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What Matters for the Rise in Trade?

Evidence from the African Continental Free Trade Area

Kiet Tuan Duong, Luu Duc Toan Huynh, Povilas Lastauskas, and Nam T. Vu

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ABSTRACT: Using firm-level panel data on cross-border sales for 27 African economies (2002-2022), we study how the African Continental Free Trade Area (AfCFTA) reshaped firms' international trade. Guided by a heterogeneous-firm model with two short-run channels, export-network history and capitaladjustment frictions, linked through goods-services input linkages, we document that the 2018 signing raised the ratio of international to total sales by 2.7 percentage points (pp) by 2022. The gains were uneven: firms with prior export experience outside Africa gained 2.8 pp, versus 1.2 pp for Africa-only exporters, and goods-producing firms and those facing lower adjustment frictions responded most. Network history and adjustment frictions thus shape who benefits from continental integration and how gains propagate across the goods-services linkage, so that an *intra*-continental agreement disproportionately rewards *extra*-continental traders.

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Keywords:	adjustment costs; Africa; export experience; goods and services sectors; ownership structure; trade agreement
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Abstract

Using firm-level panel data on cross-border sales for 27 African economies (2002-2022), we study how the African Continental Free Trade Area (AfCFTA) reshaped firms' international trade. Guided by a heterogeneous-firm model with two short-run channels, export-network history and capital-adjustment frictions, linked through goods-services input linkages, we document that the 2018 signing raised the ratio of international to total sales by 2.7 percentage points (pp) by 2022. The gains were uneven: firms with prior export experience outside Africa gained 2.8 pp, versus 1.2 pp for Africa-only exporters, and goods-producing firms and those facing lower adjustment frictions responded most. Network history and adjustment frictions thus shape who benefits from continental integration and how gains propagate across the goods-services linkage, so that an *intra*-continental agreement disproportionately rewards *extra*-continental traders.

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Contents

1 Introduction

The advent of the General Agreement on Tariffs and Trade (GATT), a landmark agreement that ushered in a period of booming trade in the decades that followed, has sparked a productive line of research on the extent to which trade agreements, and agreements that broadly lower trade barriers, can affect trade. Ever since the seminal work by Rose (2004) on the implications of joining the World Trade Organization (WTO), the successor of the GATT, economists and policymakers alike have grappled with not only if (Tomz et al., 2007; Baier and Bergstrand, 2007), but also how (Baier and Bergstrand, 2004; Amiti and Konings, 2007; Limão and Maggi, 2015) trade agreements impact trade.

In this paper, we consider if *and* how trade agreements impact trade through the lens of the African Continental Free Trade Area (AfCFTA) agreement. In the spirit of promoting African trade, the AfCFTA agreement was signed in 2018, effectively creating the largest free trade area in the world by the number of participating countries.[1] The impetus, of course, is to create a single African market for goods and services by progressively eliminating tariffs and non-tariff barriers, liberalizing trade in goods and services, among others (African Union, 2025). This agreement is historically significant because Africa has been well documented as one of the least developed regions in intra-regional trade.[2]

Given the scarcity of granular-level evidence related to African trade, our starting point is firm-level analysis based on detailed geographic revenue data across countries that are parties to the AfCFTA. We then leverage the timing of the AfCFTA agreement in 2018 and its country-specific ratifications, along with various ex-ante firm-level characteristics, to examine potential changes in trade patterns among firms located in participating countries. One source of the novelty of our paper is the use of data about African firms, which allows us to understand the channels underlying the agreement's impacts. In particular, we depart from the prior literature, which has largely relied on country-level data, and focus on firm-level evidence. Another advantage of our micro-level data is the availability of detailed, time-varying firm-level international revenue data. Specifically, we not only know whether a firm trades but also how much it trades with partners in particular countries worldwide. Such data granularity, combined with details on firm-level fundamentals and characteristics, enables a more detailed evaluation of the channels through which the agreement shapes firms' ex-post trade patterns.

Following the signing of the AfCFTA agreement in 2018, we document an increase in overall trade,

[1] The majority of countries (i.e., 49 out of 55 participating countries) signed the agreement in 2018, with the remaining signed in February (Botswana, Guinea-Bissau, and Zambia), and July (Benin and Nigeria) of 2019.

[2] See, e.g., Brookings Institution (2025) for an overview of the state of trade within Africa.

defined as the ratio of international sales over total sales, for firms located in Africa. Specifically, on average, firms experienced a one-percentage-point increase in trade when the agreement was signed in 2018, compared with other years in the sample. Such an economically and statistically significant rise increases to 2.7 percentage points five years after the signing (i.e., 2022). In other words, the effects of the AfCFTA agreement signing amount to a 1-percentage-point increase on impact, which progressively rises to around 2.7 cumulatively over the five years after. Although it is public information that participating countries began the negotiation process in 2015, we find little evidence of increased international trade during the period between the start of the negotiation process and the signing. Such a flat pre-agreement trend implies limited potential anticipation effects among firms in the participating countries. Only after the 2018 signing did we observe a significant increase in international trade for the average firm.

During our sample period, the observed increase in international trade should be interpreted as reflecting the broader institutional and policy environment created by the AfCFTA, rather than any single implementation channel alone. What our estimates capture is thus the reduction in trade policy uncertainty resulting from the 2018 signing and subsequent ratifications. Indeed, in a seminal contribution, Handley and Limão (2017) show that the mere elimination of policy uncertainty, *even* absent any change in applied tariffs, can generate large real effects on trade by encouraging firms to undertake the sunk costs of entering foreign markets.[3] The AfCFTA signing, involving 49 of the continent's 55 countries, reflects this commitment. Our results should therefore be interpreted as reflecting the combined effects of reduced policy uncertainty and the progressive easing of non-tariff frictions, rather than the direct consequences of tariff elimination per se.

Beyond this average effect, the gains were far from uniform: a firm's pre-AfCFTA export experience and its sector strongly shaped how much it could capitalize on the agreement. Three patterns stand out. First, consistent with the related literature on the importance of prior export experience (see, e.g., Eaton et al., 2008; Albornoz et al., 2012, among others), firms with at least some *external* export exposure are well-positioned to take advantage of the agreement, as evidenced by the documented increase in external trade ex-post. In stark contrast, firms with prior export experience confined to Africa only tend to exhibit smaller increases than firms with at least some external ex ante export experience. According to our estimates, a firm that had exported exclusively within Africa saw its international sales ratio increase by 1.2 percentage points after 2018. In contrast, a firm with prior exposure to overseas markets

[3] Also, see, for example, Pierce and Schott (2016) for additional evidence on how uncertainty propagates the effects of trade policy.

(such as Europe) enjoyed a larger increase of about 2.8 percentage points. In other words, having export experience in advanced economies provided a competitive edge in capitalizing on AfCFTA. This finding complements the related literature, which documents that firms learn and build capabilities by serving more demanding markets (e.g., De Loecker, 2013; Atkin et al., 2017).

Second, we find that firms' sectoral affiliation matters for the impact of the AfCFTA on trade. In particular, across the goods (non-service) and service sectors, we find that while both groups exhibit an upward trend in international sales, only services firms show a statistically significant immediate increase after 2018. In the aggregate, manufacturing and other goods-producing firms had higher export intensities and experienced a larger post-AfCFTA increase in the foreign sales ratio. In contrast, services firms generally exported less (as a share of sales) and did not see a significant change after 2018. Third, as an alternative to sectoral and goods classification, we also consider whether industry-level adjustment costs influenced firms' ability to respond to the AfCFTA agreement. Using the Hall (2004) measure as a proxy for adjustment frictions for capital and labor at the industry level, we show that firms in industries with higher adjustment costs exhibited significantly smaller increases in their international sales ratios after 2018. Higher adjustment costs on both margins attenuate the post-2018 expansion, with the capital coefficient larger in raw terms – consistent with capital being the binding short-run margin. Intuitively, high capital adjustment costs hinder the expansion of production and the reallocation of resources needed to serve new markets, and labor adjustment frictions slow firms' post-agreement response through the same channel.

As part of the analysis, we also explore alternative measures of international trade exposure, pool all-year indicators in our benchmark regression, and substitute year-fixed effects for the agreement-timing dummy. Moreover, we use country-specific ratification dates rather than the common signing date to pinpoint the agreement's effective date. Finally, we examine how financial constraints, ownership structure, and leverage (as a proxy for risk-taking) influence firms' ability to benefit from the agreement. Our results are consistent across these robustness exercises.

Our paper makes three contributions. The literature has examined how trade agreements affect trade both through theory (e.g., Anderson and van Wincoop, 2003; Bond et al., 2004, among others) and through empirical evidence (e.g., McCallum, 1995; Rose, 2004; Baier and Bergstrand, 2004, 2007, among others). First, on *framework*, we embed two short-run channels, export-network history and adjustment frictions, in a Melitz-style model with two sectors (goods and services), two regions (home and foreign),

and two periods (pre- and post-AfCFTA), with firm heterogeneity and input–output linkages; our predictions recover the Melitz (2003) and Chaney (2008) reallocation results and are consistent with multi-sector models in which cross-sector linkages shape outcomes (Caliendo and Parro, 2015). Second, on *evidence*, we connect the role of networks and prior export experience to firm-level responses (Araujo et al., 2016; Albornoz et al., 2012; Morales et al., 2019; Rauch and Trindade, 2002).

A distinguishing feature of our framework is that the goods–services linkage operates on the *production side*: African goods exporters use African services as inputs, so AfCFTA-driven goods expansion stimulates the home (African) service sector, lowers domestic service prices, and feeds back into lower goods production costs. This intra-continental "servicification multiplier" is policy-relevant for AfCFTA's stated goal of integrated African development, and aligns with multi-sector general equilibrium frameworks (Caliendo and Parro, 2015) in which cross-sector linkages mediate the gains from trade.

Another source of the novelty of our paper hinges on our use of a granular, firm-level dataset on cross-border sales. We leverage this proprietary data to examine the *export-network history* channel, a mechanism that is not directly observable from aggregate trade data. Specifically, we discipline our approach by identifying the firm's pre-2018 trade network and classifying it as either having *overseas market exposure* or *African exposure only*. Doing so allows us to study how these pre-existing network linkages, which we consider proxies for sunk costs and market knowledge, mediate the firm's response to the agreement, ultimately shaping its international sales output. Indeed, the related literature has largely remained silent on this source of heterogeneity in firm-level trade relationships, leaving open questions as to who benefits from integration. Our data allow us to fill this gap, and our findings on network history dovetail with the stylized model considered, informed by insights from the previous theoretical literature (Melitz, 2003). Our results also align with the view that export networks primarily ease information frictions (Chaney, 2014) rather than simply reflecting geographic proximity. The finding that extra-continental-exposed firms benefit more from AfCFTA suggests these firms held a superior stock of "match capital", accumulated market knowledge and contacts, from advanced markets.

To address the possibility that certain shocks may endogenously drive the effects we documented from the AfCFTA agreement, we consider a number of sensitivity analyses. First, our findings are robust to controlling for country-level COVID-19 exposure and commodity price fluctuations, suggesting that our results are not simply driven by differential recovery dynamics or terms-of-trade movements. Second, we also confirm robustness by treating the dynamics with the inclusion of year fixed effects (thereby

absorbing any aggregate (common) time-varying confounders), to alternative measures of international trade exposure, and to the sequential exclusion of individual countries from the sample. Third, we consider placebo tests that randomly reassign trade exposure and sector classifications, and find that our estimates generally lie outside the placebo distributions.

Our paper proceeds as follows. Section 2 discusses the events leading to, and the operational details of, the African Continental Free Trade Area (AfCFTA) agreement. Section 3 sets out theoretical arguments that help us formulate testable hypotheses. We discuss our empirical methodology and the data in Section 4. Section 5 provides empirical evidence on the impact of AfCFTA across firms with different sectoral focuses and prior export experience, examining whether the trade agreement increases external trade for the average firm in participating countries. Section 6 presents a battery of sensitivity analyses to complement our main results. We conclude in Section 7.

2 Institutional Details

This section provides institutional background on the African Continental Free Trade Area (AfCFTA) agreement and explains how our paper contributes to the literature.

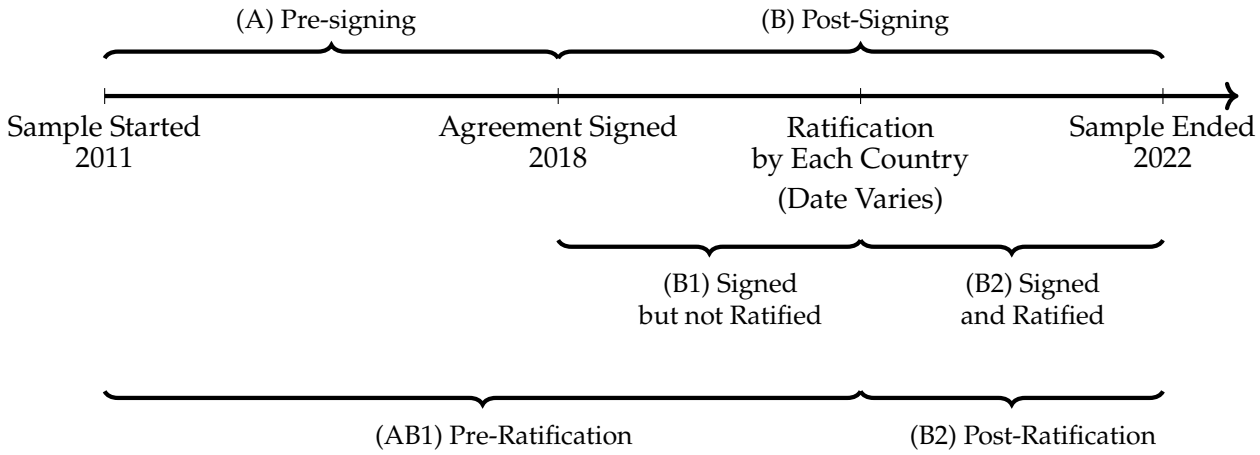
2.1 Institutional Background

The AfCFTA is the African Union's flagship economic-integration initiative under Agenda 2063 (African Union, 2025). It seeks to create a single continental market for goods and services – home to roughly 1.3 billion people and $3.4 trillion in combined GDP, with full implementation projected to raise real income by about 7% (Maliszewska and Ruta, 2020) – by progressively eliminating tariffs and non-tariff barriers (NTBs), liberalizing services, and easing the movement of persons. The agreement has also been used to engage global investors around priority sectors such as agriculture, automotive, pharmaceuticals, and transport and logistics (Mene and Signe, 2025). Following a 2012 African Union decision to establish a continental free trade area, it was opened for signature in March 2018 in Kigali (Teklewold et al., 2025).

AfCFTA's rollout followed a clear, AU-led sequence. Of the 55 participating states, 44 signed at the March 2018 summit and 49 had signed by the end of 2018, with the remaining four signing in early-to-mid 2019; the agreement entered into force on 30 May 2019 for the first 24 ratifying countries, and 47 had ratified by August 2023.[4] Operationally, it is supported by the Rules of Origin and the Pan-African

[4]See Appendix Table A1 for country-level signing and ratification dates.

Figure 1: The Anatomy of African Trade Agreement Timing



Payments and Settlement System (PAPSS) (Zongwe, 2025) and administered by the AfCFTA Secretariat (Accra, August 2020), within a broader framework comprising the African Union Assembly, the Council of Ministers, and dispute-resolution mechanisms. Commercially meaningful trade was kick-started by the Guided Trade Initiative (GTI), launched in October 2022 (International Trade Administration, 2025). Figure 1 summarizes this timeline.

Figure 1 illustrates the timeline of African trade agreement implementation, dividing it into distinct phases based on each country's status. The process begins with the Pre-signing period (A) from 2011 to 2018, followed by the Post-signing period (B) after the agreement was formally signed in 2018. During this post-signing phase, countries enter a "Signed but not Ratified" (B1) period until they individually ratify the agreement, a process that varies by country. The details for ratification are in Appendix A1. Once ratified, countries enter the Signed and Ratified (B2) phase. For our analysis, the timeline is also grouped into broader phases: Pre-Ratification (AB1), which includes both the Pre-signing and (B1) periods, and Post-Ratification (B2), reflecting full commitment to the agreement.

2.2 Identification-relevant Features

Two institutional features shape our empirical design. First, the near-synchronous 2018 signing provides a clean, continent-wide policy shock: because 49 of 55 countries committed in the same year, "treatment onset" is essentially common across firms, which fits our event-study design and minimizes ambiguity over timing (African Governance Architecture, 2025). Although negotiations began in the mid-2010s, the 2018 signing is the first point at which AfCFTA materialized as a credible, shared commitment – consistent with the flat pre-2018 trends we document in Section 5.1. Second, ratification is staggered across

countries, generating a "signed-but-not-ratified" phase (Figure 1, B1) that we exploit as an alternative timing definition in robustness checks (Section 6.2).

A second defining feature is the asymmetry between goods and services liberalization, which underpins our sectoral predictions. Under the Protocol on Trade in Goods, the agreement targets elimination of 97% of intra-African tariff lines – with slower phase-outs for sensitive products (differentiated for non-LDCs and LDCs) and a small excluded category – supported by provisional tariff schedules and the submission and verification of tariff offers under the GTI (AfCFTA E-Tariff, 2025; United Nations Economic Commission for Africa, 2024). The Protocol on Trade in Services, by contrast, requires Schedules of Specific Commitments that have advanced more slowly: as of 2024, commitments across the five priority sectors (business services, communications, financial services, transport, and tourism) remain largely under negotiation. We therefore expect AfCFTA to lower trade costs for goods more than for services over our sample window – an asymmetry we test directly, and which motivates interpreting services-sector responses as operating through indirect channels (derived demand from goods expansion and the ability of networked services firms to capture it). These readings align with IMF assessments emphasizing that tariff cuts, NTB removal, and a stronger trade-enabling environment are jointly necessary for AfCFTA's potential (ElGanainy et al., 2023), including the customs-modernization requirements detailed for the GTI (Montagnat-Rentier et al., 2025).

3 What Matters for the Rise in Trade Theoretically?

We present a two–period, Melitz–style framework that is just sufficient to deliver testable predictions for our setting. The key short-run *channels* through which AfCFTA's aggregate shock operates are: (i) selection under heterogeneous productivity; (ii) goods–services input linkages; (iii) history–based *match capital* on the demand side; and (iv) sectoral capital–adjustment frictions.[5] In other words, relative to the canonical environment, we (i) nest *servicification* so that goods selection and sectoral average costs depend on the equilibrium service price index (ii) model *history* as demand-side match capital rather than mechanical cost shifts; and (iii) bring *short–run* factor (capital) adjustment into the impact elasticity.[6]

[5]We use "channels'' for idiosyncratic states that firms take as given over our short horizon (networks, capital rigidity). We reserve "mechanisms'' for objects firms re-optimize.

[6]In more detail, our model builds on the seminal contribution due to Melitz. The canonical Melitz (2003) model features heterogeneous productivity, fixed export costs, and endogenous selection into exporting. Our framework extends Melitz in three key dimensions: (i) *servicification*—as goods production requires service inputs, the goods cutoff depends on the equilibrium service price index, thereby creating cross-sector spillovers absent in Melitz; (ii) *demand-side heterogeneity*—while Melitz assumes identical demand conditions across firms of the same productivity, we introduce match capital that varies by pre-existing trade

These extensions allow us to explain why firms in the short and medium run – as covered by our data – even with identical productivity but different histories respond differentially to trade liberalization.

Primitives and timing. Sectors $s \in \{\text{g}, \text{srv}\}$ (goods, services), destination regions $r \in \{h, a, w\}$ (home, intra-continental, extra-continental), dates $t \in \{0, 1\}$ (pre/post–AfCFTA). Consumers have CES demand with elasticity $\sigma > 1$; firms are monopolistic competitors. Productivity ϕ is i.i.d. Pareto: $\phi \sim \text{Pareto}(\underline{\phi}, k)$ with tail $k > 1$. Iceberg trade costs are $\tau_{s,t} \geq 1$, with AfCFTA lowering *goods* costs $\tau_{\text{g},1} < \tau_{\text{g},0}$;[7] short–run service costs are roughly unchanged $\tau_{\text{srv},1} \approx \tau_{\text{srv},0}$.[8] We normalize wages to 1 and treat aggregate price indices/expenditures as given at the analyzed horizon.

Technology and servicification. A goods firm uses labor ℓ_{g} and a CES composite s_{comp} of services as variable inputs:

$$y_{\text{g}} = \phi \left(\ell_{\text{g}}^{1-\beta} s_{\text{comp}}^{\beta} \right), \qquad s_{\text{comp}} = \left(\int s_j^{\frac{\sigma-1}{\sigma}} dj \right)^{\frac{\sigma}{\sigma-1}}, \quad \beta \in (0,1),\ \sigma > 1.$$

Goods production additionally requires *physical capital*—plant, machinery, and equipment—that determines production capacity. In the short run, installed capital $\bar{k}_{\text{g}}$ is quasi-fixed: it reflects past investment decisions and cannot be instantaneously adjusted. Services firms use primarily labor: $y_{\text{srv}} = \phi\, \ell_{\text{srv}}$, with negligible physical capital requirements.[9]

Normalizing wages to $w = 1$, cost minimization over variable inputs yields unit cost functions:

$$c_{\text{g}}(\phi; P_{\text{srv},h,t}) = \frac{\kappa_\beta}{\phi} P_{\text{srv},h,t}^{\beta}, \qquad c_{\text{srv}}(\phi) = \frac{1}{\phi}, \quad \kappa_\beta \equiv (1-\beta)^{-(1-\beta)} \beta^{-\beta}. \tag{1}$$

Prices are markups over delivered cost: $p_{s,r,t}(\phi) = \frac{\sigma}{\sigma-1} \tau_{s,t}\, c_s(\phi; \cdot)$. These unit costs characterize variable

exposure, generating heterogeneous export responses without assuming cost differences; and (iii) *short-run rigidities*—we incorporate convex adjustment costs that dampen immediate responses, whereas Melitz focuses on long-run equilibrium.

[7] We interpret iceberg trade costs τ broadly to encompass tariffs, non-tariff barriers, customs and regulatory frictions, and, crucially, the reduction in trade policy uncertainty associated with credible commitments such as treaty signing and institutional progress (Anderson and van Wincoop, 2004). As Handley and Limão (2017) demonstrate in the context of China's WTO accession, the mere elimination of trade policy uncertainty can generate trade effects equivalent to a 13-percentage-point permanent tariff decrease, even absent changes in applied tariffs. Our reduced-form specification $\tau_{\text{g},1} < \tau_{\text{g},0}$ is therefore consistent with the AfCFTA generating lower effective trade costs through announcement and credibility effects, institutional harmonization, and early non-tariff barrier reductions, in addition to any actual tariff changes that materialized during our sample period.

[8] The AfCFTA Protocol on Trade in Services entered into force in May 2019, but services liberalization through Schedules of Specific Commitments remains under negotiation as of 2024 (AfCFTA Secretariat, 2024). Thus, τ_{srv} is empirically unchanged over our sample period.

[9] This sectoral asymmetry—goods being capital-intensive while services are labor-intensive—is well-documented for African economies. Manufacturing relies on machinery and physical plant, whereas services (logistics, finance, professional services) scale primarily through hiring and contracting. The quasi-fixed nature of capital in the short run is standard in production theory; see Varian (1992).

production expenses; the role of quasi-fixed capital enters through capacity constraints and adjustment frictions (see below).

Derived demand linkage. The Cobb-Douglas structure in (1) implies that goods firms spend a constant fraction β of their costs on service inputs. Aggregating across all goods producers, total expenditure on services satisfies:

$$E_{\text{srv},h,t} = \beta \cdot \text{TC}_{\text{g},h,t} + E^{\text{final}}_{\text{srv},h,t}, \tag{2}$$

where $\text{TC}_{\text{g},h,t}$ denotes aggregate home goods-sector costs and $E^{\text{final}}_{\text{srv},h,t}$ is final demand for home services (taken as given). When goods trade costs fall, home goods production expands, raising $\text{TC}_{\text{g},h,t}$ and thus $E_{\text{srv},h,t}$. This derived demand channel links goods liberalization to service-sector conditions even absent direct service liberalization.[10] This production-side interpretation has direct policy content for the AfCFTA context. Because goods firms procure services locally, the agreement's goods-trade boost endogenously develops the African services sector through derived demand, even though the AfCFTA Protocol on Trade in Services remains under negotiation. The resulting fall in domestic service prices amplifies the goods response, providing a within-continent self-reinforcing channel that complements the direct (trade-cost) channel.

Firm revenues and selection. Let $E_{s,r,t}$ be sectoral expenditure in r at t and $P_{s,r,t}$ the sectoral price index. A firm with productivity ϕ earns

$$R_{s,r,t}(\phi) = \Xi_{s,r,t}\left[\tau_{s,t}\, c_s(\phi; P_{\text{srv},h,t})\right]^{1-\sigma}, \qquad \Xi_{s,r,t} \equiv E_{s,r,t}\left(\frac{\sigma}{\sigma-1}\frac{1}{P_{s,r,t}}\right)^{1-\sigma}. \tag{3}$$

Exporting to (s,r) requires a per–market fixed cost $f_{s,r}$; the cutoff solves $R_{s,r,t}(\phi^*)/\sigma = f_{s,r}$. Using (1)–(3),

$$\phi^*_{\text{srv},r,t} = \left(\frac{\sigma f_{\text{srv},r}}{\Xi_{\text{srv},r,t}}\right)^{\frac{1}{\sigma-1}} \tau_{\text{srv},t}, \qquad \phi^*_{\text{g},r,t} = \left(\frac{\sigma f_{\text{g},r}}{\Xi_{\text{g},r,t}}\right)^{\frac{1}{\sigma-1}} \tau_{\text{g},t}\, \kappa_\beta\, P^{\beta}_{\text{srv},h,t}. \tag{4}$$

Thus, *goods* selection depends on the *service* price index P_{srv}: cheaper services lower the goods cutoff.[11] Further, $\tau_{\text{srv},1} \approx \tau_{\text{srv},0}$ implies that services trade costs cancel from all comparative statics of interest.

[10] Appendix C derives how higher derived demand for home services $E_{\text{srv},h,t}$ induces service-sector entry, lowering the home equilibrium price index $P_{\text{srv},h,t}$ and generating the goods–services multiplier on the production side.

[11] The interplay with P_{srv} is a crucial coupling: ϕ^*_g depends on $P_{srv,h,t}$ for a home country. If goods liberalization stimulates the services sector (via derived demand and entry, lowering P_{srv}), that further lowers the goods cutoff. This interdependence is an important feature of the extended model: the two sectors' equilibrium cutoffs are linked.

Aggregation under Pareto. With $\theta \equiv k$ (the Pareto shape, i.e. the standard Chaney trade elasticity), aggregation over heterogeneous firms (e.g., Chaney, 2008) yields sectoral exports from home to r:

$$X_{s,r,t} = \mathcal{K}_s \, \Xi_{s,r,t}^{\theta/(\sigma-1)} \left[\tau_{s,t} \, \bar{c}_{s,t}\right]^{-\theta}, \qquad \bar{c}_{g,t} \propto P_{\text{srv},h,t}^{\beta}, \;\; \bar{c}_{\text{srv},t} \equiv 1, \tag{5}$$

where $\mathcal{K}_s$ is constant in (t, r) and $\bar{c}_{s,t}$ is the sectoral cost scale that embeds selection.[12] Equation (5) endogenizes the extensive margin via θ and links goods to services through P_{srv}; it also has a familiar gravity form.[13]

History as match capital (*a demand channel*). Let each firm carry a firm-specific *match-capital* demand shifter $m > 0$[14] that enters buyers' CES demand for the firm's output as a multiplicative weight, so that firm i's export revenue in (s, r, t) is $m_i \, R_{s,r,t}(\phi)$, where $R_{s,r,t}(\phi) = \Xi_{s,r,t}[\tau_{s,t} c_s(\phi; P_{\text{srv},h,t})]^{1-\sigma}$ is the revenue of a reference firm with unit match capital ($m = 1$). Economically, m is the firm's *demand access*: the share of destination expenditure it can capture through its accumulated buyer network. Firms are atomistic, so each takes $(\Xi_{s,r,t}, P_{s,r,t})$ as given, and market clearing is delivered by the price index. A higher m raises demand at a given price, consistent with established buyer relationships. Exporting is profitable iff

$$m \geq m^*_{s,r,t}(\phi) \equiv \frac{\sigma f_{s,r}}{\Xi_{s,r,t}} \left[\tau_{s,t} \, c_s(\phi; P_{\text{srv},h,t})\right]^{\sigma-1}. \tag{6}$$

History/exposure. A firm's exposure type $X \in \{\emptyset, A, W\}$ (none, intra-continental, extra-continental) indexes the distribution G_X from which its match m is drawn. We order these by the monotone likelihood ratio, $G_W \succeq_{\text{MLR}} G_A \succeq_{\text{MLR}} G_\emptyset$: broader networks draw systematically higher match. MLR *implies* first-order stochastic dominance, so $\Pr(m \geq m^* \mid W) \geq \Pr(m \geq m^* \mid A) \geq \Pr(m \geq m^* \mid \emptyset)$ for every threshold m^*, and – because MLR also implies the hazard-rate order – the conditional mean match among exporters $\mathbb{E}[m \mid m \geq m^*, X]$ is ordered the same way. History therefore raises *both* the entry probability and

[12] The composite parameter is $\mathcal{K}_s = \frac{k \underline{\phi}^k}{k-(\sigma-1)} (\sigma f_{s,r})^{-(k-(\sigma-1))/(\sigma-1)}$, capturing the Pareto shape, free-entry fixed cost, and (absorbed) markup constants; convergence requires $k > \sigma - 1$. The demand shifter $\Xi_{s,r,t} \equiv E_{s,r,t} \left(\frac{\sigma}{\sigma-1} \frac{1}{P_{s,r,t}}\right)^{1-\sigma}$ aggregates destination expenditure and the destination price index. The term $\bar{c}_{g,t} = \kappa_\beta P_{srv,h,t}^{\beta}$ embeds both the production function parameter and equilibrium service prices. Refer to Appendix C for full details.

[13] Exports $X_{s,r,t}$ are proportional to foreign expenditure on sector s (demand size) and inversely proportional to trade costs. The trade elasticity here is $\theta = k$ for sector s (note that the service term $\bar{c}_{s,t}$ also introduces additional indirect elasticities if P_{srv} changes).

[14] The match parameter m is a sufficient statistic for a firm's accumulated trade-facilitating assets: buyer networks, market knowledge, and reputation.

conditional revenue, and hence expected exports, without altering any cost primitive.[15]

It should be noted that, though the FOSD assumption focuses on demand-side heterogeneity, it is more general than existing alternatives in the literature. For instance, Eaton et al. (2011) assume fixed cost heterogeneity. In our framework, networks would directly reduce fixed costs, providing a more mechanical, less general approach than ours. Other alternatives include productivity augmentation (Arkolakis, 2010) when networks shift effective productivity (yet this confounds learning effects with network effects), and search and matching (Bernard et al., 2019; Chaney, 2014; Eaton et al., 2025), which is rooted in a more micro-founded approach but requires additional structure. Finally, information frictions (e.g., Allen, 2014; Startz, 2016) are reduced when networks reduce information asymmetries. Our FOSD approach is agnostic about the specific mechanism (which could be search, information, or trust), doesn't conflate network effects with cost/productivity changes, maintains tractability while allowing rich comparative statics, and nests several micro-mechanisms without taking a stand on which one dominates (thus providing greater generality). We also note that, while Chaney (2014) highlights the importance of proximate expansion (geographic and informational), we explicitly model match capital as FOSD-ordered by network quality rather than mere geographic proximity.

Further, our approach complements the learning-by-exporting literature (De Loecker, 2013; Atkin et al., 2017) but differs fundamentally: rather than productivity improvements through learning, we model accumulated market-specific demand advantages. This is consistent with evidence that export experience facilitates buyer-supplier matching (Rauch and Watson, 2003; Chaney, 2014) without requiring technological upgrading. Intuitively, since the threshold m^* is the same for all firms in a given market and productivity, a stochastically larger match distribution implies a higher probability that a firm's realized m exceeds m^*. Thus, it follows that *i*) with higher entry probability,[16] more firms meet the threshold; *ii*) conditional revenue increases among those who enter, meaning that the average share of expenditure is now larger.

Adjustment frictions. The quasi-fixed nature of physical capital in goods production generates short-run rigidities absent from labor-intensive services. Expanding goods output beyond installed capac-

[15]Notice that MLR is a mild strengthening of FOSD satisfied by all standard families used for such heterogeneity (location/scale shifts, Pareto ordered by scale, lognormal ordered by mean). Under plain FOSD the headline prediction – the ordering of *expected* exports – still holds, since $m \mapsto m\,\mathbf{1}\{m \geq m^*\}$ is non-decreasing; the stronger order is what allows us ordering the extensive and intensive margins *separately*.

[16]We maintain a fixed measure of potential firms (consistent with short-run analysis), so }}entry probability" refers to the share of existing firms that begin exporting, not new firm creation. This reflects selection along the extensive margin among incumbent firms.

ity requires capital investment—procuring machinery, expanding facilities, establishing supply chains—which incurs convex adjustment costs. Following the standard specification in Cooper and Haltiwanger (2006), we model these costs as:

$$C_g(\bar{k}_1; \bar{k}_0) = \frac{\psi}{2}\left(\frac{\bar{k}_1 - \bar{k}_0}{\bar{k}_0}\right)^2 \bar{k}_0, \qquad \psi \geq 0, \tag{7}$$

where $\bar{k}_0$ is inherited capital and $\bar{k}_1$ is the post-investment stock. Since goods output scales with installed capacity, this generates convex costs of output expansion: a larger ψ attenuates firms' ability to respond in the short run to changes in the trade-policy environment following AfCFTA.

Service firms rely on labor that can be hired, trained, or contracted flexibly within our horizon, so their adjustment frictions, while not zero, are substantially smaller than the capital adjustment costs goods producers face.[17] Formally, $\psi_{srv} \ll \psi_g$ (with $\psi_{srv} \to 0$ as the limiting case). This asymmetry of *degree* – rooted in the quasi-fixed nature of capital versus the flexibility of labor – explains why the goods sector exhibits attenuated short-run responses despite direct tariff benefits, while services scale far more elastically to exploit network advantages.

Testable Predictions and Empirical Channels. We organize our theoretical predictions around two primary channels and their interactions, directly mapping to our empirical investigation. However, we start with the standard channel, emphasized in the trade literature.

Channel 0: Direct Trade Cost Reduction

(P0.1) *AfCFTA's reduction in trade costs increases aggregate trade through standard mechanisms.* The fundamental impact of AfCFTA operates through the reduction in iceberg trade costs from $\tau_{g,0}$ to $\tau_{g,1}$ where $\tau_{g,1} < \tau_{g,0}$. From equation (5), the direct elasticity of exports with respect to trade costs is:

$$\frac{\partial \ln X_{g,r,t}}{\partial \ln \tau_{g,t}} = -\theta + \underbrace{(-\theta\beta)\frac{\partial \ln P_{srv,h,t}}{\partial \ln \tau_{g,t}}}_{\text{goods}\to\text{services feedback}} < 0, \qquad \theta \equiv k.$$

[17] This asymmetry is empirically well-established: Cooper and Haltiwanger (2006) and Bloom (2007) document substantial capital adjustment costs in manufacturing, while Hamermesh (1989) finds labor adjustment is comparatively rapid. For African firms specifically, Söderbom and Teal (2004) show that manufacturing capacity expansion involves substantial fixed costs and time lags.

This elasticity embeds both trade margins through the Pareto-Melitz structure: incumbent exporters ship more (intensively), and firms that previously were domestic begin exporting as the productivity cutoff $\phi^*_{g,r,t}$ falls (extensively).[18] Further, it captures input-price feedback, absent in the standard trade model (e.g., Chaney, 2008).[19] Refer to Proposition C.2 in Appendix C.

Empirical evidence: The positive and significant Post-2018 coefficient across all specifications represents this baseline liberalization effect, with aggregate export intensity rising even for firms without prior exposure or special characteristics (see Table A4 and Figures 3-A1).

Remark: Channel 0 represents the canonical Melitz-Chaney trade liberalization effect that would occur even in a homogeneous-firm or symmetric-country model (albeit without selection). This provides the baseline against which Channels 1 and 2 introduce firm-level heterogeneity in match capital and adjustment costs. The empirical *Post-2018* main effects capture this aggregate channel, while the interaction terms isolate the additional heterogeneous responses through history and sectoral characteristics. Theoretically, Channel 0 alone predicts uniform proportional increases in trade across all firms, which the data decisively reject in favor of the richer patterns generated by our richer model.

Channel 1: Trade History as Match Capital

(P1.1) *History creates persistent advantages through demand-side matching.* With match distributions ordered (using the MLR ordering, hence FOSD) $G_W \succ_{\text{FOSD}} G_A \succ_{\text{FOSD}} G_\emptyset$ and threshold m^* in (6), firms with pre-existing trade exposure have strictly higher export probabilities both before and after AfCFTA. The post-shock gain satisfies:

$$\Delta X_W > \Delta X_A > \Delta X_\emptyset,$$

[18] The reduction in $\tau_{g,t}$ lowers the export cutoff in (4): $\frac{\partial \phi^*_{g,r,t}}{\partial \tau_{g,t}} = \left(\frac{\sigma f_{g,r}}{\Xi_{g,r,t}}\right)^{\frac{1}{\sigma-1}} \kappa_\beta P^\beta_{\text{srv},h,t} > 0$. As $\phi^*_{g,r,t}$ falls, lower-productivity firms enter the export market while high-productivity incumbents expand. Under Pareto, $\bar{c}^{\text{act}}_{g,r,t} \propto (\phi^*_{g,r,t})^{-1} \propto \tau^{-1}_{g,t}$, so $\frac{\partial \bar{c}^{\text{act}}_{g,r,t}}{\partial \tau_{g,t}} < 0$: trade liberalization raises average cost among active exporters by admitting less productive firms. However, aggregate exports still rise because the extensive margin expansion (more firms exporting) and the intensive margin gains of high-productivity incumbents dominate.

[19] The goods liberalization generates a multiplier effect through the service input channel. From (1), goods unit costs depend on $P^\beta_{\text{srv},h,t}$. As goods production expands following AfCFTA-related changes, derived demand for services rises (equation (2)), which under standard entry conditions puts downward pressure on the service price index $P_{\text{srv},h,t}$. This creates a feedback loop: lower service prices reduce goods production costs, further expanding goods exports. The total effect can thus exceed the partial equilibrium impact, with the magnitude depending on the strength of goods–services linkages (β) and service-sector entry responses. Under Pareto, $P_{\text{srv},h,t}$ cancels from the revenue-weighted average cost among active exporters (the direct cost effect and selection effect exactly offset), so the multiplier operates through the extensive margin—the mass of exporters—rather than through changes in average costs among incumbent exporters; see the Remark following Proposition C.4 in Appendix C.

where subscripts denote extra-continental, Africa-only, and no exposure, and ΔX_X is the per-firm expected change in exports for a firm with exposure type X.[20] Refer to Proposition C.1 for details.

(P1.2) *Network diversity matters more than regional concentration.* The FOSD ordering implies that broader network reach (Extra-continental > Intra-continental) generates larger post-liberalization gains, as firms with diverse match capital can better exploit new opportunities across multiple margins.

Channel 2: Sectoral Heterogeneity and Adjustment Frictions

(P2.1) *Goods respond more strongly than services in aggregate.* From (5), the goods export elasticity with respect to τ_g is:

$$\frac{\partial \ln X_g}{\partial \ln \tau_g} = -\theta - \theta\beta \frac{\partial \ln P_{srv}}{\partial \ln \tau_g} < 0,$$

while for services, with $\tau_{srv,1} \approx \tau_{srv,0}$:

$$\frac{d \ln X_{srv}}{d \ln \tau_g} = \underbrace{\frac{\partial \ln X_{srv}}{\partial \ln \tau_{srv}}}_{\neq 0} \cdot \underbrace{\frac{\partial \ln \tau_{srv}}{\partial \ln \tau_g}}_{=0} + \text{indirect effects} \approx \text{indirect effects only.}$$

The goods sector benefits directly AfCFTA-related changes through both the direct effect ($-\theta$) and the indirect effect through lower service input prices. Services face no direct liberalization, and their aggregate response depends on the net of two opposing forces operating through (E_{srv}, P_{srv}): (i) derived demand from expanding goods production raises E_{srv} (positive), and (ii) pro-competitive service entry lowers P_{srv} (negative, since X_{srv} is increasing in the demand shifter $\Xi_{srv} \propto E_{srv} P_{srv}^{\sigma-1}$). In aggregate, these forces may offset each other for the average service firm, though heterogeneity in match capital creates divergent outcomes (see below).

(P2.2) *Services firms with match capital benefit through input-output linkages.* While the aggregate service sector shows minimal change, heterogeneity in match capital m creates divergent outcomes. From Propositions C.3 and C.1, services firms with high m (exposed firms) can capture the increased derived demand:

$$\Delta X_{srv}^{\text{high } m} = \underbrace{\Delta(E_{srv} P_{srv}^{\sigma-1})}_{\text{derived demand effect}} \times \underbrace{\Pr(m \geq m^*)}_{\text{match capital advantage}} > 0.$$

[20] This ordering arises without assuming cost differences – the entire effect operates through demand-side match capital. Moreover, since exposure type is a predetermined firm characteristic and the masses of firms in each exposure group are fixed in the short run, the same ordering holds for group-aggregate exports. The interaction coefficients in our regression specifications (9)–(10) estimate precisely the per-firm differential, which is the empirical analog of ΔX_X.

Meanwhile, services firms with low m (unexposed firms) face only the negative price pressure without capturing new demand:[21]

$$\Delta X_{\text{srv}}^{\text{low } m} \approx 0.$$

The aggregate null effect masks this heterogeneity: exposed services firms expand by leveraging their networks to serve the increased demand for logistics, finance, and business services from goods exporters, while unexposed services firms contract or stagnate.

(P2.3) *Capital adjustment costs attenuate short-run goods responses.* Since goods production requires quasi-fixed physical capital while services rely on flexible labor, the adjustment costs in (7) bind asymmetrically across sectors. Industries with higher capital intensity or less liquid capital stocks exhibit larger ψ, implying:

$$\left|\frac{\partial \Delta X_{\text{g}}}{\partial \ln \tau_{\text{g}}}\right|_{\text{high } \psi} < \left|\frac{\partial \Delta X_{\text{g}}}{\partial \ln \tau_{\text{g}}}\right|_{\text{low } \psi}.$$

Services firms, scaling through labor hiring rather than capacity investment, face much weaker attenuation ($\psi_{\text{srv}} \ll \psi_{\text{g}}$). For details, refer to Proposition C.6.

Channel Interactions: History × Sector

(P3.1) *The exposure premium is smaller in goods than in services.* Define the exposure premium as $\Delta_{\text{exposed}} - \Delta_{\text{unexposed}}$. Theory predicts:

$$\left[\Delta X_{\text{g}}^{\text{exp}} - \Delta X_{\text{g}}^{\text{unexp}}\right] < \left[\Delta X_{\text{srv}}^{\text{exp}} - \Delta X_{\text{srv}}^{\text{unexp}}\right].$$

This occurs because: (i) goods firms face binding capital adjustment costs ($\psi > 0$) arising from quasi-fixed capital, while services scale through flexible labor with much smaller frictions ($\psi_{\text{srv}} \ll \psi_{\text{g}}$), limiting goods firms' ability to leverage match capital even when networks provide demand access; and (ii) the baseline goods response is already large, consistent with more visible implementation progress in goods-related commitments, leaving less room for incremental gains from exposure.

(P3.2) *Services firms with match capital are the primary beneficiaries relative to firms without such capital.* Com-

[21] This expression is illustrative; formally, the probability enters through extensive-margin aggregation rather than as a multiplicative factor.

bining channels, the hierarchy of gains is:

$$\Delta X_{\text{srv}}^{\text{exposed}} > \Delta X_{\text{g}}^{\text{exposed}} > \Delta X_{\text{g}}^{\text{unexposed}} > \Delta X_{\text{srv}}^{\text{unexposed}}.$$

Services firms with pre-existing networks can scale elastically when demand rises, while goods firms face capacity constraints, and services firms without networks lack market access.

Summary of Theoretical-Empirical Mapping

Our model yields three key insights that align directly with the empirical findings. First, trade history operates as match capital on the demand side, creating persistent advantages independently of cost differences. This explains why prior exporters, especially those with extra-continental exposure, captured disproportionate gains from AfCFTA. Second, sectoral characteristics – particularly capital adjustment costs and the degree of tariff exposure – determine baseline responses to liberalization. Non-services firms benefit more directly but face binding capacity constraints. Third, the interaction among these channels produces nuanced patterns: services firms with established networks emerge as the primary beneficiaries, as they combine elastic supply capabilities with enhanced market access. In contrast, gains for goods firms are constrained by adjustment frictions despite more visible implementation progress in goods-related commitments.

These predictions and their empirical validation suggest that the benefits of AfCFTA depend critically on firm-level heterogeneity in both demand-side assets (networks) and supply-side constraints (adjustment costs), rather than uniformly accruing to all participants. It also sheds a new light on the main beneficiaries who, as traditional models predict, would be domestic firms close to the trade threshold or traders who expand at the intensive margin. As we see, it matters whom one traded with before the AfCFTA, the constraints it faces, and the sector in which a firm operates.

4 Empirical Strategy and Data

To test these empirical predictions in the data, we first outline the empirical strategy that helps us establish a mapping between the model's implications and their empirical counterparts. We then provide details on our data sources and variable construction.

4.1 Empirical Strategy

Our empirical strategy centers on leveraging the timing of the African Continental Free Trade Area (AfCFTA) agreement, signed in 2018. One of the most important cornerstones of any trade agreement is promoting trade, whether within the region, internationally, or both. Our first pass in evaluating the veracity of the AfCFTA along these dimensions is to examine whether the AfCFTA increases international trade for firms located in Africa. To that end, we consider the following series of regressions:

$$Y_{ict} = \alpha + \beta_\tau \mathbb{I}(t = \tau)_t + \gamma \mathbb{D}_i + \delta \mathbb{D}_c + \varepsilon_{ict} \qquad \forall \qquad \tau = 2003, \ldots, 2022. \tag{8}$$

In Equation (8), Y_{ict} is a measure of international trade exposure for firm i in country c in year t. $\mathbb{I}(t = \tau)_t$ denotes an indicator function that takes a value of one when $t = \tau$ and zero otherwise. $\mathbb{D}_i$ and $\mathbb{D}_c$ denote the firm and country fixed effects, respectively. Intuitively, β_τ captures the change in international trade exposure in year τ relative to other years in the sample. Our benchmark measure for international trade exposure is the ratio of international sales to total sales. Our coefficient of interest is β_τ, where a positive and statistically significant estimate of β_τ suggests an increase in international trade exposure relative to other years. In the context of the AfCFTA, the sequence of estimates for $\{\beta_\tau | \tau \geq 2018\}$ captures how large the international sales ratio is, on average, relative to other years following the agreement's signing in 2018.

After documenting whether trade exposure has changed for African firms following the AfCFTA, we next consider the potential channels through which these changes occur. In particular, we consider the following regression specification:

$$\begin{aligned} Y_{ict} = \alpha \quad &+ \quad \beta_1 \text{Channel}_i \times \mathbb{I}(t \geq 2018)_t + \beta_2 \text{Channel}_i + \beta_3 \mathbb{I}(t \geq 2018)_t \\ &+ \quad \gamma \mathbb{D}_i + \delta \mathbb{D}_c + \varepsilon_{ict}, \end{aligned} \tag{9}$$

where Y_{ict} is a measure of international trade exposure for firm i in country c in year t. Channel_i denotes a firm-level statistics computed using data *before* 2018. $\mathbb{I}(t \geq 2018)_t$ denotes an indicator function that takes a value of one when $t \geq 2018$ and zero otherwise. Our use of the 2018 signing as the treatment date in Equation (9) follows the trade-policy-uncertainty logic discussed in Section 1 and Section 3: the signing is a marquee, continent-wide commitment (49 of 55 countries) that lowers policy uncertainty and maps to the entry and expansion margins our firm-level data capture (Handley and Limão, 2017). $\mathbb{D}_i$ and $\mathbb{D}_c$

denote the firm and country fixed effects, respectively. Our coefficient of interest is β_1, which captures the average effects of firms having characteristics Channel$_i$ *before* 2018 on international trade exposure Y_{ict} after the signing of the AfCFTA in 2018, relative to firms without such characteristics. For example, if Channel$_i$ is the extent to which firms have previous revenue exposure in Europe, then β_1 captures how firms with such *ex-ante* exposure expand their *ex-post* international trade relative to firms without the such *ex-ante* exposure. Unless otherwise noted, we compute robust standard errors for all regressions estimated under Equations (8) and (9).[22]

In the context of our theoretical framework in Section 3, Channel$_i$ in Equation (9) consists of variables relevant to the two channels considered: (1) trade history as match capital and (2) sectoral heterogeneity and their adjustment frictions. We also consider the interaction of these two channels by estimating the following regression specification:

$$\begin{aligned} Y_{ict} = \alpha &+ \beta_1 \text{Sector}_i \times \text{Trade History}_i \times \mathbb{I}(t \geq 2018)_t \\ &+ \beta_2 \text{Trade History}_i \times \mathbb{I}(t \geq 2018)_t + \beta_3 \text{Sector}_i \times \mathbb{I}(t \geq 2018)_t + \beta_4 \text{Trade History}_i \times \text{Sector}_i \\ &+ \beta_5 \text{Trade History}_i + \beta_6 \mathbb{I}(t \geq 2018)_t + \beta_7 \text{Sector}_i \\ &+ \gamma \mathbb{D}_i + \delta \mathbb{D}_c + \varepsilon_{ict}, \end{aligned} \tag{10}$$

where Trade History$_i$ denotes a measure that captures the first channel (i.e., trade history as match capital) and Sector$_i$ denotes a measure that captures the second channel (i.e., sectoral heterogeneity and their adjustment frictions).[23] The remaining terms follow from Equation (9).

As previously mentioned, our choice of designating 2018 as the year after which the signing of the AfCFTA materialized stems from the fact that 44 countries signed initially in March 2018 and 49 of the 55 participating countries had signed by the end of 2018, with the remaining signed in February (Botswana, Guinea-Bissau, and Zambia) and July (Benin and Nigeria) of 2019.[24] While we primarily use 2018 as the year in which the trade agreement is in effect for ease of exposition, in Section 6, we allow for alternative timings of, and heterogeneity in, the periods in which the agreement becomes effective (i.e., signing vs. ratification).

[22] We note that Channel$_i$ is absorbed by the firm fixed effects $\mathbb{D}_i$.
[23] Based on the sector names, we classify the goods (non-services) and services sectors in Table A3.
[24] See Table A1 for a complete list of countries with their corresponding signing and ratification dates.

Table 1: Sample Distribution by Country

Country	Observations	%	Country	Observations	%
Burkina Faso	38	0.210	Namibia	163	0.901
Benin	7	0.039	Niger	10	0.055
Botswana	367	2.028	Nigeria	2,165	11.965
Cote d'Ivoire	350	1.934	Réunion	19	0.105
Egypt	3,480	19.233	Sudan	30	0.166
Gabon	20	0.111	Senegal	36	0.199
Ghana	381	2.106	Eswatini	20	0.111
Gambia	7	0.039	Togo	60	0.332
Kenya	904	4.996	Tunisia	1,214	6.709
Morocco	1,288	7.118	Tanzania	212	1.172
Mauritius	1042	5.759	Uganda	99	0.547
Malawi	215	1.188	South Africa	5,004	27.656
Mozambique	18	0.099	Zambia	349	1.929
			Zimbabwe	596	3.294
			Total	18,094	100.000

Notes: This table presents the distribution of data availability across countries.

4.2 Data Sources

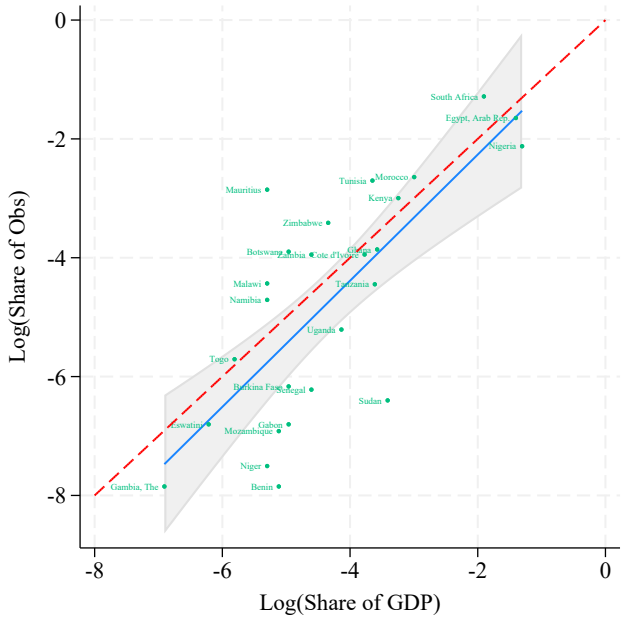
We initially obtain firm-level financial and accounting data from FactSet - Fundamentals, previously used in the literature (Ersahin et al., 2024; Wang et al., 2021). The FactSet - Fundamentals provides firm-level accounting and financial data globally, sourced primarily from firms' financial statements. Compared with other firm-level data sources, such as the World Bank Enterprise Surveys (WBES), which rely primarily on businesses' self-reports to survey questions, FactSet - Fundamentals provides more accurate administrative data reported in firms' financial statements.[25]

Another distinctive dataset from FactSet includes detailed information on firms' international sales, broken down by geographic segments and foreign ownership. We merge this data with the FactSet - Geographic Exposure dataset to obtain firm-level revenue by region. Additionally, to incorporate ownership information, we combine it with the FactSet - Ownership dataset, which is widely used in prior studies (Bena et al., 2017; Ferreira and Matos, 2008).

The raw dataset for all African firms covered by FactSet - Fundamentals comprises 21,135 firm-year observations (from 1,675 unique firms) across 27 African countries, spanning the period from 2002 to 2022. We apply several criteria to refine our dataset. First, as we use 2018 as the quasi-experimental event, we restrict our sample to firms with at least one observation before and one after 2018. Second, we exclude sectors with fewer than three observations. As a result, our final sample comprises 18,094 firm-year observations, encompassing 1,244 unique firms across 27 countries, spanning the period from

[25]For instance, Rivas and Crowley (2018) call for the use of administrative data to improve decision making, policy advice, and economic performance in developing countries compared to economic censuses and business surveys.

Figure 2: Share of GDP vs Share of Observations by Country (2002-2022)



Notes: Each point is an African country, plotting its share of total sample observations against its share of GDP (PPP-adjusted), 2002–2022, on log scales. The solid line is the 45-degree line and the shaded region is the 95% confidence band around the fitted relationship.

2002 to 2022.[26] Table 1 presents the distribution of the number of observations by country.

A natural concern is that the concentration of observations in a few economies – e.g., South Africa, Egypt or Nigeria – could compromise the external validity of our findings. Figure 2 is the diagnostic we use to address this concern directly. It shows that each country's share of sample observations tracks its share of continental GDP quite closely: the points cluster along the 45-degree line, so a country's weight in our data mirrors its weight in the African economy. The alignment is systematic – economic size and sample representation are strongly positively correlated – so the sample is reflective of the underlying distribution of African economic activity.

The deviations that do exist are bounded. The most over-represented country is Mauritius and the most under-represented are Benin and Sudan, yet even the largest economies sit within the confidence band around the fitted relationship; South Africa, for example, is only slightly over-represented and remains inside the interval. Some concentration is unavoidable: firm-level financial data are genuinely scarce across much of the continent, so any sample of listed and reporting African firms will weight toward the larger, more financially developed economies. Given this constraint, the close GDP-observation

[26]The observation numbers in different regressions may vary as they depend on the missing values in the variables included.

Table 2: Descriptive Statistics

	Obs.	Mean	Std.	Median	Min	Max
Intl Sales/Total Sales	16910	0.081	0.200	0.000	0.000	1.000
Intl Sales/Domestic Sales	16882	0.292	1.358	0.000	0.000	11.273
Post 2018	18094	0.297	0.457	0.000	0.000	1.000
Post Ratification	18094	0.199	0.399	0.000	0.000	1.000
Any exposure	17794	0.345	0.475	0.000	0.000	1.000
Some African exposure	17794	0.318	0.466	0.000	0.000	1.000
African exposure only	17794	0.151	0.358	0.000	0.000	1.000
Some European exposure	17794	0.265	0.441	0.000	0.000	1.000
Non-Services	18094	0.210	0.408	0.000	0.000	1.000
Services	18094	0.450	0.498	0.000	0.000	1.000
Capital Adj. Costs	2822	0.070	0.736	-0.030	-0.920	3.020
Labor Adj. Costs	1635	0.510	2.331	0.012	-0.965	7.695
WW Index	12332	-37.119	54.587	-38.979	-456.672	2.352
Low Cash Dividends	16883	-0.027	0.047	-0.008	-0.267	0.000
Foreign Ownership	18094	0.046	0.131	0.000	0.000	0.774
Leverage	17766	0.189	0.205	0.126	0.000	0.958

Notes: This table presents the descriptive statistics for all variables. The number of observations varies across variables. Detailed definitions and data sources for each variable are provided in Appendix A2. Our final analysis sample comprises 18,094 firm-year observations from 1,244 unique firms across 27 African economies, spanning 21 years from 2002.

correspondence indicates that our sample is representative of continental economic activity subject to available data limitations. We nonetheless confront the external-validity concern head-on in Section 6, where we re-estimate our main specifications dropping one country at a time and find robust results.

4.3 Variable Definitions

We provide descriptive statistics in Table 2. Details of variable definition and construction are presented in Appendix A2. Our variables are constructed using firm-level data primarily from FactSet. The key dependent variables include *Intl Sales/Total Sales* and *Intl Sales/Domestic Sales*, which measure the extent of a firm's international market engagement.[27] We also define a set of binary exposure indicators based on firms' geographic revenue data. First, *Any exposure* identifies firms with any international sales. *Some African exposure* captures firms that engage in international trade and report revenue from African countries (though corporate segment data may sometimes report this inclusive of the home country). We are also interested in firms whose international revenue comes solely from African markets, which we label *African exposure only*. Finally, *Some European exposure* captures firms with partial revenue from Europe. *Post 2018* equals "one" for years from 2018 onward, which is the signing of the agreement, while *Post Ratification* equals "one" from the year in which each country ratified the agreement.

[27] Because FactSet does not directly report domestic sales, we calculate them as the firm's total sales minus its international sales.

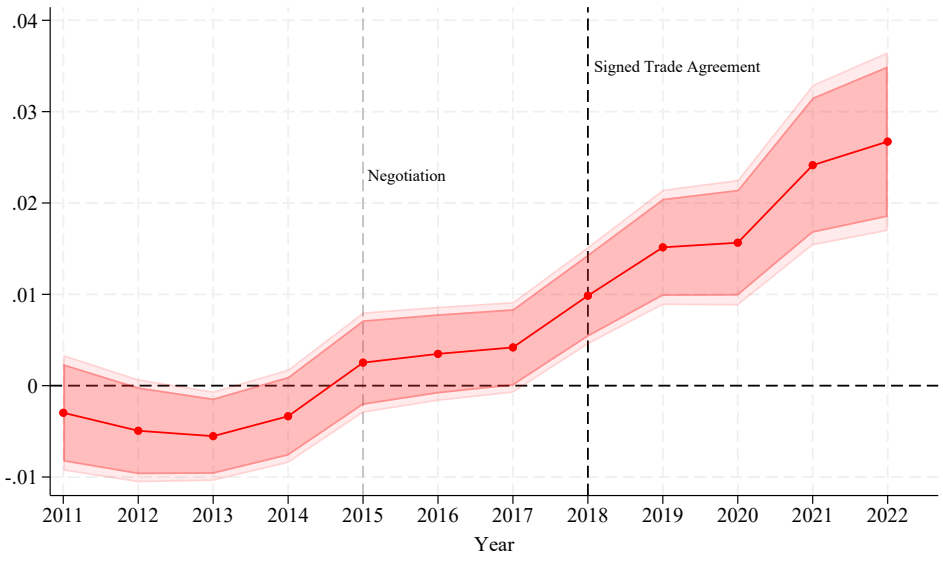
5 What Matters for the Rise in Trade Empirically?

We are now equipped to proceed with the empirical evaluation of the major sources of the increase in international sales following the agreement. We first confirm that the 2018 trade agreement indeed increases overall trade activity. Upon confirming this result, we next consider whether channels considered in Section 3 are supported by empirical evidence.

5.1 What Happened to Trade After the 2018 Trade Agreement?

To motivate our paper, we turn to Figure 3, which presents the coefficients for the year-specific dummy variables obtained from each regression, with the dependent variable being the proportion of international sales to total sales. Specifically, Figure 3 plots the estimated coefficients for β_τ over $\tau = 2011, \ldots, 2022$ in Equation (8) with the 90% and 95% confidence bands (darker and lighter shaded, respectively). In Figure 3, we restrict τ to be from 2011 to 2022, which covers four years before the negotiation and four years after the signing of AfCFTA for ease of exposition.

Figure 3: International Sales of African firms Over years (International Sales/Total Sales)



Notes: Figure 3 displays the coefficients on the year dummy variable $\mathbb{I}(t = \tau)_t$ from each regression analysis, where the dependent variable is the ratio of International Sales to Total Sales. The regression includes firm- and country-fixed effects, with robust standard errors. The shaded areas denote the 90% and 95% confidence bands, respectively.

Figure 3 indicates that the African continent benefits from an increase in the amount of trading activities by up to 2.7 pp in the ratio of international sales to total sales in 2022, which is exactly 5 years after the signing of the trade agreement. The estimated coefficients were insignificantly negative before

2015, suggesting that African firms tended to have lower levels of international sales in each specific year (though these values do not differ significantly from zero). After the negotiations, the coefficients shift from negative to positive until 2017, although they remain statistically indistinguishable from zero. In stark contrast, the coefficients became significantly positive in 2018, coinciding with the formal signing of the trade agreement. This result is consistent with an overall post-signing rise in international sales intensity and with the canonical Melitz-Chaney trade liberalization effect documented in the literature.[28] We complement the related literature by documenting which firms capture the early, short-to-medium-run gains, concentrated among those with prior export experience and lower adjustment costs.[29]

5.2 Channel: Trade History Matters

We begin by examining the fundamental sources of the post-AfCFTA increase in international sales. Our first hypothesis considers the role of firms' pre-AfCFTA export experience. A substantial literature explores how firms select into export markets and the importance of prior export experience (e.g., Eaton et al., 2008; Albornoz et al., 2012). In particular, more productive firms tend to enter foreign markets earlier and often expand sequentially, starting with nearby or less competitive markets before venturing into more challenging destinations.

Consistent with this "learning to export" mechanism (our "trade history" channel), we find that firms with any pre-AfCFTA international trade exposure exhibit a significantly larger increase in their international sales ratio after 2018. As shown in Table 3, prior exporters increased the share of sales going to foreign markets by about 3.4 percentage points more than firms without any export history. This effect is over and above the general post-2018 export growth, suggesting that firms with export know-how leveraged the improved trading environment more effectively than non-exporters.[30]

Importantly, the *type* of past export experience also matters (our trade history as a match capital channel with persistent differences). Firms whose pre-AfCFTA exports were confined to African markets saw a smaller boost in export intensity compared to those with more diversified export portfolios. In our estimates, a firm that had exported exclusively within Africa saw its international sales ratio increase by roughly 1.2 percentage points after 2018. In contrast, a firm with prior exposure to overseas markets

[28] See Table A4 and Figure A1 for detailed coefficients and results under alternative measures of trade liberalization.

[29] This is also a departure from the related literature that shows that AfCFTA raises aggregate trade and welfare in the long run once tariff and non-tariff barriers are fully addressed (see, e.g., Chauvin et al., 2017, Abrego et al., 2019, and International Monetary Fund, African Department, 2019).

[30] Our results are not driven by any "size effect," reminiscent of the productivity narrative. We obtain similar results when including firm size (i.e., logarithm of total assets), shown in Table A5.

Table 3: Trade History

	Intl Sales/Total Sales			
	(1)	(2)	(3)	(4)
Post 2018 × Any exposure	0.034***			
	(0.005)			
Post 2018 × Some African exposure		0.040***		
		(0.005)		
Post 2018 × African exposure only			-0.016**	
			(0.007)	
Post 2018 × Some European exposure				0.035***
				(0.006)
Post 2018	0.014***	0.013***	0.028***	0.016***
	(0.002)	(0.002)	(0.002)	(0.002)
Constant	0.073***	0.073***	0.073***	0.073***
	(0.001)	(0.001)	(0.001)	(0.001)
Firm fixed effects	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
Adj R-squared	0.732	0.732	0.731	0.732
Observations	16,860	16,860	16,860	16,860

Notes: This table presents four columns for firms with: (1) any international revenue, (2) some revenue from African countries (including the home country), (3) all revenue from African countries (including the home country), and (4) at least some revenue from European countries. Robust standard errors are in parentheses; significance: $p < 0.10$ (*), $p < 0.05$ (**), $p < 0.01$ (***).

(such as Europe) enjoyed a larger increase of about 2.8 percentage points (Table 3). In other words, having export experience in advanced economies provided a competitive edge in capitalizing on AfCFTA. This finding is consistent with evidence that firms learn and build capabilities by serving more demanding markets (e.g., De Loecker, 2013; Atkin et al., 2017).

Intuitively, a firm's history of exporting is not only a record of past sales but also a process of accumulating an intangible asset, denoted m in the model, that represents trade-facilitation assets (e.g., buyer networks, market reputation, and managerial expertise). Global or, given proximity, European export experience generates a "stronger" stock of match capital than African experience because these market functions as a more rigorous selection mechanism and training ground. For instance, as the European Union is a demanding market with stringent quality standards, regulatory requirements, and intense competition, firms that survive there need to improve their competitive edge.

Our results also imply that match capital is transferable. Having experience serving demanding markets like the EU requires the ability to meet (or exceed) rigorous standards and navigate administrative complexities that far exceed typical domestic or regional requirements. When the AfCFTA lowers barriers, the globally experienced firms do not just compete on price (productivity). They compete on access, and can repurpose their existing high-complexity trade infrastructure to explore additional trade

opportunities.[31]

This aligns with the literature emphasizing historical and informational barriers to trade (e.g., Allen, 2014; Chaney, 2014; Morales et al., 2019; Rauch and Trindade, 2002). Surviving in demanding environments (e.g., the EU) imparts transferable capabilities that reduce informational barriers to entering new African markets. In this sense, AfCFTA particularly favors firms with broader pre-existing networks (extra-continental), consistent with the idea that networks alleviate informational frictions.

5.3 Channels: Sectoral Heterogeneity and Adjustment Frictions Matter

We next consider how sectoral heterogeneity and adjustment frictions matter for trade. In particular, we document empirical evidence that aligns with the second channel considered in Section 3. Specifically, we find that sectoral heterogeneity (i.e., services versus non-services) is associated with greater international trade exposure. In addition, firms facing higher capital adjustment costs realized significantly smaller gains in international sales output relative to firms with lower adjustment costs.

5.3.1 Sectoral Heterogeneity: Services and Non-services

We examine whether the AfCFTA's impact varies between the goods (non-services) and services sectors (Table 4). Given ongoing structural changes in African economies, such as growth in services and digital trade, heterogeneous effects are to be expected. Columns (1) and (2) of Table 4a report separate regressions for firms in non-services and services industries, respectively.[32] Both groups exhibit an upward trend in international sales, but only non-services firms show a statistically significant jump after 2018. In the aggregate, manufacturing and other goods-producing firms had higher export intensities and experienced a larger post-AfCFTA increase in the foreign sales ratio. In contrast, services firms generally exported less (as a share of sales) and did not see a significant change after 2018.

This differential response is intuitive. Many services (e.g., finance, insurance, telecommunications) face non-tariff barriers and often require local presence or regulatory compliance, which can dampen the short-run benefits of broad trade agreements. By contrast, goods-producing firms can more readily benefit from goods-related commitments and simplified customs procedures under the AfCFTA, leading to stronger export growth. In fact, being in the service sector is associated with a lower baseline level of

[31] As a robustness check, Appendix Table A5 illustrates a different pre-AfCFTA split. Firms with domestic sales only do not increase their international sales, while those with only African or only outside-Africa sales see increases of 1.2 and 1.0 percentage points, respectively.

[32] We provide details of industry classification and industry names in Table A3.

export intensity, reflecting the greater challenges in trading services across borders. Thus, the AfCFTA's early gains in international trade exposure appear to have been concentrated in the services firms. Yet, this finding masks within-sector heterogeneity, one of the paper's central insights.

5.3.2 *Adjustment Frictions: Capital and Labor Adjustments*

Table 4: Sectoral Heterogeneity and Adjustment Costs

(a) Sector

	Intl Sales/Total Sales	
	(1)	(2)
Post 2018 × Non-Services	0.016***	
	(0.006)	
Post 2018 × Services		0.006
		(0.004)
Post 2018	0.022***	0.022***
	(0.002)	(0.003)
Constant	0.073***	0.073***
	(0.001)	(0.001)
Firm fixed effects	Yes	Yes
Country fixed effects	Yes	Yes
Adj R-squared	0.731	0.731
Observations	16,907	16,907

(b) Adjustment Costs Matter

	Intl Sales/Total Sales	
	(1)	(2)
Post 2018 × Capital Adj. Costs	-0.012***	
	(0.003)	
Post 2018 × Labor Adj. Costs		-0.003***
		(0.001)
Post 2018	0.024***	0.014*
	(0.005)	(0.007)
Constant	0.099***	0.092***
	(0.003)	(0.004)
Firm fixed effects	Yes	Yes
Country fixed effects	Yes	Yes
Adj R-squared	0.742	0.625
Observations	2,686	1,553

Notes: Panel 4a (Sector) shows the results for firms by sector: (1) Non-Services and (2) Services. Post-2018 is a dummy variable equal to 1 for years from 2018 onward. Panel 4b presents the results on the effects of African trade agreements (i.e., signed in 2018) on international sales activities (i.e., the dependent variable is the ratio of international sales to total sales) under different firms with high capital adjustment costs (*Capital Adj. Costs*) and labor adjustment costs (*Labor Adj. Costs*). Robust standard errors are reported in parentheses. Significance levels are denoted as follows: p < 0.10 (*), p < 0.05 (**), p < 0.01 (***).

Finally, we examine whether industry-level adjustment costs affected firms' ability to respond to the AfCFTA. Following Hall (2004), we proxy for adjustment frictions using industry-level measures of capital and labor adjustment costs.[33] Table 4b indicates that firms in industries with higher capital adjust-

[33]We note that no comparable industry-level calibration of capital adjustment cost parameters exists for African economies. The closest work by Bigsten et al. (2005) examines investment irreversibility in African manufacturing but does not produce

ment costs exhibited significantly smaller increases in their international sales ratios after 2018. In other words, firms requiring large capital investments or facing substantial lags in expanding capacity were less able to ramp up exports in the wake of the agreement. This is intuitive, as high capital adjustment costs can slow the expansion of production or the reallocation of resources needed to serve new markets.

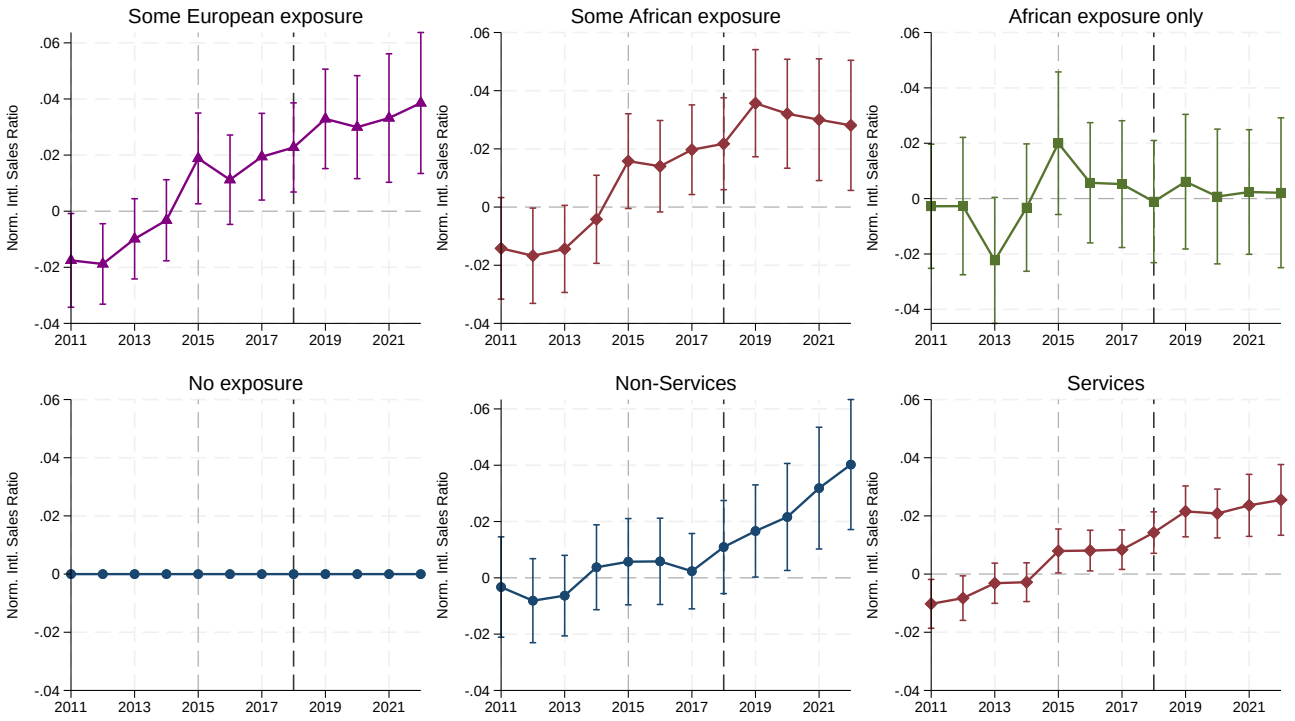
Labor adjustment costs likewise reduce the post-2018 increase in international sales, with the coefficient on (Post 2018 × Labor Adj. Costs) statistically significant at the 1% level. The capital and labor adjustment cost variables are model-based proxies drawn from Hall (2004) and are estimated on different subsamples (2,686 versus 1,553 observations in columns (1) and (2) of Table 4b). For this reason, we interpret each coefficient as a point estimate of its corresponding friction within its own regression, rather than as a directly comparable magnitude across the two specifications. The qualitative implication is unambiguous: adjustment frictions on both margins are associated with a smaller post-2018 expansion in international sales intensity, consistent with the model in Section 3, in which capital is the dominant binding margin – hence the larger capital coefficient – while labor frictions, though present and smaller ($\psi_{\text{srv}} \ll \psi_{\text{g}}$), attenuate the response to a lesser degree. Given our focus on African economies, these findings are consistent with a labor-abundant, capital-scarce environment. In short, our findings suggest that the benefits of AfCFTA were uneven across firms: those with prior export experience (especially outside Africa), operating in goods sectors, and facing lower adjustment frictions saw the greatest gains in international sales after the agreement's implementation.

5.4 Trade History and Sector: Pre-trend and Post-AfCFTA Effects

Figure 4 presents an event study analysis by the groups classified by trade history (some European exposure, only Africa exposure, some African exposure, and no exposure) and by sector heterogeneity (services vs. non-services). Here we normalize by the corresponding group means between 2011 and 2017. One key insight from Figure 4 is that firms with only ex-ante Africa exposure and firms that we classify as having "no exposure" (defined here as firms that never export throughout the sample window, hence the mechanically perfectly flat line) tend to fare much worse than firms with broad ex-ante African and/or European exposure. Note that this "never-exposed" group in Figure 4 is a narrower subset than the pre-2018 unexposed baseline group modeled in Table 3. Turning to the remaining panels,

the sector-specific estimates needed for our exercise. Importantly, using U.S.-derived, industry-level parameters also has some methodological advantages: though capital-intensive processes should be comparable across borders, as these measures are determined outside the African context, they constitute a plausibly exogenous industry characteristic that firms take as given, thereby avoiding the endogeneity that would arise from using Africa-specific, firm-choice-driven proxies.

Figure 4: Event Studies by Trade Exposure and Sector



Notes: Normalized to Pre-2018 (2011--2017) group-specific means. Dependent variable: ratio of international to total sales.

Notes: The figure reports event-study estimates across six groups in a 2×3 grid. Top row (left to right): *Some European exposure*, *Some African exposure*, *African exposure only*; bottom row: *No exposure*, *Non-Services*, *Services*. Within each group, the dependent variable is the ratio of international to total sales. For each group and year τ from 2011 to 2022, we run a separate regression of the sales ratio on a single year indicator $\mathbb{I}(t = \tau)$, restricting the sample to group members and absorbing firm and country fixed effects with robust standard errors. The plotted coefficients are normalized by subtracting each group's pre-2018 (2011 - 2017) mean, so every series is centered at zero in the pre-period. The vertical dashed line marks 2018. Capped spikes denote 95% confidence intervals.

we find that services firms appear to see gains in trade earlier than non-services firms, which dovetails with the positive and more statistically significant coefficients for services firms relative to non-services firms (Table 4a).

5.5 Channels at Work: Sector versus Trade History

Finally, to more clearly infer the channels at play, we jointly examine trade history and sectoral heterogeneity in Table 5. As in Equation (10), we estimate a specification that saturates the regression with *Post–2018*, *Non–services*, *Exposure*, and all two- and three-way interactions between them (Table 5). Given the large number of coefficients reported for completeness in the Table, we shall focus on the results that highlight the key mechanism at hand.

Table 5: Sectors + Trade History

	Intl Sales/Total Sales							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post 2018 × Non-Services × Any exposure	-0.032***							
	(0.012)							
Post 2018 × Services × Any exposure		0.027***						
		(0.010)						
Post 2018 × Non-Services × Some African exposure			-0.033***					
			(0.012)					
Post 2018 × Services × Some African exposure				0.029***				
				(0.011)				
Post 2018 × Non-Services × African exposure only					-0.022			
					(0.015)			
Post 2018 × Services × African exposure only						0.040***		
						(0.014)		
Post 2018 × Non-Services × Some European exposure							-0.033**	
							(0.013)	
Post 2018 × Services × Some European exposure								0.013
								(0.011)
Post 2018 × Any exposure	0.041***	0.020***						
	(0.006)	(0.008)						
Post 2018 × Some African exposure			0.048***	0.025***				
			(0.007)	(0.008)				
Post 2018 × African exposure only					-0.011	-0.039***		
					(0.008)	(0.012)		
Post 2018 × Some European exposure							0.043***	0.029***
							(0.007)	(0.008)
Post 2018 × Non-Services	0.024***		0.022***		0.021***		0.022***	
	(0.006)		(0.006)		(0.006)		(0.006)	
Post 2018 × Services		-0.004		-0.004		0.001		0.005
		(0.003)		(0.003)		(0.004)		(0.004)
Post 2018	0.009***	0.016***	0.009***	0.015***	0.023***	0.027***	0.012***	0.014***
	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)
Constant	0.073***	0.073***	0.073***	0.073***	0.073***	0.073***	0.073***	0.073***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-squared	0.732	0.732	0.732	0.732	0.731	0.731	0.732	0.732
Observations	16,860	16,860	16,860	16,860	16,860	16,860	16,860	16,860

Notes: This table presents the baseline results on the effects of African trade agreements (i.e., signed in 2018) on international sales activities (i.e., the dependent variable is the ratio of international sales to total sales) across different groups. Columns (1)–(8) report the results for firms with: (1)–(2) any international revenue (any exposure), (3)–(4) some revenue from African countries, including the home country (some African exposure), (5)-(6) all revenue from African countries, including the home country (African exposure only), and (7)-(8) at least some revenue from European countries (some European exposure). Post-2018 is a dummy variable equal to 1 for years from 2018 onward and zero otherwise. The *Services* dummy indicates whether a firm operates in the services sector, whereas the *Non-Services* dummy indicates whether it belongs to a non-services sector. Robust standard errors are reported in parentheses. Significance levels are denoted as follows: $p < 0.10$ (*), $p < 0.05$ (**), $p < 0.01$ (***).

First, Table 5 shows that exposure premium is largely smaller for non-services than for services, as evidenced by the triple interaction term Post 2018 × Non-Services × Any exposure being negative and highly significant (-0.032). Specifically, while prior trade exposure gave services firms a massive 4.1 percentage point (pp) premium over unexposed services firms, this premium is much smaller for non-services firms (0.9). Such a result is consistent with the model where non-services firms face short-run capital adjustment costs ($\psi > 0$) that restrict their capacity to scale, while services firms can scale elastically.

Second, Table 5 documents a clear hierarchy of who gains the most from the AfCFTA, specifically,

$$\underbrace{\Delta X_{srv}^{exposed}}_{5\text{pp.}} > \underbrace{\Delta X_{g}^{exposed}}_{4.2\text{pp.}} > \underbrace{\Delta X_{g}^{unexposed}}_{3.3\text{pp.}} > \underbrace{\Delta X_{srv}^{unexposed}}_{0.9\text{pp.}}. \tag{11}$$

Specifically, for *exposed services* firms, who have both market access (networks) and costless supply, the gain is around 5 pp (which is the sum of 0.009 baseline + 0.041 interaction). For *exposed non-services* firms that benefit directly from tariff cuts and have networks, but are held back by capital adjustment costs, the gain is around 4.2 pp. For *unexposed non-services* firms that benefit from tariff cuts but lack prior network advantages, the gain is around 3.3 pp. Lastly, for *unexposed services* firms that lack direct tariff benefits and lack the networks to capture derived demand, the gain is a measly 0.9 pp.

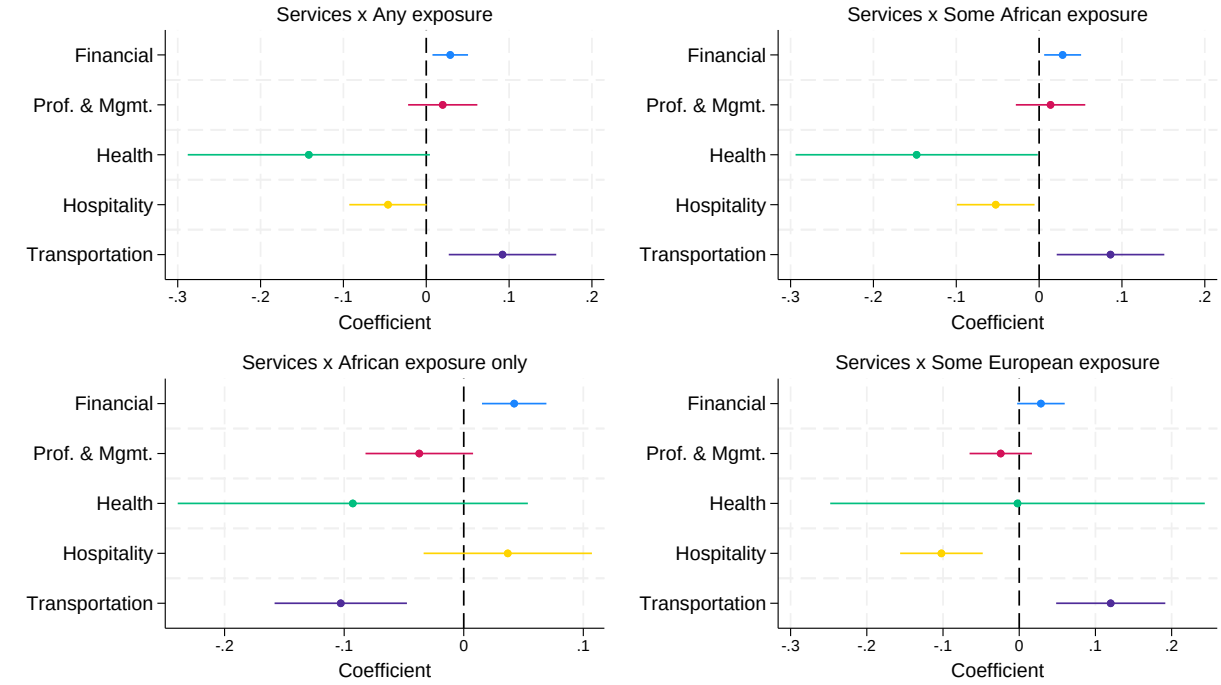
Third, Table 5 confirms that quality of capital matters. Indeed, as Columns (5)-(6) indicate, the interaction *Post 2018* × *African exposure only* for non-services firms is significantly negative (-0.039). These firms actually experienced a relative decline in international sales intensity. In stark contrast, *Some European exposure* Columns (7)-(8) yield highly positive results for both sectors. Intuitively, "match capital" from demanding markets (like Europe) is highly transferable and acts as a superior intangible asset. Trading solely with neighboring African markets prior to 2018 did not confer enough competitive edge or scale-up capability for manufacturing firms to overcome rigid supply chains once broader liberalization hit.

5.6 Service Type Heterogeneity

The results so far call for unboxing the nature and impact of different sectors. In Figure 5, we disaggregate the triple interaction coefficients by service type and document considerable variation across these categories. In particular, transportation services firms with European exposure exhibit a large and statistically significant increase in international sales following the AfCFTA, as shown in panel (d). Such a result aligns with our theoretical model in Section 3, in which match capital accumulated in demanding overseas markets translates into stronger responses once intra-African barriers fall. Transportation and logistics firms that previously served European supply chains likely possess the operational capabilities and network linkages necessary to facilitate the expanded goods trade enabled by the AfCFTA.

In stark contrast, other service types display weaker or statistically insignificant responses across exposure categories. Firms in healthcare experienced no meaningful gains regardless of prior trade ex-

Figure 5: Service-Type Heterogeneity in Triple Interactions



Notes: Triple-interaction coefficients (Post 2018 x Services x Exposure) by service subtype, with 95% CIs.

Notes: Figure 5 reports triple-interaction coefficients (Post 2018 × Services × Exposure) by service subtype. Each of the four panels corresponds to a different exposure definition: *Any exposure*, *Some African exposure*, *African exposure only*, and *Some European exposure*. Within each panel, point estimates and 95% confidence intervals are shown for the five service subtypes: Financial Services, Professional & Management Services, Health Services, Hospitality Services, and Transportation Services. The vertical reference line marks zero.

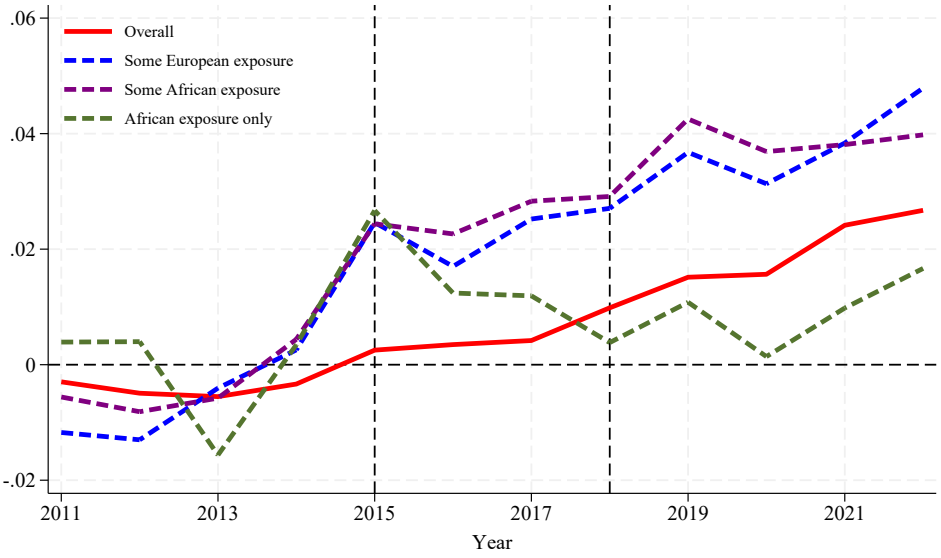
perience, possibly due to regulatory and licensing barriers beyond the scope of the agreement and their inward-facing business model. Most strikingly, we find firms in financial services see gains across the board, as long as they have at least some trade experience. These effects complement our previous results in Table 5, in that firms in service industries that support other industries appear best positioned to capitalize on the agreement.

5.7 Who Benefits: Beyond-Continent Networks and the Africa-only Penalty

A recurring question is who the principal beneficiaries of the AfCFTA are: African firms whose pre-2018 networks were confined to the continent, or those whose networks already reached beyond it. To address this directly, Figure 6 overlays the post-2018 event-study paths for the overall sample and for three trade-history groups on a common axis, each normalized to its own pre-2018 (2011–2017) mean.

Two features of Figure 6 provide the answer. First, the *Some European exposure* and *Some African exposure* paths are nearly indistinguishable after 2018, both rising to roughly four percentage points by 2022. This coincidence should not be read as evidence that African and European exposure confer com-

Figure 6: Trade Exposure over Time by Pre-2018 Network Reach



Notes: Each series plots the year-specific coefficients β_τ from Equation (8), estimated separately by group with firm and country fixed effects and robust standard errors, normalized by each group's pre-2018 (2011–2017) mean. *Overall* is the full-sample path (Figure 3); *Some European exposure* and *Some African exposure* are non-exclusive groups defined by firms reporting at least some European or African revenue, respectively; *African exposure only* comprises firms whose international revenue is entirely African. The vertical dashed line marks key AfCFTA events (negotiation in 2015 and agreement signing in 2018).

parable advantages, nor as a decomposition in which the two premia can be added or differenced. The exposure groups are, by construction, *overlapping* rather than mutually exclusive: a firm that trades with both Europe and other African markets enters both series. Because the globally connected firms that drive the response also report African revenue, they populate the *Some African exposure* group and pull it up toward the *Some European exposure* path. The two lines coincide not because African reach earns the extra-continental gain, but because the same broadly networked firms dominate both pools.

Second, the genuinely informative contrast is between the *African exposure only* path—firms whose networks never extended beyond the continent—and every broader group. This series trended downward post-2015 and is essentially flat thereafter, remaining far below the other groups throughout the post-2018 window, whereas all groups with beyond-continent reach rise together. The operative margin is therefore not a smoothly increasing "European premium" along a three-step ordering, but a discrete *Africa-only penalty*. Specifically, firms confined to intra-continental networks before 2018 capture only a small fraction of the post-signing gains, while firms with any broader reach capture them fully.[34]

[34]The group-specific paths in Figure 6 are normalized to each group's own pre-2018 mean, whereas the 1.2 pp figure in Section 5 is the pooled difference-in-differences level (the common post-2018 effect net of the Africa-only interaction); the two are, therefore, complementary rather than conflicting.

Although the AfCFTA is an intra-continental agreement, its early gains accrue to firms whose pre-existing networks reached *beyond* Africa. This is precisely what the match-capital mechanism predicts: capabilities accumulated in more demanding, extra-continental markets are transferable and lower the informational barriers to entering new African markets, whereas a network confined to the continent does not, on its own, provide enough of a competitive edge once liberalization arrives.

5.8 How Our Results Complement Prior Work

Our documented results in this section complement the literature along several dimensions. That exposure strengthens the AfCFTA boost in services far more than in manufacturing is consistent with recent work showing that service exporters rely heavily on accumulated relational capital and network effects (Bernard et al., 2007 and Drinkwater and Robinson, 2023).[35] The results in Table 5 also echo findings that firms learn from gradually expanding into similar markets (Van Biesebroeck, 2005) and that smaller economies or less diversified sectors may need substantial efficiency improvements to fully exploit new trade opportunities. Fernandes et al. (2021) show that African apparel firms, which grew rapidly under a temporary trade preference, later struggled once global competition intensified unless domestic reforms had boosted their productivity. Learning-by-exporting is also strongest when firms face lower scale-up costs or can leverage intangible assets (Atkin et al., 2017; Van Biesebroeck, 2005).

Macroeconomic models generally project that AfCFTA will boost intra-African trade and output, but they also highlight sector- and country-specific variations (see, e.g., Simola et al., 2021 and Yemba et al., 2021). Simola et al. (2021) report that scenarios with only tariff liberalization (without addressing regulatory frictions) yield minimal impacts. In contrast, the full AfCFTA package, including regulatory harmonization, yields substantially larger gains in production and welfare. Our results also provide firm-level evidence for Africa that complements existing studies on other regions (e.g., Van Biesebroeck, 2005), and they highlight the importance of firm characteristics (such as size, productivity, and ownership) in mediating trade policy outcomes.

6 Robustness and Additional Results

In this section, we conduct various sensitivity analyses, including an alternative measure of international trade exposure, pooling all-year indicators in our benchmark regression, verifying sample representative-

[35] For a similar argument in the context of African professional services trade, see Dihel et al. (2010).

ness by sequentially removing countries from the sample, and including year fixed effects in place of the agreement-timing dummy. We also consider country-specific ratification dates to determine the agreement's effective timing, as an alternative to our signing date, which is common across countries. Lastly, we consider how financial constraints, ownership structure, and risk-taking behavior, as measured by leverage, affect the extent to which firms can capitalize on the agreement.

6.1 Sensitivity Analyses

6.1.1 An Alternative Measure of International Trade Exposure

We re-estimate Equation (9) with Y_{ict} being the ratio of international sales over domestic sales and Channel_i being firm i's characteristics concerning trade experience and the primary sector of the firm. Overall, we find that our results on the roles of these two characteristics are insensitive to the trade-exposure measure we use. We leave the details of these estimates in Table 6 and Table 7.

6.1.2 Alternative Specification on Trade Exposure over Time: Pooling All Periods

To provide an alternative to plotting each coefficient of β_τ over year τ from Equation (8), we estimate the effects of the 2018 trade agreement by pooling all years together instead of estimating them separately. The results, presented in Table A4 in the Appendix, confirm the significant increase in international trade exposure following the signing of AfCFTA that we documented in Figures 3 and A1.[36] Moreover, such increases are documented to be insensitive to our choices of which ratio to use to measure international trade exposure.

6.1.3 Sample Representativeness: Leaving Countries Out One by One

To check on the representativeness of the sample considered in our results, we conduct a sensitivity analysis where the coefficients of the interaction terms in each column of Table 3 and 4a are re-computed by dropping one country at a time. Overall, we find that no single country significantly affects the estimates, as evidenced by the relatively small deviations when excluding each country in turn. For brevity, we leave the detailed estimates in Table A6 in the Appendix.[37]

[36] Specifically, columns (2) and (4) estimate the following specification: $Y_{ict} = \alpha + \sum_{\tau=2003}^{2022} \beta_\tau \mathbb{I}(t = \tau)_t + \gamma \mathbb{D}_i + \delta \mathbb{D}_c + \varepsilon_{ict}$, whereas columns (1) and (3) estimate the following specification: $Y_{ict} = \alpha + \beta_\tau \mathbb{I}(t \geq 2018)_t + \gamma \mathbb{D}_i + \delta \mathbb{D}_c + \varepsilon_{ict}$.

[37] Results are robust to excluding any single country. As shown in Table A6, coefficients remain stable and statistically significant across all 27 leave-one-out specifications for the "Any exposure," "Some African exposure," and "Some European exposure" categories. The "Africa-only exposure" category exhibits somewhat greater heterogeneity, but no exclusion produces a statistically significant sign reversal. South Africa, as the largest economy in the sample, exerts the greatest influence on point

6.1.4 *Including Year Fixed Effects instead of Post-2018 Dummy*

Previously in Section 5, we have considered how various firm-level characteristics can impact how more exposed to international trade firms become following the signing in 2018. Throughout our exposition in Section 5, we estimated variations of Equation (9) without any year fixed effects. This choice is intentional as the coefficient on $\mathbb{I}(t \geq 2018)_t$ will be dropped if year fixed effects are included. As a robustness check, we also re-estimated Equation (9) with the addition of year fixed effects. Overall, we find that our results are insensitive to whether year fixed effects are included.[38]

6.1.5 *Placebo Tests*

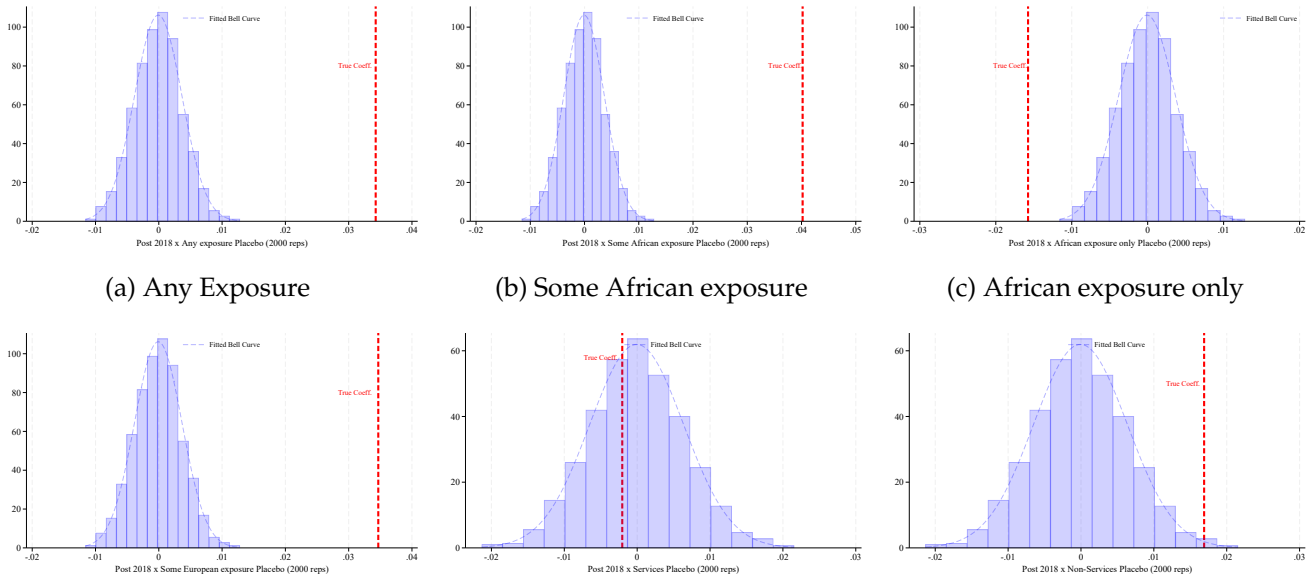
To address the possibility that the result is driven by a specific draw from the distribution, we randomly assign firms to different trading groups and compare them against our true estimates. Specifically, the randomization process is repeated two thousand times based on the uniform distribution with four new trading dummies: *Any exposure Placebo* in Figure 7 (a), *Some African exposure Placebo* in Figure 7 (b), *African exposure only Placebo* in Figure 7 (c), and *Some European exposure Placebo* in Figure 7 (d). Accordingly, Figures 7 show the distribution of the estimates for the interaction term between Post 2018 and each placebo dummy. In each figure, we also overlay a vertical line indicating the estimated interaction between Post 2018 and each trading dummy. Our estimate, based on actual data, is largely outside the 1% range for the placebo distributions. These results indicate that our main results are unlikely to be driven by a random draw of trading dummies.

Similarly, we conduct two thousand randomization tests by creating two new dummies: *Services Placebo* and *Non-Services Placebo*. Figure 7 (e) reports the distribution of estimates for (Post 2018 × Services Placebo), while Figure 7 (f) reports the corresponding distribution for (Post 2018 × Non-Services Placebo). These placebo exercises support our baseline sectoral results: the service-sector interaction is not statistically significant, whereas the non-service-sector interaction is positive and statistically significant in the baseline specification. Overall, the results suggest that our sectoral findings are unlikely to be driven by random sector assignment.

estimates; however, even when excluded, no coefficient differs significantly from the baseline in a way that would alter our substantive conclusions.

[38] See, for example, Table A5 in the Appendix, where we estimate the counterpart (with year fixed effects) to Table 3.

Figure 7: Placebo Tests - Exposure



(a) Any Exposure (b) Some African exposure (c) African exposure only

(d) Some European exposure (e) Services Sectors (f) Non-Services Sectors

Notes: Figure 7 presents placebo tests for the effects of African trade agreements (signed in 2018) on international sales (measured as the ratio of international to total sales). In panels (a)–(f), each actual exposure variable is replaced with a placebo measure drawn from a uniform distribution: (a) *Any exposure Placebo*, (b) *Some African exposure Placebo*, (c) *African exposure only Placebo*, (d) *Some European exposure Placebo*, (e) *Services Placebo*, and (f) *Non-Services Placebo*. For each placebo specification, we run 2,000 replications and report the distribution of the estimated coefficients on the interaction between Post 2018_t and the placebo measure. The true baseline estimates using actual variables are shown as a red vertical line.

6.2 Alternative Policy Date: Ratification versus Signing

Although the AfCFTA was signed in 2018 by the majority of participating countries, the extent to which each country's regulatory body has ratified the agreement varies.[39] In this section, we examine how variations in ratification dates affect the extent to which prior trade experience influences ex-post international trade exposure in Table 6.

Table 6 replicates Table 3, but with heterogeneous ratification timings that vary across countries. Specifically, we estimate the following counterpart to our benchmark specification in Equation (9):

$$\begin{aligned} Y_{ict} = \alpha &+ \beta_1 \text{Channel}_i \times \mathbb{I}(t \geq R_c)_{ict} + \beta_2 \text{Channel}_i + \beta_3 \mathbb{I}(t \geq R_c)_{ict} \\ &+ \gamma \mathbb{D}_i + \delta \mathbb{D}_c + \varepsilon_{ict}, \end{aligned} \tag{12}$$

where $\mathbb{I}(t \geq R_c)_{it}$ is an indicator function, indexed by firm i in country c at time t, that takes a value of one after the date R_c on which country c ratified the agreement and zero otherwise. Table A1 in the

[39] See Table A1 in the Appendix for a list of participating countries and their corresponding ratification dates.

Table 6: Robustness: Alternative Timing, Dependent Variables, and Controls

	Intl Sales/Total Sales		Intl/Domestic	Within Afr/Total	Intl Sales/Total Sales
	(1)	(2)	(3)	(4)	(5)
	Post Rat.	Excl. Sign-Rat.	Alt. DV (Dom.)	Within Africa	+ COVID, TOT
Post 2018 × Any exposure	0.028***	0.030***	0.144***	0.036***	0.031***
	(0.006)	(0.006)	(0.042)	(0.004)	(0.005)
Post 2018 × Some African exposure	0.030***	0.032***	0.146***	0.039***	0.037***
	(0.006)	(0.007)	(0.044)	(0.004)	(0.005)
Post 2018 × African exposure only	-0.038***	-0.041***	-0.187***	0.022***	-0.017**
	(0.008)	(0.008)	(0.047)	(0.006)	(0.007)
Post 2018 × Some European exposure	0.036***	0.039***	0.129***	0.019***	0.031***
	(0.007)	(0.007)	(0.045)	(0.004)	(0.006)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	–	–	–	–	Yes
Adj R-squared	0.730	0.731	0.604	0.552	0.734
Observations	16,860	15,199	16,833	16,860	16,842

Notes: Each cell reports the interaction-term coefficient from a separate regression with firm and country fixed effects (and year fixed effects in column (5)). *Column (1)* replaces Post 2018 with a country-specific Post Ratification indicator. *Column (2)* excludes the signed-but-not-ratified period. *Column (3)* uses Intl Sales/Domestic Sales as the dependent variable. *Column (4)* uses Within African Sales/Total Sales as the dependent variable. *Column (5)* additionally controls for the logarithm of one plus country-level COVID-19 cases and Terms-of-Trade (Export Commodity Price divided by Import Commodity Price) and includes year fixed effects; the COVID-19 and Terms-of-Trade coefficients are suppressed in the displayed table for compactness and are available upon request. In column (1), the interaction term is Post Ratification × Exposure rather than Post 2018 × Exposure. Robust standard errors in parentheses; significance: $p < 0.10$ (*), $p < 0.05$ (**), $p < 0.01$ (***).

Appendix presents the date of ratification R_c for all countries in the sample. Overall, we find that our benchmark results in Table 3 regarding the role of prior trade experience are robust even when we use country-specific ratification dates rather than the general timing of the trade agreement. Specifically, the estimates of β_1 are consistent, in terms of magnitude and statistical significance, across Tables 3 and 6. While all firms appear to increase their international trade exposure ex-post, firms that only traded within Africa before the effective dates of the agreement are less able to capitalize on the agreement than firms with at least some ex-ante trade experience outside of Africa, as evidenced by the reported coefficients across both Tables.

Turning to the magnitude of the interaction terms, we find that the positive effects of having ex-ante external trade experience on ex-post trade exposure are quite similar regardless of whether the common signing or the country-specific ratification dates are used as the trade agreement's effective timing. In stark contrast, firms with only prior African exposure still experience smaller increases in ex-post exposure relative to firms without such prior experience. Still, the adverse effects for the former group are much more pronounced when country-specific ratification dates are used. This result suggests that firms with only prior African exposure are significantly worse off in terms of ex-post trade increases, the longer the time it takes for the agreement to take effect.

We further confirm this result in Table 6, where we exclude the effects of the signing period. Specifi-

cally, Table 6 replicates Table 3, but with the periods between the signing and ratification dates excluded. Again, we find that our benchmark results in Table 3 on the role of prior trade experience are robust, even when we exclude the period between signing and country-specific ratification from the data. Perhaps more importantly, the relative magnitude of the coefficients in Table 6 compared to those reported in Table 3 suggests that the longer the agreement takes effect (i.e., ratification instead of timing), the worse off firms are in terms of ex-post international trade expansion.

6.3 Complementary Channels Considered

Are there omitted firm-level factors that may help explain the heterogeneous gains from trade we observe? To investigate this possibility, we extend the baseline model by incorporating three firm-specific characteristics: financial constraints, foreign ownership, and leverage. Overall, we find that our results are generally consistent when controlling for these complementary channels.

Financial Constraints Table 7 builds on the baseline estimations presented in Table 5 by introducing firm-level controls for financial constraints, including the Whited-Wu (WW) Index (Whited and Wu, 2006) and Low Cash Dividends (Hennessy and Whited, 2007). The dependent variable remains the ratio of international sales to total sales, with interaction terms capturing how firms' internationalization patterns evolved after the 2018 signing of the African Continental Free Trade Area (AfCFTA), conditional on (services vs. non-services) and on regional trade-exposure heterogeneity.

Ownership Structure Table 7 also presents the results where we include foreign ownership as another firm-level characteristic, which is defined as the proportion of a firm's market capitalization held by investors based in foreign countries (Bena et al., 2017; Ferreira and Matos, 2008).

Leverage Table 7 re-conducts the estimations in Table 5, in which we examine the relationship between the AfCFTA signing and firms' international sales performance, while adding leverage, measured as the ratio of total debt to total assets, as a control for capital structure. As in previous tables, sector and trade exposure remain key dimensions of heterogeneity.

Table 7: Complementary Channels and Alternative Measures

	Intl Sales/Total Sales					Intl Sales/Domestic
	(1) Baseline	(2) + Fin. Constr.	(3) + Foreign Own.	(4) + Leverage	(5) + Firm Size	(6) Alt. DV
Post 2018 × Non-Services × AE	-0.032***	-0.035***	-0.031**	-0.032**	-0.031**	-0.141
	(0.012)	(0.013)	(0.012)	(0.012)	(0.012)	(0.107)
Post 2018 × Services × AE	0.027***	0.040***	0.027***	0.027***	0.028***	-0.051
	(0.010)	(0.013)	(0.010)	(0.010)	(0.010)	(0.084)
Post 2018 × Non-Services × SAE	-0.033***	-0.034**	-0.033***	-0.037***	-0.036***	-0.128
	(0.012)	(0.013)	(0.012)	(0.013)	(0.012)	(0.109)
Post 2018 × Services × SAE	0.029***	0.041***	0.029***	0.030***	0.032***	-0.042
	(0.011)	(0.013)	(0.011)	(0.011)	(0.011)	(0.089)
Post 2018 × Non-Services × AEO	-0.022	-0.004	-0.022	-0.025	-0.023	-0.171
	(0.015)	(0.018)	(0.015)	(0.016)	(0.016)	(0.109)
Post 2018 × Services × AEO	0.040***	0.024	0.040***	0.042***	0.044***	0.272***
	(0.014)	(0.018)	(0.014)	(0.015)	(0.014)	(0.099)
Post 2018 × Non-Services × SEE	-0.033**	-0.025*	-0.033**	-0.036***	-0.035***	-0.196*
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.111)
Post 2018 × Services × SEE	0.013	0.005	0.012	0.014	0.016	-0.144
	(0.011)	(0.013)	(0.011)	(0.011)	(0.011)	(0.089)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-squared	0.732	0.756	0.732	0.735	0.738	0.604
Observations	16,860	11,532	16,860	16,623	16,800	16,833

Notes: This compact table reports the eight key triple-interaction coefficients (Post 2018 × Sector × Exposure) across six specifications. Column (1) is the baseline (matches Table 5); column (2) adds financial-constraint controls (Whited-Wu Index, Low Cash Dividends); column (3) adds foreign ownership; column (4) adds leverage; column (5) adds firm size; column (6) replaces the dependent variable with Intl Sales/Domestic Sales. Each cell reports the triple-interaction coefficient from a separate regression with firm and country fixed effects. Lower-order interactions and main effects are estimated but suppressed for compactness. Robust standard errors in parentheses; significance: $p < 0.10$ (*), $p < 0.05$ (**), $p < 0.01$ (***). SAE = Some African exposure. SEE = Some European exposure. AEO = African exposure only. AE = Any exposure.

7 Conclusion

We provide empirical evidence that African firms were not substantially involved in international trade before the discussions or the formal signing of the African Continental Free Trade Area (AfCFTA). However, the observed increase in international trade activity emerged only after countries officially committed to joining the trade bloc in 2018. The increase in international sales across several channels accounts for the agreement.

To examine these channels, we first consider trade history. Firms with any prior international trade exposure experienced a significantly larger increase in their international sales ratio after 2018, demonstrating that export know-how helps leverage an improved trading environment. Firms with diversified export portfolios, especially those with exposure to overseas markets such as Europe, experience higher growth than those whose exports are confined to African markets.

Second, sectoral heterogeneity, along with sector-specific adjustment costs, plays a pivotal role. The impact of AfCFTA varied along the dichotomy between goods (non-services) and services sectors. Non-services firms, such as those in manufacturing, exhibited a higher increase in international sales

post-2018. In contrast, services firms generally exported less and did not experience a significant change after 2018. Industries with higher capital adjustment costs showed smaller increases in international sales after 2018 (labor adjustment frictions also attenuated the response, though to a lesser degree, consistent with capital being the binding short-run margin), implying that significant capital investments or production capacity expansion lags particularly hindered export growth.

Finally, we also consider the interaction between trade history and sectoral nature. While both services and non-services firms with prior export experience generally benefited, the "exposure advantage" was smaller for non-services firms. Services firms with pre-existing international networks appeared more flexible in scaling output and in leveraging these networks to achieve robust export growth. For services firms, prior engagement in African markets was particularly beneficial for building regional networks and know-how.

Our expositions contribute to the related literature by showing that gains from trade hinge critically on trade history and sectoral frictions, drawing from the African firm-level experience. We also explore additional factors, such as financial constraints, ownership structure, and leverage, to discipline our approach through a comprehensive empirical strategy. Open questions remain about how these dynamics evolve over longer horizons and across different product categories, as well as about the long-run implications of AfCFTA for African firms and development prospects more generally.

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Online Appendix for "What Matters for the Rise in Trade? Evidence from the African Continental Free Trade Area."

A AfCFTA: Signing versus Ratification Dates

In this section, we summarize the African Continental Free Trade Area (AfCFTA). It is a monumental trade agreement with the ambitious goal of creating a single market for goods and services across the entire African continent (African Union, 2025). Table A1 indicates the list of African countries that have signed the agreement. The African Continental Free Trade Area (AfCFTA) began with an African Union decision in 2012 to create a continent-wide free trade zone by 2017. Though initially aiming for an earlier date, 44 of the 55 AU member states agreed to sign the agreement in March 2018 in Kigali, Rwanda. It officially came into effect on May 30, 2019, after the first 24 countries ratified it. By August 2023, 47 countries had ratified the agreement, showing broad commitment.

Table A1 provides a comprehensive overview of the signatory and ratification process for the African Continental Free Trade Area (AfCFTA) agreement across 55 African Union member states. It lists each country, along with the date it signed the agreement, the date of ratification or accession, and the date its ratification instrument was deposited. The majority of countries signed the agreement on March 21, 2018, in Kigali, Rwanda, although some signed on later dates, including Botswana and Nigeria in February and July 2019, respectively. The ratification dates vary significantly, ranging from early 2019 (e.g., Ghana, Kenya) to as recently as 2023 (e.g., Botswana and Comoros). This data visually confirms the broad participation and varied timelines involved in bringing the AfCFTA into force across the continent.

Table A1: Countries and Dates for AfCFTA: Signing versus Ratification

No	Country	Date of Signature	Date of Ratification/Accession	Date Deposited
1	Algeria	21/03/2018	07/06/2021	23/06/2021
2	Angola	21/03/2018	06/10/2020	04/11/2020
3	Benin	07/07/2019	-	-
4	Botswana	10/02/2019	16/02/2023	19/02/2023
5	Burkina Faso	21/03/2018	27/05/2019	29/05/2019
6	Burundi	02/07/2018	17/06/2021	26/08/2021
7	Cameroon	21/03/2018	31/01/2020	01/12/2020
8	Central African Rep.	21/03/2018	09/04/2020	22/09/2020
9	Cape Verde	21/03/2018	13/11/2020	05/02/2022
10	Chad	21/03/2018	29/06/2018	02/07/2018
11	Côte d'Ivoire	21/03/2018	13/11/2018	23/11/2018
12	Comoros	21/03/2018	11/02/2023	19/02/2023
13	Congo	21/03/2018	07/02/2019	10/02/2019
14	Djibouti	21/03/2018	05/02/2019	11/02/2019
15	Democratic Rep. of Congo	21/03/2018	28/01/2022	23/02/2022
16	Egypt	21/03/2018	27/02/2019	08/04/2019
17	Equatorial Guinea	21/03/2018	28/06/2019	02/07/2019
18	Eritrea	-	-	-
19	Ethiopia	21/03/2018	23/03/2019	10/04/2019
20	Gabon	21/03/2018	02/07/2019	07/07/2019
21	Gambia	21/03/2018	11/04/2019	16/04/2019
22	Ghana	21/03/2018	07/05/2018	10/05/2018
23	Guinea-Bissau	08/02/2019	08/08/2022	31/08/2022
24	Guinea	21/03/2018	31/07/2018	16/10/2018
25	Kenya	21/03/2018	06/05/2018	10/05/2018
26	Libya	21/03/2018	-	-
27	Lesotho	02/07/2018	20/10/2020	27/11/2020
28	Liberia	21/03/2018	-	-
29	Madagascar	21/03/2018	-	-
30	Mali	21/03/2018	11/01/2019	01/02/2019
31	Malawi	21/03/2018	01/11/2020	15/01/2021
32	Morocco	21/03/2018	24/02/2022	18/04/2022
33	Mozambique	21/03/2018	20/06/2023	05/07/2023
34	Mauritania	21/03/2018	31/01/2019	11/02/2019
35	Mauritius	21/03/2018	30/09/2019	07/10/2019
36	Namibia	02/07/2018	25/01/2019	01/02/2019
37	Nigeria	07/07/2019	03/12/2020	05/12/2020
38	Niger	21/03/2018	28/05/2018	19/06/2018
39	Rwanda	21/03/2018	25/05/2018	26/05/2018
40	South Africa	02/07/2018	31/01/2019	10/02/2019
41	Sahrawi Arab Democratic Republic	21/03/2018	27/04/2019	30/04/2019
42	Senegal	21/03/2018	12/03/2019	02/04/2019
43	Seychelles	21/03/2018	08/07/2021	15/09/2021
44	Sierra Leone	02/07/2018	19/04/2019	30/04/2019
45	Somalia	21/03/2018	-	-
46	South Sudan	21/03/2018	-	-
47	Sao Tome & Principe	21/03/2018	28/05/2019	27/06/2019
48	Sudan	21/03/2018	-	-
49	Eswatini	21/03/2018	21/06/2018	02/07/2018
50	Tanzania	21/03/2018	17/01/2022	17/01/2022
51	Togo	21/03/2018	09/01/2019	02/04/2019
52	Tunisia	21/03/2018	07/09/2020	27/11/2020
53	Uganda	21/03/2018	20/11/2018	09/02/2019
54	Zambia	10/02/2019	28/01/2021	05/02/2021
55	Zimbabwe	21/03/2018	25/04/2019	24/05/2019

Notes: This table adapts the information from the list of countries that have signed and ratified/acceded to the agreement establishing the African continental free trade area, adopted by the 10^{th} extraordinary session of the assembly in Kigali, Rwanda, on 21^{st} March 2018. The detailed information can be found at https://au.int/en/treaties/agreement-establishing-african-continental-free-trade-area

B Data Description

Table A2: Variables Definition

Variables	Definitions	Sources
Intl Sales/Total Sales	The ratio of international sales to the total sales	FactSet - Fundamentals
Intl Sales/Domestic Sales	The ratio of international sales to domestic sales	FactSet - Fundamentals
Post 2018	A dummy variable that equals one if the years are from or after 2018 (the signing year of the trade agreement), and zero otherwise.	https://au.int/en/african-continental-free-trade-area
Post Ratification	A dummy variable that equals one if the years are from or after the trade agreement ratification, and zero otherwise.	https://au.int/en/african-continental-free-trade-area
Any exposure	A dummy variable that equals one if the firm has a certain international revenue, and zero otherwise.	FactSet - Geographic Exposure
Some African exposure	a dummy variable that equals one if the firm has a certain level of revenue from trading only with African countries (including the home country), and zero otherwise.	FactSet - Geographic Exposure
African exposure only	a dummy variable that equals one if the firm has all revenue traded only with African countries (including the home country), and zero otherwise.	FactSet - Geographic Exposure
Some European exposure	a dummy variable that equals one if the firm has at least a certain level of international revenue with European countries, and zero otherwise.	FactSet - Geographic Exposure
Non-Services	A dummy variable that equals one if the firm is in the non-services industry, and zero otherwise.	FactSet - Fundamentals
Services	A dummy variable that equals one if the firm is in the services industry, and zero otherwise.	FactSet - Fundamentals
Capital Adj. Costs	Capital adjustment costs are the expenses firms incur when changing the level of their capital stock, such as planning, installation, or disruptions associated with investment	Hall (2004)
Labor Adj. Costs	Labor adjustment costs are the costs firms incur when hiring or laying off workers, including expenses for recruitment, training, severance, and productivity disruptions.	Hall (2004)
WW Index	Following Whited and Wu (2006), it is obtained by -0.091 × Cash flow - 0.062 × Dividend dummy + 0.021 × Long-term debt - 0.044 × Firm Size + 0.102 × Industry sales growth - 0.035 × Sale Growth	FactSet - Fundamentals
Low Cash Dividends	-1 × Cash dividend ratio, where Cash dividend ratio is the ratio of cash dividends to the total assets	FactSet - Ownership
Foreign Ownership	The proportion of a firm's market capitalization held by foreign institutions, where the institutions are located outside the country in which the stocks are issued (Bena et al., 2017; Ferreira and Matos, 2008)	FactSet - Ownership
Leverage	The ratio of total debt to total assets	FactSet - Fundamentals

Table A3: Industry Classification

Industry Classification	Industry Name
Services	Advertising/Marketing Services, Air Freight/Couriers, Airlines, Alternative Power Generation, Broadcasting, Casinos/Gaming, Apparel/Footwear Retail, Commercial Printing/Forms, Computer Communications, Contract Drilling, Data Processing Services, Department Stores, Drugstore Chains, Electric Utilities, Electronics Distributors, Electronics/Appliance Stores, Engineering & Construction, Finance/Rental/Leasing, Financial Conglomerates, Food Distributors, Food Retail, Gas Distributors, General Government, Home Improvement Chains, Home building, Hospital/Nursing Management, Hotels/Resorts/Cruise lines, Household/Personal Care, Industrial Conglomerates, Information Technology Services, Insurance Brokers/Services, Internet Software/Services, Investment Banks/Brokers, Investment Managers, Investment Trusts/Mutual Funds, Life/Health Insurance, Major Banks, Major Telecommunications, Marine Shipping, Medical Distributors, Metal Fabrication, Miscellaneous Commercial Services, Miscellaneous Manufacturing, Movies/Entertainment, Multi-Line Insurance, Oil & Gas Production, Oil Refining/Marketing, Other Consumer Services, Other Transportation, Personnel Services, Property/Casualty Insurance, Publishing: Books/Magazines, Publishing: Newspapers, Railroads, Real Estate Development, Real Estate Investment Trusts, Regional Banks, Restaurants, Savings Banks, Services to the Health Industry, Specialty Insurance, Specialty Stores, Specialty Telecommunications, Trucking, Water Utilities, Wholesale Distributors, Wireless Telecommunications
Non-Services	Aerospace & Defense, Agricultural Commodities/Milling, Aluminum, Apparel/Footwear, Auto Parts, Automotive Aftermarket, Beverages: Alcoholic, Beverages: Non-Alcoholic, Building Products, Chemicals: Agricultural, Chemicals: Major Diversified, Chemicals: Specialty, Coal, Computer Peripherals, Computer Processing Hardware, Construction Materials, Containers/Packaging, Electrical Products, Electronic Components, Electronic Equipment/Instruments, Electronic Production Equipment, Electronics/Appliances, Food: Major Diversified, Food: Meat/Fish/Dairy, Food: Specialty/Candy, Forest Products, Home Furnishings, Industrial Specialties, Industrial Machinery, Integrated Oil, Miscellaneous, Motor Vehicles, Office Equipment/Supplies, Other Consumer Specialties, Other Metals/Minerals, Packaged Software, Pharmaceuticals: Generic, Pharmaceuticals: Major, Precious Metals, Pulp & Paper, Steel, Telecommunications Equipment, Textiles, Tobacco, Tools & Hardware, Trucks/Construction/Farm Machinery

C Theoretical Framework

Primitives and timing. Two sectors $s \in \{\text{g}, \text{srv}\}$ (goods, services), destination regions $r \in \{h, a, w\}$ (home, intra-continental, extra-continental) as in the main text, two dates $t \in \{0, 1\}$ (pre/post AfCFTA). Each firm produces a variety under monopolistic competition with CES demand (elasticity $\sigma > 1$). Productivity ϕ is firm-specific and drawn i.i.d. from Pareto: $\phi \sim \text{Pareto}(\underline{\phi}, k)$ with tail index $k > 1$. AfCFTA lowers iceberg trade costs *only* for goods traded internationally: $\tau_{\text{g},1} \in (1, \tau_{\text{g},0})$, where τ captures the full spectrum of trade frictions (tariffs, non-tariff barriers, regulatory costs, and trade policy uncertainty) in reduced form; services trade costs $\tau_{\text{srv},t} \geq 1$ remain approximately unchanged in the short run. Wages w are normalized to one (given data limitations, we are interested in the short-run and partial equilibrium).

C.1 Technologies with servicification of goods

Goods technology. A goods firm with productivity ϕ uses labor and a Dixit–Stiglitz *composite* of services as an intermediate input:

$$y_{\text{g}} = \phi \left(\ell_{\text{g}}^{1-\beta} \, s_{\text{comp}}^{\beta} \right), \qquad s_{\text{comp}} = \Big(\int_{j \in \mathcal{J}_{\text{srv}}} s_j^{\frac{\sigma-1}{\sigma}} \, dj \Big)^{\frac{\sigma}{\sigma-1}}, \tag{13}$$

with $\beta \in (0, 1)$ and $\sigma > 1$. Cost minimization of the firm problem per *one* unit of goods is

$$\min_{\ell_{\text{g}}, s_{\text{comp}}} \; w_\ell \, \ell_{\text{g}} + P_{\text{srv}} \, s_{\text{comp}} \quad \text{s.t.} \quad \phi(\ell_{\text{g}}^{1-\beta} s_{\text{comp}}^{\beta}) = 1,$$

with the Lagrangian and the F.O.C. being

$$\begin{aligned}
\mathcal{L} &= \ell_{\text{g}} + P_{\text{srv}} s_{\text{comp}} + \lambda \big[1 - \phi(\ell_{\text{g}}^{1-\beta} s_{\text{comp}}^{\beta}) \big], \\
\frac{\partial \mathcal{L}}{\partial \ell_{\text{g}}} &= 1 - \lambda \phi (1-\beta) \, \ell_{\text{g}}^{-\beta} s_{\text{comp}}^{\beta} = 0 \;\Rightarrow\; \lambda = \frac{1}{\phi(1-\beta)} \, \ell_{\text{g}}^{\beta} s_{\text{comp}}^{-\beta}, \\
\frac{\partial \mathcal{L}}{\partial s_{\text{comp}}} &= P_{\text{srv}} - \lambda \phi \beta \ell_{\text{g}}^{1-\beta} s_{\text{comp}}^{\beta-1} = 0 \;\Rightarrow\; \lambda = \frac{P_{\text{srv}}}{\phi \beta} \, \ell_{\text{g}}^{-(1-\beta)} s_{\text{comp}}^{1-\beta},
\end{aligned}$$

which imply $\frac{s_{\text{comp}}}{\ell_{\text{g}}} = \left(\frac{\beta}{1-\beta} \right) \frac{1}{P_{\text{srv}}}$. With $w = 1$, the unit cost is thus

$$c_{\text{g}}(\phi; P_{\text{srv},h,t}) = \frac{1}{\phi} \underbrace{\left[(1-\beta)^{-(1-\beta)} \, \beta^{-\beta} \right]}_{\equiv \kappa_\beta} P_{\text{srv},h,t}^{\beta} \;\equiv\; \frac{\kappa_\beta}{\phi} \, P_{\text{srv},h,t}^{\beta}. \tag{14}$$

Here $P_{\text{srv},h,t}$ is the CES price index of service varieties available in the home market at t, which home goods producers use as inputs.

Service technology. A service firm with productivity ϕ uses labor only:

$$y_{\text{srv}} = \phi \, \ell_{\text{srv}} \quad \Rightarrow \quad c_{\text{srv}}(\phi) = \frac{1}{\phi}. \tag{15}$$

C.2 Pricing, demand, and revenues

A firm serving region r at date t charges a constant markup over the delivered unit cost. For sector s:

$$p_{s,r,t}(\phi) = \frac{\sigma}{\sigma - 1} \, \tau_{s,t} \, c_s(\phi; P_{\text{srv},h,t}), \qquad \tau_{\text{srv},t} \equiv 1 \text{ for domestic sales.} \tag{16}$$

Let $E_{s,r,t}$ denote CES expenditure on sector s in region r at t, and $P_{s,r,t}$ the CES price index over sector-s varieties in r at t. Revenue for firm in sector s, region r, at time t is thus

$$\begin{aligned} R_{s,r,t}(\phi) &= p_{s,r,t} q_{s,r,t} = p_{s,r,t} E_{s,r,t} P_{s,r,t}^{-1} \Big(\frac{p_{s,r,t}}{P_{s,r,t}}\Big)^{-\sigma} \\ &= E_{s,r,t} \Big(\frac{p_{s,r,t}}{P_{s,r,t}}\Big)^{1-\sigma} \\ &= E_{s,r,t} \left(\frac{\sigma}{\sigma-1}\, \tau_{s,t}\, c_s(\phi; P_{\text{srv},h,t})\right)^{1-\sigma} (P_{s,r,t})^{\sigma-1} \end{aligned}$$

Standard CES algebra thus implies firm i's revenue from region r:

$$R_{s,r,t}(\phi) = E_{s,r,t} \left(\frac{p_{s,r,t}(\phi)}{P_{s,r,t}}\right)^{1-\sigma} = \underbrace{E_{s,r,t} \left(\frac{\sigma}{\sigma-1} \frac{1}{P_{s,r,t}}\right)^{1-\sigma}}_{\equiv \Xi_{s,r,t}} \left[\tau_{s,t}\, c_s(\phi; P_{\text{srv},h,t})\right]^{1-\sigma}. \tag{17}$$

Variable profit equals R/σ.

C.3 Heterogeneous selection with Pareto and sectoral price indices

A firm sells to (s, r, t) iff $\pi_{s,r,t}(\phi) \geq f_{s,r}$, where $f_{s,r}$ is a per-market fixed cost (we keep $f_{s,r}$ constant across t to avoid mechanical cost channels; see Section C.4 for the history/network channel). Using (17), the export cutoff solves

$$\phi \geq \phi^*_{s,r,t} \iff \left[\tau_{s,t}\, c_s(\phi^*; P_{\text{srv},h,t})\right]^{1-\sigma} = \frac{\sigma f_{s,r}}{\Xi_{s,r,t}}. \tag{18}$$

With (14)–(15), this yields

$$\phi^*_{\text{srv},r,t} = \left(\frac{\sigma f_{\text{srv},r}}{\Xi_{\text{srv},r,t}}\right)^{\frac{1}{\sigma-1}} \tau_{\text{srv},t}, \tag{19}$$

$$\phi^*_{\text{g},r,t} = \left(\frac{\sigma f_{\text{g},r}}{\Xi_{\text{g},r,t}}\right)^{\frac{1}{\sigma-1}} \left[\tau_{\text{g},t}\, \kappa_\beta\, P^{\beta}_{\text{srv},h,t}\right]. \tag{20}$$

Selection and average costs are endogenous: when $\tau_{\text{g},t}$ falls, the goods cutoff drops and the composition of active (and exporting) goods firms shifts to lower unit costs (higher ϕ). Because $P_{\text{srv},h,t}$ is itself an equilibrium object determined by the *mass and productivity* of active services firms, (20) makes the goods cutoff, and hence the sectoral average unit cost, *interlinked* with services.

Exports are obtained by integrating revenue over all firms whose productivity exceeds the export cutoff $\phi^*_{s,r,t}$. Using $R_{s,r,t}(\phi) = \Xi_{s,r,t} (\tau_{s,t} \bar{c}_{s,t})^{1-\sigma} \phi^{\sigma-1}$:

$$\begin{aligned} X_{s,r,t} &= \int_{\phi^*}^{\infty} R_{s,r,t}(\phi)\, f(\phi)\, d\phi \\ &= \Xi_{s,r,t}\, (\tau_{s,t} \bar{c}_{s,t})^{1-\sigma} \int_{\phi^*}^{\infty} \phi^{\sigma-1}\, k\, \underline{\phi}^{k}\, \phi^{-(k+1)}\, d\phi \\ &= \Xi_{s,r,t}\, (\tau_{s,t} \bar{c}_{s,t})^{1-\sigma}\, k\, \underline{\phi}^{k}\, \frac{(\phi^*)^{-[k-(\sigma-1)]}}{k-(\sigma-1)}, \end{aligned}$$

where the integral converges under $k > \sigma - 1$.

Substituting $\phi^*_{s,r,t} = (\sigma f_{s,r}/\Xi_{s,r,t})^{1/(\sigma-1)}\tau_{s,t}\bar{c}_{s,t}$ and combining exponents yields

$$X_{s,r,t} = \mathcal{K}_s\, \Xi_{s,r,t}^{k/(\sigma-1)} \left[\tau_{s,t}\, \bar{c}_{s,t}\right]^{-k}, \qquad \mathcal{K}_s \equiv \frac{k\, \underline{\phi}^{k}}{k-(\sigma-1)} (\sigma f_{s,r})^{-(k-(\sigma-1))/(\sigma-1)}.$$

Defining the trade elasticity $\theta \equiv k$, and noting that $\Xi_{s,r,t} \propto E_{s,r,t} P_{s,r,t}^{\sigma-1}$ (with markup constants absorbed into $\mathcal{K}_s$), we obtain the gravity-form aggregation:

$$X_{s,r,t} = \mathcal{K}_s\, \Xi_{s,r,t}^{\theta/(\sigma-1)} \left[\tau_{s,t}\, \bar{c}_{s,t}(P_{\mathrm{srv},h,t})\right]^{-\theta}, \qquad \theta \equiv k. \tag{21}$$

Equation (21) shows (i) the *extensive margin* is built into the elasticity θ, and (ii) goods and services are *linked* through $P_{\mathrm{srv},h,t}$ when $s = \mathrm{g}$.

C.4 Network (history) channel

We model network history as a *demand-side* channel that introduces no cost differences. Match capital admits two equivalent microfoundations. First, as a multiplicative demand shifter (Foster et al., 2008; Khandelwal, 2010; Hottman et al., 2016). Second, and equivalently in the continuum limit, as *demand access* under random buyer – seller matching (Arkolakis, 2010; Chaney, 2014): a firm whose network reaches a measure m_i of destination buyers, each with CES demand, earns m_i times the revenue of a firm that reaches the whole market. We adopt the second reading – m_i is the share of destination demand the firm can access – and note that "match" is the reduced-form label for the same object. Either way, buyers' aggregator is

$$Q_{s,r,t} = \Big(\int m_i^{1/\sigma}\, q_i^{\frac{\sigma-1}{\sigma}}\, di\Big)^{\frac{\sigma}{\sigma-1}}, \qquad q_i = m_i \Big(\tfrac{p_i}{P_{s,r,t}}\Big)^{-\sigma} \tfrac{E_{s,r,t}}{P_{s,r,t}}, \quad P_{s,r,t} = \Big(\int m_j p_j^{1-\sigma} dj\Big)^{\frac{1}{1-\sigma}},$$

which yields revenue

$$R_i(\phi) = m_i\, R_{s,r,t}(\phi), \qquad R_{s,r,t}(\phi) = \Xi_{s,r,t}\big[\tau_{s,t} c_s(\phi; P_{\mathrm{srv},h,t})\big]^{1-\sigma}, \tag{22}$$

where $R_{s,r,t}(\phi)$ is the revenue of a reference firm with unit match. Market clearing holds identically, $\int p_i q_i\, di = P_{s,r,t}^{\sigma-1} E_{s,r,t} \int m_i p_i^{1-\sigma} di = E_{s,r,t}$. Firms are atomistic and take $(\Xi_{s,r,t}, P_{s,r,t})$ as given.

A firm exports iff variable profit covers the fixed cost, $R_i(\phi)/\sigma \geq f_{s,r}$, i.e.

$$m_i \geq m^*_{s,r,t}(\phi) \equiv \frac{\sigma f_{s,r}}{R_{s,r,t}(\phi)} = \frac{\sigma f_{s,r}}{\Xi_{s,r,t}} \big[\tau_{s,t} c_s(\phi; P_{\mathrm{srv},h,t})\big]^{\sigma-1}. \tag{23}$$

History/exposure. Exposure type $X \in \{\emptyset, A, W\}$ indexes the match distribution G_X. We assume the monotone likelihood ratio ordering $G_W \succeq_{\mathrm{MLR}} G_A \succeq_{\mathrm{MLR}} G_\emptyset$ (the density ratios g_W/g_A and $g_A/g_\emptyset$ are non-decreasing in m). MLR implies the hazard-rate and first-order stochastic-dominance orders and is satisfied by the natural parametric families. This single assumption orders both export margins.

Proposition C.1 (History/network orders both margins and expected exports, without cost differences)**.** *Fix (s, r, t) and ϕ, and let $m^* \equiv m^*_{s,r,t}(\phi)$ from (23). Under $G_W \succeq_{\mathrm{MLR}} G_A \succeq_{\mathrm{MLR}} G_\emptyset$:*

(i) Extensive margin: *the export probability $1 - G_X(m^*)$ is ordered $W \geq A \geq \emptyset$ (FOSD suffices);*

(ii) Intensive margin: *the conditional mean match $\mathbb{E}_X[m \mid m \geq m^*]$ is ordered $W \geq A \geq \emptyset$ (hazard-rate order);*

(iii) Expected exports: $\mathbb{E}_X[m\, R_{s,r,t}(\phi)\mathbf{1}\{m \geq m^*\}] = R_{s,r,t}(\phi) \int_{m^*}^{\infty} m\, dG_X(m)$ *is ordered $W \geq A \geq \emptyset$, strictly whenever the relevant dominance is strict at m^*. Any shock weakly lowering m^* (e.g. $\tau_{\mathrm{g}} \downarrow$, or $P_{\mathrm{srv},h} \downarrow$ for $s = \mathrm{g}$) raises every type's expected exports and preserves the ordering.*

Proof. *(i) FOSD gives $G_W(m^*) \leq G_A(m^*) \leq G_\emptyset(m^*)$. (ii) Under the hazard-rate order the upper truncation $[m \mid m \geq m^*]$ is FOSD-ordered across types for every m^*, hence its mean is ordered. (iii) $m \mapsto m\,\mathbf{1}\{m \geq m^*\}$ is non-decreasing, so FOSD orders $\int_{m^*}^{\infty} m\, dG_X$; equivalently it is the product of the ordered margins (i) and (ii). Lowering m^* enlarges both the survival probability and the integration region. No cost primitive differs across X.* □

Aggregate versus conditional. The aggregate elasticity in (21) is stated at the reference match level ($m = 1$). Match-capital heterogeneity is characterized *conditional* on ϕ in Proposition C.1 above, and maps to the interaction coefficients in our regressions – where firm fixed effects absorb ϕ – while the aggregate maps to the *Post-2018* main effect. The two are therefore distinct moments and need not share a selection structure. Equivalently, defining match-augmented productivity $\tilde{\phi} \equiv m^{1/(\sigma-1)}\phi$ preserves the gravity form of (21) whenever $\tilde{\phi}$ is Pareto.

Intuitively, because the threshold m^* is the same for all firms in a given market and productivity, a stochastically larger match distribution implies a higher probability that a firm's realized m exceeds m^*. Thus, it follows that (i) **entry probability rises**, meaning that more firms meet the threshold; (ii) **conditional revenue rises,** meaning that among those who enter, the average share of expenditure is larger. Since no change in unit costs is required, the entire channel operates through the demand-side match capital.

C.5 Goods-services complementarity and the home service price index

Because goods are produced at home using home services as inputs, the relevant object for the goods–services linkage is the *home* service price index, defined over the service varieties available in the home market:

$$P_{\text{srv},h,t}^{1-\sigma} = \int_{\mathcal{M}_{\text{srv},h,t}} \left[p_{\text{srv},h,t}(\phi)\right]^{1-\sigma} dM_{\text{srv},h,t}(\phi), \tag{24}$$

where $\mathcal{M}_{\text{srv},h,t}$ is the measure of active service varieties in the home market and $p_{\text{srv},h,t}(\phi) = \frac{\sigma}{\sigma-1} c_{\text{srv}}(\phi)$ is the domestic service price ($\tau_{\text{srv}} = 1$ for domestic sales). Because goods use services as inputs (§C.1), a fall in $\tau_{\text{g},t}$ raises home goods output and thus *derived demand* for home services. Under free entry with per-variety fixed cost $f_{\text{srv},h}$, the mass of active home services firms adjusts so that $P_{\text{srv},h,t}$ is pinned by zero profits; with service trade muted in the short run ($\tau_{\text{srv},t} \approx \tau_{\text{srv},0}$), the *cross-sector* effect of AfCFTA on the home service price operates through the goods-induced shift in $E_{\text{srv},h,t}$ and the induced change in $\mathcal{M}_{\text{srv},h,t}$. This feedback enters (20) and (21).

Service sector entry and the equilibrium home price index. To close the model, we derive how the home service price index $P_{\text{srv},h,t}$ responds to changes in home service demand $E_{\text{srv},h,t}$. A potential home service entrant pays a sunk entry cost f^e_{srv} to draw productivity ϕ from the Pareto distribution. The entrant becomes active with probability $\delta_{\text{srv},h,t} \equiv \Pr(\phi \geq \phi^*_{\text{srv},h,t}) = (\underline{\phi}/\phi^*_{\text{srv},h,t})^k$, in which case it earns conditional expected profit $\bar{\pi}^{\text{a}}_{\text{srv},h,t} = \frac{1}{\sigma}\bar{R}^{\text{a}}_{\text{srv},h,t} - f_{\text{srv},h}$, where "a" denotes "conditional on being active." The standard Melitz free-entry condition equates the unconditional expected payoff to the entry cost:

$$\delta_{\text{srv},h,t}\, \bar{\pi}^{\text{a}}_{\text{srv},h,t} \;=\; f^e_{\text{srv}},$$

pinning down the mass of *entrants* $M^e_{\text{srv},h,t}$, while the mass of *active* home firms is $M_{\text{srv},h,t} = \delta_{\text{srv},h,t}\, M^e_{\text{srv},h,t}$.

Under Pareto productivity with $k > \sigma - 1$, the CES price index satisfies

$$P^{1-\sigma}_{\text{srv},h,t} = M_{\text{srv},h,t} \cdot \mathbb{E}\big[p_{\text{srv},h,t}(\phi)^{1-\sigma} \mid \phi \geq \phi^*_{\text{srv},h,t}\big],$$

where $M_{\text{srv},h,t}$ is the mass of active home services firms. Standard manipulations yield

$$P_{\text{srv},h,t} \propto M^{\frac{1}{1-\sigma}}_{\text{srv},h,t} \cdot (\phi^*_{\text{srv},h,t})^{-1}. \tag{25}$$

When goods liberalization raises home derived demand $E_{\text{srv},h,t}$ (via (2)), the home service demand shifter $\Xi_{\text{srv},h,t}$ rises, which from (19) lowers the home service cutoff $\phi^*_{\text{srv},h,t}$ and induces entry ($M_{\text{srv},h,t}$ rises). Both forces reduce $P_{\text{srv},h,t}$ in (25), establishing the key comparative static:

$$\frac{\partial P_{\text{srv},h,t}}{\partial E_{\text{srv},h,t}} < 0 \quad \Longrightarrow \quad \frac{\partial P_{\text{srv},h,t}}{\partial \tau_{\text{g},t}} > 0, \tag{26}$$

since goods liberalization ($\tau_{\text{g},t}$ goes down) expands home goods production, raises $E_{\text{srv},h,t}$, and thereby lowers $P_{\text{srv},h,t}$. This feedback enters the goods export elasticity in Proposition C.2.

C.6 Predictions and proofs

Define $\theta \equiv k$ and, for brevity, the goods cost scale $\chi_t \equiv \tau_{g,t} P_{srv,h,t}^{\beta}$.

Proposition C.2 (Goods liberalization raises goods exports via both intensive and extensive margins). *Holding $(E_{g,r,t}, P_{g,r,t})$ fixed, $X_{g,r,t}$ in (21) satisfies*

$$\frac{\partial \ln X_{g,r,t}}{\partial \ln \tau_{g,t}} = -\theta + \underbrace{\left(-\theta\,\beta\right)\frac{\partial \ln P_{srv,h,t}}{\partial \ln \tau_{g,t}}}_{\text{goods}\to\text{services feedback}} < 0.$$

Proof. *Direct differentiation of (21) with $\bar{c}_{g,t} \propto P_{srv,h,t}^{\beta}$ yields $d\ln X_g = -\theta\, d\ln \tau_g - \theta\,\beta\, d\ln P_{srv,h,t}$ at fixed $\Xi_{g,r,t}$. The first term is the Chaney trade elasticity ($\theta = k$, the Pareto shape). The second captures input-price feedback through home services. Since $d\ln P_{srv,h,t}/d\ln \tau_g \geq 0$ (Equation (26): goods liberalization raises derived demand and induces service entry, lowering $P_{srv,h,t}$), the RHS is strictly negative.* □

Proposition C.3 (Services benefit (even with unchanged τ_{srv}) through goods–services complementarity). *If $\tau_{srv,t}$ is unchanged between $t = 0, 1$ and AfCFTA lowers τ_g, then $X_{srv,r,1} - X_{srv,r,0} > 0$ provided (i) some services are tradable and (ii) the induced change in $(E_{srv,r,t}, P_{srv,r,t})$ from the goods shock satisfies*

$$\Delta \ln \left(E_{srv,r,t}\, P_{srv,r,t}^{\sigma-1}\right) > 0.$$

Proof. *From (21) with $s = \text{srv}$ and $\bar{c}_{srv,t} \equiv 1$, $X_{srv,r,t} \propto \Xi_{srv,r,t}^{\theta/(\sigma-1)} \propto (E_{srv,r,t} P_{srv,r,t}^{\sigma-1})^{\theta/(\sigma-1)}$. AfCFTA shifts goods activity, raising demand for logistics/IT/finance (domestically and, to the extent tradable, abroad). If the composite $E_{srv,r}\, P_{srv,r}^{\sigma-1}$ rises, so do service exports, despite unchanged τ_{srv}.* □

Proposition C.4 (Trade liberalization raises average cost among active exporters). *Let $\bar{c}_{g,r,t}^{act}$ denote the revenue-weighted average unit cost among active exporters to (g, r, t). Under Pareto with $k > \sigma - 1$,*

$$\frac{\partial \bar{c}_{g,r,t}^{act}}{\partial \tau_{g,t}} < 0.$$

Thus trade liberalization ($\tau_g \downarrow$) raises average cost among exporters by admitting less productive firms.

Proof. *The revenue-weighted average of $1/\phi$ among firms with $\phi \geq \phi^*$ is proportional to $(\phi^*)^{-1}$ under Pareto. Since $c_g(\phi) = \kappa_\beta P_{srv}^{\beta}/\phi$, we have $\bar{c}_g^{act} \propto P_{srv}^{\beta} \cdot (\phi^*)^{-1}$. From the cutoff $\phi^* \propto \tau_g P_{srv}^{\beta}$, this yields $\bar{c}_g^{act} \propto P_{srv}^{\beta}/(\tau_g P_{srv}^{\beta}) = \tau_g^{-1}$. Hence $\partial \bar{c}_g^{act}/\partial \tau_g < 0$.* □

Remark C.5. Under Pareto, the service price P_{srv} does not affect $\bar{c}_g^{act}$: the direct cost effect (higher P_{srv} raises each firm's cost) exactly offsets the selection effect (higher P_{srv} raises the cutoff, selecting more productive firms). However, P_{srv} still affects *aggregate* exports X_g through the extensive margin: lower P_{srv} expands the mass of exporters, generating the goods-services multiplier in Proposition C.2.

Proposition C.6 (Capital adjustment frictions dampen short-run goods responses). *Goods production requires quasi-fixed physical capital; expanding capacity from $\bar{k}_0$ to $\bar{k}_1$ incurs adjustment cost $C_g(\bar{k}_1; \bar{k}_0) = \frac{\psi}{2}\left(\frac{\bar{k}_1 - \bar{k}_0}{\bar{k}_0}\right)^2 \bar{k}_0$ with $\psi \geq 0$. Service production uses flexible labor, with adjustment friction $\psi_{srv} \ll \psi_g$ (and $\psi_{srv} \to 0$ as the limiting case). Then:*

(i) The short-run output expansion for goods firms is attenuated and strictly decreasing in ψ, so

$$\left|\frac{d\ln X_g}{d\ln \tau_g}\right|_{\psi>0} < \left|\frac{d\ln X_g}{d\ln \tau_g}\right|_{\psi=0},$$

with the gap increasing in ψ.

(ii) Service firms face negligible attenuation: labor adjusts within the short-run horizon, so $\psi_{\text{srv}} \ll \psi_{\text{g}}$ and the attenuation term is correspondingly small (vanishing in the limit $\psi_{\text{srv}} \to 0$).

Proof. *(i) Let $\Pi(\bar{k}, \tau_{\text{g}})$ denote short-run operating profit as a function of installed capacity and trade cost. The firm chooses $\bar{k}_1$ to maximize $\Pi(\bar{k}, \tau_{\text{g}}) - C_{\text{g}}(\bar{k}; \bar{k}_0)$. The first-order condition is $\Pi_{\bar{k}}(\bar{k}_1^*, \tau_{\text{g}}) = \psi(\bar{k}_1^* - \bar{k}_0)/\bar{k}_0$, where $\Pi_{\bar{k}} \equiv \partial\Pi/\partial\bar{k}$. Applying the implicit function theorem,*

$$\frac{d\bar{k}_1^*}{d\tau_{\text{g}}} = \frac{\Pi_{\bar{k}\tau_{\text{g}}}}{\psi/\bar{k}_0 - \Pi_{\bar{k}\bar{k}}},$$

where $\Pi_{\bar{k}\tau_{\text{g}}} \equiv \partial^2\Pi/\partial\bar{k}\partial\tau_{\text{g}} < 0$ (lower trade costs raise the marginal value of capacity), and the second-order condition guarantees $\psi/\bar{k}_0 - \Pi_{\bar{k}\bar{k}} > 0$. Hence $d\bar{k}_1^*/d\tau_{\text{g}} < 0$ (capacity expands when τ_{g} falls), and the magnitude is strictly decreasing in ψ. Since goods output scales with installed capacity, the same attenuation carries over to $|d\ln X_{\text{g}}/d\ln\tau_{\text{g}}|$. As $\psi \to \infty$, $d\bar{k}_1^*/d\tau_{\text{g}} \to 0$.

(ii) Service output $y_{\text{srv}} = \phi\,\ell_{\text{srv}}$ involves no quasi-fixed capital. Labor adjusts within the period at normalized wage $w = 1$, so services firms respond fully to demand shifts without adjustment cost attenuation. □

Interpretation of channels (i) *Selection/composition* (Pareto–Melitz): trade liberalization lowers the export productivity cutoff, admitting lower-productivity firms to export. (ii) *Goods–services complementarity* propagates the goods shock to services through P_{srv} and E_{srv}, even if τ_{srv} is unchanged. (iii) *History/network* enters via match capital (demand). (iv) *Capital adjustment frictions* dampen the short-run goods response but not services, reflecting the quasi-fixed nature of physical capital in goods production versus the flexibility of labor in services. This asymmetry arises naturally from sectoral production technologies, explaining why exposed services firms, which combine elastic labor-based supply with demand-side network advantages, emerge as the primary beneficiaries of the AfCFTA.

D Extended Literature

The effects of trade agreements have a long intellectual history predating the GATT, including the canonical Heckscher–Ohlin model (Heckscher, 1919) and its later derivations (e.g., Bond et al., 2003, among others). Africa, however, has been a peculiar case for economic theory: following Solow (1956) and Lewis (1954), growth models long predicted convergence that did not materialize, leaving African performance something of an enigma to the profession. If those predictions are any guide, the trade effects of AfCFTA are anything but a foregone conclusion – motivating the firm-level evidence we provide.

Extensive empirical research indicates that regional trade agreements (RTAs) and free trade agreements (FTAs) generally stimulate trade among member countries, albeit the significance and magnitude vary. Gravity-model estimates suggest that, on average, an FTA significantly increases bilateral trade flows; for example, Baier and Bergstrand (2007) find that a typical FTA roughly doubles members' trade after about ten years. The literature also shows substantial net trade creation with relatively little trade diversion for non-members, alleviating concerns that increased intra-bloc trade might come at the expense of external trade (Rose, 2004). Some major agreements yielded only modest aggregate effects; for instance, the North American Free Trade Agreement led to relatively small net increases in trade and welfare overall (Trefler, 2004; Romalis, 2007), or no discernible impact on trade partners for WTO members (Rose, 2004). In contrast, more recent econometric studies that control for endogeneity find quite large trade-boosting effects of preferential liberalization (Egger et al., 2011). Several surveys concur that FTAs tend to expand commerce among participants (see, e.g., Baldwin, 2008; Freund and Ornelas, 2010), although the magnitude of the impact can vary across agreements depending on factors such as pre-existing trade volumes between partners (the "natural trading-partner" effect) (Baldwin, 2008). Overall, the evidence suggests that RTAs and FTAs promote exports and trade among members. This conclusion provides an essential benchmark for evaluating new agreements, such as those in Africa, where developing countries may benefit more from faster integration than from a more standard evaluation of the experience of more advanced economies.

Papers directly dealing with the AfCFTA impact include Abrego et al. (2019, 2020) providing comprehensive model-based estimates of AfCFTA's potential welfare impacts under various implementation scenarios. Using multi-country, multi-sector general equilibrium models, they estimate that full tariff elimination combined with a partial but substantial reduction in non-tariff barriers could generate significant welfare gains, with considerable

cross-country variation. Their analysis suggests that the bulk of potential gains come from lowering non-tariff barriers rather than tariff elimination alone, given that intra-regional tariffs in Africa are already relatively low. Their finding that welfare gains from combined tariff and non-tariff barriers elimination is about 2 to 4 percent; though quite large in comparison of our international trade increase, it shall be noted that we only capture early effects of the agreement among key firms.

The Regional Economic Outlook for Sub-Saharan Africa (International Monetary Fund, African Department, 2019) examines whether the AfCFTA can be a "game changer" for the continent, documenting that eliminating tariffs on 90 percent of existing intra-regional trade flows would increase regional trade by about 16 percent (US$16 billion) over time. Crucially, this analysis finds that improving trade logistics and addressing infrastructure bottlenecks could be up to four times more effective in boosting trade than tariff reductions alone. More recently, ElGanainy et al. (2023) provide an updated empirical assessment of trade integration in Africa, investigating the role of trade policy and the broader trade-enabling environment. Their findings emphasize that AfCFTA implementation, combined with supporting policies addressing infrastructure and regulatory barriers, is essential for realizing the agreement's full potential. This institutional literature provides model-based predictions against which we can benchmark our firm-level empirical estimates.

Though we do not cover other dimensions, trade agreements with intellectual property provisions can improve innovation and long-term productivity, especially in countries that can effectively enforce intellectual property rights (Santacreu, 2025) and promote vertical foreign direct investment (Osnago et al., 2017, 2019). These dynamic gains, resulting from increased incentives for R&D, exceed the traditional static gains from trade, suggesting that intellectual property rules are a key channel through which trade policy influences long-term economic outcomes. Interestingly, Mayer et al. (2025) show that the free trade agreement significantly promotes bilateral trade by facilitating face-to-face interactions and easing the movement of business visitors. Beyond facilitating interaction, governments negotiate trade agreements that constrain domestic regulatory policies to prevent regulatory protectionism aimed at attracting firms through relocation incentives, ensuring efficiency, especially when product differentiation and local consumption externalities are significant (Grossman et al., 2021).

When it comes to the magnitude of trade agreements, Baier and Bergstrand (2007) employed a gravity model of 96 countries (1960-2000) and found that, when properly accounted for, they have a much larger effect than previously believed, approximately doubling bilateral trade after ten years. This suggests that earlier estimates may have severely underestimated the trade-enhancing effects of free-trade agreements. After one decade, Egger et al. (2022) confirm that the literature might underestimate the trade-creating effects of free trade agreements. Their results reveal that properly accounting for interval censoring significantly amplifies the estimated impact of free-trade agreements on trade flows, reinforcing the conclusion that trade agreements play a crucial role in promoting international trade. More broadly, our paper is also related to a literature that leverages firm-level data to study various aspects of trade agreements (see, for example, De Hoyos and Iacovone, 2013; Chevassus-Lozza et al., 2013; Asprilla et al., 2019; Lee et al., 2023, among others). We contribute to this literature by highlighting how trade experience and sectoral frictions affect gains from trade at the firm level.

E Additional Empirical Results

Table A4: Post-ACFTA Overall Trade

	Intl Sales/Total Sales		Intl Sales/Domestic Sales	
	(1)	(2)	(3)	(4)
Post 2018	0.019***		0.085***	
	(0.002)		(0.014)	
Year=2011		0.003		0.013
		(0.005)		(0.048)
Year=2012		0.001		-0.044
		(0.005)		(0.040)
Year=2013		0.001		-0.025
		(0.005)		(0.040)
Year=2014		0.003		-0.012
		(0.005)		(0.040)
Year=2015		0.009*		0.010
		(0.005)		(0.042)
Year=2016		0.011**		-0.014
		(0.005)		(0.040)
Year=2017		0.012**		0.017
		(0.005)		(0.039)
Year=2018		0.018***		0.034
		(0.005)		(0.040)
Year=2019		0.023***		0.069*
		(0.005)		(0.041)
Year=2020		0.023***		0.068
		(0.005)		(0.045)
Year=2021		0.030***		0.107**
		(0.006)		(0.047)
Year=2022		0.033***		0.138***
		(0.006)		(0.050)
Constant	0.075***	0.070***	0.258***	0.264***
	(0.001)	(0.004)	(0.008)	(0.036)
Firm fixed effects	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
Adj R-squared	0.789	0.790	0.691	0.691
Observations	13,113	13,113	13,102	13,102

Notes: This table presents the baseline results on the effects of African trade agreements (i.e., signed in 2018) on Intl Sales/Total Sales (i.e., the dependent variable is the ratio of international sales to total sales) in Columns (1)-(2) and Intl Sales/Domestic Sales (i.e., the dependent variable is the ratio of international sales to domestic sales) in Columns (3)-(4). Columns (1) and (3) include only the Post 2018 dummy, while Columns (2) and (4) include year dummies from 2011 to 2022. Post-2018 is a dummy variable equal to 1 for years from 2018 onward and zero otherwise. Robust standard errors are reported in parentheses. Significance levels are denoted as follows: $p < 0.10$ (*), $p < 0.05$ (**), $p < 0.01$ (***). Columns (2) and (4) estimate the following specification $Y_{ict} = \alpha + \sum_{\tau=2003}^{2022} \beta_\tau \mathbb{I}(t = \tau)_t + \gamma \mathbb{D}_i + \delta \mathbb{D}_c + \varepsilon_{ict}$, whereas columns (1) and (3) estimate the following $Y_{ict} = \alpha + \beta_\tau \mathbb{I}(t \geq 2018)_t + \gamma \mathbb{D}_i + \delta \mathbb{D}_c + \varepsilon_{ict}$.

Table A5: Robustness: Year Fixed Effects, Firm Size, and Outside-Africa Exposure

	Intl Sales/Total Sales		
	(1) Year FE	(2) + Firm Size	(3) Outside Africa
Post 2018 × Any exposure	0.031***	0.033***	
	(0.005)	(0.005)	
Post 2018 × Some African exposure	0.037***	0.038***	
	(0.005)	(0.005)	
Post 2018 × African exposure only	-0.017**	-0.019***	-0.016**
	(0.007)	(0.007)	(0.007)
Post 2018 × Some European exposure	0.031***	0.035***	
	(0.006)	(0.006)	
Post 2018 × Domestic exposure only			-0.031***
			(0.005)
Post 2018 × Outside African exposure			-0.020***
			(0.007)
Firm fixed effects	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	–	–
Firm size control	–	Yes	–
Adj R-squared	0.734	0.738	0.731
Observations	16,860	16,800	16,860

Notes: Each cell reports the interaction-term coefficient from a separate regression with firm and country fixed effects; standard errors are robust. The dependent variable is the ratio of international to total sales throughout. *Column (1)* additionally includes year fixed effects (which absorb the Post 2018 main effect). *Column (2)* adds a firm-size control (logarithm of total assets). *Column (3)* replaces the four standard exposure dummies with three alternative exposure indicators – Domestic exposure only, African exposure only, and Outside African exposure – and reports their interactions with Post 2018. Cells left blank indicate that the row's exposure does not apply to the column's specification. Significance levels: $p < 0.10$ (*), $p < 0.05$ (**), $p < 0.01$ (***).

Table A6: Sample Representativeness: Dropping Countries One by One

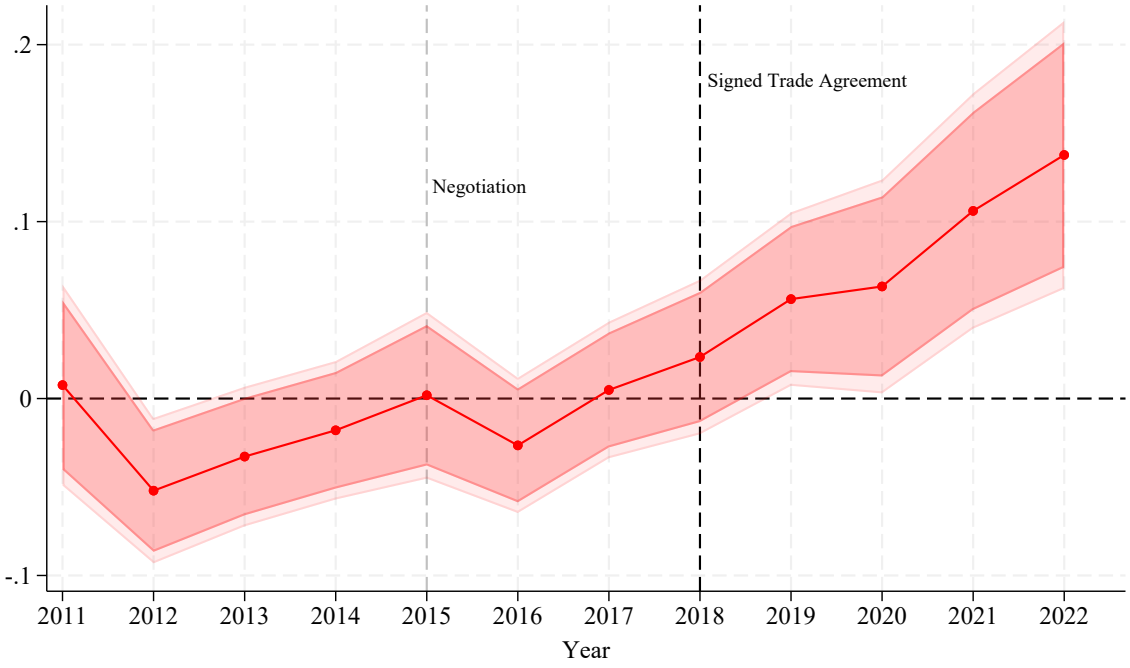
Country	Anyexposure	SomeAfricanexposure	Africanexposureonly	SomeEuropeanexposure
Benin	0.9997***	0.9998***	1.0011**	0.9997***
Botswana	0.8825***	0.8831***	1.7535***	1.0536***
Burkina Faso	0.9984***	0.9988***	1.0055**	0.9983***
Côte d'Ivoire	1.0744***	1.0695***	0.7014	0.9880***
Egypt	0.9587***	0.9249***	1.3133***	0.9409***
Eswatini	0.9808***	0.9829***	0.9813**	0.9761***
Gabon	1.0092***	1.0076***	0.9858**	0.9826***
Gambia	0.9997***	0.9998***	1.0009**	0.9997***
Ghana	0.9898***	0.9938***	1.1304**	1.0034***
Kenya	1.1052***	1.1115***	0.8448*	0.9677***
Malawi	1.0123***	1.0139***	0.9683**	0.9906***
Mauritius	1.0040***	1.0330***	1.2325***	1.0526***
Morocco	1.0723***	1.0072***	1.3615***	1.1136***
Mozambique	1.0042***	1.0042***	0.9947**	0.9993***
Namibia	1.0734***	1.0692***	0.6883	1.0984***
Niger	0.9997***	0.9998***	1.0010**	0.9997***
Nigeria	0.9852***	0.9956***	1.2211**	1.0175***
Réunion	0.9993***	0.9995***	1.0023**	1.0061***
Senegal	1.0011***	1.0015***	1.0031**	1.0019***
South Africa	0.4059**	0.5594***	-0.6874	0.4850**
Sudan	0.9856***	0.9873***	1.0856**	0.9821***
Tanzania	1.0002***	1.0023***	1.0458**	0.9961***
Togo	1.0302***	1.0290***	1.0215**	1.0395***
Tunisia	0.9841***	0.9941***	1.1160**	1.1083***
Uganda	0.9958***	0.9969***	1.0143**	0.9956***
Zambia	1.0272***	1.0041***	0.9570**	0.9417***
Zimbabwe	1.1152***	1.0981***	0.8456*	1.0003***

Notes: In this table, we re-conduct each column of Table 3 by dropping one country at a time. We report the coefficients of the interaction terms scaled by the coefficients of the baseline regressions in Table 3.

E.1 International Sales over Domestic Sales over Time

In Section 5.1, we documented a significant increase in international trade exposure, as measured by the change in the ratio of international sales over total sales following the signing of AfCFTA. While not denying the intuitive interpretation of such a measure, as total sales encompass both international and domestic sales, it is possible that the effects on trade exposure of AfCFTA, estimated in Section 5.1 reflect changes in domestic sales rather than genuine increases in international activity. To address this concern, we re-estimate our specifications with the ratio of international sales to domestic sales as the dependent variable, thereby isolating international performance from domestic market fluctuations. Specifically, we re-estimate Equation (8) but with Y_{ict} defined as the ratio of international sales over domestic sales, ceteris paribus, and plot the estimates of β_τ over time. Specifically, to facilitate a fair comparison with Figure 3, Figure A1 plots the estimated coefficients for β_τ over $\tau = 2011, \ldots, 2022$ in Equation (8) with the corresponding 90% and 95% confidence bands (darker and lighter shaded, respectively). In Figure A1, we also restrict τ to be from 2011 to 2022, which covers four years before the negotiation and four years after the signing of AfCFTA for ease of exposition.

Figure A1: International Sales of African firms Over years (International Sales/Domestic Sales)



Notes: Figure A1 displays the coefficients of the year dummy variable $\mathbb{I}(t = \tau)_t$ from each regression analysis, where the dependent variable is the ratio of International Sales to Domestic Sales. The regression includes firm- and country-fixed effects and uses robust standard errors. The shaded areas denote the 90% and 95% confidence bands, respectively.

Turning to the details of Figure A1, we find that, consistent with Figure 3, international trade exposure increases, on average, across all firms in the sample following the signing of AfCFTA relative to the periods before such a signing. Remarkably, we also find no significant increase in trade exposure even after negotiations started in 2015. Such a flat and insignificant response, from the start of negotiations through to the signing in 2018, suggests that firms do not anticipate a significant change in trade exposure, presumably because information about the ongoing negotiation was made public.

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