Anticipatory effects of the Carbon Border Adjustment Mechanism on Swedish corporate performance

A quantitative study on Swedish manufacturing firms

Alice Bevegård

Degree project/Independent project • 30 credits
Swedish University of Agricultural Sciences, SLU
Faculty of Natural Resources and Agricultural Sciences/Department of Economics
Environmental Economics and Management. Master's Programme
Degree project/SLU, Department of Economics, 1736 • ISSN 1401-4084
Uppsala 2026

Anticipatory Effects of the Carbon Boarder Adjustment Mechanism on Swedish corporate performance

Alice Bevegård

Supervisor:	**Shon Ferguson, Swedish University of Agriculturual Studies, Department of economics**
Examiner:	Richard Ferguson, Swedish University of Agricultural Atudies, Department of economics

Credits:	30 credits
Level:	Advanced level, A2E
Course title:	Master thesis in Business Administration
Course code:	EX0904
Programme/education:	Environmental Economics and Management
Course coordinating dept:	Department of Economics
Place of publication:	Uppsala
Year of publication:	2026
Title of series:	Degree project/SLU, Department of Economics
Part number:	1736
ISSN:	1401-4084
Keywords:	*CBAM, EU ETS, Sustainability, Corporate Financial Performance, Environmental Regulation, Emission Allowances*

Swedish University of Agricultural Sciences
Faculty of Natural Resources and Agricultural Science
Department of Economics

Abstract

The Carbon Border Adjustment Mechanism (CBAM) was introduced by the European Union to prevent carbon leakage and encourage cleaner production globally. While designed as an environmental policy, CBAM imposes new administrative requirements and financial pressures on companies within the EU that import carbon-intensive goods. This study investigates the early financial impact of the CBAM announcement on Swedish firms, specifically examining whether the policy led to a decline in corporate financial performance as measured by the EBIT margin.

Applying a quantitative approach, a Triple Difference (DDD) regression model was used on panel data from 256 Swedish firms between 2019 and 2024, incorporating firm and year fixed effects to control for structural differences and macroeconomic trends.

The empirical results do not support the hypothesis that the CBAM announcement negatively affected financial performance, as the key policy variables are statistically insignificant. While the model shows high overall predictive precision with a low Root Mean Square Error (RMSE) of 0.06 and an Adjusted of 0.579, this power is almost entirely driven by inherent structural differences between firms. The Within of 0.007 reveals that the policy variables and controls explain only 0.7% of the annual fluctuations in profitability within the firms.

The study concludes that the CBAM announcement had an unnoticeable short-term impact on the financial performance of the sampled Swedish firms. This lack of a significant effect is likely due to selection bias toward larger, more resilient parent companies and the difficulty of isolating specific supply chain exposures using broad industry codes. Consequently, future studies should focus on the long-term effects as the policy is fully implemented, preferably by using more granular, firm-level import data and expanding the sample to include smaller, potentially more vulnerable sub-contractors.

Keywords: CBAM, EU ETS, Sustainability, Corporate Financial Performance, Environmental Regulation, Emission Allowances

Acknowledgments

I would like to thank my supervisor, Shon Ferguson, for the valuable guidance and support throughout the process of writing this thesis.

I also want to thank my peers and opponents at the seminars for their constructive feedback and helpful suggestions, which contributed to improving the final result.

Finally, thank you to everyone who supported me along the way.

Uppsala, June 2026
Alice Bevegård

Table of contents

List of Tables

List of Figures

1. Introduction

In July 2021, the European Union proposed a new climate policy instrument known as the Carbon Border Adjustment Mechanism (CBAM). It was introduced as a key component of the 'Fit for 55' legislative package, which included a reform of the Emissions Trading System (ETS) to support the EU's broader objective to reduce greenhouse gas emissions (European Commission, 2021).

CBAM is designed to ensure that imported goods are subject to the same carbon costs as products produced within the European Union. Under CBAM, importers must pay a carbon tariff based on the emissions associated with their goods, extending the EU carbon price signal to foreign producers. At the same time, CBAM allows the EU to gradually phase out the free allocation of emission allowances in certain sectors under the EU ETS, as carbon costs for both domestic production and imports become explicit (NVV, 2024).

The intention of CBAM is to prevent carbon leakage by protecting domestic companies from being undercut by foreign firms operating under less stringent climate regulations by creating a level playing field (NVV, 2024). Literature indicates that CBAM can be effective in this regard. For instance, Böhringer et al. (2012a) estimate that it can reduce carbon leakage by roughly one-third, while Branger and Quirion (2014) suggest an average reduction of about one-half (as cited in Amendola, 2025). Additionally, Sandorf and Böhringer (2022) predict that the introduction of CBAM will create a new market dynamic, as firms will now face a direct and explicit cost for every ton of CO_2. This shift benefits "green" firms with low emissions, which can gain a financial advantage by benefiting from higher market prices while keeping production costs lower than their carbon-intensive competitors (ibid.)

However, although CBAM is widely advocated as a measure to prevent carbon leakage and safeguard the competitiveness of domestic firms, no empirical studies prior to its implementation have found statistically significant evidence of carbon leakage or negative impacts on competitiveness resulting from the EU ETS (Venmans, 2012; Arlinghaus, 2015; Martin et al., 2016; Dechezleprêtre & Sato, 2014; Jaraite & Di Maria, 2016; Branger et al., 2016; Naegele & Zaklan, 2019; Verde, 2020; Misch & Wingender, 2021).

Aldy and Pizer (2015) argue that differences in energy prices have a surprisingly small effect on firms' competitiveness and the location of production. In the most energy-intensive sectors (such as iron and steel, aluminium, and cement), only about one-sixth of the reduction in domestic production caused by higher energy prices can be attributed to "competitiveness effects.

Joltreau and Sommerfeld (2017) challenge prior conclusions, introducing an alternative explanation. They contend that the limited financial impact of the EU ETS is largely due to historically low carbon prices and generous free allowances, which enabled firms to generate windfall profits. They argue that firms have not yet felt the full impact of energy price differentials, as free emission allowances have acted as a buffer. However, as these free allocations are phased out, the pressure will intensify. Consequently, energy-efficient firms will only begin to see a real advantage when their carbon-related expenses remain lower than those of their less sustainable rivals.

Another stand of literature focuses on the challenges of implementing a carbon border tax. Aldy and Pizer (2015) argue that implementation can be both costly and difficult for several reasons: firms often resist revealing supply chain details, and distinguishing marginal from average emissions is challenging. Furthermore, the tax may cause trade diversion as high-carbon goods shift to untaxed markets, and regulatory complexity disproportionately burdens small firms in developing countries. Using "default carbon values" can simplify administration but does not resolve issues of data privacy, reporting fraud, or shifting global trade flows.

In summary, this body of literature highlights the potential challenges and concerns associated with implementing CBAM. Yet, despite extensive theoretical analysis, practical experience with CBAM in the EU remains limited. Consequently, it is essential to empirically assess its effects to understand how this regulatory shift impacts companies in practice. The aim of this study is to examine how CBAM affects companies across different industrial sectors, with a particular focus on variations in their financial performance. Its primary contribution is to fill a gap in the existing literature on CBAM, while also adding to the broader body of research on the EU ETS.

As CBAM has only recently entered its definitive phase where the regulation begins to be fully operational, it remains difficult to identify and quantify its direct financial causal effects since there is no data available. Nevertheless, the preceding transitional period provides a valuable empirical setting for studying firms' anticipatory behavior. This timeframe is critical because, as established by Malani and Reif (2015), forward-looking firms do not delay adaptation until a policy is fully enforced; instead, they adjust their behavior upon receiving initial policy signals. In anticipation of CBAM's definitive phase, many firms have already initiated substantial green investments and restructured their operations. Consequently, the financial footprint of these preemptive measures is highly likely to manifest within this transitional window.

This study focuses on Sweden, analyzing companies participating in the EU ETS within the country. Although many of these firms operate internationally, the financial and emissions data considered here reflect only their Swedish operations. Limiting the scope in this way allows for a precise assessment of CBAM's financial implications in a domestic context, providing a solid foundation for the empirical analysis.

In order to address the purpose of this study, the following research question is formulated:

- *How does CBAM affect the financial performance of Swedish firms operating in the EU ETS?*

To address the research question, I have analyzed data from 2019–2024, focusing on the relationship between corporate profitability, emissions, and the allocation of free emission allowances. The study uses a quantitative approach, which is suitable for measuring relationships between variables and enabling generalisation (Saunders et al., 2019). The analysis combines descriptive statistics and a Triple Differences (DDD) regression. Descriptive statistics are first used to summarise and understand the data (Dong, 2023), followed by the DDD model to examine the relationships more rigorously. The hypothesis of this study is that the implementation of CBAM negatively affects the financial performance of Swedish EU ETS firms producing CBAM goods.

2. Existing literature

2.1 The European Union Emissions Trading System

The EU Emissions Trading System (EU ETS) is the European Union's carbon market and was initiated in 2005 as a response to the global climate goals of the Kyoto Protocol (1997). The EU committed to significant emission reductions, establishing the ETS as its cornerstone instrument for meeting these binding international targets. By placing a price on carbon, the system ensures that major emitters pay for their environmental impact, which gives them a financial reason to switch to greener technology (European Commission, n.d.).

Prior to 2005, climate regulations were fragmented across individual nations. The establishment of the EU ETS replaced these disparate rules with a unified carbon market spanning the entire EU, alongside Iceland, Liechtenstein, and Norway. Today, the system regulates emissions from power generation and energy-intensive industries, having recently expanded to include the aviation and maritime sectors. In total, the ETS monitors approximately 13,000 energy-intensive and power-generating facilities including roughly 750 in Sweden and accounts for about 45% of the EU's total greenhouse gas emissions (European Commission n.d.).

The system operates under a cap-and-trade framework, whereby the EU sets an overall emissions limit that declines over time. Participating entities are obligated to cover every tonne of verified CO2 emissions with a corresponding emission allowance that are tradable on the carbon market (Energimyndigheten, 2025). While some allowances are distributed for free by Member States, each facility is responsible for monitoring its own emissions. If an installation exceeds its limit, it must purchase additional allowances on the market. Conversely, those that emit less than their allocated amount can sell their surplus to other participants (NVV, n.d.).

The system has evolved over four phases, each introducing tighter controls as the EU raises its climate stakes. These stricter measures are designed to ensure the Union meets its overarching goal of becoming climate-neutral by 2050 while ensuring that climate policy does not impose disproportionate burdens on firms (NVV, 2026). During Phases 1 through 3 (2005–2020), the system primarily relied on the generous free allocation of emission allowances. Additionally, carbon prices remained significantly low during these initial stages. In 2013, a tonne of CO2 traded at an average price of €4.3, compared to 2020 when the price reached €24.4 which is an increase of 463% (NVV, 2023b; EEA, 2022).

The fourth and current phase (2021–2030) introduces a further reform of the system, with CBAM designed to facilitate the complete phase-out of free emission allowances. By removing these free passes, the EU ETS establishes a real carbon price that forces industries to reduce their emissions (ibid.).

2.2 Carbon Border Adjustment Mechanism in the EU

CBAM initially targets six highly carbon-intensive sectors: (i) cement; (ii) iron and steel; (iii) aluminium; (iv) fertilizers; (v) electricity; and (vi) hydrogen. These industries were strategically selected due to their high "embedded emissions" and significant exposure to international trade which are factors that render them particularly susceptible to carbon leakage, where production shifts to jurisdictions with more lenient environmental standards (European Parliament & Council of the European Union, 2023).

The implementation of CBAM is structured as a phased transition between 2023 and 2034. During the initial transitional phase (2023–2025), requirements are limited to the monitoring and reporting of emissions associated with imported goods, with no financial charges applied. However, starting in 2026, the system will introduce mandatory CBAM certificates, which function as a carbon tariff. Their cost will gradually increase in line with the phased reduction of free EU ETS allowances, continuing through 2034. The tariff is calculated based on three factors: the EU carbon price, the carbon price in the exporting country, and the carbon content of the product. Companies must pay the difference between the EU price and the foreign price, multiplied by the amount of CO_2 embedded in the product (European Commission, n.d.)

This regulatory shift requires firms to collect and report detailed data on imported goods, including both direct and indirect emissions (scope 1 and 2), to ensure accurate carbon pricing (European Commission, 2021). While this creates incentives for foreign producers to reduce emissions, measuring them is complex and costly. There is also a risk that firms strategically export cleaner products to the EU while keeping more polluting production elsewhere (Böhringer et al., 2022).

Furthermore, the operational reality of CBAM introduces a substantial administrative burden, especially for small and medium-sized enterprises (SMEs) who, unlike large corporations, often lack the economies of scale and specialized internal resources required to navigate complex carbon accounting and verification processes efficiently. In February 2026, the European Parliament adopted the Omnibus Simplification Package (OSP) in response to criticism regarding the high administrative burden on small and medium-sized enterprises. The main changes on CBAM included exemptions for small importers, mainly SMEs and individuals, who import limited quantities of CBAM-covered goods. A new cumulative annual threshold of 50 tonnes per importer removes obligations for around 182,000 importers which is about 90% of all importers, while still covering over 99% of emissions. For companies that remain under CBAM, the rules have been simplified, making it easier to calculate embedded emissions, report, and obtain authorisation. The reforms also strengthen CBAM’s long-term effectiveness by preventing circumvention and abuse and prepare the ground for a future expansion to additional ETS sectors and downstream goods, with a legislative proposal on the scope extension expected in early 2026 (European Parliament, 2026).

The practical relevance of these thresholds and sector definitions becomes clear when looking at data from Sweden. In 2024, Swedish importers affected by the regulation imported just over 700,000 tonnes of CBAM goods. This includes importers whose total imports during that year exceeded 50 tonnes, meaning they surpassed the threshold that will apply from 2026. Two sectors, steel and metal production along with wholesale and commission trade, each account for one third of these imports. Goods within the iron and steel category stood for 85 percent of the total import volume. In total, the embedded emissions from these Swedish imports have been roughly estimated at just over 2 million tonnes of CO_2 for 2024 (NVV, 2025). However, as previously noted, the gradual phasing out of free emission allowances ensures that all firms producing CBAM goods will be affected, whether their production occurs within or outside the EU. This will result either in higher operational costs due to the mandatory purchase of emission allowances, or in the loss of a prior revenue stream (Dagens Industri, 2023).

2.3 Academic contribution

Given this context, this study makes several significant contributions to the field. There is currently a need for up-to-date quantitative analysis of how companies are economically affected by the CBAM in the EU. The implementation of this instrument represents a fundamental shift in the market conditions prevailing within the EU ETS, primarily due to the gradual phase-out of free emission allowances.

This creates an opportunity to empirically examine these effects at the firm level. This study is based on the hypothesis that CBAM may have negative financial effects for exposed companies within the EU, as the mechanism introduces additional compliance and administrative costs that could alter market competitiveness

Previous research has shown that companies have historically not been negatively affected by the EU ETS, largely due to the system of free allocation of emission allowances. In certain sectors, this even resulted in so-called windfall profits, as companies were able to pass on fictitious emission costs to consumers despite having received the allowances free of charge.

Thus, projections indicate that the transition from free allocation to border adjustments (CBAM) may now transform environmental performance into a direct economic competitive advantage. However, this competitive edge will likely only materialize for firms that have successfully reduced their emissions relative to their competitors**.** Yet, achieving this demands heavy capital and substantial upfront investments. Currently, there remains a distinct lack of empirical evidence to support this projection. This thesis therefore aims to address this gap, contributing valuable insights to both academia and business practitioners navigating the evolving landscape of the EU ETS and CBAM.

3. Theory and Hypothesis

In the following section, I contrast two different theoretical perspectives that explain the relationship between environmental regulations and corporate performance: the traditional neoclassical view, which frames regulation as an economic burden, and the Porter Hypothesis, which suggests that well-designed environmental policy can drive growth and competitiveness. By positioning these theories against each other, this section establishes the theoretical framework used to analyze the economic effects of CBAM. The first part examines the fundamental differences between these static and dynamic economic models. The second part applies these theories to the institutional context of CBAM, arguing that the transitional phase introduces heavy upfront investments that align with static theory, thereby forming the theoretical foundation for the study's primary hypothesis.

3.1 Environmental Policy and Economic Efficiency

Within traditional neoclassical literature, environmental regulations are often viewed through a static lens. This model rests on the assumption that firms are already operating at maximum efficiency, given existing technology and market conditions. Consequently, any new regulation, such as carbon taxes or mandatory emission reductions, is viewed as a pure additional cost that inevitably lowers the firm's profit margins and international competitiveness (Palmer et al., 1995; Walley & Whitehead, 1994)).

The Porter Hypothesis offers a different perspective on regulations. It suggests that companies often fail to reach peak efficiency due to resistance to change or a lack of information. Regulatory compulsion is therefore necessary to break the corporate status quo; without external pressure, the 'cost of inefficiency' often goes unnoticed (Porter, 1991; Porter & Van Der Linde, 1995).

Michael Porter's claims were tested by Jaffe and Palmer (1997), who divided the Porter Hypothesis into three versions: weak, strong, and narrow. The weak version suggests environmental regulation stimulates innovation but not necessarily profitability. The strong version argues that such innovation can improve competitiveness and increase profits beyond compliance costs. The narrow version emphasizes that policy design matters, with flexible, market-based instruments being more effective than rigid regulations.

Jaffe and Palmer (1997) provide strong empirical support for the weak version of the Porter Hypothesis, showing that environmental regulations tend to stimulate innovation in firms. However, they find less support for the strong version, suggesting that such innovation rarely leads to immediate economic gains. Their conclusion is that environmental policy is essential for environmental improvement, but it should not be expected to automatically increase firms' profitability in the short term.

3.2 CBAM and the Transitional Effects on Firm Financial Performance

A central assumption of this study is that the historical allocation of free emission allowances under the EU ETS has weakened the economic incentives for emission-intensive firms to invest in green technologies. As these free allowances are gradually phased out under CBAM, a theoretical tension emerges between classical economic theory and the Porter hypothesis. On one hand, traditional economic theory suggests that emission-intensive firms producing CBAM goods will face substantially higher compliance and transitional costs, directly depressing profit margins. On the other hand, the Porter hypothesis argues that these very cost pressures act as a productive trigger for innovation, eventually yielding efficiency gains that mitigate the initial regulatory burden.

Consequently, according to both theories, firms can expect higher costs in the short term. This proactive behavior is already observable in Sweden, where the nation's largest industrial firms have planned or ongoing green investments exceeding SEK 800 billion (Accelerationskontoret, 2025). Because this study evaluates the anticipatory effects of CBAM, a temporary decline in the financial performance of treatment firms is highly probable. However, such a decline during this initial phase does not indicate fundamental underperformance or a failure of the Porter hypothesis; rather, it reflects the front-loaded costs required to cross the threshold into long-term efficiency.

Based on this theoretical friction, the following hypothesis is proposed:

Hypothesis: *The transitional phase of CBAM will temporarily weaken the financial performance for Swedish firms producing CBAM goods.*

In the empirical analysis, the Porter hypothesis is operationalized through three key metrics: EBIT margin, emission intensity, and free allocation of emission allowances.

4. Methodology

To investigate how CBAM affects firms' financial performance, I conducted a systematic analysis of all active firms with installations in Sweden for the years 2019–2024. The work involved manual data collection, selection, and a classification of the firms based on whether they belong to a CBAM sector or not. Furthermore, a detailed operationalisation of the firms' EBIT margin and their emission levels was performed. The final dataset consisted of 1 firms, enabling an empirically grounded examination of how carbon tariffs and environmental performance link to firms' financial outcomes.

The analysis combined descriptive statistics with a regression model. Firms' financial performance, measured by the EBIT margin, was analysed based on their industry classification and emission data. The model also controlled for firm size, a central variable that prior research has identified as crucial for isolating effects on profitability. By following a clear theoretical model and building upon an existing research design, the study provides a timely contribution to research on the economic effects of environmental policy instruments at the firm level.

4.1 Research Design

This research aims to examine the relationship between the implementation of CBAM and the financial performance of firms. The study focuses specifically on Swedish companies participating in the EU ETS, and the research design has been developed accordingly to capture this context. The data used in this study is treated as a unified dataset, although it is constructed from multiple quantitative sources. Specifically, data is collected from the Swedish Environmental Protection Agency, the European Transaction Log (EU ETL), and Business Retriever, all of which are standardized sources subject to rigorous regulatory oversight. By utilizing emission data that is verified by independent third parties and financial data governed by statutory accounting requirements and generally accepted accounting principles, the risk of measurement error or subjective reporting bias is significantly minimized.

These datasets contain complementary information on facility-level emissions and allowances, as well as firm-level financial performance. To enable analysis, the data undergoes a structured process of cleaning, matching, and consolidation, where facility identifiers are used as a key to link installations to their corresponding firms.

To examine the relationship between the implementation of CBAM and firm financial performance, this study adopts a quantitative research approach. According to Mark Saunders et al. (2019), a quantitative method is appropriate when the aim is to measure relationships between variables and enable generalisation across a larger population.
Furthermore, the study employs a regression analysis using a Triple Difference model (DDD). This framework facilitates a comparison of temporal changes in financial performance between affected and less-affected firms, thereby isolating CBAM's effects from confounding external factors. Consequently, the DDD model provides a robust empirical strategy for identifying policy impacts among Swedish firms operating within the EU ETS. To identify which industries and firms produce CBAM-covered goods, specific classification criteria are applied. Specifically, treatment groups are determined by combining the firms' SNI industry codes with their emission intensity, thereby isolating high-emitting entities within the relevant sectors. To perform the descriptive and regression analyses, I used the statistical software R. To write parts of the code, I used the AI model Gemini as a support tool.

To address the research design, the study follows a structured process consisting of four main steps: (i) a literature review and theoretical framework, (ii) data collection and processing, (iii) model development, and (iv) analysis of results. First, the literature review covers two main areas: the EU ETS, and CBAM. It presents the history and regulation of both systems, focusing on the shift from free allowances to CBAM.

In addition, a theoretical framework is established based on Porter's Hypothesis, which suggests that while environmental regulation triggers long-term innovation, it inherently requires front-loaded compliance and investment costs that can depress financial performance during the transitional phase. Second, quantitative data is collected from the Swedish Environmental Protection Agency, EU ETL, and Business Retriever. These datasets are processed and merged into a unified wide format dataset by linking facility-level emissions data to firm-level financial data using unique identifiers. Third, a regression model incorporating a Triple DDD design is developed to examine the relationship between CBAM and firm financial performance. Finally, the results are analysed and discussed to assess whether the introduction of CBAM is associated with changes in financial performance among Swedish firms participating in the EU ETS.

4.2 Research Process

4.2.1 Data Preparation

The data collection is quantitative and primarily based on two sources: Swedish Environmental Protection Agency´s database of Swedish installations operating under the EU ETS, which provides facility-level information on emissions and allowances, and Business Retriever, which contains firm-specific financial data. The European Transaction Log (EU ETL) is used to link facilities to their corresponding firms through unique identifiers, enabling the integration of installation-level and firm-level data into a unified dataset. Furthermore, a manual mapping of 5-digit Swedish Standard Industrial Classification (SNI) codes using Statistics Sweden's (SCB) search utility was conducted for all organizations to ensure a more robust analysis of firm-level differences. This process linked each unique organisation number to an individual SNI code. By capturing more precise industry distinctions, the study can better isolate the specific impacts of CBAM and prevent firm-specific variations from confounding the results.

The data preparation process consists of two main steps. First, each dataset is cleaned and structured individually to ensure consistency and reliability. Second, the datasets are merged into a unified dataset by matching facility-level and firm-level information through common identifiers, making the data suitable for the subsequent Difference-in-Differences (DiD) regression analysis.

The initial scope of this study consists of Swedish installations encompassed by the EU ETS. To address the research question regarding how CBAM affects firms within the EU ETS, it was necessary to distinguish the installations directly subject to the regulation's legal requirements. Consequently, the sector and product definitions set out in Regulation (EU) 2023/956 served as the primary criteria for identifying CBAM-relevant activities within the broader dataset. However, a methodological challenge arose from the fact that the Regulation formally defines its scope at the product level, whereas the study's dataset utilizes industry classifications.

To address this, the selection process was anchored in the specific Combined Nomenclature (CN) codes listed in Annex I of the Regulation. To facilitate a matching process with the dataset, these CN codes were translated into five-digit Statistical Classification of Products by Activity (CPA) codes using the EU reference tool ShowVoc. This ensured a technically accurate transfer between product nomenclatures and activity classes. These CPA codes correspond to the first four digits of the Swedish SNI system, creating a bridge that allows for the identification of potentially exposed companies within the dataset.

Following this logic, several industrial sectors were excluded from the CBAM exposed sample. This includes wood products (SNI 16), pulp and paper (SNI 17), refineries (SNI 19), pharmaceuticals (SNI 21), rubber and plastic goods (SNI 22), electrical equipment (SNI 27), as well as the food and beverage industries (SNI 10 to 11) and water utilities (SNI 36). Since the products manufactured within these industries consistently lack corresponding CN codes in Annex I of the Regulation, it can be concluded with high certainty that these branches, as currently defined, fall outside the regulatory scope.

Despite this systematic mapping, certain sectors required additional manual intervention due to technical limitations in the statistical nomenclature. For instance, the absence of a direct automated linkage between product codes (CN) and activity codes (CPA/SNI) was particularly prevalent in the electricity sector (SNI 35) and basic chemical industry (SNI 20), where conversion keys often fail to capture specific CBAM regulated flows like hydrogen or grid specific electricity.

Furthermore, manual intervention was necessary for the metal industry (SNI 24) and non metallic mineral products (SNI 23) to enable precise differentiation. In these cases, the broad industry classifications encompass both CBAM liable materials, such as iron, steel, and cement, and non liable materials, such as copper, zinc, or specialized glass. This two step process, combining automated mapping with qualitative verification, ensured that the final dataset aligns with the regulatory scope of Annex I. A list of SNI codes and their corresponding industry descriptions is provided in Table A.2 under Additional Material.

PPI & SPII

Lastly, all financial variables were deflated to ensure that observed trends reflect real economic shifts rather than nominal price fluctuations. In accordance with Martinsson et al. (2024), 2020 was established as the base year (2020=100) to provide a stable pre-crisis baseline.

The selection of indices was tailored to the specific nature of each firm’s activities. The Swedish Producer Price Index (PPI) was utilized for industrial sectors (SNI B–E), as it accurately captures price changes for intermediary goods from a manufacturer's perspective. For service-oriented sectors, such as SNI 43 (Specialized construction) and SNI 62–63 (Information and communication), the Service Producer Price Index (SPPI) was applied.

The inclusion of service classified firms in an analysis centered on the EU ETS requires important methodological clarification. The EU ETS is fundamentally designed for heavy, asset intensive industrial processes. However, when merging the EU ETS installation registry with firm level financial data from Business Retriever, certain regulated entities appear under non industrial classifications. These include codes such as SNI 70 for headquarter activities and management consultancy, or SNI 64 for financial services and holding companies. This divergence occurs because the physical, high emitting installation is legally owned by a parent corporation or a holding company whose primary registered economic activity is administrative or financial rather than industrial.

Consequently, to ensure sample integrity, this study defines treatment based on the actual ownership of an active EU ETS installation, regardless of whether the firm aggregate financial metrics are classified under an industrial PPI or a service oriented SPPI. Utilizing the SPPI for these specific corporate entities is therefore methodologically vital, as it accurately reflects the inflationary pressures and price dynamics operating at the consolidated corporate level where the financial variables are measured.

The PPI and SPPI values are mapped to firms based on their respective SNI codes. In instances where data was unavailable for specific years or codes, a proxy was established using the most closely related SNI classification. For instance, where data was unavailable at the 5-digit SNI level, the index for the corresponding 4-digit level was applied. If data remained unavailable, the process continued to the 3-digit level, and so forth, moving up the SNI hierarchy until a suitable proxy was identified. For SNI codes lacking a specific index even at the 2-digit aggregate level, a sector-wide total index was utilized as a final proxy.

After merging the industry-specific index values with the firm observations based on their SNI codes, the dataset was processed in R. The final index for adjustments is summarised in Figure A.1.

4.2.2 Data processing

From the Swedish Environmental Protection Agency´s database, annual data on reported emissions and allocated emission allowances covering all Swedish installations participating in the EU ETS were available for the period 2005–2023. However, this study focuses on the years 2019–2024, consequently data is only collected for this period. This time frame was selected to enable a balanced comparison of firm performance before and after the introduction of CBAM.

The raw datasets for the period 2019–2024 initially contained 4,476 year-specific entries. By consolidating the data from all years, overlapping records were merged so that each installation-ID represents a single longitudinal unit. This process transformed the dataset into a wide panel format consisting of 746 unique facilities, while retaining the complete time-series information for each year.

The dataset contains detailed information on emission allowances, actual emissions, and surpluses or deficits. While the data can be categorized by installation, sector, municipality, and region, it lacks unique corporate registration numbers. This poses a challenge, as this thesis conducts its analysis at the firm level rather than the facility level. To obtain this information, the dataset was matched with the EU Transaction Log (EUTL), the official registry that records all transactions and allocations of emission allowances and links each unique installation to a legal entity within the EU ETS. Corporate registration numbers were sourced from the EUTL and merged with the primary dataset using installation IDs. This process transformed the facility-level data from the Swedish EPA into a firm-level dataset suitable for regression analysis.

After matching, many facilities were found to belong to the same parent company, sharing the same organisation ID. To avoid double-counting in the financial analysis, only the parent company's financial performance was used. To ensure that emissions and allowances were accurately represented at the parent company level, all facilities under the same company were aggregated for emissions and allocated allowances. After this final aggregation, the dataset consisted of 314 unique firms, each representing a parent company with consolidated emissions and financial data across multiple years.

The next step involved using each organisation ID to search the Business Retriever database in order to collect the relevant financial data for each parent company. This included key figures such as operating profit and revenue, which were then used to calculate the EBIT margin, providing a consistent measure of financial performance across all companies in the dataset. Some company registration numbers lacked financial data and were therefore excluded, resulting in a final dataset of 256 unique firms. The final dataset contains information on company-level emissions, allowances, and EBIT margin.

4.3 Mathematical Methods

In this section, mathematical methodologies and theories, which lays the foundation for the quantitative study, will be presented and described.

4.3.1 Triple Difference-model (DDD)

Restricting the sample to Swedish firms within the EU ETS establishes a controlled research environment. Because all firms in the sample operate under identical institutional conditions and regulatory frameworks, the study can isolate the impact of CBAM while minimizing the risk of results being confounded by national characteristics or general economic trends. However, the impact of CBAM is not expected to be uniform across all firms in the sample. To capture this complexity, the study operationalizes the variables through a Triple Difference (DDD) framework.

The Triple Difference (DDD) framework is a quasi-experimental research design used to isolate the causal effect of a specific intervention by comparing multiple groups across different dimensions. Instead of relying on a single comparison, the DDD model identifies the treatment effect by looking at the intersection of three factors: group affiliation, timing, and a specific measure of vulnerability or intensity. This multi-layered approach is particularly effective for filtering out confounding factors, such as general industry trends or macro-economic shocks, that might otherwise bias the results (Angrist & Pischke, 2009).

The formal econometric model for this study is specified as follows:

$$Y_{it} = \beta_0 + \beta_1(Group_i \times Time_t \times Intensity_i) + \gamma X_{it} + \alpha_i + \delta_t + \epsilon_{it}$$

This model defines Yit as the dependent variable representing the outcome for firm i at time t. The core of the framework is the triple interaction term (GroupiTimet Intensityi), where the coefficient β1 isolates the causal effect by intersecting the dimensions of group affiliation, timing, and individual vulnerability. To ensure statistical precision, the model incorporates Xit as a vector of control variables for firm-specific factors, while αi and δt represent fixed effects that account for time-invariant firm characteristics and annual macroeconomic shocks, respectively. Finally, ϵit denotes the error term for the unexplained variance in the data.

4.3.2 Operationalization of variables

4.3.2.1 Independent variables

In the regression analysis, the independent variable of interest is operationalized through the triple interaction term (β1), which categorizes the sample into three layers of comparison:

Treat (Groupi)

Firms identified through the SNI codes specified in Annex I of Regulation (EU) 2023/956 are subject to the direct requirements of the mechanism. These firms constitute the treatment group, while the remaining companies in the sample serve as the control group. The study uses the control group as a counterfactual to represent the performance trend that would have occurred in the absence of the policy change.

Post (Timet)

This variable captures the shift in market expectations by taking the value of 1 for the post-announcement period (2022–2024) and 0 for the pre-announcement period (2019–2021). The selection of 2021 as the pivotal year for the study is motivated by the fact that it marked the official announcement of the CBAM proposal. However, in accordance with economic theory, a lag in financial reporting and operational adjustments must be assumed. Firms often operate under existing contracts and hedging strategies that cannot be altered immediately. Consequently, 2021 is classified as the final year of the control period (Pre), while the Post period is defined as 2022 to 2024. This post policy timeframe allows enough time for the regulatory changes to actually reflect in corporate financial reporting. Since strategic investments and accounting adjustments naturally take time to implement, a multi year window is necessary. This ensures that regulatory pressures have adequate time to influence financial metrics like operational costs and EBIT margins, while also reducing the impact of short term market volatility.

High Emitter (Intensityi)

To enable a nuanced analysis of how the CBAM announcement affects firms based on their specific carbon profiles, a specialized variable, High Emitter, was constructed. While the primary treatment variable (*sectoral affiliation)* identifies firms at the sectoral level , the *High Emitter* variable allows for firm-level categorization based on actual carbon exposure.

As the carbon border adjustment mechanism functions as a direct cost on carbon emissions, the ultimate financial burden will not be distributed evenly across a regulated sector. Instead, the costs will concentrate heavily on firms with the largest emission volumes and carbon intensive imports. By introducing this third term, the model isolates the specific sub group facing the highest financial risk. The variable is defined as a dichotomous dummy variable (0/1) based on the firms' verified emissions during the baseline year of 2022. The calculation follows an objective threshold method:

$$High\_emitter = \begin{cases} 1 & \text{if } Emissions_{2022} > \text{Median}(Emissions_{2022}) \\ 0 & \text{if } Emissions_{2022} \leq \text{Median}(Emissions_{2022}) \end{cases}$$

By utilizing the median as the cutoff point, a balanced distribution within the sample is ensured, reducing the risk of extreme outliers in the emission data driving the results. The underlying logic of the variable rests on the concept of Net Exposure. A firm's financial vulnerability to CBAM is not determined solely by its total emissions, but by the difference between those emissions and the free allowances it receives. Since CBAM is designed to replace the current system of free allocation, firms classified as *High Emitters* are expected to face a more substantial future cost burden as these subsidies are phased out.

4.3.2.2 Dependent variable

The dependent variable, Yit, is financial performance, which captures the operational profitability and efficiency of the firms. Specifically, this refers to the ability of a company to generate an economic surplus relative to the scale of its operations despite the increased regulatory costs and administrative requirements imposed by CBAM. To ensure comparability across firms of different sizes and industrial backgrounds, this is operationalized through the EBIT margin, also known as the operating margin. It is a financial metric used to measure a company's operational profitability by calculating the percentage of revenue that remains as operating profit before interest expenses and taxes are deducted. By focusing purely on core operations, it allows analysts to evaluate a company's efficiency and compare its performance with competitors, regardless of its capital structure or tax environment (*bexio*, n.d.).

The EBIT margin has been selected as the primary financial variable for this study because it methodologically combines the need for size normalisation with the capacity to capture the economic effects of environmental policy instruments.

First, financial analysis within manufacturing sectors consistently requires data to be normalised in order to mitigate the influence of company size, which is a prerequisite for conducting meaningful comparisons across different firms (Wlodarczyk et al., 2024). By scaling operating profit against net sales, a relative measure is created that allows for robust cross-sectional comparisons between companies of varying scales within the analyzed sectors, aligning with established empirical praxis in the research field (Capkun et al., 2009).

Second, in the context of carbon regulations and market frameworks, operating metrics such as the EBIT margin are highly effective at reflecting core economic dynamics within manufacturing industries (Wlodarczyk et al., 2024). Given that regulations like CBAM are projected to alter variable input and compliance costs, tracking changes in this specific margin provides a direct look into operational performance. A contracting or shifting EBIT margin among the carbon-exposed firms can therefore be interpreted as an indication of how well or poorly these businesses manage to absorb, handle, or adapt to the additional regulatory costs imposed by the framework (Capkun et al., 2009; Wlodarczyk et al., 2024).

To calculate this metric, the following formula is applied:

$$\text{EBIT Margin} = \left(\frac{\text{EBIT}}{\text{Net Sales}}\right) \times 100$$

Since the EBIT margin reflects this core profitability, the hypothesized reduction in financial performance during the transitional phase is operationalized as an expected decline in this specific metric.

4.3.2.3 Control Variables and Fixed Effects

To ensure the internal validity of the Triple Difference (DDD) model and to isolate the causal effect of the CBAM announcement, the regression includes several control components that account for unobserved heterogeneity.

Firm Fixed Effects (αi)

The model incorporates firm-specific fixed effects to control for time-invariant characteristics of each unique facility or legal entity. This accounts for factors that do not change over the study period, such as geographical location, established management structures, and baseline technological efficiency. By including αi, the analysis compares each firm against its own historical baseline, reducing the risk of omitted variable bias.

Time Fixed Effects (δt)

To account for temporal shocks that affect all firms in the sample simultaneously, time fixed effects are included. These variables capture macro-economic fluctuations, such as the energy price volatility following the geopolitical shifts in 2022 or general interest rate changes. The inclusion of δt ensures that the estimated impact (β1) is not confounded by broader market trends that coincide with the CBAM announcement.

Control Vector (Xit)

The vector Xit represents time-varying firm-level controls. While fixed effects capture static differences,these variables account for fluctuations in firm size or operational scale during the 2019–2024 period.Specifically, firm size is operationalized using the natural logarithm of total sales. Log-transforming this variable is essential to account for the highly skewed distribution of revenue within the sample, ensuring that the model is not disproportionately influenced by the largest entities. This transformation also allows the coefficient to be interpreted as the effect of a percentage change in size on the EBIT margin, controlling for economies of scale.

Error Term (ϵit)

The idiosyncratic error term, ϵit, represents the remaining variation not captured by the model. Given the longitudinal nature of the data, the standard errors are clustered at the firm level. This adjustment is necessary to account for potential autocorrelation, as financial performance observations within the same firm are likely to be correlated over time.

4.3.3 Winsorization

To minimize the impact of extreme outliers, the dataset has been winsorized at the 5th and 95th percentiles. This means that the most extreme values at both ends of the distribution have been replaced with the values of the 5th and 95th percentiles, respectively. As noted by Chambers et al. (2000), limiting the influence of extreme values through this statistical approach is essential for preventing outliers from distorting the model's overall performance.

This method has been applied consistently to the variables for emissions and real revenue throughout the entire study. The purpose is to stabilize both the descriptive statistics and the results of the regression analysis, ensuring that isolated extreme cases do not provide a misleading picture of the general relationships.

5. Results and Analysis

5.1 Descriptive analysis

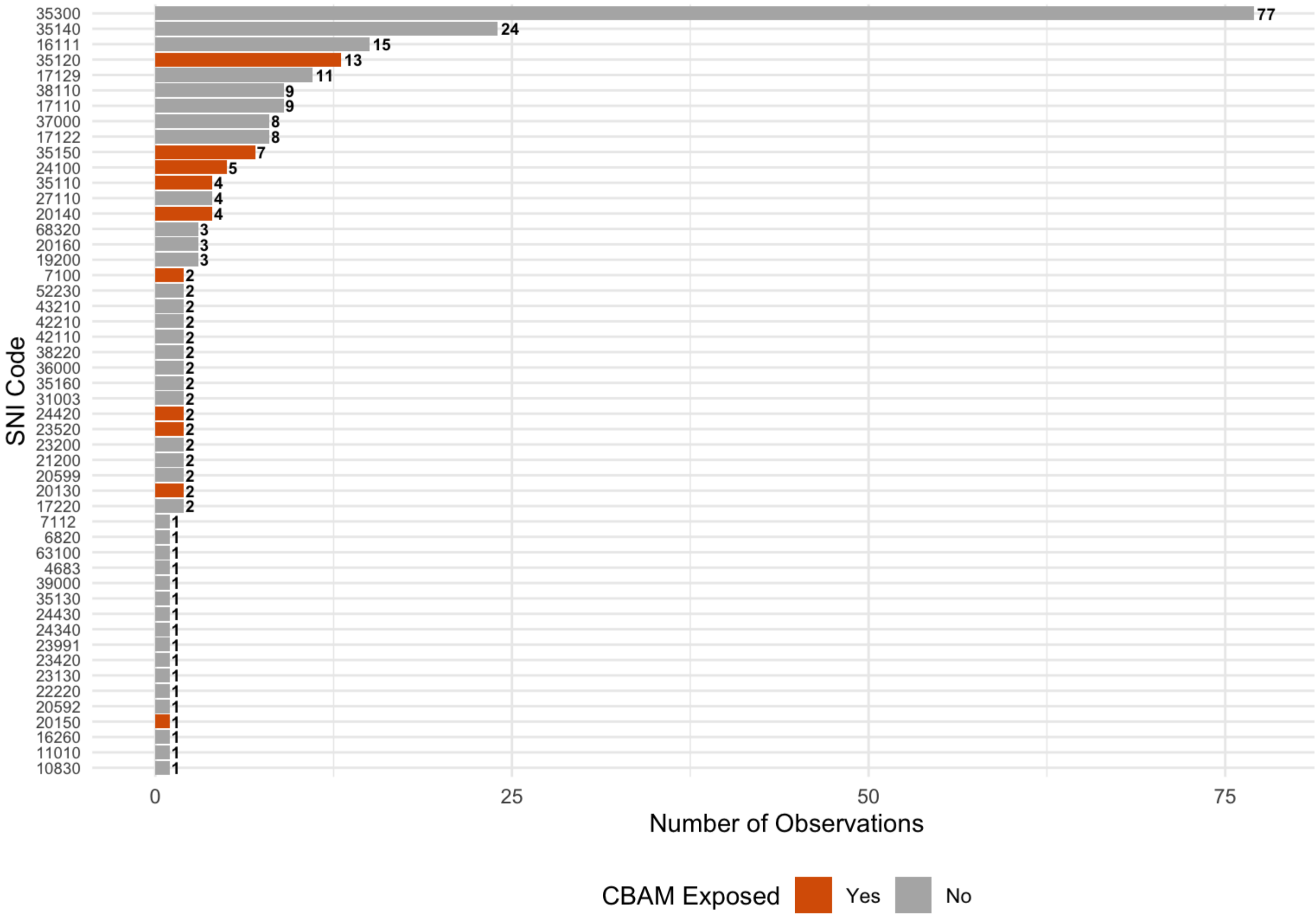

Figure 1: Number of observations per SNI code

Figure 1 illustrates the distribution of observations across different 4-digit SNI codes, categorized by CBAM exposure. The dataset consists of 256 observations in total, where 42 are classified as CBAM-exposed (marked in red) and 214 belong to the control group (marked in blue). In total, there are 50 unique SNI classifications represented in the dataset. Out of these, 10 SNI codes contain CBAM-exposed observations, while the remaining 40 codes consist exclusively of control group observations. Detailed descriptions of each SNI code are provided in Table A.1 in the Appendix.

Table 1: Statistic number of observation distribution per SNI code

Summary Statistics: Observations per SNI Code

Minimum	Median	Maximum	Average
1	1	50	3.56

Table 1 shows the minimum, median, maximum and average number of observations per SNI code.

5.1.1 Emission metrics

To ensure a fair comparison, a normalized metric is required due to the diversity of the 256 observations. The dataset covers 50 different SNI codes, ranging from heavy industry to technical consulting, with companies varying greatly in size. Using absolute emission numbers would be misleading, as large entities naturally have higher total footprints regardless of their actual carbon efficiency.

Furthermore, the 42 CBAM-exposed companies belong to sectors with naturally high energy needs, while the 214 control group companies operate under different structural conditions. Normalization is therefore essential to determine if high emissions are due to inefficiency or simply a result of industry type and economic scale. To address this, emission intensity is used, defined as:

$$Emission\ Intensity = \frac{Emissions\ (tons)}{Revenue\ (mSEK)}$$

By using revenue as a proxy for size, this metric creates a "level playing field." It allows for a consistent comparison of carbon efficiency across different years, industries, and groups, despite their structural imbalances.

5.1.1.2 Emission intensity

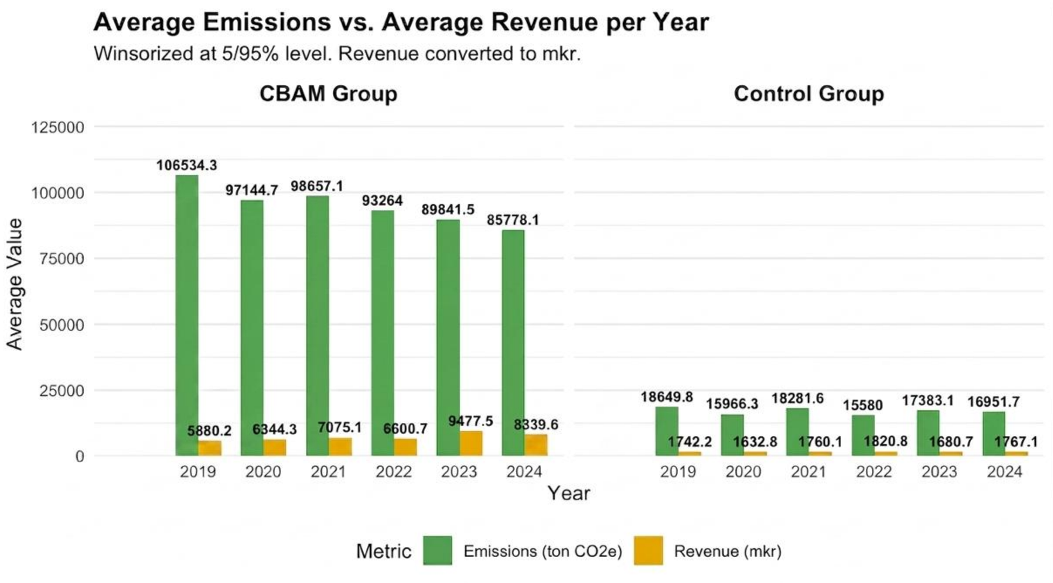

Figure 2: Average emissions and real revenue per year

Figure 3 illustrates the annual development of average emissions and real revenue for the CBAM-exposed group compared to a control group. The data highlights a significant structural gap between the groups, where the exposed group consists of high-intensity industrial actors with a substantially larger environmental footprint.

The data shows a clear difference between the groups, as the treatment group (CBAM-exposed firms) has average emissions, represented by green bars, significantly higher than the control group. Between 2019 and 2024, the CBAM group reduced its average emissions from 106,534.3 to 85,778.1 tonnes of CO_2e. During the same period, their revenue, shown by the yellow bars, increased from 5,880.2 mkr in 2019 to 8,339.6 mkr in 2024, peaking at 9,477.5 mkr in 2023. This combination of declining emissions and growing revenue suggests that these firms have become more carbon-efficient.

The CBAM firms are also larger economically, with revenue consistently staying above 5,800 mkr, compared to the control group which remains at a lower baseline between roughly 1,600 and 1,800 mkr per year. While the CBAM group shows a steady downward trend in emissions, the control group's emissions fluctuate more, starting at 18,649.8 tonnes in 2019 and ending at 16,951.7 tonnes in 2024. In summary, the analysis confirms that the CBAM group consists of heavy industries that have started to transition toward lower emissions while simultaneously growing their economic output

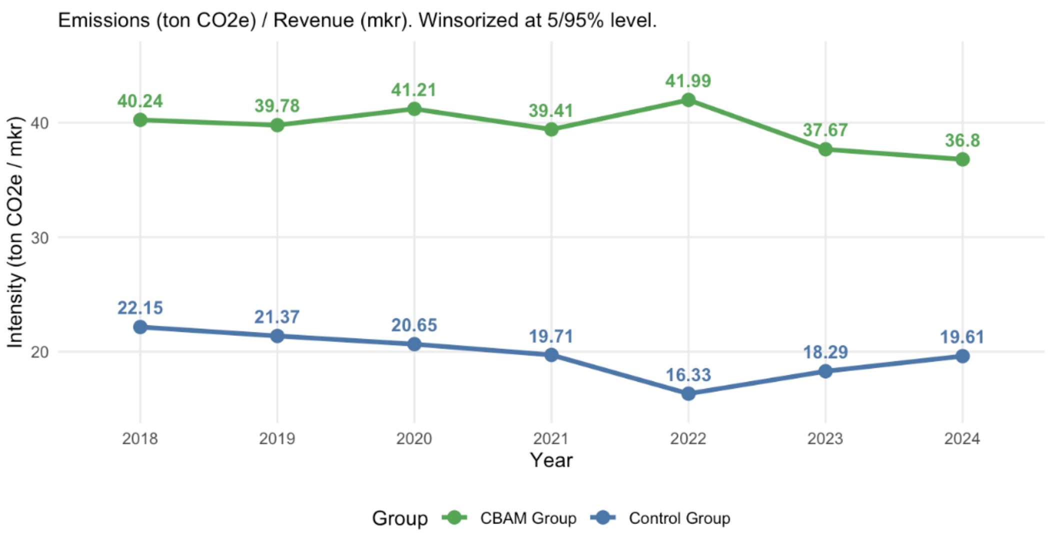

Figure 3: Average emission intensity per year

Figure 3 illustrates the development of the average emission intensity between 2019 and 2024, measured as tonnes of CO2e per million SEK in revenue.

A key observation is how the intensity changed for the CBAM group over time. In 2019, the average intensity was 39.78 t/MSEK. After rising to a peak of 41.99 t/MSEK in 2022, the intensity dropped steadily to 36.8 t/MSEK by 2024. This decline in the latter half of the period suggests that these companies have begun to improve their carbon efficiency following a period of higher intensity.

In contrast, the control group exhibits a different trend. Their intensity starts at a lower level of 21.37 t/MSEK in 2019 and reaches its lowest point of 16.33 t/MSEK in 2022. While the control group remains significantly less carbon-intensive than the heavy industries in the CBAM group, it shows a slight upward trend toward the end of the period, reaching 19.61 t/MSEK in 2024. The visualization highlights that while the CBAM companies remain more carbon-intensive, a downward trend is evident for the exposed group from 2022 onwards, whereas the control group has seen a slight increase in intensity during the same timeframe.

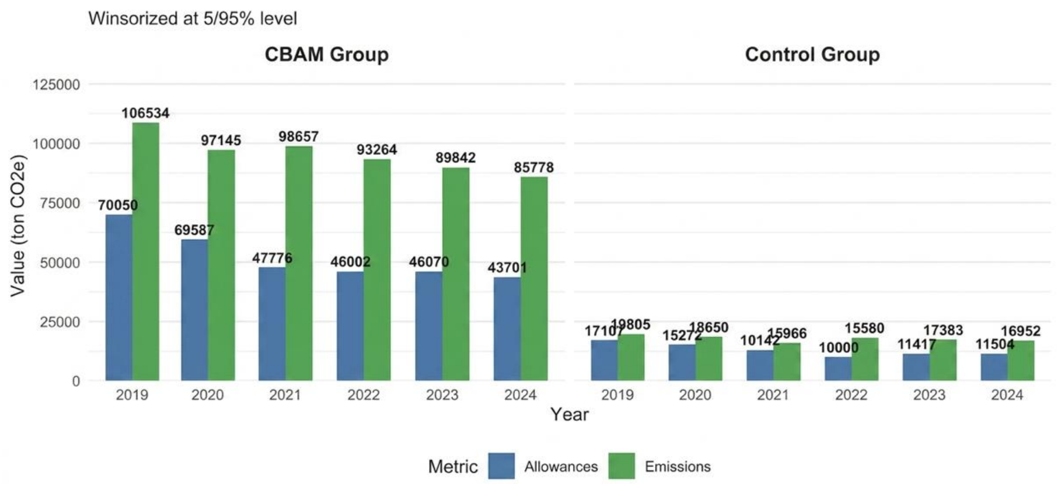

Figure 4: Average free allocation of emission allowances

Figure 4 illustrates the historical trend of average free emission allowances between 2019 and 2024, disaggregated by sectors based on their exposure to CBAM. Both groups exhibit a downward trajectory over the period, reflecting the broader tightening of EU climate policy and the linear reduction of the overall cap within the EU ETS to drive decarbonization. The CBAM group, represented by the blue bars, has consistently received a higher volume of free allowances, starting at an average of 70,050 tonnes CO2e in 2019 and declining to 43,701 tonnes by 2024. This elevated level of support has traditionally been maintained to mitigate the risk of carbon leakage for energy-intensive industries that face intense international competition. In contrast, the control group shown by the corresponding blue bars started at a significantly lower baseline of 17,107 tonnes and declined to 11,504 tonnes by 2024. Ultimately, the visualization highlights the regulatory protection historically granted to CBAM-exposed industries, though the steady decline in both groups underscores the ongoing phase-out of free allocations as the EU transitions toward using border adjustments as a primary tool.

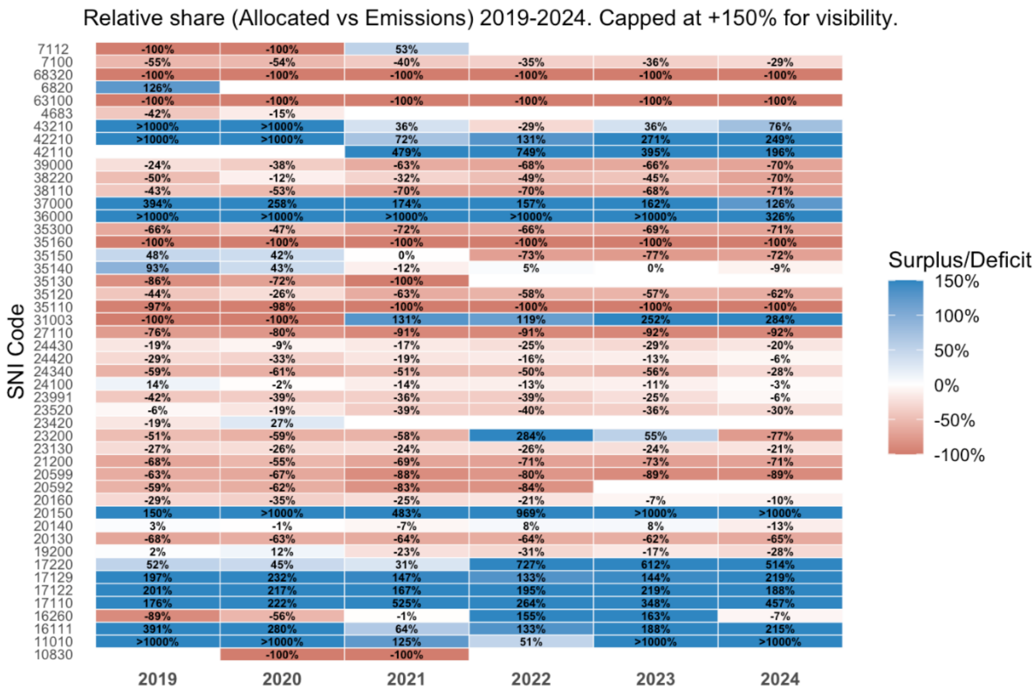

Figure 5: Share of surplus/deficit emission allowances in relation to the total emission

Figure 5 illustrates the proportion of emissions covered (or not covered) by the free allowances companies receive. One allowance equals one tonne of CO2e. The following equation is applied to determine the share of surplus or deficit:

$$\text{Share Permit Surplus or Deficit}_{it} = \frac{\text{Free Allocation}_{it} - \text{Actual Emission}}{\text{Total Actual Emissions}_{t}}$$

The data illustrates a clear divide in how the EU ETS affects different SNI-coded industries, functioning as a financial redistribution mechanism rather than a uniform tax. While sectors such as Paper (SNI 17) and Beverages (SNI 11) utilize the system as a potential source of income through surpluses, others, like the Energy sector (SNI 35), treat it as a pure operational cost due to structural deficits. Meanwhile, a third group, including heavy industries like Steel (SNI 24) and Cement (SNI 23), remains largely insulated from the immediate financial impact of their emissions in a neutral zone. This variation is driven by the specific benchmarks used for free allocation and the varying carbon intensity of production processes within each sector.

5.2 Financial Metrics

Just as normalization is required for emission data, a comprehensive analysis must account for the underlying financial variations across the dataset. The economic capacity of a firm often dictates its ability to invest in carbon-reducing technologies, meaning that emission trends cannot be fully understood in isolation from a firm's financial health. By aligning environmental parameters with financial metrics, such as profitability and scale, the study ensures that the evaluation of company behavior under the EU ETS is grounded in each industry's specific economic reality.

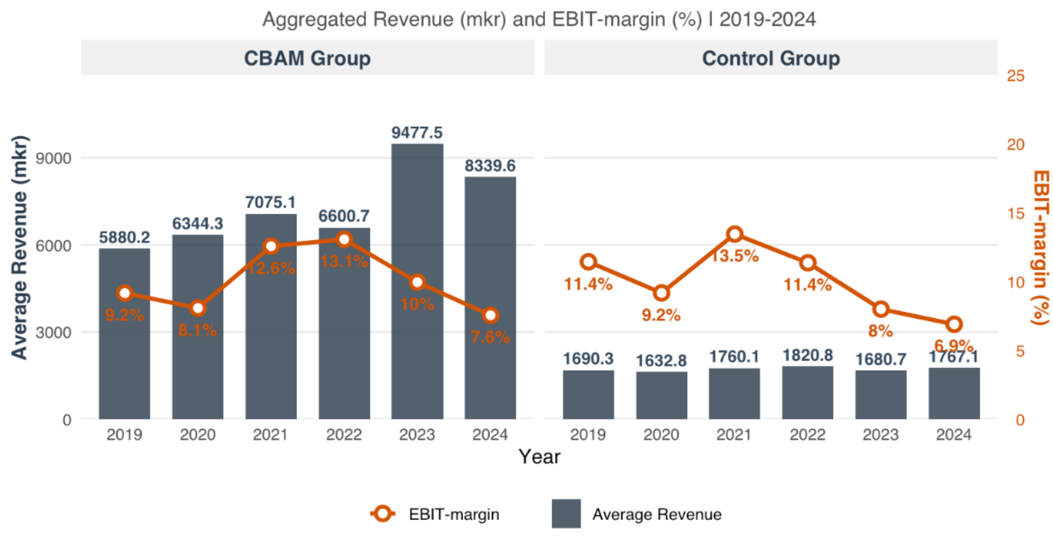

Figure 6: Average EBIT margin per year

Figure 6 tracks the economic trajectory of the study groups from 2019 to 2024 by measuring average real revenue alongside the average EBIT margin. The data reveals a significant structural divide between the groups, with the CBAM-exposed group consisting of substantially larger actors reaching an average revenue of 8,339.6 mkr in 2024, compared to the control group's stable level of approximately 1,767.1 mkr.

Economic performance within the CBAM-exposed group showed a notable upward trend in revenue, increasing from 5,880.2 mkr in 2019 to a peak of 9,477.5 mkr in 2023, before settling at 8,339.6 mkr in 2024. Despite this revenue growth, profitability has fluctuated; the average EBIT margin for the CBAM group rose from 9.2% in 2019 to a peak of 13.1% in 2022, but subsequently declined to 7.6% by 2024.

Meanwhile, the control group exhibits a more stagnant economic development, with revenue remaining within a narrow range between 1,632.8 mkr and 1,820.8 mkr throughout the entire six-year period. The average EBIT margin for the control group also saw a downward trend in the latter half of the period, falling from a peak of 13.5% in 2021 to 6.9% in 2024. Ultimately, the visualization highlights that while the CBAM-exposed firms operate on a much larger economic scale and saw significant revenue expansion, both groups experienced a tightening of profit margins toward the end of the study period.

5.3 Regression Analysis

The previously presented trend diagrams for the period 2019–2024 indicate that the financial performance of CBAM-exposed firms has not developed positively in step with increasing explicit carbon costs and the gradual phase-out of free emission allowances. While these diagrams show a visual correlation between the regulatory shift and stagnant profitability, they lack the capacity to isolate causal relationships. Descriptive graphs cannot independently determine whether the observed development in EBIT margins is a direct consequence of CBAM or the result of broader macroeconomic fluctuations affecting the market as a whole. That is why it is important with a regression analysis which is presented below.

Table 2: Descrpitive stats for variables in the regression models

Variables	OBS	Mean	Median	St.dev	Min	Max	Approach
EBIT margin	1,410	0.105	0.096	0.095	-0.062	0.318	W
ln(Sales)	1,410	13.357	13.310	1.811	7.989	20.363	W + LN
Treat (CBAM)	1,536	0.164	0.000	0.370	0.000	1.000	-
Post (2022)	1,536	0.500	0.500	0.500	0.000	1.000	-
High Emitter	1,536	0.496	0.000	0.500	0.000	1.000	-
Net Exposure	1,536	13,045.930	26.000	80,052.573	-309,813.000	604,610.000	W

Note: The number of observations is restricted to 1,410 due to listwise deletion. W = Winsorization (5/95th percentile), LN = Natural Logarithm.

Table 2 provides a summary of the descriptive statistics for the final sample of 1,410 observations. The variables *EBIT margin*, *ln(Sales)*, and *Net Exposure* have been winsorized at the 5th and 95th percentiles to mitigate the impact of extreme outliers and ensure the robustness of the regression estimates. To account for the skewed distribution of firm size, the natural logarithm was applied to the Sales variable, establishing a more linear relationship suitable for OLS estimation. In the econometric model, ln(Sales) serves as the time-varying control variable (γX_{it}). While firm fixed effects (α_i) remove permanent, structural size differences between large and small firms, ln(Sales) captures temporary business cycles and annual profitability shifts within each firm. By controlling for these changes over time, the model "vacuums" confounding operational noise, which prevents fluctuations in firm size from biasing the main policy coefficient (β_1).

The dummy variables *Treat*, *Post*, and *High Emitter* reflect the categorical distribution of the sample, with the *Post* variable (mean = 0.500) indicating a balanced dataset between the pre- and post-announcement periods. The *Net Exposure* variable captures the carbon intensity of firms by calculating the difference between verified emissions and free allowances, providing a technical measure of the potential financial impact of the CBAM regulation.

Table 3: Tripple difference (DDD) regression results

	(1)	(2)
Log(Sales)	-0.010*	-
	(0.005)	-
Treat × Post (DiD)	0.026+	0.012
	(0.014)	(0.021)
Post × High Emitter	0.013+	0.019
	(0.007)	(0.023)
Treat × Post × High Emitter (DDD)	-0.023	-0.027
	(0.018)	(0.032)
Num.Obs.	1410	1410
R2	0.627	0.359
R2 Adj.	0.579	0.277
R2 Within	0.007	-
R2 Within Adj.	0.004	-
RMSE	0.06	0.17

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3 presents the results from a fixed-effects OLS regression using a Triple Difference (DDD) methodology, where the EBIT margin serves as the dependent variable. The table displays two specifications: Column (1) outlines the full model including the control variable Log(Sales), while Column (2) presents a baseline model excluding it. Both models incorporate firm and year fixed effects. Structuring the dataset around unique firm IDs removes permanent, time-invariant differences between individual firms, while including fiscal years absorbs broader economic trends and macro-level shocks that affect all firms simultaneously. In Column (1), Log(Sales) is introduced to control for time-varying, within-firm changes in operating scale and to capture potential economies of scale or demand shocks. While sales figures are mathematically linked to the denominator of the dependent variable (EBIT margin), including this control is theoretically motivated to isolate structural policy impacts from purely transitory business cycle fluctuations.

The empirical results from Model 1 focus on the interaction terms mapping the policy dynamics. The primary variable of interest, the triple-interaction term Treat×Post×High Emitter, isolates the policy impact on the most exposed group (treated high emitters). It exhibits a negative but statistically insignificant coefficient of -0.023. Consequently, the study cannot establish that the policy announcement had a unique or distinct effect specifically on treated firms with high carbon intensity. Conversely, the traditional Difference-in-Differences term (Treat×Post), capturing the baseline policy effect on treated firms with a lower emissions profile, displays a positive coefficient of 0.026, which is only marginally significant at the 10% level ($p<0.1$). Similarly, the interaction term Post×High Emitter indicates a weak, marginal baseline trend (0.013, $p<0.1$) for high-emitting firms in general during the post-announcement period, suggesting potential market shifts irrespective of treatment.

The control variable Log(Sales) is statistically significant (-0.010, $p<0.05$). Because the model includes firm fixed effects that remove permanent structural differences in size, this negative coefficient demonstrates that temporary, within-firm revenue spikes are associated with a minor decrease in the EBIT margin.

It is also important to note that the model’s ability to explain the EBIT margin across different firms, as measured by Adjusted R2, is high at 0.579. However, this high number is mostly driven by the fixed effects. These fixed effects simply absorb the permanent, structural differences between individual firms and the general economic shifts that happen from year to year. This is proven by the Within R2 value of 0.007, which shows that the policy variables and the control variable explain only 0.7% of the variation occurring within the same firms over time. This demonstrates that the vast majority of the total variance is driven by inherent differences between the companies, rather than annual fluctuations caused by the policy announcement. Furthermore, the model's low RMSE of 0.06 shows that its predictions are very accurate across the 1,410 observations. In real terms, it means the model's guesses only miss the actual EBIT margin by an average of 6 percentage points.

Model 2 demonstrates that the baseline policy estimates are highly sensitive to the specification of firm size. When the Log(Sales) control is omitted, none of the main policy or interaction variables retain statistical significance, meaning the observed coefficients cannot be confidently distinguished from random variation. Specifically, the triple-interaction term Treat×Post×High Emitter yields a coefficient of -0.027, which remains statistically insignificant. Furthermore, the traditional Difference-in-Differences term (Treat×Post) drops to 0.012, and the interaction Post×High Emitter shifts to 0.019, with both losing their marginal significance.

This divergence between the two models highlights that the marginal effects identified in Model 1 are conditional on filtering out the variation associated with annual sales fluctuations. Reflecting the omission of any time-varying controls, the Adjusted R2 drops to 0.277, and Within R2 metrics are omitted as no within-firm variation is explained beyond the fixed effects. Concurrently, the RMSE increases to 0.17, indicating a substantial increase in the baseline prediction errors when relying strictly on the firm and year fixed effects without accounting for annual changes in operational scale.

6. Discussion

This thesis examines the impact of CBAM on the financial performance of firms operating within the EU ETS. The initial hypothesis posited that firms producing CBAM goods and therefore directly exposed to the regulation would experience a decline in financial performance. The empirical analysis provided mixed evidence to support this claim. While high emitters within the treatment group experienced a decline in financial performance, firms with lower emission intensities saw a relative improvement compared to the control group. The following section discusses the interpretation of these findings, the inherent limitations of the study, and potential avenues for future research.

6.1 Interpretation of results

The empirical results from the descriptive statistics reveal a general contraction in the EBIT margin post-2021 across the entire sample, affecting both the treatment and control groups. However, the baseline Difference-in-Differences (DiD) regression estimate shows that the treatment group's margin decreased less than that of the control group, resulting in a positive and weakly significant coefficient ($\beta=0.026$, $p<0.1$). Furthermore, the model demonstrates a high overall explanatory power, with an R2 of 62.7%, indicating that the included variables account for most of the variance in EBIT margins. This positive DiD result runs counter to the study's primary theoretical expectations.

To isolate the impact of carbon exposure, a Triple Difference (Triple DiD) framework was used. For firms within the treatment group that are highly emission-intensive, the Triple DiD coefficient shows a further decline in EBIT margins ($\beta=-0.023$).

While the negative sign of the Triple DiD coefficient aligns with the hypothesis that high-emitting firms face greater cost pressures, the result is not statistically significant. Consequently, despite the downward descriptive trend across all groups, the Triple DiD cannot confirm a distinct financial penalty for high emitters during this transitional phase.

One potential explanation for the lack of empirical support for the hypothesis is that the structural costs for emission-intensive firms were already high prior to the introduction of CBAM. Although the descriptive statistics indeed reveal an absolute decline in financial performance for the treatment group, the fact that the control group exhibits a parallel trend suggests that this downturn was likely driven by broader macroeconomic factors. Furthermore, key industrial actors such as SSAB initiated their green transition as early as 2016 through the HYBRIT initiative (Hybrit, 2016). Because their most capital-intensive investments were consequently front-loaded long before CBAM became relevant, the policy failed to generate a statistically significant divergence between the treatment and control groups within the regression model.

6.2 Limitations of the study

This study is subject to several limitations. These limitations likely explain why the empirical analysis fails to provide full support for the hypothesis that CBAM weakens the financial performance of the firms encompassed by the regulation.

First, there is a risk of selection bias due to missing data. The sample shrank from 314 to 256 firms because some financial data was missing in the Business Retriever database. This suggests that smaller or private companies were systematically excluded. As a result, the dataset is skewed toward larger parent companies. These larger firms often have more resources to handle new regulations, which might hide the negative impact that smaller competitors experienced.

Second, it is difficult to perfectly identify which firms are affected. Although SNI codes and Showvoc were used to find companies linked to CBAM goods, these industry codes only show a firm's main business sector. They do not show exactly how much of a firm's revenue or supply chain is actually exposed to carbon-intensive imports. This means some firms in the "treated" group might barely be affected by the policy, which dilutes the results.

Third, using the EBIT margin as the main measure has downsides. As shown in Table 5.3, this measure is highly sensitive to firm size. Because sales are already used to calculate the EBIT margin (EBIT/Sales), adding Log(Sales) as a control variable creates a mathematical overlap. This alters the entire model: the total explanatory power (Adjusted R2) doubles, but the variables over time (Within R2) explain a tiny 0.7%. This sensitivity suggests that the EBIT margin contains too much mathematical noise to capture small, early signals from the new policy.

6.3 Future work

Future work could expand on this study by analyzing later time periods after the transitional phase of CBAM ends and the actual financial enforcement begins. Since this paper primarily captures short term anticipatory effects during a cost free reporting phase, future research will be essential to evaluate the true economic consequences when corporate entities must legally purchase CBAM certificates to cover their embedded emissions.
Furthermore, moving from an aggregate analysis to a more granular, industry specific level represents a valuable avenue for future research. Investigating individual sectors would help identify which specific industries are most vulnerable to these policy changes once the financial exemptions disappear. Sectors like iron and steel completely dominate total import volumes and face unique challenges under the new regulations. Examining how these specific industries navigate the phase out of free EU ETS allowances alongside the

introduction of mandatory CBAM tariffs would provide critical, sector specific insights into how carbon border adjustments reshape heavy manufacturing.

7. Conclusions

This study aimed to analyse the impact of the CBAM announcement on the financial performance of Swedish firms operating under the EU ETS. Based on the theoretical framework and the underlying objectives of the regulation, it was hypothesized that CBAM could initially weaken the financial performance of regulated firms. Although the results revealed a positive and statistically significant increase in EBIT margins for the treatment group as a whole, the coefficient for high emitting firms lacked statistical significance. This is a critical nuance, as high emitters represent the specific sub group with the greatest carbon exposure and financial risk within the sample.

However, these findings should not be interpreted as a lack of regulatory impact or study value. The discussion and limitations highlight that severe macroeconomic disruptions during this period, such as global inflation and the energy crisis, likely created substantial statistical noise that obscured the results. Furthermore, certain methodological challenges in perfectly isolating the affected firms may have influenced the empirical outcomes.

Ultimately, this analysis underscores a clear need for future research. While this study focuses exclusively on the early anticipatory effects following the announcement, future studies should investigate the definitive phase of CBAM when the policy begins to impose direct, mandatory financial costs on corporate balance sheets.

Bibliography

Accelerationskontoret. (2025). *Here and now across the country: Accelerationskontoret's situational assessment of the industrial transition*. Government Offices of Sweden. https://accelerationskontoret.se/wp-content/uploads/2025/05/Har-och-nu-i-hela-landet.pdf

Aldy, J. E., & Pizer, W. A. (2015). *The competitiveness impacts of climate change mitigation policies* (Working Paper No. RWP15 046). Harvard Kennedy School.

Amendola, M. (2025). Winners and losers of the EU carbon border adjustment mechanism: An intra EU issue? *Energy Economics*, 142, Article 108139. https://doi.org/10.1016/j.eneco.2024.108139

Angrist, J. D., & Pischke, J. S. (2009). *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton University Press.

Arlinghaus, J. (2015). *Impact of carbon prices on indicators of competitiveness: A review of empirical findings* (OECD Environment Working Paper No. 87). OECD Publishing. https://doi.org/10.1787/5js37p21grzq en

bexio. (n.d.). *EBIT (Earnings Before Interest and Taxes): Definition & formula*. Retrieved May 26, 2026, from https://www.bexio.com/en-CH/ebit

Böhringer, C., Carbone, J. C., & Rivers, N. (2022). The incidence of carbon pricing: Evidence from the European Union Emissions Trading System. *Climate Policy*, 22(1), 1–17. https://doi.org/10.1080/14693062.2021.1947707

Capkun, V., Vedel, B., & Namazi, M. (2009). Corporate ability to manage inventories and its effect on financial performance. *International Journal of Production Economics*, 121(2), 633–646. https://doi.org/10.1016/j.ijpe.2008.05.021

CE Delft. (2010). *Does the energy intensive industry obtain windfall profits through the EU ETS? An econometric analysis of possible links between profits and the EU ETS*. CE Delft. https://cedelft.eu/wp-content/uploads/sites/2/2021/06/CE_Delft_200402_Additional_Profits_EU_ETS_FINAL_3.pdf

Dagens Industri (2023). *Så stor blir industrins nota om EU stryper gratis utsläppsrätter* [How large the industry's bill will be if the EU chokes off free emission allowances]. Dagens Industri: Hållbart Näringsliv. https://www.di.se/hallbart-naringsliv/sa-stor-blir-industrins-nota-om-eu-stryper-gratis-utslappsratter/

Dechezleprêtre, A., & Sato, M. (2014). *The impacts of environmental regulations on competitiveness* (Policy brief). Grantham Research Institute on Climate Change and the Environment, London School of Economics and Political Science. http://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2014/11/Impacts_of_Environmental_Regulations.pdf

Energimyndigheten. (2025). *What is the EU ETS?* Swedish Energy Agency. https://www.energimyndigheten.se/klimat/eus-utslappshandelssystem-eu-ets/om-eu-ets-och-hur-utslappshandeln-fungerar/vad-ar-eu-ets/

European Commission. (2021). *'Fit for 55': Delivering the EU's 2030 Climate Target on the way to climate neutrality*(COM(2021) 550 final). https://eur lex.europa.eu/legal content/EN/TXT/HTML/?uri=CELEX:52021DC0550

European Commission. (2024). *List of operators in the EU ETS*. Union Registry. https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/free-allocation/carbon-leakage en

European Commission. (2026). *Carbon Border Adjustment Mechanism (CBAM)*. European Commission Taxation and Customs Union. https://taxation customs.ec.europa.eu/carbon border adjustment mechanism_en

European Commission. (u.å.). *About the EU ETS*. Directorate General for Climate Action. https://climate.ec.europa.eu/eu-action/carbon-markets/about-eu-ets_en

European Parliament and Council of the European Union. (2023). *Regulation (EU) 2023/956 of the European Parliament and of the Council of 10 May 2023 establishing a carbon border adjustment mechanism*. http://data.europa.eu/eli/reg/2023/956/oj

Europeiska kommissionen. (2021). *Commission Staff Working Document: Executive Summary of the Impact Assessment Report accompanying the document Proposal for a Regulation of the European Parliament and of the Council establishing a carbon border adjustment mechanism* (SWD(2021) 644 final). European Commission. https://eur lex.europa.eu/legal content/SV/TXT/?uri=CELEX:52021SC0644

Eurostat. (2008). *NACE Rev. 2: Statistical classification of economic activities in the European Community*. Office for Official Publications of the European Communities. https://ec.europa.eu/eurostat/documents/3859598/5902521/KS RA 07 015 EN.PDF

Eurostat. (2025). *Combined Nomenclature 2026 (CN 2026)* [Dataset]. Publications Office of the European Union. https://showvoc.op.europa.eu/#/datasets/ESTAT_Combined_Nomenclature,2026%28CN_2026%29/data

Fontagné, L., & Ostojic, N. (2024). *Carbon Border Adjustment Mechanism: A Review of the Economic Literature* (CEPII Working Paper No. 2024 03). CEPII. http://www.cepii.fr/PDF_PUB/wp/2024/wp2024-03.pdf

Hybrit (2016). *The HYBRIT initiative: Toward a fossil-free future*. Hybrit Development AB. Available at: https://www.hybritdevelopment.se/

Jaraite, J., & Di Maria, C. (2016). Did the EU ETS make a difference? An empirical assessment using Lithuanian firm level data. *The Energy Journal*, 37(1), 1–23. https://doi.org/10.5547/01956574.37.2.jjar

Joltreau, E., & Sommerfeld, K. (2017). *Why does emissions trading under the EU ETS not affect firms' competitiveness? Empirical findings from the literature* (IZA Discussion Paper No. 11253). IZA Institute of Labor Economics. https://docs.iza.org/dp11253.pdf

Kalantzis, F., Khalid, S., Solovyeva, A., & Wolski, M. (2025). Firms' response to climate regulations: Empirical investigations based on the European Emissions Trading System. *Energy Policy*, 196, Article 114389. https://doi.org/10.1016/j.enpol.2024.114389

Kaur, P., Stoltzfus, J., & Yellapu, V. (2018). Descriptive statistics. *International Journal of Academic Medicine*, 4(1), 60–63. https://doi.org/10.4103/IJAM.IJAM_7_18

Lankoski, L. (2000). *Determinants of environmental profit: An analysis of the firm-level relationship between environmental performance and economic performance* (Doctoral dissertation, Helsinki University of Technology). Institute of Strategy and International Business.

Laing, L., Sato, M., Grubb, M., & Comberti, C. (2014). The effects and side effects of the EU emissions trading scheme. *WIREs Climate Change*, 5(4), 509–519. https://doi.org/10.1002/wcc.283

Malani, A., & Reif, J. (2015). Accounting for anticipatory effects in economic evaluations of policy changes. *Journal of Economic Literature*, 53(1), 123-145.

Magacho, G., de Conti, B., & Leudjou, E. (2024). CBAM and the green transition: Examining the impact on bilateral trade and global value chains. *Journal of International Economics*, 147, Article 103856. https://doi.org/10.1016/j.jinteco.2023.103856

Martin, R., Muûls, M., & Wagner, U. J. (2016). The impact of the European Union Emissions Trading Scheme on regulated firms: What is the evidence after ten years? *Review of Environmental Economics and Policy*, 10(1), 129–148. https://doi.org/10.1093/reep/rev016''

Naranjo Tuesta, T., Crespo Soler, C., & Ripoll Feliu, V. (2021). Accounting for carbon emission allowances in the European Union: In search of consistency.

Business Strategy and the Environment, 30(2), 1139–1152. https://doi.org/10.1002/bse.2676

Palmer, K., Oates, W. E., & Portney, P. R. (1995). Tightening environmental standards: The benefit cost or the no cost paradigm? *Journal of Economic Perspectives*, 9(4), 119–132. https://doi.org/10.1257/jep.9.4.119

Sandorf, M., & Böhringer, C. (2022). Carbon border adjustment mechanisms and the WTO. *Journal of Environmental Economics and Management*, 116, Article 102744. https://doi.org/10.1016/j.jeem.2022.102744

Saunders, M., Lewis, P., & Thornhill, A. (2019). *Research methods for business students* (8th ed.). Pearson Education.

Statistiska centralbyrån. (u.å.-a). *Swedish Standard Industrial Classification (SNI)*. https://www.scb.se/en/documentation/classifications-and-standards/swedish-standard-industrial-classification-sni/

Statistiska centralbyrån. (u.å.-b). *Search business: The Business Register*. https://cfarnrsok.scb.se/

Swedbank Research. (2026). *ESG Focus: The EU's CBAM: A climate tool with a broad impact*. Swedbank. https://v2.research.swedbank.se/article/4532a591 efcb 4320 a10c 7ef9c8cf0c74

Swedish Environmental Protection Agency. (2024a). *Carbon Border Adjustment Mechanism (CBAM)*. https://www.naturvardsverket.se/amnesomraden/utslappshandel/cbam/

Swedish Environmental Protection Agency. (2024b). *Who participates in emissions trading?*https://www.naturvardsverket.se/amnesomraden/utslappshandel/utslappshandel-for-allmanheten/vad-ar-utslappshandel/

Swedish Environmental Protection Agency. (2025). *Who is covered by CBAM and which goods are included?*https://www.naturvardsverket.se/vagledning-och-stod/cbam/vem-omfattas-av-cbam-och-vilka-varor-ingar/

Torres Reyna, O. (2007). *Panel data analysis fixed and random effects using Stata (v. 4.2)*. Princeton University. https://www.princeton.edu/~otorres/Panel101.pdf

UBC Arts Instructional Support and Information Technology. (u.å.). *Panel data and difference in differences*. COMET. https://comet.arts.ubc.ca/docs/5_Research/econ490 r/14_Panel_Data.html

Venmans, F. (2012). A literature based multi criteria evaluation of the EU ETS. *Renewable and Sustainable Energy Reviews*, 16(8), 5493–5510. https://doi.org/10.1016/j.rser.2012.05.036

Walley, N., & Whitehead, B. (1994). It's not easy being green. *Harvard Business Review*, 72(3), 46–52.

Wlodarczyk, A., Sutopo, B., & Barbu, C. M. (2024). Financial and carbon performance in manufacturing sectors: Evidence from Central and Eastern Europe. *Journal of Cleaner Production*, 435, Article 140412. https://doi.org/10.1016/j.jclepro.2023.140412

Zachmann, G., & McWilliams, B. (2020). *A European carbon border tax: Much pain, little gain* (Bruegel Policy Contribution No. 2020/05). Bruegel. https://www.econstor.eu/bitstream/10419/237637/1/1694817660.pdf

Appendix A

Table A.1: PPI & SPPI adjustment factors

SNI	2018	2019	2020	2021	2022	2023	2024
7.1	100.6	103.5	100.0	110.7	134.3	133.2	133.1
11.01	93.6	99.2	100.0	100	108	120	127
16.111	104.2	101.6	100.0	161.4	156.2	126.8	139.0
16.26	94.9	98.4	100.0	109.5	127.5	134.0	135.5
16.21	93.4	100.8	100.0	110	128	134	136
17.11	130.5	120.5	100.0	122.0	164.3	155.3	166.6
17.122	100.6	105.6	100.0	100.8	135.5	143.8	134.7
17.129	100.6	105.6	100.0	100.8	135.5	143.8	134.7
17.121	100.6	105.6	100.0	100.8	135.5	143.8	134.7
17.22	97.3	100.2	100.0	104.0	120.5	140.3	133.7
19.2	140.5	139.2	100.0	147.7	260.6	226.1	197.9
20.13	88.4	97.7	100.0	98.8	126.2	153.8	146.3
20.14	107.8	108.1	100.0	121.2	174.1	170.5	161.9
20.16	105.8	106.2	100.0	116.9	143.0	133.0	131.3
20.59	94.4	99.4	100.0	102.0	128.7	133.3	132.6
21.2	100.6	103.5	100.0	110.7	134.3	133.2	133.1
22.22	98.2	101.0	100.0	106.4	127.3	134.5	136.7
23.13	98	99.3	100.0	105	130	150	155
23.52	100.6	103.5	100.0	110.7	134.3	168.3	167.1
23.99	98.9	103	100.0	117	137	147	149
24.1	105.3	108.6	100.0	132.7	184.8	183.8	173.2
24.2	91.4	101.1	100.0	111.2	129.4	140.4	140.8
24.34	102	105.3	100.0	118	145.4	158	137.3
24.43	90.9	94.6	100.0	120	137	143	153
27.11	97.7	98.8	100.0	101.7	103.9	113.4	112.7
35.1	125.1	125.0	100.0	139.5	231.4	149.9	120.6
35.11	125.1	125.0	100.0	139.5	231.4	149.9	120.6
35.12	125.1	125.0	100.0	139.5	104.1	41.6	41.7
35.14	136.8	138.7	100.0	152.1	295.5	178.2	121.5
35.15	125.1	125.0	100.0	139.5	231.4	149.9	120.6
35.16	125.1	125.0	100.0	139.5	231.4	149.9	120.6
35.3	93.8	101.7	100.0	101.0	102.9	109.1	124.1
36	92.6	95.7	100.0	106.0	110.6	121.2	140.1
37	100.6	103.5	100.0	110.7	134.3	133.2	133.1
38.11	109.9	102.3	100.0	134.3	154.8	171	190.2
38.22	91.8	96.3	100.0	108.9	123.6	136.9	151.7
52.23	91.4	95.2	100.0	103.4	112.1	125.7	128.2
62	98.4	100.3	100.0	101.3	107.6	112.1	115.2
62.1	98.4	100.3	100.0	101.3	107.6	112.1	115.2

63.1	90.9	97.7	100.0	102.6	106.1	111.8	115.3
68.32	95.6	96.7	100,0	102.8	107.4	111.2	115.8
43.21	100.6	103.5	100.0	110.7	134.3	133.2	133.1
42.21	100.6	103.5	100.0	110.7	134.3	133.2	133.1
42.11	100.6	103.5	100.0	110.7	134.3	133.2	133.1
68.2	95.5	98.4	100.0	102.1	106.5	113.6	119.2
20.592	94.4	99.4	100	102	128.7	133.3	132.6
24.42	107.3	104.2	100	109.9	140.4	143	142.8
23.42	97.6	98.8	100	99.4	120.4	145.3	155.1
20.15	98.3	101.1	100	107.6	148.8	151.1	138.8
10.83	94.3	97.5	100	99.4	120.4	145.3	155.1
17.129	100.6	105.6	100	100.8	135.5	143.8	134.7
16.111	104.2	101.6	100	161.4	156.2	126.8	139
35.3	93.8	101.7	100	101	102.9	109.1	124.1
17.122	100.6	105.6	100	100.8	135.5	143.8	134
31.003	93.5	97.4	100	103.8	119.8	130	132.7
23.2	97.6	98.8	100	104.9	122.4	136.1	138.1
35.13	103.1	105.2	100	98.8	106.6	111	126.3
39	100.6	103.5	100	114.8	119.8	126.3	123.3
46.83	97.1	99.3	100	102.6	110.2	114.8	117.9
71.12	97.1	98.3	100	101.7	105.3	110.1	113.9

Table A.1 shows the PPI indices used for financial adjustments. Blue-marked cells represent missing data, where the index has been proxied by the nearest lower-digit SNI code. For instance, SNI 62's index was used for SNI 62.1 during 2018–2024 as no specific data was available.

Table A.2: Industry classification

Industry Classification	
SNI 5 digit	Description
11010	Distilling, rectifying and blending of spirits
16111	Sawmilling of wood
16210	Manufacture of veneer sheets and wood-based panels
16260	Manufacture of solid fuels from vegetable biomass
17110	Manufacture of pulp
17121	Manufacture of newsprint and graphic paper
17122	Manufacture of kraft paper and paperboard
17129	Other manufacture of paper and paperboard
17220	Manufacture of household and sanitary paper products
19200	Manufacture of refined petroleum products
20130	Manufacture of other inorganic basic chemicals
20140	Manufacture of other organic basic chemicals
20160	Manufacture of plastics in primary forms
20599	Manufacture of other chemical products
21200	Manufacture of pharmaceuticals
22220	Manufacture of plastic packing goods
23130	Manufacture of hollow glass
23520	Manufacture of lime and plaster
23991	Manufacture of stone and mineral wool products
24100	Manufacture of basic iron and steel
24200	Manufacture of tubes and pipes of steel
24340	Manufacture of cold drawn wire
24430	Lead, zinc and tin production
27110	Manufacture of electric motors and generators
35110	Electricity generation (non-renewable)
35120	Electricity generation (renewable)
35140	Distribution of electricity
35150	Trade of electricity
35160	Storage of electricity
35300	Steam and air conditioning supply
36000	Water collection and treatment
37000	Sewerage
38110	Collection of non-hazardous waste
38220	Energy recovery
42110	Construction of roads and motorways
42210	Construction of utility projects
43210	Electrical installation
52230	Service activities for air transportation
62100	Computer programming
63100	Data processing and hosting
68320	Real estate management
7100	Mining of iron ores

Table A.2 presents the SNI codes alongside their corresponding industry classifications.

Populärvetenskaplig sammanfattning

Den här uppsatsen utforskar hur EU:s nya klimatverktyg, CBAM (Carbon Border Adjustment Mechanism), påverkar svenska företags finansiella resultat. CBAM fungerar som en koldioxidtull på import och är en utökning av EU:s befintliga utsläppshandelssystem, EU ETS. Tidigare har europeiska företag tilldelats generösa mängder gratis utsläppsrätter. Detta har gjorts för att jämna ut spelplanen och förhindra att produktion flyttas till länder utanför EU med mindre strikta klimatregler. Eftersom CBAM nu lägger en koldioxidavgift på importvaror fasas de kostnadsfria utsläppsrätterna ut, vilket gör att koldioxidkostnaderna för svenska företag blir betydligt mer kännbara.

För att belysa de potentiella finansiella effekterna kontrasteras två motstridiga ekonomiska teorier: Porters hypotes och den neoklassiska teorin. Eftersom Porters hypotes om innovationsdrivna vinster primärt sträcker sig över en längre tidsisofon, formas uppsatsens hypotes utifrån ett neoklassiskt perspektiv, att lönsamheten på kort sikt sjunker till följd av initiala investeringskostnader.

Hypotesen har testats genom att samla in data från samtliga företag med produktion i Sverige som omfattades av EU ETS under perioden 2019–2024. Företagens lönsamhet har i studien operationaliserats och mätts genom rörelsemarginalen (EBIT-marginalen). Resultaten visar att introduktionen av CBAM *inte* har haft någon mätbar negativ effekt på de svenska företagens lönsamhet under de undersökta åren. De skillnader i lönsamhet som syns i datan tycks i stället till allra största del höra samman med långsiktiga, strukturella olikheter mellan de enskilda bolagen

Sammanfattningsvis indikerar studien att introduktionen av CBAM har haft en försumbar effekt på de svenska företagens finansiella resultat på kort sikt. Detta resultat kan dock härledas till att den undersökta tidsperioden främst fångar företagens initiala anpassning under policyprocessens tidiga skede, innan de faktiska finansiella sanktionerna och tullavgifterna har trätt i kraft fullt ut. Framtida studier bör därför fokusera på de långsiktiga effekterna i takt med att regelverket implementeras i sin helhet.

Publishing and archiving

Approved students' theses at SLU can be published online. As a student you own the copyright to your work and in such cases, you need to approve the publication. In connection with your approval of publication, SLU will process your personal data (name) to make the work searchable on the internet. You can revoke your consent at any time by contacting the library.

Even if you choose not to publish the work or if you revoke your approval, the thesis will be archived digitally according to archive legislation.

You will find links to SLU's publication agreement and SLU's processing of personal data and your rights on this page:

- https://libanswers.slu.se/en/faq/228318

☒ YES, I, Alice Bevegård, have read and agree to the agreement for publication and the personal data processing that takes place in connection with this

☐ NO, I/we do not give my/our permission to publish the full text of this work. However, the work will be uploaded for archiving and the metadata and summary will be visible and searchable.