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Beyond Trade Volumes: Market Entry, Export Survival, and the Early Trade Effects of the African Continental Free Trade Area

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Abstract

This paper examines how the African Continental Free Trade Area (AfCFTA) reshapes export relationships during its early implementation by distinguishing between the intensive, extensive, entry, exit, and survival margins of trade. Using highly disaggregated HS6 bilateral export data covering 4,314 products exported from Ghana to 196 destination markets between 2014 and 2023, the paper provides one of the first ex post evaluations of these mechanisms. The analysis employs a structural gravity framework estimated by Poisson Pseudo-Maximum Likelihood (PPML), which accommodates zero trade flows and heteroskedasticity while controlling for rich product-destination heterogeneity. The results show that AfCFTA's early effects are concentrated primarily in the formation and persistence of export relationships rather than in the expansion of existing trade volumes. Specifically, the agreement increases entry into new product-destination markets, improves export survival, and promotes broader market participation, while the effects on the intensive margin are comparatively limited. These findings are robust to alternative treatment dates, the exclusion of Ghana's major commodity exports, and dynamic event-study specifications. Overall, the evidence suggests that the early benefits of AfCFTA extend beyond increases in trade values by facilitating export diversification and strengthening the durability of export relationships, offering new evidence on the mechanisms through which continental trade integration may support structural transformation in African economies.

Keywords: AfCFTA; Ghana; extensive margin; entry margin; export survival; export diversification
JEL Classification Codes: F13; F14; F15; O14; O19

1 Introduction and Motivation

The African Continental Free Trade Area (AfCFTA) represents an unprecedented attempt to integrate a continent characterized by fragmented markets, high trade costs, and limited intra-regional commerce. By reducing tariff and non-tariff barriers and creating a more unified continental market, the agreement is expected not only to increase the value of trade among African economies but also to alter the composition and durability of their trading relationships. Beyond increasing trade volumes, the AfCFTA aims to facilitate structural transformation by encouraging economic diversification and enhancing the competitiveness of African producers in regional and global markets (Ebenezer and Mhlanga (2025)). These objectives

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are particularly important for African economies that remain heavily dependent on a narrow range of primary commodity exports and are vulnerable to external demand and price volatilities (Annandale (2022)). An important question is therefore whether AfCFTA expands trade primarily by increasing exports within established product-market relationships or by enabling exporters to introduce new products, enter previously inaccessible markets, and sustain those relationships over time.

This distinction is central to understanding the developmental implications of continental integration. Aggregate trade growth may arise from larger shipments of products that were already being exported, without generating meaningful diversification or new productive capabilities. By contrast, growth along the extensive margin-sthe formation of new product-destination relationships can broaden the export base, reduce dependence on a narrow range of commodities, and support longer-term structural transformation. Export survival is equally important because the benefits of market entry are limited when newly established trade relationships disappear shortly after they are formed. The success of AfCFTA should therefore be assessed not only by whether it raises aggregate trade values, but also by whether it promotes entry, reduces the fragility of export relationships, and expands the range of products traded across African markets.

Existing research on the AfCFTA has primarily focused on its effects on aggregate trade flows, trade creation and trade diversion (Geda and Yimer (2023); Letlala and Johnson (2025)), welfare and distributional outcomes (Abrego et al. (2019); Bayale et al. (2022); Maliszewska et al. (2020); Fofack et al. (2021)), export diversification (Ebenezer and Mhlanga (2025); Vogel and Bochum (2022)), tariff liberalization, regional value chains, and industrial development (De Melo and Solleder (2025); Ajibo (2023)). Existing AfCFTA research has predominantly relied on computable general equilibrium (CGE) models and structural simulations to evaluate the agreement's effects on trade and welfare. Studies by Abrego et al. (2019) and Maliszewska et al. (2020) predict substantial gains in intra-African trade, income, welfare, employment, and industrial output following the implementation of AfCFTA. More recent work extends this analysis to poverty, inequality, and country-specific outcomes using CGE and microsimulation frameworks (Diallo (2022)).

Using gravity models, partial-equilibrium approaches, and CGE simulations, these studies generally evaluate whether the agreement increases trade volumes, improves GDP, promotes regional economic integration, improves the terms of trade, and enhances economic welfare across participating countries. However, considerably less attention has been devoted to the extensive margin of trade, including product diversification, market entry, exit margin, and export survival. As a result, relatively little is known about whether the AfCFTA is facilitating the emergence of new export products, enabling firms to penetrate new African markets, or improving the durability of export relationships over time.

The extensive margin is particularly salient in the African context. Many African economies continue to exhibit highly concentrated export structures, relying heavily on a narrow range of primary commodities for export earnings (Annandale (2022)). According to UNCTAD, commodities account for more than 60% of merchandise exports in 45 of the 54 African countries, highlighting the continent's persistent dependence on a limited scope of export products (Trade and (UNCTAD)). Consequently, the success of the AfCFTA should not be evaluated solely by increases in export values but also by its ability to facilitate the emergence of new export varieties, expand market access across the continent, and improve the durability of trade relationships. While increases in trade volumes among existing exporters, products, and

destinations are significant, their contribution to structural transformation may be limited. Structural transformation is more likely when trade integration promotes extensive-margin adjustments, such as the introduction of new export products, entry into new markets, and the participation of new firms, thereby facilitating diversification and upgrading of productive capabilities (Hummels and Klenow (2005); Baier et al. (2014); Alessandria et al. (2023)).

This issue is particularly important for Ghana. Although Ghana has achieved significant export growth over the past decades, its exports remain concentrated in a relatively small number of commodities, including gold, crude oil, and cocoa-related products. The World Bank World Integrated Trade Service trade data consistently show that Ghana's leading exports are gold, petroleum oils, and cocoa products. In 2023, gold exports exceeded US$7.6 billion, petroleum oils nearly US$4.0 billion, and cocoa beans over US$1.1 billion, making them the country's dominant export products. Recognizing the risks associated with commodity dependence, successive governments have prioritized export diversification and the promotion of non-traditional exports as central pillars of national development strategies. Serving as a home to the AfCFTA Secretariat and one of the leading proponents of continental integration, Ghana stands to benefit substantially if the agreement lowers market-entry barriers, creates opportunities for new products, and improves the sustainability of export relationships across African markets. Understanding whether these outcomes are materializing is therefore of considerable policy relevance.

This paper contributes to the burgeoning AfCFTA literature by examining the impact of the agreement on the extensive margin of Ghanaian exports. Specifically, the analysis investigates three interrelated dimensions of export dynamics: product diversification, market entry, and export survival. Using highly disaggregated Ghanaian product-level export data, the paper evaluates whether the AfCFTA has increased the number of products exported by Ghana, facilitated entry into new destination markets, and improved the likelihood that newly established export relationships persist over time. By focusing on these dimensions, the paper provides new evidence on the mechanisms through which regional integration influences export development and structural transformation.

The paper makes three contributions. First, it provides early ex post evidence on AfCFTA implementation, complementing a literature dominated by prospective simulations and aggregate trade estimates. Second, it decomposes the trade response into intensive, extensive, entry, exit, and survival margins, thereby identifying the channels through which continental integration begins to reshape export activity. Third, it shows that the incremental effects of a continent-wide agreement may be greatest outside pre-existing regional blocs, highlighting the role of AfCFTA in connecting exporters to markets that were not already covered by established regional preferences. Although the empirical analysis focuses on Ghana, the mechanisms examined market entry, export experimentation, relationship survival, and the interaction between continental and subregional integration are relevant to the broader assessment of how AfCFTA may affect small and commodity-dependent African economies.

Using highly disaggregated HS6-level export data from the UN Comtrade database, covering 4,314 products exported by Ghana to 196 destination markets worldwide, this paper examines the impact of AfCFTA on the extensive and intensive margins of Ghanaian exports, with particular attention to export market entry, exit, and survival. The results provide strong evidence that AfCFTA enhanced Ghana's extensive export margin by increasing the likelihood of entry into new product-destination markets and improving the survival of existing export relationships. While the agreement also promotes export diversification, its effects are more

pronounced along the extensive margin than through increases in the value of existing exports. The robustness analyses further reinforce the credibility of the findings. The estimated effects remain qualitatively unchanged when alternative treatment years are considered, major export commodities are excluded from the sample, and dynamic event-study specifications are employed, suggesting that the results are not driven by model specification, commodity dependence, or pre-existing trade relationships.

The remainder of the paper is organized as follows. Section (2) reviews the literature on AfCFTA, with particular emphasis on its implications for trade, welfare, industrialization, and regional integration, while identifying the limited empirical evidence on the extensive margin of trade. Section (3) outlines the empirical framework, including the gravity model and related econometric specifications used to examine the effects of AfCFTA on the intensive, extensive, entry, exit, and survival margins of Ghana's exports. Section (4) describes the data. Section (5) presents and discusses the empirical results, including robustness analyses. Finally, Section (6) concludes and highlights the policy implications of the findings.

2 Literature Review

The growing importance of the AfCFTA has generated an expanding body of research examining its implications for trade, welfare, industrialization, and regional integration. Existing studies can broadly be grouped into three strands: welfare and CGE analyses, trade creation and diversion studies, and research on industrialization, regional value chains, and structural transformation.

The first strand focuses on the welfare effects of AfCFTA. Using a multi-sector general equilibrium framework, Abrego et al. (2019) estimate the economic consequences of the agreement under alternative market structures and find positive welfare gains for most participating countries. Their results suggest that reductions in trade costs can substantially increase intra-African trade and improve welfare outcomes across the continent. Similarly, Maliszewska et al. (2020) combine a global CGE model with microsimulation techniques and show that full implementation of AfCFTA could raise continental income, expand manufacturing exports, increase employment opportunities, and reduce poverty. Employing a CGE framework, Asamoah et al. (2024) evaluate the effects of eliminating tariffs and export taxes under the AfCFTA and find that the agreement improves Ghana's economic performance by increasing GDP, expanding export and import volumes, enhancing the terms of trade, and raising overall welfare. Subsequent CGE studies largely support these findings, emphasizing the importance of tariff liberalization, reductions in non-tariff barriers, and improvements in trade facilitation for generating welfare gains and strengthening regional economic integration.

A second strand examines the trade effects of AfCFTA, particularly trade creation and trade diversion. Existing evidence generally predicts substantial trade-creation effects arising from continental integration. Using gravity and trade-index approaches, Geda and Yimer (2023) find that tariff liberalization under AfCFTA is likely to increase intra-African trade and generate net trade creation. Likewise, Fofack et al. (2021) employ a general equilibrium PPML framework and estimate that the agreement could raise intra-African trade by approximately 24% in the short run. Using a multi-country general equilibrium model, Abrego et al. (2019) also report sizeable increases in intra-African trade, especially when reductions in non-tariff barriers accompany tariff liberalization. More recent gravity-based analyses, including Letlala and Johnson (2025), confirm the potential of AfCFTA to deepen regional integration and

expand trade among African economies. Sector-specific evidence from Fusacchia et al. (2022) further suggests that the agreement can generate considerable trade creation in agricultural and food value chains. Overall, the literature consistently concludes that AfCFTA is likely to stimulate intra-African trade through significant trade-creation effects.

The third strand investigates the implications of AfCFTA for industrialization, regional value chains, and structural transformation. These studies argue that continental integration can promote industrial development by enlarging market size, exploiting economies of scale, encouraging specialization, and strengthening regional production networks. For example, Maliszewska et al. (2020) show that AfCFTA has the potential to expand manufacturing activity and accelerate structural transformation across African economies. Similarly, Abrego et al. (2019) find that lower trade costs can facilitate the reallocation of resources toward more productive sectors, thereby supporting industrial development. Complementing these findings, UNECA (2023) argues that effective implementation of AfCFTA could help African economies diversify away from primary commodity dependence while promoting industrialization and export diversification. In addition, Byiers et al. (2021) and Mitaritonna et al. (2024) emphasize the role of regional value chains as an important mechanism through which AfCFTA can foster industrial upgrading and deeper economic integration. Collectively, this literature suggests that AfCFTA has the potential to transform African economies by promoting manufacturing development, strengthening regional production networks, and facilitating movement toward higher value-added activities.

Although the existing AfCFTA literature provides important evidence on its effects on trade, welfare, income, employment, poverty reduction, and industrialization, relatively little attention has been paid to the mechanisms through which the agreement influences export performance. While Majune et al. (2024) examine the implications of AfCFTA for export survival using firm-level data from Kenya and evidence from pre-existing African trade agreements, my work provides direct evidence on the trade effects of AfCFTA itself. Using highly disaggregated HS6 product-destination data for Ghana, the analysis extends beyond export survival to examine the intensive, extensive, entry, and exit margins of trade, thereby offering a more comprehensive assessment of how AfCFTA influences export dynamics and diversification. The omission is particularly evident in the case of Ghana, where empirical studies have largely focused on aggregate trade and macroeconomic outcomes while providing limited evidence on whether AfCFTA promotes new export products, facilitates entry into new markets, or improves export survival. This paper addresses this gap by examining the impact of AfCFTA on both the intensive and extensive margins of Ghana's exports, thereby shedding light on the agreement's role in fostering export diversification and structural transformation.

3 Model Specification

3.1 Outcome Variables

Using Ghana exports at the HS6 product–destination–year level, $X_{pj,t}$. where $X_{pj,t}$ is Ghana's export value of HS6 product p to destination country j in year t. Since Ghana is the only exporter, the exporter dimension is fixed. $X_{pj,t}$ is the outcome variable for the intensive margin estimation because it represents the average value of exports by variety (Berthou and Fontagné (2008); Bernard et al. (2009)). There are four different outcomes in the extensive margin estimation, including $Extensive_{pj,t}$, $Entry_{pj,t}$, $Exit_{pj,t}$, and $survival_{pj,t}$, which are the extensive, entry,

exit, and survival margins, respectively. The extensive-margin approach is well grounded in the international trade literature. Hummels and Klenow (2005) demonstrate that differences in export performance across countries arise not only from greater export volumes of existing products but also from a wider range of exported goods, with the extensive margin accounting for a substantial share of cross-country export variation. Similarly, Helpman et al. (2008) show that the decision to enter foreign markets and the volume traded conditional on market entry are distinct processes, highlighting the importance of separately analyzing the extensive and intensive margins of trade. Together, these studies suggest that evaluating trade agreements solely through aggregate trade volumes overlooks important channels related to product diversification, market entry, export exit, and export survival.

3.2 Constructing the Export Margins

Extensive Margin

Following the approach of Berthou and Fontagné (2008), the extensive margin is defined as the number of product varieties exported to each destination country. In this study, product varieties are measured at the HS6 level, such that the extensive margin captures the number of distinct HS6 products that Ghana exports to a given destination in a given year. Define the extensive export margin as whether Ghana exports product p to destination j in year t:

$$Extensive_{pj,t} = \begin{cases} 1: & X_{pj,t} > 0 \\ 0: & X_{jp,t} = 0 \end{cases} \tag{1}$$

After constructing the extensive margin, the probability of an export relationship is modeled using a non-linear model (2).

$$Extensive_{pj,t} = exp\left(\alpha + \beta AfCFTA_{j,t} + \delta_{pj} + \lambda_{p,t} + \mu_t\right)\varepsilon_{pj,t}, \tag{2}$$

where $AfCFTA_{j,t} = 1$ if destination j is an AfCFTA member in year t, and 0 otherwise. β captures Ghana's extensive margin effect of AfCFTA. Therefore, a positive β would indicate that AfCFTA increases the likelihood that Ghana exports a given product to a given destination, providing evidence of an expansion of the extensive margin through new product-market relationships. The term δ_{pj} captures all time-invariant characteristics specific to a product-destination pair that may influence the probability of Ghana exporting product p to country j. These characteristics include persistent demand for product p in country j, long-run Ghanaian comparative advantage in product p for market j, and consumer preferences for product p in country j. The term λ_{pt} captures all factors that affect Ghana's exports of product p in year t across all destinations. The factors include changes in world prices of product p, global demand shocks for product p, and technological improvements in the production of product p. μ_t denotes time fixed effects that control for unobserved factors varying over time but common across all country-product pairs. Examples include global business-cycle fluctuations, commodity-price shocks, technological change, and major worldwide economic events such as the Global Financial Crisis. The error term $\varepsilon_{pj,t}$ captures all unobserved factors that vary across products, destinations, and time and are not explained by the included regressors or fixed effects. Examples include firm-level productivity shocks, supply-chain disruptions affecting a particular product, and measurement error in trade data. Econometrically,

$E\left(\varepsilon_{pj,t}|AfCFTA_{j,t}, \delta_{pj}, \lambda_{p,t}, \mu_t\right) = 1$, meaning that after controlling for $AfCFTA_{j,t}$ and fixed effects, the remaining unexplained variation is assumed to be unrelated to the explanatory variables. α is a constant.

Equation (2) is motivated by the structural gravity literature and the growing body of work examining the extensive margin of trade. Following Santos Silva and Tenreyro (2006), the model is specified in multiplicative form and estimated using PPML, which is robust to heteroskedasticity and accommodates the prevalence of zero trade observations. The specification also draws on the extensive-margin literature, which emphasizes that trade agreements can influence not only the value of trade but also the range of products exported and the number of active export relationships (Hummels and Klenow (2005); Bernard et al. (2009); Berthou and Fontagné (2008))

Market Entry Margin

Following Besedeš and Prusa (2006a) and Besedeš and Prusa (2006b), the market entry occurs when Ghana did not export product p to country j in the previous year but starts exporting in the current year. This can be constructed as:

$$Entry_{pj,t} = \begin{cases} 1: & X_{pj,(t-1)} = 0 \text{ and } X_{pj,t} > 0 \\ 0: & otherwise \end{cases} \tag{3}$$

where $X_{pj,(t-1)}$ is the first lag value of exports, i.e., the previous value of exports. After constructing the market entry margin, we can estimate the model for the probability of entry as:

$$Entry_{pj,t} = exp\left(\alpha + \beta AfCFTA_{j,t} + \delta_{pj} + \lambda_{p,t} + \mu_t\right)\varepsilon_{pj,t} \tag{4}$$

A positive coefficient $\beta > 0$ implies that AfCFTA promotes export-market entry by increasing the probability that Ghana begins exporting new products to new destinations. In contrast, a negative coefficient $\beta < 0$ would indicate that the agreement discourages the formation of new product-destination export relationships.

Market Exit Margin

Exit occurs when Ghana exported product p to destination j in the previous year but stops exporting in the current year:

$$Exit_{pj,t} = \begin{cases} 1: & X_{pj,(t-1)} > 0 \text{ and } X_{pj,t} = 0 \\ 0: & otherwise \end{cases} \tag{5}$$

The model is used to estimate the probability of exiting the market is specified as:

$$Exit_{pj,t} = exp\left(\alpha + \beta AfCFTA_{j,t} + \delta_{pj} + \lambda_{p,t} + \mu_t\right)\varepsilon_{pj,t} \tag{6}$$

In the export-exit margin specification, a negative value of β indicates that AfCFTA reduces the probability that an existing export relationship terminates. In other words, membership in the agreement is associated with a lower likelihood of export failure or market exit. Therefore, a negative and statistically significant coefficient would provide evidence that AfCFTA strengthens the stability and durability of Ghana's export relationships by helping exporters

remain active in foreign markets for longer periods. Such a result would be consistent with the view that trade integration lowers trade costs, improves market access, and enhances the sustainability of export participation.

Export Survival Margin

Survival occurs when Ghana exports product p to j in two consecutive years:

$$Survival_{pj,t} = \begin{cases} 1: & X_{pj,(t-1)} > 0 \text{ and } X_{pj,t} > 0 \\ 0: & otherwise \end{cases} \tag{7}$$

The model is specified as follows:

$$Survival_{pj,t} = exp\left(\alpha + \beta AfCFTA_{j,t} + \delta_{pj} + \lambda_{p,t} + \mu_t\right)\varepsilon_{pj,t} \tag{8}$$

Here, β indicates that AfCFTA improves the persistence and durability of Ghana's export relationships by increasing the probability that existing product-market linkages continue over time. A positive and statistically significant coefficient therefore suggests that the agreement not only facilitates export participation but also helps sustain trade relationships once they are established. This distinction is particularly important because export growth depends not only on entering new markets but also on maintaining export relationships over the long run.

The focus on export survival is well motivated by the trade literature, which shows that export relationships are often remarkably fragile, especially in developing countries. Using highly disaggregated trade data, Besedeš and Prusa (2006a) and Besedeš and Prusa (2006b) find that a large proportion of export relationships fail within the first few years of entry, with many trade spells ending after only a single year. Their results suggest that the ability to sustain export relationships is a key determinant of long-run export growth. Subsequent studies have shown that export survival tends to be particularly challenging for developing economies due to information frictions, limited access to finance, weak trade networks, and high fixed costs of maintaining foreign market presence (Brenton et al. (2010); Cadot et al. (2013)).

From this perspective, AfCFTA may improve export survival by reducing trade costs, harmonizing regulations, improving market access, and strengthening regional commercial networks. By lowering the barriers associated with serving foreign markets, the agreement can help exporters maintain existing product-market relationships and reduce the likelihood of export failure. Consequently, a positive estimate of β would provide evidence that AfCFTA contributes not only to export expansion but also to the stability and resilience of Ghana's export relationships over time.

Intensive Margin

For export values, use PPML because it handles zero trade flows and heteroskedasticity better than log-linear OLS gravity models (see Santos Silva and Tenreyro (2006); Santos Silva and Tenreyro (2011)). Therefore, the specification for the intensive margin is shown in equation (9)

$$X_{pj,t} = exp\left(\alpha + \beta AfCFTA_{j,t} + \delta_{pj} + \lambda_{p,t} + \mu_t\right)\varepsilon_{pj,t} \tag{9}$$

In all the specifications, destination-year fixed effects are not included because the AfCFTA treatment variable varies at the destination-year level. Including destination-year fixed ef-

fects would absorb all variation in the treatment indicator, rendering the main AfCFTA effect unidentified. Instead, the model includes product-destination fixed effects, product-time fixed effects, and year fixed effects, which control for time-invariant product-market and product-time characteristics and common temporal shocks while preserving the variation necessary to estimate the impact of AfCFTA. Destination-year fixed effects are incorporated only in heterogeneity specifications where identification is obtained through interactions between AfCFTA exposure and product-level characteristics. Specification in (9) is generally better than the log-linearized model, as some zero exports are thrown away by log-transformation. Since high HS data is plagued with zeros, estimating the model in levels is ideal.

3.3 ECOWAS versus Non-ECOWAS Heterogeneity

Distinguishing between ECOWAS and non-ECOWAS destinations provides insight into whether AfCFTA primarily deepens existing regional trade relationships or promotes broader continental integration. Because Ghana already benefited from preferential trade arrangements within ECOWAS before AfCFTA, the additional gains from the agreement may be limited within the bloc. In contrast, larger effects for non-ECOWAS destinations would suggest that AfCFTA is facilitating access to previously less integrated African markets, thereby contributing to export diversification, market expansion, and structural transformation. Consequently, separating the analysis by destination bloc allows for a more nuanced assessment of the channels through which AfCFTA affects Ghana's export performance.

To examine whether AfCFTA effects differ between ECOWAS and non-ECOWAS African destinations, I interact the ECOWAS binary variable with AfCFTA:

$$Y_{pj,t} = exp\left(\alpha + \beta_1 AfCFTA_{j,t} + \beta_2 AfCFTA \times ECOWAS_j + \delta_{pj} + \lambda_{p,t} + \mu_t\right)\varepsilon_{pj,t} \tag{10}$$

where $Y_{pj,t}$ can be extensive margin, entry margin, exit margin, survival margin, or export value. β_1 is the AfCFTA effect for non-ECOWAS destinations, $\beta_1 + \beta_2$ is the AfCFTA effect for ECOWAS destinations, and β_2 additional AfCFTA effect for ECOWAS relative to non-ECOWAS. If $\beta_1 > 0$ and $\beta_2 < 0$, AfCFTA increases exports to non-ECOWAS destinations, but the effect is weaker for ECOWAS. That may happen because Ghana already had preferential access to ECOWAS markets before AfCFTA under the ECOWAS Trade Liberalizatin Scheme, leaving less room for additional gains. Conversely, if $\beta_1 < 0$ and $\beta_2 > 0$, AfCFTA decreases exports to non-ECOWAS destinations, but increases exports to the ECOWAS bloc.

3.4 Product Heterogeneity

The product-heterogeneity specification asks whether the effect of AfCFTA differs across product groups. The product-heterogeneity specification is particularly salient because African trade remains heavily concentrated in a narrow range of products, raising the question of whether AfCFTA promotes diversification into new sectors or primarily benefits products in which countries already possess a comparative advantage.

$$Y_{pj,t} = exp\left(\alpha + \sum_g \beta_g (AfCFTA_{j,t} \times ProdGroup_{pg}) + \delta_{pj} + \lambda_{p,t} + \mu_t\right)\varepsilon_{pj,t} \tag{11}$$

Here, Y_{pjt} is the outcome for product p, destination j, and year t. It could be export value, extensive, entry, exit, or survival margins. $ProdGroup_{pg}$ identifies whether product p belongs to group g, such as agriculture, chemicals, textiles, machinery, wood, metals, etc. So β_g tells you the effect of AfCFTA on product group g, relative to non-AfCFTA destinations, after controlling for product-destination, product-year, and year fixed effects. For example, if $\beta_{Agriculture} > 0$, AfCFTA increases Ghana's exports, entry, or survival in agricultural products.

3.5 Robustness Check and Dynamic Effects of AfCFTA

To assess the robustness of the baseline findings, the analysis implements several complementary robustness checks. First, alternative treatment years are used to verify that the estimated effects are not driven by the particular timing of AfCFTA implementation. Second, the estimations are repeated after excluding Ghana's major export commodities, gold, cocoa, and crude petroleum, to ensure that the results are not disproportionately influenced by a small number of dominant products. Finally, an event-study framework is employed to examine the dynamic effects of AfCFTA over time and to assess the validity of the parallel-trends assumption underlying the identification strategy. The event study specification is shown below:

$$Y_{pj,t} = exp\left(\alpha + \sum_{k \neq -1} \beta_k \left(AfCFTA_j \times \mathbb{1}[t - 2021 = k]\right) + \delta_{pj} + \lambda_{p,t}\right) \varepsilon_{pj,t} \tag{12}$$

Here, $Y_{pj,t}$ represents all the margins under study. $AfCFTA_j$ is a binary variable equal to one when the destination is a member of AfCFTA. The term $t - 2021 = k$ defines event time, with $k = -1$ omitted as the reference year. Thus, each β_k measures the effect of AfCFTA k years before or after implementation relative to the year immediately before AfCFTA. The baseline analysis defines 2021 as the start year of AfCFTA. Although Ghana ratified the Agreement in 2018, ratification alone did not immediately liberalize trade, as the operational phase of AfCFTA commenced in January 2021 and actual tariff concessions and trading arrangements required additional implementation. Consequently, 2021 is considered the most appropriate treatment year for identifying the trade effects of the Agreement. Nevertheless, to assess the sensitivity of the results to the choice of treatment date, robustness checks are performed using alternative treatment years of 2018 and 2019.

4 Data

This study uses highly disaggregated bilateral export data obtained from the United Nations Commodity Trade Statistics Database (UN Comtrade), which is the world's most comprehensive source of international merchandise trade statistics. The analysis focuses on Ghana's merchandise exports at the six-digit Harmonized System (HS6) level. The HS6 classification provides a highly disaggregated product breakdown and is widely used in the trade literature to examine export diversification, market entry, and product-level trade dynamics. The sample spans the period 2014–2023. Following data availability in UN Comtrade, the year 2020 is excluded because export records for Ghana are unavailable. The resulting dataset therefore consists of nine annual observations covering the years 2014–2019 and 2021–2023. UN Comtrade reports trade flows in current US dollars and records exports by trading partner and product classification.

The unit of observation is a product–destination–year combination. The dataset contains exports from Ghana to 196 destination countries across 4,314 HS6 products. Combining the destination, product, and time dimensions yields a highly disaggregated panel that captures both the intensive and extensive margins of Ghanaian export performance. The large number of potential product-destination combinations also allows the identification of export relationships that emerge, disappear, or persist over time. The use of HS6-level data is particularly important for the objectives of this study. Aggregate trade statistics may conceal substantial variation across products and destination markets. By exploiting highly disaggregated trade data, the analysis can identify whether AfCFTA affects not only the value of exports but also the creation of new export relationships, the introduction of new products into foreign markets, and the survival of existing export relationships. Such product-level information is essential for evaluating whether continental integration contributes to export diversification and structural transformation.

To investigate heterogeneity in the effects of AfCFTA, products are further aggregated into broad sectors based on their HS2 chapters, including agriculture, chemicals, textiles and apparel, wood, metals, machinery and transport equipment. In addition, destinations are classified into ECOWAS and non-ECOWAS markets to assess whether the effects of AfCFTA differ between Ghana's traditional regional trading partners and the broader African market. The resulting dataset provides a rich framework for analyzing how AfCFTA influences Ghana's export dynamics at the product level. In particular, it enables an assessment of whether continental trade integration promotes export diversification, facilitates entry into new destination markets, reduces export exit, and improves the survival of export relationships over time.

5 Empirical Findings

This section evaluates whether AfCFTA has altered the pattern of Ghana's exports to member countries. The discussion proceeds from baseline estimates of the intensive, extensive, entry, exit, and survival margins to heterogeneity analyses and robustness checks. Particular attention is given to whether the Agreement has facilitated the expansion of existing trade relationships, encouraged entry into new markets, reduced export exits, and improved the persistence of Ghanaian exports across destination-product pairs.

Table (1) reports the effects of AfCFTA on Ghana's export performance across the intensive, extensive, entry, exit, and survival margins. Panel A presents estimates from a specification that includes importer-product and year fixed effects, while Panel B augments this framework with product-year fixed effects to control for product-specific shocks affecting all destinations in a given year. The latter specification is more demanding and provides a stronger test of whether the estimated effects are robust to global changes in demand, commodity prices, and other product-specific factors. The results suggest that AfCFTA has had little impact on the intensive margin of Ghana's exports. Although the coefficient is positive in both specifications, 0.258 and 0.092 in panels A and B, respectively, it is statistically insignificant, indicating that the agreement has not significantly increased the value of existing export relationships. Similarly, the evidence for the extensive margin is mixed. While Panel A suggests that AfCFTA increases the probability of exporting a product to a destination by approximately 3.1%, i.e., $(e^{0.031} - 1)100$, the effect becomes statistically insignificant once product-year fixed effects are included in Panel B. These findings imply that the *early effects* of AfCFTA are not primarily driven by larger export volumes or a broad expansion of product-destination relationships.

Table 1: **Effects of AfCFTA on Ghana's Export Margins**

Ind. Var.	(1) Intensive	(2) Extensive	(3) Entry	(4) Exit	(5) Survival
			PaneL A: More Restrictive		
AfCFTA	0.258*	0. 031**	0. 132***	−0.049***	0.025
	(0.151)	(0.011)	(0.017)	(0.018)	(0.021)
Importer × Product FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
			PaneL B: Less Restrictive		
AfCFTA	0.092	0.015	0.060***	−0.009	0.068***
	(0.171)	(0.012)	(0.020)	(0.021)	(0.024)
Importer × Product FE	Yes	Yes	Yes	Yes	Yes
Product × Year FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes

Notes: This table contains the effects of AfCFTA on Ghana's export margins. Columns (1), (2), (3), (4), and (5) report the intensive, extensive, entry, exit, and survival margins, respectively. Panel A is a more restrictive specification with only product-destination and year fixed effects. Panel B is a less restrictive specification with an additional product-year fixed effect. Standard errors in parentheses are clustered at the importer-product pair. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

By contrast, the most robust effects emerge for the entry margin. The estimates indicate that AfCFTA significantly increases the probability that Ghana enters new product-destination markets. The effect remains positive and highly significant across both specifications, although its magnitude declines from 14.1% in Panel A to 6.2% in Panel B after accounting for product-specific shocks. This result suggests that AfCFTA has lowered barriers to market access and facilitated the creation of new export relationships. The agreement therefore appears to support export diversification by enabling Ghanaian firms to penetrate new markets rather than merely expanding trade in existing ones.

The results for export exit and survival provide additional insights into the dynamics of Ghana's export relationships. In Panel A, AfCFTA is associated with a statistically significant 3.9% reduction in the probability of export exit, indicating that the agreement may help reduce the likelihood of export failure. However, this effect disappears in the more stringent specification of Panel B (0.9% reduction in the probability of export exit), suggesting that the evidence for lower exit rates is not robust. In contrast, the survival margin becomes positive and highly significant in Panel B, implying that AfCFTA increases the probability that existing export relationships persist over time. Specifically, the agreement raises export survival by approximately 7.0% after controlling for product-specific shocks.

The results indicate that AfCFTA has influenced Ghana's exports primarily through the extensive dynamics of trade rather than through the intensive margin. The most consistent effects are observed for market entry and export survival, suggesting that the agreement has helped Ghanaian firms establish and maintain export relationships in foreign markets. While there is little evidence that AfCFTA has increased export values or substantially reduced export exits, the positive effects on entry and survival point to an important role for the agreement in promoting export diversification and strengthening the long-run sustainability of Ghana's export sector.

A word of caution is warranted when interpreting these results. Because AfCFTA is a rel-

atively recent policy initiative, the analysis captures only its *early effects* on Ghana's export performance. Many provisions of the agreement are still being implemented, and firms may require time to adjust production, establish new trade relationships, and exploit emerging market opportunities. The estimated coefficients should therefore be interpreted as short-run effects rather than the full long-run impact of AfCFTA.

5.1 AfCFTA Effect on ECOWAS and Non-ECOWAS Blocs

Table (2) examines whether AfCFTA affects Ghana's export margins differently across ECOWAS and non-ECOWAS destinations. The coefficient on AfCFTA captures the effect of the agreement for non-ECOWAS destinations, while the coefficient on AfCFTA $\times$ ECOWAS measures the additional effect for ECOWAS destinations relative to non-ECOWAS destinations. Therefore, the total effect for ECOWAS markets is obtained by adding the two coefficients together.

The results show that AfCFTA has strong positive effects on Ghana's exports to non-ECOWAS destinations, especially through the extensive, entry, exit, and survival margins. The extensive-margin coefficient is positive and statistically significant, indicating that AfCFTA increases the probability that Ghana exports a product to a non-ECOWAS destination by about 17.9%. The entry-margin effect is even larger: AfCFTA raises the probability of entering a new non-ECOWAS product-destination market by about 35.1%. The survival coefficient is also positive and significant, suggesting that AfCFTA improves the persistence of export relationships outside ECOWAS by about 22%. The positive exit coefficient, however, implies that AfCFTA is also associated with a higher probability of exit in non-ECOWAS markets, which may reflect experimentation, market churning, or the short-run instability of newly formed export relationships.

Table 2: **AfCFTA, ECOWAS Membership, and Ghana's Export Margins**

	(1)	(2)	(3)	(4)	(5)
Ind. Var.	Intensive	Extensive	Entry	Exit	Survival
AfCFTA	0.157	0.165***	0.301***	0.156***	0.199***
	(0.195)	(0.018)	(0.027)	(0.028)	(0.041)
AfCFTA $\times$ ECOWAS	-0.294	-0.224***	-0.410***	-0.269***	-0.174***
	(0.210)	(0.021)	(0.030)	(0.031)	(0.045)
Importer $\times$ product FE	Yes	Yes	Yes	Yes	Yes
Product $\times$ year FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes

Notes: This table contains the effects of AfCFTA on Ghana's export margins, decomposing the effect into ECOWAS and non-ECOWAS blocs. Columns (1), (2), (3), (4), and (5) report the intensive, extensive, entry, exit, and survival margins, respectively. Standard errors in parentheses are clustered at the importer-product pair. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

The interaction terms are negative and statistically significant for all margins except the intensive margin. This means that the AfCFTA effects are weaker for ECOWAS destinations than for non-ECOWAS destinations. For example, the total ECOWAS effect on the extensive margin is approximately -5.7%, i.e., $(0.165 - 0.224)$, while the total effect on entry is about -10.3%, i.e., $(0.301 - 0.410)$. Similarly, the total effect on survival for ECOWAS destinations is about 2.5%, i.e., $(0.199 - 0.174)$, which is much smaller than the effect for non-ECOWAS markets. These results suggest that AfCFTA's strongest contribution is not within Ghana's

already established ECOWAS, such as the ECOWAS Trade Liberalization Scheme, but rather in expanding Ghana's reach into the broader African market.

Consequently, Table (2) provides evidence that AfCFTA primarily promotes Ghana's export diversification and market expansion outside ECOWAS. This is economically plausible because Ghana already had preferential access to ECOWAS markets before AfCFTA, leaving less room for additional gains within the bloc. By contrast, AfCFTA may have reduced trade barriers, improved market access, and created new opportunities in African countries beyond ECOWAS. Thus, the results suggest that AfCFTA's main extensive-margin effects operate through new entry and stronger survival in non-ECOWAS destinations, consistent with the agreement's objective of expanding intra-African trade beyond existing regional blocs.

5.2 Heterogeneous Trade Effects of AfCFTA by Product Sector

Table (3) reports the heterogeneous effects of AfCFTA on Ghana's export margins across six product sectors: agriculture, chemicals, textiles and apparel, machinery, wood, and metals. The results show substantial variation across sectors, indicating that AfCFTA does not affect all export categories uniformly. Instead, the agreement appears to promote export diversification most strongly in sectors where Ghana has either existing productive capacity or potential regional market opportunities, while some sectors experience weak responses.

In agriculture, AfCFTA has positive effects across most margins. The extensive margin coefficient is positive and statistically significant, suggesting that AfCFTA increases the likelihood that Ghana exports agricultural products to destination markets. The entry effect is particularly strong, with AfCFTA increasing new agricultural product-destination relationships by about 24.1%. Survival is also positive and statistically significant, indicating that agricultural export relationships are more likely to persist after AfCFTA. These results suggest that agriculture is one of the clearest beneficiaries of the agreement, consistent with Ghana's comparative advantage in agricultural and agro-based products. However, the intensive margin is insignificant, meaning that AfCFTA has not yet significantly increased the value of existing agricultural exports.

The chemicals sector presents a different pattern. AfCFTA has no significant effect on the intensive, extensive, or entry margins, but it significantly reduces exit and increases survival. The negative exit coefficient implies that chemical export relationships are less likely to disappear after AfCFTA, while the positive survival coefficient suggests that existing chemical trade relationships have become more durable. This indicates that AfCFTA may not be creating many new chemical export relationships, but it helps stabilize those already in place. From a policy perspective, this sector may require support aimed at expanding entry, such as standards compliance, certification, and production upgrading, because AfCFTA appears to be strengthening survival rather than generating new market penetration.

Textiles and apparel show a more challenging pattern. AfCFTA has a negative and statistically significant effect on the extensive margin and exit, while the intensive, entry, and survival margins are statistically insignificant. The negative extensive-margin result suggests that Ghana is less likely to maintain textile and apparel export relationships under AfCFTA, while the negative exit coefficient indicates some reduction in exit among existing relationships. Evidence is mixed and does not provide strong support that AfCFTA is expanding Ghana's textile and apparel exports.

Machinery shows positive effects on the extensive, entry, exit, and survival margins. AfCFTA increases the probability that Ghana exports machinery products to destination markets and

raises entry into new machinery export relationships. Survival also increases strongly, suggesting that new and existing machinery export relationships are more likely to persist. However, the positive exit coefficient means that machinery exports also experience greater churn: Ghana is entering more markets, but some relationships are also disappearing. This pattern may reflect experimentation in a sector where Ghana has emerging but still fragile capabilities.

Table 3: **Heterogeneous Effects of AfCFTA on Ghana's Export Margins by Product**

	(1)	(2)	(3)	(4)	(5)
Ind. Var.	Intensive	Extensive	Entry	Exit	Survival
			PaneL A: Agriculture		
AfCFTA	0.006	0.056*	0.241***	0.007	0.104*
	(0.097)	(0.032)	(0.054)	(0.055)	(0.068)
			PaneL B: Chemicals		
AfCFTA	−0.120	−0.019	0.086	−0.208***	0.144**
	(0.121)	(0.040)	(0.076)	(0.077)	(0.071)
			PaneL C: Textiles & Apparel		
AfCFTA	−0.016	−0.145***	−0.114	−0.155**	−0.034
	(0.216)	(0.045)	(0.075)	(0.077)	(0.084)
			PaneL D: Machinery		
AfCFTA	−0.042	0.121***	0.074*	0.116***	0.233***
	(0.157)	(0.027)	(0.041)	(0.043)	(0.058)
			PaneL E: Wood & Paper		
AfCFTA	−0.511*	−0.165**	−0.047	−0.051	−0.406***
	(0.300)	(0.084)	(0.143)	(0.150)	(0.155)
			PaneL F: Metals		
AfCFTA	0.014	0.329***	0.252*	−0.351**	0.728***
	(0.298)	(0.075)	(0.139)	(0.147)	(0.145)

Notes: This table contains the heterogeneous effects of AfCFTA on Ghana's export margins by product sector. Columns (1), (2), (3), (4), and (5) report the intensive, extensive, entry, exit, and survival margins, respectively. All specifications control for product-destination, product-year, and year fixed effects. Standard errors in parentheses are clustered at the importer-product pair. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

The wood sector records mostly negative effects. AfCFTA reduces the intensive, extensive, and survival margins, with the survival effect particularly large and statistically significant. This suggests that AfCFTA has not strengthened Ghana's wood export relationships; instead, it appears to be associated with weaker export persistence and lower existing trade values in this sector. The metals sector shows the strongest and most consistent positive response. AfCFTA significantly increases the extensive margin, entry, and survival, while significantly reducing exit. The extensive-margin coefficient suggests that Ghana is more likely to export metal products to destination markets after AfCFTA, while the entry coefficient indicates an increase in the formation of new metal export relationships. The negative exit coefficient implies that these relationships are less likely to collapse, and the very large positive survival coefficient suggests that metal export relationships become substantially more persistent. This is perhaps the strongest sectoral evidence that AfCFTA is supporting Ghana's export diversification. Unlike agriculture, where the gains are important but concentrated mostly in entry and survival, the metal sector shows improvements across nearly all dynamic margins.

The policy implication is that Ghana should not rely on AfCFTA alone to generate broad-

based export diversification. Instead, AfCFTA should be complemented with targeted sectoral policies. Agriculture and metals could be prioritized for regional market expansion because they show strong entry and survival effects. Machinery may require support for firms experimenting in new markets. Chemicals may need policies that encourage new entry, while wood and textiles require deeper competitiveness and value-chain interventions before they can fully benefit from continental trade liberalization. In this sense, Table (3) provides strong evidence that AfCFTA creates opportunities, but the ability to convert those opportunities into durable export growth depends on sector-specific constraints and policy support.

5.3 Commodity versus Non-Commodity Export Margins

Table (4) examines whether the effects of AfCFTA differ between Ghana's commodity and non-commodity exports. This distinction is particularly important because one of the central objectives of AfCFTA is to promote export diversification and reduce African countries' dependence on primary commodity exports. The results reveal notable differences in how the agreement affects the two categories of products.

For commodity exports, AfCFTA has a strong and statistically significant effect only on the entry margin. The coefficient of 0.210 indicates that the agreement increases the probability of entering new commodity product-destination markets by approximately 23.4% This suggests that AfCFTA has facilitated the expansion of Ghana's traditional export products into new African markets. However, the agreement has no statistically significant effect on the intensive, extensive, exit, or survival margins for commodities. In other words, while AfCFTA appears to encourage the formation of new commodity export relationships, there is little evidence that it increases export values, expands the overall number of commodity export relationships, reduces market exits, or improves the long-run persistence of commodity exports.

The results for non-commodity exports present a different and arguably more compelling picture. Although AfCFTA does not significantly affect the intensive, extensive, or exit margins, it positively influences both entry and survival. The entry coefficient indicates that AfCFTA increases the probability of entering new non-commodity export markets by approximately 3.6%, while the survival coefficient suggests that existing non-commodity export relationships become 8.9% more likely to persist over time. The strong survival effect is particularly noteworthy because export diversification is not only about entering new markets but also about maintaining a sustained presence in them. Many developing countries succeed in initiating export relationships but struggle to keep them active due to production constraints, limited competitiveness, and high trading costs. The positive survival effect therefore suggests that AfCFTA may be helping Ghanaian firms overcome some of these barriers in non-traditional export sectors.

5.4 Robustness Checks

Table (6) presents a robustness check based on alternative AfCFTA treatment dates. While the baseline specification defines AfCFTA as beginning in 2021, when trading under the agreement officially commenced, this table re-estimates the model using 2018 and 2019 as alternative treatment years. The objective is to assess whether the main findings are sensitive to the timing of the treatment and to determine whether the estimated effects reflect the actual implementation of AfCFTA rather than some pre-existing relationships.

Table 4: **AfCFTA and Ghana's Commodity and Non-Commodity Export Margins**

Ind. Var.	(1) Intensive	(2) Extensive	(3) Entry	(4) Exit	(5) Survival
			PaneL A: Commodity Exports		
AfCFTA	0.110	−0.007	0.210***	−0.021	−0.028
	(0.198)	(0.033)	(0.055)	(0.055)	(0.067)
Importer × Product FE	Yes	Yes	Yes	Yes	Yes
Product × Year FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
			PaneL B: Non-Commodity Exports		
AfCFTA	−0.001	0.019	0.036*	−0.007	0.085***
	(0.067)	(0.013)	(0.022)	(0.023)	(0.026)
Importer × Product FE	Yes	Yes	Yes	Yes	Yes
Product × Year FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes

Notes: This table contains the effects of AfCFTA on Ghana's export margins by commodity and non-commodity categories. Columns (1), (2), (3), (4), and (5) report the intensive, extensive, entry, exit, and survival margins, respectively. Panels A and B are for commodity and non-commodity exports, respectively. Standard errors in parentheses are clustered at the importer-product pair. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

The results indicate that the principal conclusions of the paper remain broadly intact across alternative treatment dates. Using the baseline treatment year of 2021, AfCFTA significantly increases both the entry and survival margins, suggesting that the agreement facilitates the formation of new export relationships while also improving the persistence of existing ones. When the treatment year is shifted to 2019, the positive survival effect remains statistically significant, although the entry effect becomes insignificant. Similarly, when 2018 is used as the treatment year, AfCFTA continues to exhibit a positive effect on entry, but the survival effect loses statistical significance. Across all three specifications, there is little evidence of robust effects on the extensive or exit margins, while the intensive-margin results remain generally weak and inconsistent.

Importantly, the strongest and most consistent effects are obtained when 2021 is used as the treatment year. This finding provides support for the baseline specification because 2021 corresponds to the first year in which preferential trading under AfCFTA became operational. Although firms may have begun adjusting their expectations and export strategies following the signing of the agreement in 2018 and the institutional preparations undertaken in 2019, the full benefits of market access could not be realized until trading formally commenced. The weaker and less consistent results under the alternative treatment dates therefore suggest that the observed export responses are closely tied to the actual implementation of AfCFTA rather than to anticipation effects or unrelated pre-treatment dynamics.

Table 6 examines whether the baseline AfCFTA results are driven by Ghana's three dominant export commodities: gold, cocoa, and crude oil. To address this concern, the model is re-estimated after sequentially excluding each commodity group from the sample. The resulting coefficients are compared with the baseline estimates to assess the robustness of the findings.

The results indicate that the main conclusions remain remarkably stable after excluding each of the major export commodities. In the baseline specification, AfCFTA significantly in-

Table 5: **Sensitivity of AfCFTA Effects to Alternative Treatment Dates**

Ind. Var.	(1) Intensive	(2) Extensive	(3) Entry	(4) Exit	(5) Survival
AfCFTA	0.092	0.015	0.060***	−0.009	0.068***
	(0.171)	(0.012)	(0.020)	(0.021)	(0.024)
AfCFTA Started in 2019	0.135	−0.014	0.004	0.001	0.051**
	(0.098)	(0.012)	(0.020)	(0.020)	(0.022)
AfCFTA Started in 2018	0.177**	−0.018	0.038*	0.009	0.021
	(0.085)	(0.012)	(0.021)	(0.020)	(0.023)
Importer × Product FE	Yes	Yes	Yes	Yes	Yes
Product × Year FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes

Notes: This table contains the effects of AfCFTA on Ghana's export margins, comparing different years of implementation. Columns (1), (2), (3), (4), and (5) report the intensive, extensive, entry, exit, and survival margins, respectively. Standard errors in parentheses are clustered at the importer-product pair. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

creases the entry margin by approximately 6.2% and the survival margin by 7%, while having no statistically significant effect on the extensive or exit margins. These findings are largely unchanged when gold, cocoa, or crude oil exports are removed from the sample. The entry coefficient remains positive and highly significant in all specifications, ranging from 5.6% to 6.2%, while the survival coefficient remains positive and statistically significant, ranging from 6.8% to 7.1%. The consistency of these estimates suggests that the positive effects of AfCFTA on market entry and export persistence are broad-based and not driven solely by Ghana's traditional commodity exports.

Table 6: **Robustness to the Exclusion of Ghana's Major Commodity Exports**

Ind. Var.	(1) Intensive	(2) Extensive	(3) Entry	(4) Exit	(5) Survival
AfCFTA	0.092	0.015	0.060***	−0.009	0.068***
	(0.171)	(0.012)	(0.020)	(0.021)	(0.024)
AfCFTA No Gold	−0.240**	0.015	0.058***	−0.009	0.069***
	(0.102)	(0.012)	(0.020)	(0.021)	(0.024)
AfCFTA No Cocoa	0.094	0.013	0.055***	−0.013	0.066***
	(0.173)	(0.012)	(0.020)	(0.021)	(0.025)
AfCFTA No Crude	0.249**	0.015	0.059***	−0.008	0.068***
	(0.103)	(0.012)	(0.020)	(0.021)	(0.024)
Importer × Product FE	Yes	Yes	Yes	Yes	Yes
Product × Year FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes

Notes: This table contains the effects of AfCFTA on Ghana's export margins, comparing different estimates without Ghana's major export commodities. Columns (1), (2), (3), (4), and (5) report the intensive, extensive, entry, exit, and survival margins, respectively. Standard errors in parentheses are clustered at the importer-product pair. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Interestingly, the intensive-margin results become significant when gold or crude oil is excluded from the sample. Excluding gold yields a negative and statistically significant coef-

ficient, while excluding crude oil produces a positive and statistically significant coefficient. These changes suggest that gold and crude oil may exert substantial influence on aggregate export values because of their large weight in Ghana's export basket and their exposure to international commodity-price fluctuations. However, the absence of significant intensive-margin effects in the baseline specification indicates that these commodity-specific influences largely offset one another when all products are considered together.

Consequently, the robustness checks provide strong support for the baseline findings. The persistence of the positive entry and survival effects after excluding gold, cocoa, and crude oil demonstrates that AfCFTA's impact extends beyond Ghana's traditional commodity sectors. The agreement appears to facilitate the creation of new export relationships and improve the durability of existing ones across a broader range of products. This result strengthens the interpretation that AfCFTA is contributing to export diversification and market expansion rather than merely reinforcing trade in a small number of commodity exports.

5.5 Event Study: Dynamic AfCFTA Effect

Figure (1) presents the event-study estimates for the intensive margin of Ghana's exports. The pre-treatment coefficients are generally small and statistically indistinguishable from zero, providing support for the parallel-trends assumption underlying the difference-in-differences framework. Moreover, there is no evidence of a systematic upward or downward trend before the implementation of AfCFTA, suggesting that the results are unlikely to be driven by anticipation effects or pre-existing differences in export growth. Following the implementation of AfCFTA, the estimated coefficients become positive, although they remain statistically insignificant. This pattern indicates that the agreement has not generated a substantial immediate increase in the value of existing export relationships. Instead, the results are consistent with the baseline findings, which show that AfCFTA's primary effects operate through market entry and export survival rather than through the expansion of export values.

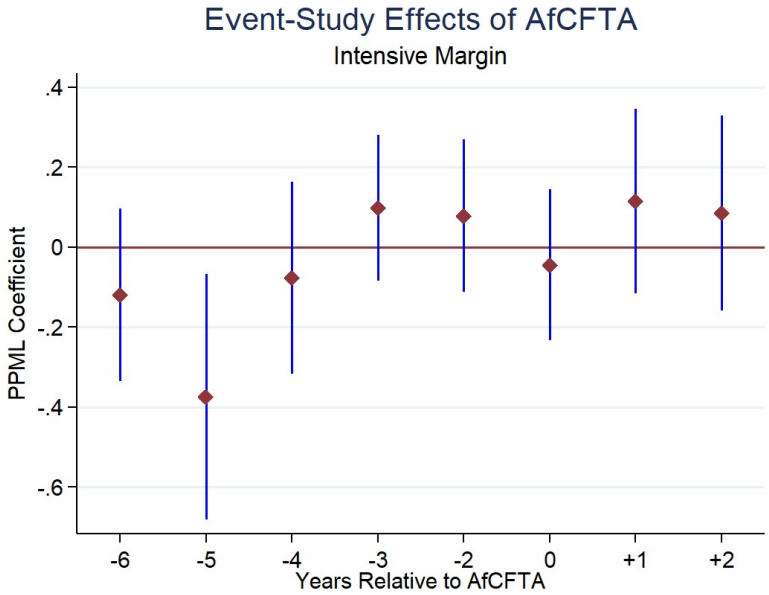


Figure 1: **Dynamic Effects of AfCFTA on Ghana's Intensive Export Margin**

Figure (2) provides much stronger evidence in favor of AfCFTA than the intensive-margin graph. The pre-treatment coefficients are generally close to zero and exhibit no clear upward

trend before implementation, lending support to the parallel-trends assumption and suggesting that the estimated effects are not driven by pre-existing differences in export participation. Following the implementation of AfCFTA, however, the coefficients become positive and increase sharply, with the treatment-year effect and subsequent post-treatment years remaining economically large and statistically significant. This pattern indicates that AfCFTA substantially increased the probability that Ghana exports a product to a destination market, consistent with an expansion of the extensive margin. Moreover, the persistence of positive effects in the years following implementation suggests that the agreement's impact is not temporary but reflects a sustained increase in the breadth of Ghana's export network.

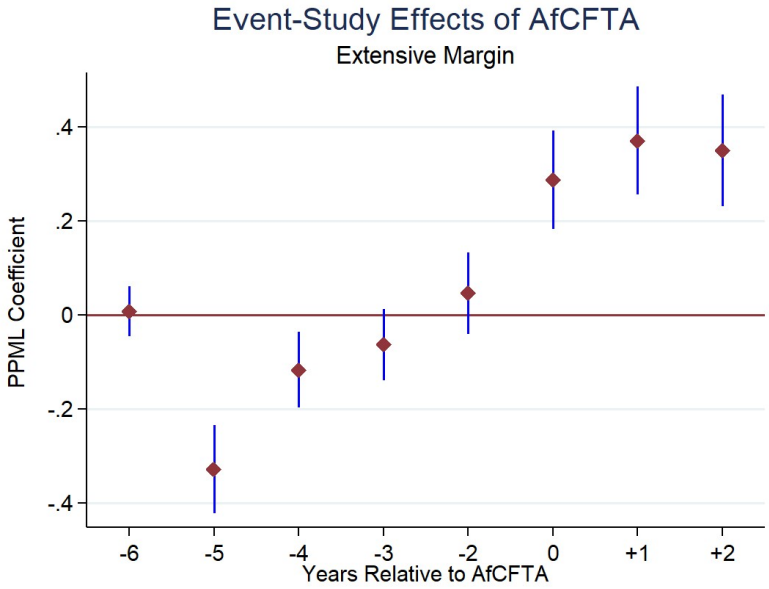


Figure 2: **Dynamic Effects of AfCFTA on Ghana's Extensive Export Margin**

The pre-treatment coefficients are generally close to zero, and their confidence intervals overlap zero, indicating no systematic pre-AfCFTA trend in market entry. This supports the parallel-trends assumption and suggests that Ghana was not already experiencing an unusual increase in export market entry before AfCFTA. More importantly, immediately after implementation, the coefficients become large, positive, and statistically significant, rising to roughly 0.35 in the first post-treatment year and remaining around 0.30 in the second year. The persistence of these positive post-treatment effects indicates that AfCFTA substantially increased the probability that Ghanaian firms entered new product-destination markets. The fact that the post-treatment coefficients are considerably larger than those observed before implementation and remain elevated over time suggests that the agreement generated a sustained expansion in market entry rather than a temporary surge.

In Figure (4), the event-study estimates for the exit margin present a less clear pattern than those for entry and survival. While post-treatment coefficients are positive, suggesting a possible increase in export exits following AfCFTA implementation, the baseline regression results provide little evidence of a robust exit effect. One possible explanation is that lower trade barriers encourage firms to experiment with new export markets, generating greater turnover among product-destination relationships. Consequently, the positive post-treatment coefficients may reflect short-run market churning associated with export discovery rather than a deterioration in export performance. Given the lack of a significant baseline effect, these results should be interpreted with caution.

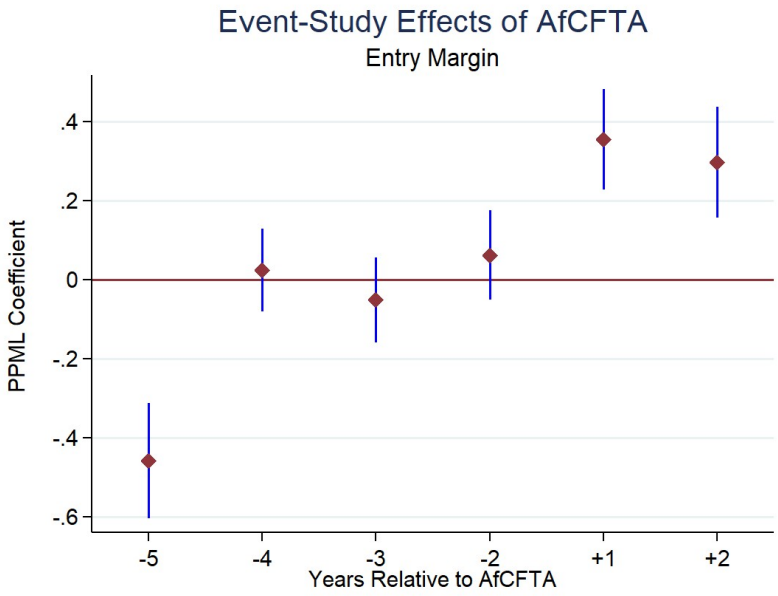


Figure 3: **Dynamic Effects of AfCFTA on Ghana's Entry Margin**

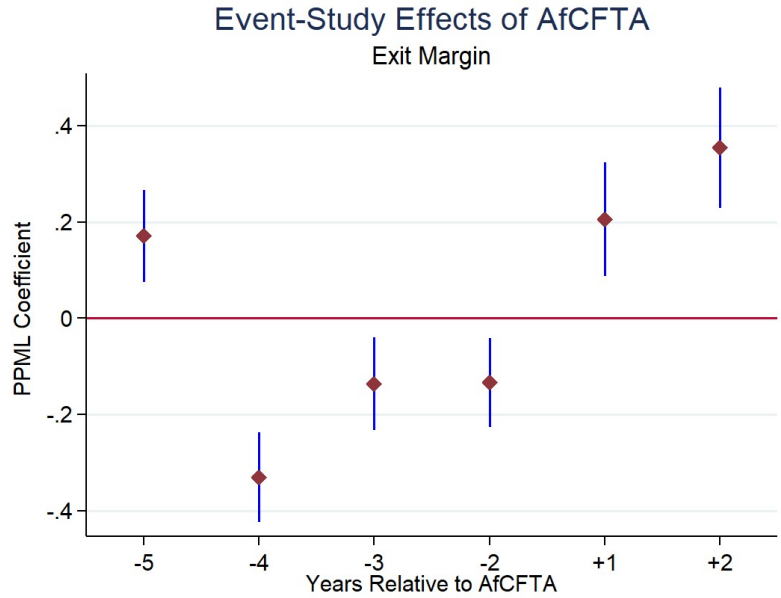


Figure 4: **Dynamic Effects of AfCFTA on Ghana's Exit Margin**

Figure (5) presents the event-study estimates for the survival margin of Ghana's exports. The results provide strong evidence that AfCFTA has improved the persistence of export relationships. Before implementation, the coefficients are generally negative and exhibit no clear upward trend, supporting the parallel-trends assumption and suggesting the absence of significant pre-treatment effects. Following the implementation of AfCFTA, the coefficients become large, positive, and statistically significant, indicating a substantial increase in the probability that existing product-destination export relationships survive over time. The persistence of these positive effects across post-treatment periods suggests that AfCFTA has strengthened the durability of Ghana's export relationships, complementing the positive entry-margin results.

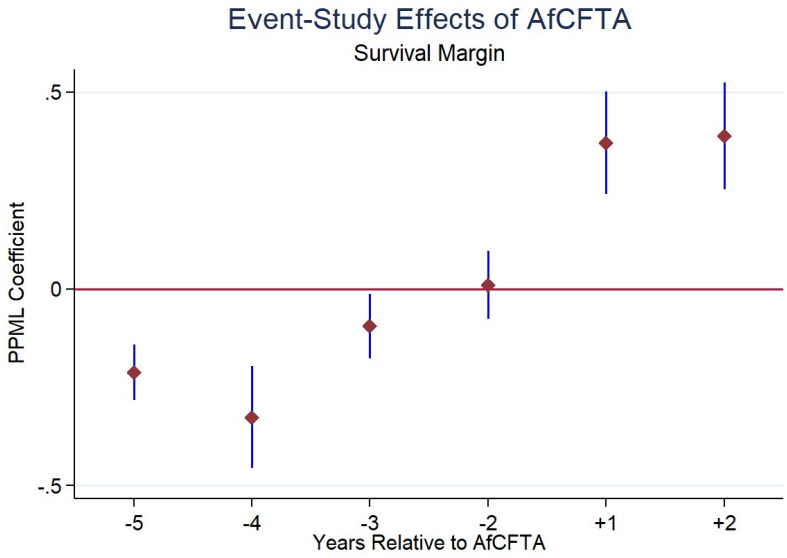


Figure 5: **Dynamic Effects of AfCFTA on Ghana's Survival Margin**

6 Conclusion

This paper examined the effects of the African Continental Free Trade Area (AfCFTA) on Ghana's export performance using highly disaggregated HS6-product data across 196 destination markets. Unlike most existing studies that focus on aggregate trade flows, this study investigated the impact of AfCFTA on multiple dimensions of export dynamics, including the intensive, extensive, entry, exit, and survival margins. In doing so, it provides new evidence on whether AfCFTA has contributed not only to higher exports but also to export diversification and persistence of trade relationships.

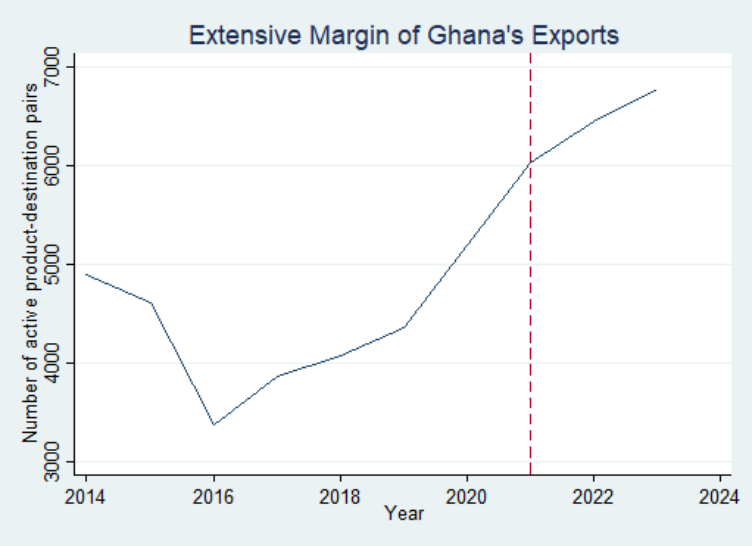
The results indicate that AfCFTA has had a meaningful effect on Ghana's export dynamics. Beyond influencing the value of existing trade flows, the Agreement has facilitated participation in new destination-product markets and improved the sustainability of export relationships. The findings therefore suggest that the benefits of AfCFTA extend beyond trade expansion to include broader improvements in market access and export diversification. The robustness checks reinforce the credibility of the results. Estimates remain stable when alternative treatment years are considered, when major export commodities such as gold, cocoa, and crude products are excluded from the sample, and when dynamic event-study specifications are employed. Importantly, the event-study analysis provides little evidence of differential pre-treatment trends, lending support to the identifying assumptions underlying the empirical strategy and strengthening the interpretation of the estimated effects as causal impacts

These findings have important policy implications. While tariff liberalization remains central to the success of AfCFTA, realizing its full benefits will require complementary policies aimed at reducing non-tariff barriers, improving trade facilitation, strengthening transport and logistics infrastructure, and enhancing the competitiveness of Ghanaian firms. Particular attention should be given to supporting exporters seeking to enter and remain in new African markets, as sustained export relationships are essential for long-term trade growth and structural transformation. As AfCFTA implementation deepens, the Agreement has the potential to play a significant role in promoting export diversification and strengthening Ghana's integration into regional value chains.

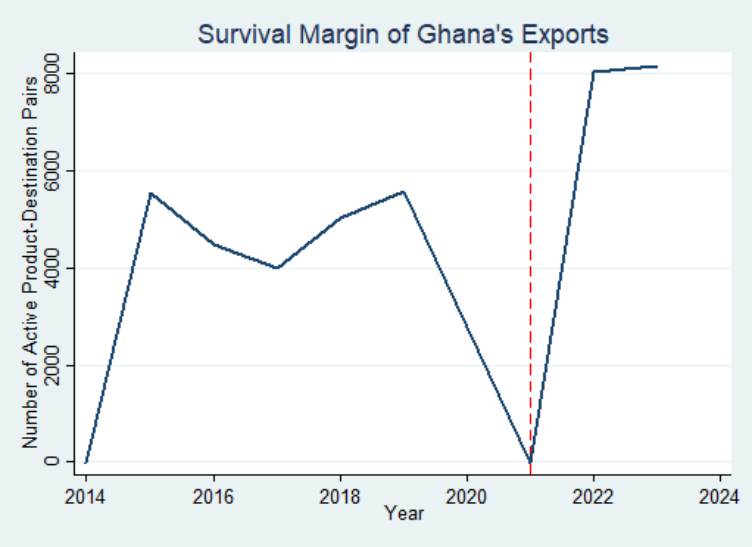
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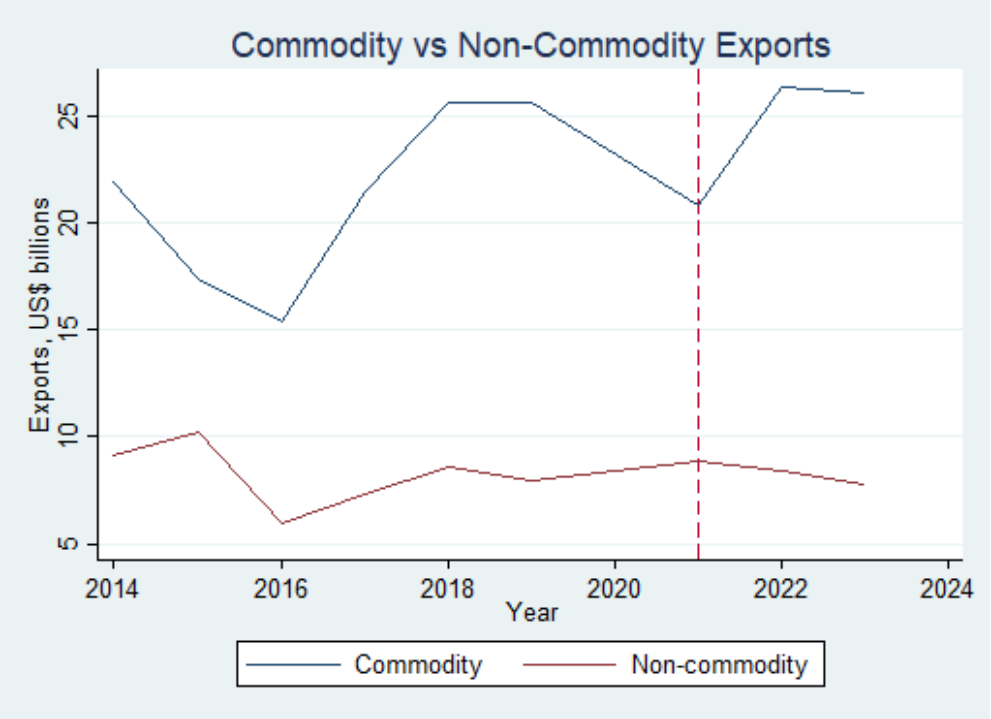
Trends in the Export Margins of the Data from 2014 to 2023

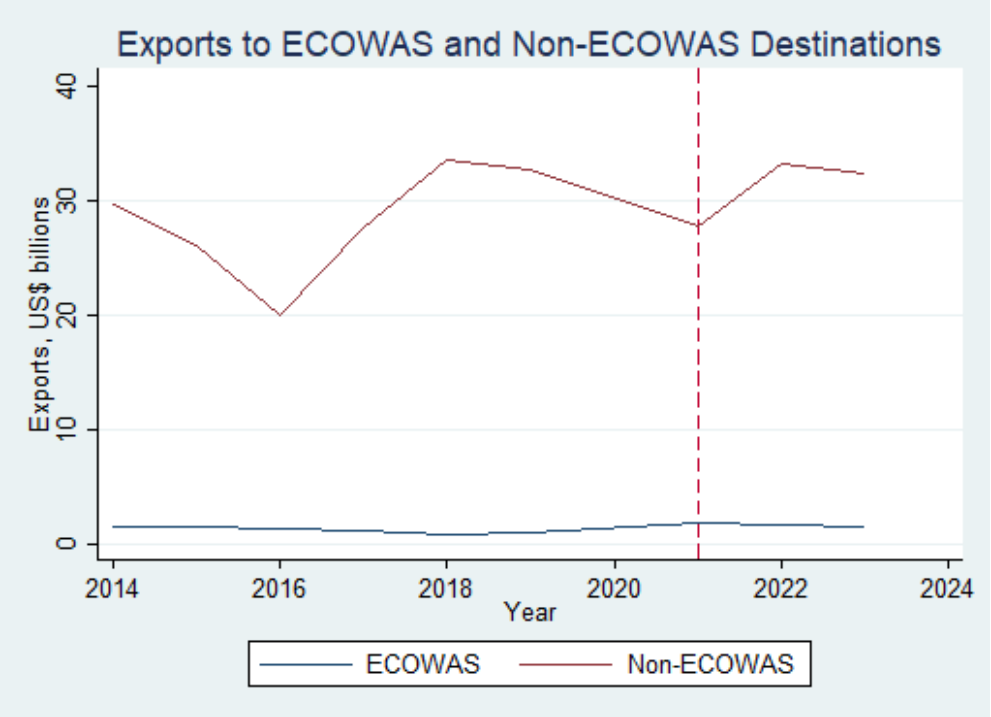






Trends in Ghana's Commodity and Non-Commodity Exports and Exports to ECOWAS and Non-ECOWAS Destinations





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