0.009
	(0.008)	(0.007)	(0.007)	(0.006)
Regulatory Quality	1.399	1.697	1.289	1.310
	(1.119)	(1.337)	(1.058)	(1.078)
Tax Rate	-0.006	-0.010	-0.003	-0.003
	(0.012)	(0.014)	(0.011)	(0.011)
Observations	112	112	112	112
R^2	0.051	0.062	0.044	0.042
Adjusted R^2	-0.225	-0.210	-0.234	-0.236
Note:				*p<0.1 **p<0.05 ***p<0.01

TABLE B.21: SERVICES

	EPS	Market	Nonmarket	Technology
EPS	0.592			
	(0.529)			
EPS Market		0.457		
		(0.328)		
EPS Nonmarket			0.417	
			(0.380)	
EPS Technology				-0.046
				(0.106)
Ln(GDP)	2.152	2.865	2.213	2.048
	(1.706)	(2.478)	(1.682)	(1.610)
Trade Openness	0.002	0.011	0.004	0.006
	(0.008)	(0.008)	(0.009)	(0.009)
Regulatory Quality	0.529	0.128	0.670	0.634
	(0.334)	(0.502)	(0.434)	(0.428)
Tax Rate	0.025	0.031	0.021	0.021
	(0.019)	(0.024)	(0.016)	(0.017)
Observations	112	112	112	112
R^2	0.028	0.042	0.022	0.020
Adjusted R^2	-0.254	-0.236	-0.263	-0.265
Note:				*p<0.1 **p<0.05 ***p<0.01

TABLE B.22: FINANCIAL AND INSURANCE ACTIVITIES

	EPS	Market	Nonmarket	Technology
EPS	0.819			
	(0.506)			
EPS Market		0.522*		
		(0.306)		
EPS Nonmarket			0.522	
			(0.361)	
EPS Technology				-0.0001
				(0.130)
Ln(GDP)	1.953	2.725	2.006	1.707
	(1.448)	(2.195)	(1.411)	(1.307)
Trade Openness	0.0004	0.011	0.003	0.004
	(0.009)	(0.008)	(0.010)	(0.009)
Regulatory Quality	0.285	-0.142	0.479	0.461
	(0.396)	(0.570)	(0.499)	(0.481)
Tax Rate	0.018	0.024	0.013	0.013
	(0.016)	(0.021)	(0.015)	(0.015)
Observations	112	112	112	112
R^2	0.034	0.047	0.018	0.014
Adjusted R^2	-0.247	-0.229	-0.267	-0.273
Note:				*p<0.1 **p<0.05 ***p<0.01