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Abbreviations

ACP	African, Caribbean and Pacific Group of States
AfT	Aid for Trade
CAFTA-DR	Dominican Republic-Central America Free Trade Agreement
CARIFORUM	Caribbean Forum
CEMAC	Economic and Monetary Community of Central Africa
COMESA	Common Market for Eastern and Southern Africa
EAC	East African Community
EBA	Everything But Arms
ECOWAS	Economic Community of West African States
EPA	Economic Partnership Agreement
ESA	Eastern and Southern Africa
EU	European Union
FTA	free trade agreement
GDP	gross domestic product
GSP	Generalised System of Preferences
LDC	least developed country
OLS	ordinary least squares
PNG	Papua New Guinea
REC	Regional Economic Community
SADC	Southern African Development Community
SITC	Standard International Trade Classification
SPS	Sanitary and Phytosanitary Standards
TDCA	Trade, Development and Cooperation Agreement
TRAINS	Trade Analysis and Information System
UN	United Nations
WITS	World Integrated Trade Solution
WTO	World Trade Organization

Executive summary

The Economic Partnership Agreements (EPAs) constitute the centrepiece of the reformation of trade relations between the European Union (EU) and the African, Caribbean and Pacific Group of States (ACP) after the decades-long system of unilateral preferences was challenged in various dispute settlement proceedings at the World Trade Organization (WTO). EPA negotiations between the EU and regional blocs of ACP countries started in 2002. Conserving the existing tariff-free access of ACP exports to the EU market, EPAs entail tariff concessions on around 80 percent of trade from ACP countries in order to make bilateral trading conditions compliant with the WTO rulebook. To date, seven EPAs are under provisional application between the EU and 32 ACP partner countries.

This study provides early ex-post empirical evidence on the effects of provisionally applied EPAs on two-way trade flows between the EU and the ACP countries. Previous research has analysed the potential effects of the EPAs using partial or general equilibriums models simulating (future) economic effects. Because a number of EPAs are under recent provisional application, we use the gravity model of trade to analyse the actual effects of EPAs on trade flows.

Given their short lifetime to date, any empirical assessment of the trade effects associated with provisionally applied EPAs is limited by a relatively short treatment period. EPAs differ not only by regional scope and year of entry, but also by the depth and speed of the liberalisation process. The EU-CARIFORUM agreement, for instance, was concluded several years ahead of the other EPAs in 2008, and partial fulfilment of tariff commitments has been underway since 2010. By contrast, neither Ghana nor Côte d'Ivoire have started liberalising their import markets in the course of their respective interim EPAs. Despite these differences, a common feature across EPAs is that ACP countries are granted long implementation periods (up to 25 years) for their tariff reductions, to smooth the liberalisation process and allow for development of domestic industries. As mechanisms to provide ACP countries with the policy space to support industrialisation processes, they are also allowed to temporarily exclude certain products, protect infant industries and use export subsidies.

In line with other research on the effects of trade agreements and in view of the recent start of tariff reductions on the part of ACP countries, our empirical strategy does not exclusively focus on the trade effects arising from tariff concessions. Instead, in a more comprehensive manner, it also allows for anticipatory trade effects stemming from various policy effects of trade integration, such as signalling stable and predictable policy frameworks. Because EPA-participating ACP countries reciprocate the EU's earlier (unilateral) market access commitments, we a priori expected the trade effects associated with the EPAs to be on the import-, rather than on the export-, side of ACP countries.

The empirical findings of this study do not reveal a general EPA effect on total exports from ACP countries to the EU nor on total exports from the EU to ACP countries. However, some early effects can be observed when focusing on specific agreements and economic sectors. The EU-CARIFORUM agreement, if anything, reduced total imports and manufactures imports of the partner countries from the EU, which may be explained by other FTAs that were concluded by CARIFORUM countries and may have led to a re-orientation of trade flows. The provisional application of the other EPAs seems to have at least partly led to increased imports from the EU to some partner countries. More specifically, the estimation results suggest an increase in the total imports from the EU only in the SADC EPA partner

countries. On the sectoral level, by comparison, we find increases in the EU's agricultural exports to SADC, ESA and the Pacific. These sectoral findings are, however, largely driven by individual member countries, namely South Africa and Zimbabwe for SADC and ESA, respectively. Moreover, considering that our assessment of the SADC EPA builds on a relatively short observation period since entering provisional application, the estimated trade effects could well reflect a snapshot rather than the expected long-term trade patterns. Lastly, in the area of manufactures trade, we find decreases in exports from the ESA and SADC countries to the EU, but increases in imports from the EU into SADC countries. The former might reflect the partner countries' currently lower competitiveness in the manufacturing sector. The latter is attributable mainly to South Africa and potentially also the short duration of the SADC EPA's implementation to date.

While this early assessment of the EPA effects merits attention in light of the importance of monitoring future implications of these agreements, it is still too early for any final verdict on the EPAs' effects, and future research is needed to investigate the mid- and long-term consequences of these agreements.

1 Introduction

The Economic Partnership Agreements (EPAs) are free trade agreements (FTAs) that the European Union (EU) and 79 African, Caribbean and Pacific (ACP) countries agreed to negotiate in the context of the 2000 Cotonou Partnership Agreement (Brandi et al. 2017; Keijzer & Bartels, 2017).¹² Negotiations of these agreements were necessitated by the incompatibility of the EU's longstanding system of unilateral trade preferences, granted to ACP countries independent of their income levels, with the non-discrimination principle of the World Trade Organization (WTO). In contrast to unilateral trade preferences granted by the EU to ACP countries under the Lomé Conventions until the end of 2007, the EPAs demand commitments to liberalise trade reciprocally to make trade relations between the EU and the ACP countries WTO compliant.³

EPA negotiations began in 2002 and were highly contentious because of diverging views on the design of trade policies between the EU and the ACP countries (Meyn, 2008; Makhan, 2009). While the objectives of EPAs include, according to the text of the agreements, promoting trade while also fostering sustainable development, regional integration and Aid for Trade (AfT), the very nature and overall objectives of the EPAs as “trade and development” agreements are still under discussion. In particular, the relationship between trade and development remains controversial. Not all ACP states concur with the European Commission's perspective on EPAs as promising instruments to promote development. Critical voices among trade policy circles as well as civil society organisations contest the EU's demands to open their markets to exports from European companies in reciprocation of the free access to the EU's market (e.g., Hurt, 2016; Berthelot, 2017). For others, EPAs and associated AfT programmes are perceived as an opportunity to promote trade integration and economic development.

The rationale behind the EPAs is that reciprocal trade liberalisation is expected to encourage economic development. There are several ways in which trade liberalisation could theoretically support economic development. First, countries could specialise in the sectors in which they have a comparative advantage, thus raising overall productivity and generating welfare gains among all partners to the agreement. Further, a utilisation of economies of scale through concentration of production on either side in different products could have the same effect. Internationalisation of the economies additionally allows economic activity to be concentrated in the most productive exporting firms, which should additionally raise average productivity and thus welfare, and could even induce further learning effects. When ACP countries open their borders, thereby gaining access to cheaper imports, this might not necessarily be a threat to domestic industries but could be essential to consumers, giving them access to more affordable basic commodities, like food, and for export-oriented industries, giving them access

1 While the use of the term “FTAs” might be contested in the context of EPAs in which ACP countries do not fully reciprocate the EU's comprehensive market access, it seems to us the most adequate term to use to refer to these agreements.

2 The Cotonou Agreement expires in 2020 and is currently being renegotiated.

3 As of 2008, those ACP countries that do not (yet) implement an EPA export to the EU under either the Everything But Arms (EBA), Generalized System of Preferences (GSP) or GSP+ schemes, depending on their status of economic development. Gabon and Cuba are currently the only ACP countries without any form of preferential market access conditions to the EU.

to cheaper inputs. If exports from ACP countries to the EU increase, this in turn might support regional integration, as long as inputs are sourced from neighbouring countries. On the political economy side, the EU expects that the common negotiations with groups of countries could also promote regional cooperation. These positive expectations stand against the worries that developing countries could be trapped in low-productivity (growth) sectors, and that even these sectors may be exposed to competition. Further, higher productivity domestic industries that are in their infancy could have their growth stunted by cheap foreign competition. Also, tariff reductions may lead to an immediate loss in customs revenues (e.g., de Melo & Regolo, 2014). Therefore, the EU argues that the smooth and reciprocal, yet asymmetric, liberalisation process that the EPAs embody is the ideal way to foster development through trade integration.

Complications in the negotiations arose from a fragmented trade policy framework among ACP countries and the EU in particular in light of multiple, partially overlapping regional economic communities (RECs) in Africa. More specifically, under the Cotonou Agreement, which replaced the Lomé Convention, only the least developed countries (LDCs) are granted duty- and quota-free access to the EU under the EBA preference scheme. Middle-income countries have to trade under the less generous GSP or GSP+ scheme. Among ACP countries, only South Africa had an FTA in place with the EU: the Trade, Development and Cooperation Agreement (TDCA), which was signed in 1999 and entered into force in 2004. As a result of this fragmented trade policy framework, LDCs and middle-income countries had different incentives to conclude EPAs with the EU that offer permanent free access to the European market but also demand market access commitments from the ACP countries.

As a result of controversies and negotiation deadlocks, the outcomes of the first phase of negotiations that lasted until December 2007 did not go very far as none of the regional EPAs were concluded apart from the agreement with the Caribbean Forum (CARIFORUM). Instead, some bilateral interim agreements with African and Pacific countries were made. In light of the largely unsuccessful first phase, the EU set new deadlines for 2014 and 2016, linked to a threat to withdraw preferential market access, to force the pace of negotiation and ratification.

Currently, seven EPAs are provisionally applied. Beyond the EU's EPA with CARIFORUM, regional EPAs with Pacific countries, Eastern and Southern Africa (ESA) and the Southern African Development Community (SADC) are under provisional application. In other instances, bilateral EPAs with individual countries (Cameroon, Côte d'Ivoire and Ghana) have been the sole outcome of the negotiations between the EU and the ACP countries as regional EPAs have fallen by the wayside. A few African states – namely Burundi, Nigeria and Tanzania – are delaying ratification of their respective regional EPAs with the EU. Nigeria and Tanzania, for example, argue that the EPA undermines their industrialisation strategies (Rowden, 2016; Ogunmade and Ajimotokan, 2018). Although EPAs contain provisions that can be used to (temporarily) protect fledgling industries, countries like Nigeria and Tanzania perceive these as insufficient to meet their industrialisation ambitions. The decision of the UK to exit the EU further complicates EU-ACP trade relations as it has the potential to render EPAs with the EU less attractive.⁴

4 Brexit would have two main consequences for ACP countries. First, unless the UK is able to roll over the EPA commitments into its own FTAs with ACP countries, both the UK and the ACP countries would no longer trade under the EPAs because the UK would no longer be a party to the EPAs concluded by the EU. This in

What effects on trade flows are to be expected from the EPAs between the EU and the ACP countries? A key objective of the EPAs is to stabilise market access conditions for exporters from ACP countries to the European market. In most instances this means replicating the existing preferential tariffs. In some cases, however, the EPAs grant more beneficial market access conditions than the trade preferences granted under the Lomé Convention. What is new under the EPAs is that ACP countries are required to gradually dismantle most of their comparatively high trade barriers, although to a lesser extent on agricultural products. Therefore, the expectation is that exports from ACP countries to the EU will only grow slightly, if at all, in the longer term.⁵ By comparison, as a result of the market opening on the side of ACP countries, EU exports are expected to increase.

So far, the quantitative trade effects of EPAs have been estimated in a number of studies using ex-ante methods to simulate potential welfare, trade and revenue effects of these trade agreements using partial or general equilibrium models that rely on the assumptions of different scenarios in order to predict likely future trade patterns. In general, studies focusing on trade effects predict that EPAs predominantly stimulate EU exports while ACP exports to the EU are largely unaffected. At the same time, the EPAs would result in revenue losses for the ACP countries. An early study by Milner, Morrissey, and McKay (2005) uses a partial equilibrium framework to estimate the effects of an EPA between East African countries and the EU. They find that while both Tanzania and Uganda would benefit from cheaper EU imports, Kenya would be exposed to competition with EU imports in the market of the East Africa Community (EAC), in which it currently finds a regionally protected comparative advantage for more sophisticated goods. Milner et al. (2005) find that all countries would face significant revenue losses. For the Economic Community of West African States (ECOWAS), Busse and Großmann (2007) predict significant trade creation effects of an EPA with the EU for all countries belonging to this regional grouping. Again, all countries are expected to be negatively affected by revenue losses due to the required import tariff reductions. Vollmer, Martínez-Zarzoso, Nowak-Lehmann and Klann (2009) forecast the trade and welfare effects of interim EPAs for nine African countries. The authors use data on actual tariff reduction rates negotiated between the EU and African countries and find no or only slightly positive effects for the countries considered. Extending the partial equilibrium model framework to the ECOWAS-, Economic and Monetary Community of Central Africa (CEMAC)-, Common Market for Eastern and Southern Africa (COMESA)-, SADC-, CARIFORUM- and Pacific-EU EPAs, Fontagné, Laborde, and Mitaritonna (2010) simulate trade and tariff revenue effects across agriculture sectors. Their models generally confirm those of previous studies when it comes to tariff revenues from EU imports. At the same time, ACP exports to the EU are predicted to be 10 per cent above those under current GSP/EBA preference schemes for individual countries. For the EPA between the EU and EAC, de Melo and Regolo (2014) show that a shallow agreement that only focuses on trade in goods will have negligible trade and revenue effects. The study by Europeaid (2014) finds the CARIFORUM EPA's potential effects on EU exports to the Caribbean countries are limited while the agreement will have no effects on EU imports. In a recent report, Grumiller, Raza, Staritz, Tröster and von Arnim (2018) analyse the effects of the SADC, ECOWAS and EAC EPAs with a focus on Mozambique, Ghana and Uganda. They predict negative effects on output and employment as a result of the ACP countries' trade

turn decreases the value of EPAs for ACP states that trade significantly with the UK. Second, Brexit would make it more difficult for (mainly English-speaking) African states to continue using the UK as an "entry point" to the European internal market.

5 Because the EU liberalised its market towards ACP countries under the Lomé Convention entirely for industrial goods, but, at the same time, maintained some degree of protection in (selected) agricultural sectors, there could be sectoral differences.

liberalisation commitments under EPAs. Tröster et al. (2019) furthermore predict significant adjustment costs for African EPA partner countries. Overall, these studies have in common that they predict larger increases of exports from the EU to EPA partner countries than vice versa.

In this paper, we analyse the effects as can be observed hitherto of the provisionally applied EPAs on trade flows from partnering ACP countries to the EU, and on trade flows from the EU to partnering ACP countries. Given their short provisional application to date, the scope for using ex-post empirical methods to analyse EPAs' effects on trade – in contrast to ex-ante approaches – has until now been very limited. To the best of our knowledge, this is the first ex-post study that employs the gravity model of trade to assess the trade effects of all provisionally applicable EPAs comprehensively to date. From an academic point of view, this study represents an early econometric analysis of the EPAs' trade effects that can be replicated and extended when the EPAs' commitments are applied for longer time periods or when new EPAs become effective. From a policy perspective, this early analysis can empirically inform debates about the benefits and challenges of EPAs that are often based on ideological perceptions or anecdotal evidence. Increasing trade is one of the important objectives set out in the EPAs. While others are key as well, above all development and regional integration, they are not assessed in this study, which focuses on the key aspect of EPAs that is typically in the spotlight of the debate around these agreements, namely how EPAs affect trade flows.⁶

Compared with a descriptive analysis of the developments of trade flows, an econometric approach allows us to, in the best way possible, infer causal effects of the EPAs on trade flows between the respective ACP countries and the EU. Given that many EPAs are not in force yet, ex-post analysis is restricted to the effects of the EPAs with CARIFORUM, SADC, ESA, Cameroon, Côte d'Ivoire, Ghana and the Pacific on EU-ACP imports and exports. As EPAs replace nonreciprocal preferences, the analysis focuses on what the EPAs add to these in determining trade flows. The effects that the nonreciprocal schemes had on recipients' exports are under some discussion in the literature (Ornelas, 2016), but most recent studies establish that they had a positive effect on exports from developing countries to the EU, with a stronger effect from EBA than from GSP schemes (e.g., Gil-Pareja, Llorca-Vivero, & Martínez-Serrano, 2014; Cirera et al., 2016; Gradeva & Martínez-Zarzoso, 2016; Sorgho & Tharakan, 2019). Prospects of the trade effects associated with the provisionally applied EPAs may well be derived from numerous ex-post studies analysing reciprocal North-South trade agreements. For instance, while Behar and Cirera-i-Crivillé (2013) and Cheong, Kwak and Tang (2015) find that North-South trade agreements boost bilateral trade, estimation results presented in both papers, however, suggest that the trade creating effects are comparatively more pronounced in trade agreements among developing countries.

Our estimation results, as we expected and as predicted by ex-ante studies, do not identify any effects of EPAs on exports from participating ACP countries into the EU. When it comes to the effect on exports from the EU into the partner countries, however, the evidence is rather mixed. While generally, our findings do not suggest an across-the-board EPA effect on EU exports to the ACP countries, there is significant heterogeneity across individual EPAs. With regard to the trade of the EU with CARIFORUM countries, our analysis finds a decrease in response to the EPA. This unexpected result could be explained by contemporary FTAs concluded by CARIFORUM countries, such as the Dominican Republic-Central America (CAFTA-DR) FTA in 2006, that may have led to a re-orientation of trade flows. We find an overall effect on EU exports only in the case of the SADC EPA. Focusing only on agricultural exports of the EU we find significant increases in the case of SADC, ESA and the Pacific countries. Furthermore, we

6 On the implications of EPAs for regional integration, see Hulse (2016), for instance.

find a negative effect of EPAs on manufactures exports of ESA and SADC to the EU. These early findings are in line with the expectation that, by replacing non-reciprocal preference schemes of the EU, the EPAs will largely have an effect on exports from the EU to partnering ACP countries. While EPAs could also promote exports from ACP countries to the EU by offering slightly better and more secure long-term market access to the European market, the effect on imports from the EU can be expected to be more direct and pronounced.

While all of these results are to be considered tentative given the short amount of time that has passed since liberalisation began and that liberalisation effects are fully revealed over the longer term, particularly on the side of the ACP partner countries, they can already give some indication of how EPAs will affect trade flows in the long term. Rather than providing a definitive answer on the effects of the EPAs that are provisionally applied, this research provides an early assessment and is intended to lay the foundation for future empirical research.

The remainder of the paper is structured as follows. The next section introduces the institutional framework of the provisionally applied EPAs and shows their current status of implementation. It briefly describes the main characteristics of the trade relationship between individual EPA partners and the EU. Section 3 presents the data and methodology used in the analysis of the effects of the EPAs on bilateral trade flows of the partner countries. Section 4 presents the results of the analysis for overall trade in both directions, differentiated by partner country groups and sectors. Section 5 concludes and gives an outlook.

2 Provisionally applied EPAs at a glance

The EPAs negotiated by the EU with regional ACP groupings are agreements that include asymmetric commitments to reduce barriers to trade. While the EU commits to full tariff reduction on day one of the entry into force of the agreements, ACP countries commit to reduce tariffs between 40 and 97 per cent, on 75-97 per cent of their imported goods (UNECA, 2018). The agricultural and textiles sectors often face lower commitments to liberalise trade than other sectors. In addition, ACP countries are granted implementation periods for their tariff reductions that can be as long as 25 years to smooth the liberalisation process and allow domestic industries to adjust. As mechanisms to provide ACP countries with the policy space to support industrialisation processes, they are also allowed to temporarily exclude certain products, protect infant industries and use export subsidies. In order to boost economic development, each EPA includes detailed development cooperation commitments by the EU, such as AftT, to support implementation and to help partner countries reap the benefits of the agreements.

The degree to which partner countries can make use of the tariff reductions of the EPAs, as with all other FTAs, depends on the design and stringency of rules of origin. Rules of origin determine the “nationality” of a product by defining the levels of value addition or production steps that need to take place in the economies of the members of the FTA. Without proof of origin a product cannot be traded on the preferential terms of an FTA. Rules of origin are an integral part of every FTA to prevent the diversion of trade flows from third countries to make use of the preferential tariff rates.⁷ Compared with the EU’s EBA scheme granting duty- and quota-free access for LDCs, EPAs typically offer better (e.g., less stringent) rules of origin. In particular, they allow for a commutation of value-added originating in other ACP countries, thus supporting regional integration (UNECA, 2018). More generous rules of origin in EPAs

7 On rules of origin in the African context, see also Draper et al. (2016).

can make these agreements an attractive prospect for ACP states that are heavily reliant on inputs from neighbouring countries and support the development of regional value chains.

At the start of the negotiations, the EU intended to conclude EPAs with seven regional blocks. The EPAs differ by regional scope and year of entry as well as by the depth and speed of their liberalisation processes. Because regional EPAs with ECOWAS, Central Africa and EAC have not yet entered into force, our analysis focuses on the agreements that are provisionally applied: four regional EPAs (CARIFORUM, Pacific, ESA and SADC) and three bilateral EPAs with Cameroon, Côte d'Ivoire and Ghana (see Table 1).

In a nutshell, seven EPAs involving 32 partner countries are currently provisionally applied, of which some are further progressed than others particularly regarding the implementation of the liberalisation schemes on the side of the ACP countries. The oldest has been provisionally in force since 2008, and others have just recently begun to be applied. We will detail each relationship in what follows.⁸

Region	Members	Start date of provisional application	Percentage of liberalised trade (and time frame)
CARIFORUM	Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, St. Christopher and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago	29 December 2008 (Haiti not included due to pending ratification)	86.9 (over 25 years)
Pacific	Fiji, Papua New Guinea, Samoa	2011 (Papua New Guinea), 2014 (Fiji), 2019 (Samoa)	80 to 88 (up to 20 years)
ESA	Comoros, Madagascar, Mauritius, Seychelles, Zimbabwe	14 May 2012 (Madagascar, Mauritius, Seychelles, Zambia, Zimbabwe), 7 February 2019 (Comoros)	80 to 97.4 (over 10 years)
	Cameroon	4 August 2014	80 (over 15 years)
	Côte d'Ivoire	3 September 2016	80 (over 14 years)
SADC	Botswana, Lesotho, Mozambique, Namibia, Swaziland, South Africa	10 October 2016	81 to 86.2 (10 to 12 years)
	Ghana	15 December 2016	80 (over 15 years)

Source: Authors' representation, adapted from UNECA (2018) and EC (2018).

⁸ If not otherwise indicated, the information on the nature and implementation of the EPAs as well as the trade data used in the following paragraphs is based on EC (2018).

2.1 EU-CARIFORUM EPA

The agreement between the EU and the CARIFORUM was the first regional EPA. It was signed in October 2008 and has been provisionally applied by all parties (with the exception of Haiti, the only LDC with access to EBA preferences in the group) since December 2008. The CARIFORUM EPA's tariff liberalisation covers 87 per cent of the trade volume and the full liberalisation amounts to 90 per cent (UNECA, 2018). While tariff liberalisations on the part of CARIFORUM countries began in 2011, the long transition period of 25 years means that the full liberalisation effect has not yet kicked in. In contrast to other EPAs, the CARIFORUM agreement also covers market access commitments on services and other trade-related provisions, such as competition, public procurement and intellectual property. The services sector in particular is of importance for the Caribbean countries. The market access offers for services by the EU, however, are less generous compared with trade in goods.

Up until the global financial crisis, trade volumes between the EU and the CARIFORUM countries grew significantly. After 2008, however, EU imports from CARIFORUM countries declined significantly and since 2016, they have recovered only slightly. Exports from the EU to CARIFORUM decreased in the aftermath of the global financial crisis (but less severely than exports from the CARIFORUM countries to the EU) and have been on slight upward trends since then. As a result, since 2008, the EU's trade balance with the CARIFORUM countries has grown substantially from a bilateral deficit of EUR -971 million in 2009 to EUR 1.55 billion in 2018.

It is consequently argued in the qualitative literature that so far, the trade effects of the CARIFORUM-EU EPA are limited (Schmieg, 2015). This may be a result of the long implementation period of tariff liberalisations and the protracted implementation of the agreements commitments (Humphrey and Cossy, 2011; Europeaid, 2014). Additionally, if not more importantly, the limited impact of the agreement is explained by the impact of the financial crisis of 2008 and 2009, Caribbean countries' domestic structural challenges and high non-tariff barriers on the EU market (Europeaid, 2014; Schmieg, 2015).

2.2 EU-Pacific EPA

The EU-Pacific EPA negotiations were concluded in 2007 with Papua New Guinea (PNG) and Fiji – two of the 14 Pacific States, which account for the majority of regional exports to the EU. The EU-PNG EPA came into force in 2011 and while Fiji is still to ratify its EPA, it has been provisionally applying the bilateral agreement with the EU since 2014. In December 2018, Samoa acceded to the EU-Pacific EPA.

The EPA with Fiji and PNG foresees the liberalisation of 87 per cent and 88 per cent of trade, respectively, and PNG reduced its tariffs on day one of the provisional application of the agreement. The EPA generates trade preferences for Pacific countries for processed fish products, for example canned tuna, by allowing for an exemption of the usual Rules of Origin.⁹

Exports and imports between the EU and the Pacific countries have fluctuated over the past years. While exports from the Pacific countries, in particular Papua New Guinea, have been growing in since 2016, exports from the EU to the Pacific countries have been on the decline

9 “The ‘global sourcing’ provision allows Pacific EPA countries to source fish from any vessel for further processing (regardless of who caught the fish, or where it is caught)” (EC, 2018).

over the past four years. The Pacific countries' most important exports to the EU include commodities like palm oil, copper, sugar, coconut and fish. In particular, PNG's exports of processed (canned) tuna to the EU has grown considerably over the past years. The EU's most important exports, on the other hand, are machinery and vehicles.

2.3 EU-ESA EPA

The EU concluded the EPA negotiations with six countries from the ESA region (Comoros, Madagascar, Mauritius, Seychelles, Zambia and Zimbabwe) at the end of 2007. The agreement was signed in August 2009 by Madagascar, Mauritius, Seychelles and Zimbabwe and has been provisionally applied by the four countries since May 2012. Comoros ratified the ESA EPA in February 2019 and began applying the agreement immediately. The members of the ESA EPA are diverse in terms of their developmental status. While Seychelles and Mauritius belong to the high, respectively upper-middle-income country group, Comoros, Zambia and Zimbabwe are classified as lower-middle-income countries and Madagascar as a low-income country.

The percentage of liberalised tariff lines ranges from 86 per cent (Zimbabwe) to 90 per cent (Madagascar), 95 per cent (Mauritius) and 97 per cent (Seychelles). The percentage of liberalised trade volumes ranges from around 80 per cent (Madagascar and Zimbabwe) to around 95 per cent (Mauritius and Seychelles). Tariff liberalisation started in 2013 and a transition period is scheduled to run 10 years (UNECA, 2018). Most ESA exports to the EU do not face any tariff barriers as the EU's most-favoured-nation (MFN) tariffs agreed in the context of the WTO are at zero. Comoros, Zambia and Madagascar have been granted EBA status.

EU-ESA trade volumes fluctuated over the past two decades despite a drop in both exports and imports during the global financial crisis. In particular, since 2016, both exports and imports have been growing strongly. ESA countries run a persistent trade surplus vis-à-vis the EU. With the exception of Zimbabwe, the EU's agri-food exports to ESA countries have been increasing solidly. Above all, Mauritius, being the main import market for the EU among the ESA countries and an important processing platform for the region, imports low-cost raw materials from the EU, such as milk powder and grain. Agri-food exports play a huge role for the ESA countries. In particular, agri-food exports from Madagascar to the EU have shown strong growth since 2013 and account for over half of the overall agri-food exports of ESA.

2.4 EU-Cameroon EPA

In the central African region, Cameroon is the only country that has signed an EPA with the EU. Signed in January 2009 and provisionally applied since August 2014, the agreement focuses on trade in goods, but is also intended as a "stepping-stone" agreement that includes "rendez-vous" clauses that should enable future negotiations among the partners regarding issues such as services, competition and intellectual property. The EPA grants Cameroon immediate duty- and quota-free access to the EU's market while Cameroon commits to liberalise 80 per cent of its tariff lines by 77 per cent over a period of 15 years. Cameroon agreed to liberalise imports of industrial machines, electrical equipment and certain chemicals. Cameroon started the liberalisation in 2016. Many processed agricultural products and textiles imports, however, are excluded from liberalisation.

Trade relations between the EU and Cameroon have been relatively stable over the past decade. While EU export flows to Cameroon have increased slightly, Cameroon's exports to the EU

have been declining since 2013. Still, Cameroon runs a trade surplus with the EU, which, however, is declining. Cameroon's main exports to the EU include oil (32 per cent of total exports in value), cocoa beans (22 per cent), wood (15 per cent), bananas (13 per cent) and aluminium (5 per cent). Processed cocoa exports have increased by 82 per cent since 2010. The EU mainly exports under EPA preferences clinker (for cement) (31 per cent of total value of imports under EPA preferences), machinery and equipment (21 per cent), articles for breweries (13 per cent), chemical industries (10 per cent), fertilisers (10 per cent), electrical machinery and equipment (7 per cent).

2.5 EPAs with West Africa

In 2014, the EU and 15 of the 16 West African countries (Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, The Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mauritania, Mali, Niger, Senegal, Sierra Leone and Togo) signed an EPA. Because Nigeria has not (yet) signed it, the EPA has not (yet) been submitted for ratification. Meanwhile, stepping-stone EPAs with Côte d'Ivoire and Ghana entered into provisional application in 2016.

The EPA between Côte d'Ivoire and the EU was concluded in 2008 and entered into provisional application in September 2016. Exports from Côte d'Ivoire have been granted duty-free and quota-free access to the EU since 2008. Tariffs on imports from the EU only began to be liberalised in 2019. Over a 14-year period, import duties on 80 per cent of EU exports to Côte d'Ivoire are planned to be gradually eliminated. Starting in 2019, the use of quantitative restrictions by the government of Côte d'Ivoire on imports from the EU is prohibited.

For Côte d'Ivoire, the EU is by far their most important trading partner. Both EU exports and imports from Côte d'Ivoire have been growing steadily over the past two decades while the EU runs a persistent trade deficit with Côte d'Ivoire. Côte d'Ivoire's exports to the EU are largely agricultural products. The most important EU imports from Côte d'Ivoire are cacao beans (45 per cent of total imports in value) and processed cocoa products (23 per cent). Banana imports from Côte d'Ivoire to the EU have grown significantly (by about 80 per cent) between 2007 and 2017 (with total banana imports into the EU merely growing about 50 per cent). Without tariff reductions, because of the EPA, the value of agri-food exports from the EU to Côte d'Ivoire increased by around 15 per cent between 2014 and 2018 (e.g., meat products and cereals). The most important exports from the EU to Côte d'Ivoire were machinery and transport equipment (35 per cent), a variety of foodstuff and agricultural products (20 per cent) and chemicals and pharmaceuticals (17 per cent).

The EPA between Ghana and the EU was concluded in 2007 and entered into provisional application in December 2016. The EPA envisages the liberalisation of 80 per cent of imports from the EU, but Ghana has not yet begun to reduce its trade barriers for imports from the EU as Ghana's market access commitments are still being discussed (EC, 2018). Ghanaian exports enjoy duty-free and quota-free market access to the EU.

EU-Ghana trade relations were on an upward trend until 2013 when both import and export volumes declined. Ghanaian exports started to increase again in 2017 while EU exports remained stagnant. In 2017, the main products by value that were exported to the EU by Ghana were cacao beans (30 per cent of total agri-food exports), cocoa butter, paste and powder (23 per cent), fuels (22 per cent), and edible fruits and nuts (2 per cent). Since 2014, Ghana has increased its exports of cocoa paste and cocoa powder to the EU by more than 50 per cent. The main EU exports to Ghana in 2017 were machinery and transport equipment (30 per cent), fuels

(16 per cent), agri-food products (43 per cent) and chemicals (11 per cent). Since 2014, EU agri-food exports to Ghana have increased in value by 43 per cent. There has been strong growth in the value of EU poultry meat exports (> 192 per cent), dairy exports (> 44 per cent), vegetable oils (55 per cent) and exports of miscellaneous edible preparations (275 per cent). EU sanitary and phytosanitary standards (SPS) have negatively affected trade flows from Ghana in recent years. Increasing standards (see also new EU Plant Health legislation) led to an EU import ban of specified vegetables from Ghana in 2015 (e.g., peppers and chillies) until the ban was lifted again in 2018.

2.6 EU-SADC EPA

The EPA between the EU and six countries from SADC (Botswana, Lesotho, Mozambique, Namibia, South Africa and Swaziland) entered into provisional application in 2016 for all parties with the exception of Mozambique, for which it entered into provisional application in 2018. The EU-SADC EPA is the only fully operational regional EPA in Africa with all member countries implementing the tariff cuts envisaged by the EPA. In the case of South Africa, the EPA replaced a previous bilateral trade agreement between the EU and South Africa, which led to the removal of tariffs on imports from the EU in the period between 2002 and 2012. In the context of the EPA, new market access offers were negotiated between the EU and South Africa. South Africa gained additional concessions (although not duty-free, quota-free like the other countries) and the EU was granted slightly better conditions by South Africa.

Trade volumes between the EU and SADC grew continuously until the global financial crisis in 2008 and 2009. Exports of the SADC countries to the EU only started to grow again in 2015 and EU exports to SADC began recovering in 2016. Recently, several agri-food exports from the EU have grown for a number of goods for which the EPA generates improved market access via extra or revised tariff rate quotas, for example, wheat, pig fat, pork meat and butter. South Africa's exports to the EU increased by only 0.7 per cent in 2017, and its share in the SADC EPA members' exports to the EU increased to 83 per cent up from 80 per cent in 2014.

Our analysis in this paper goes beyond the above-mentioned descriptive analysis of trade flows that may be influenced by a host of international and domestic factors. More specifically, we aim to identify which part of the developments in trade flows since the application of the different EPAs can be attributed to these EPAs. We therefore apply an econometric approach to best elicit the causal effect of EPAs on trade volumes besides any other, potentially confounding, factors. We will introduce our analytical framework in the next section.

3 Empirical model

In line with the large body of literature on the ex-post assessment of (international) trade policies, for our econometric analysis we build upon the gravity model of trade. In its basic form, the gravity equation describes bilateral trade as a function of trading partners' gross domestic products (GDPs) and their distance to each other. Pioneered by Tinbergen (1962) and Pöyhönen (1963), who were the first to estimate the impact of trade integration on trade flows, the gravity model found theoretical support from Anderson (1979), Helpman (1987), Bergstrand (1985; 1989), Deardorff (1995), and Anderson and van Wincoop (2003). Undergoing both continuous refinement of explanatory variables and improvements in estimation techniques, the gravity equation has evolved into the famously termed "empirical

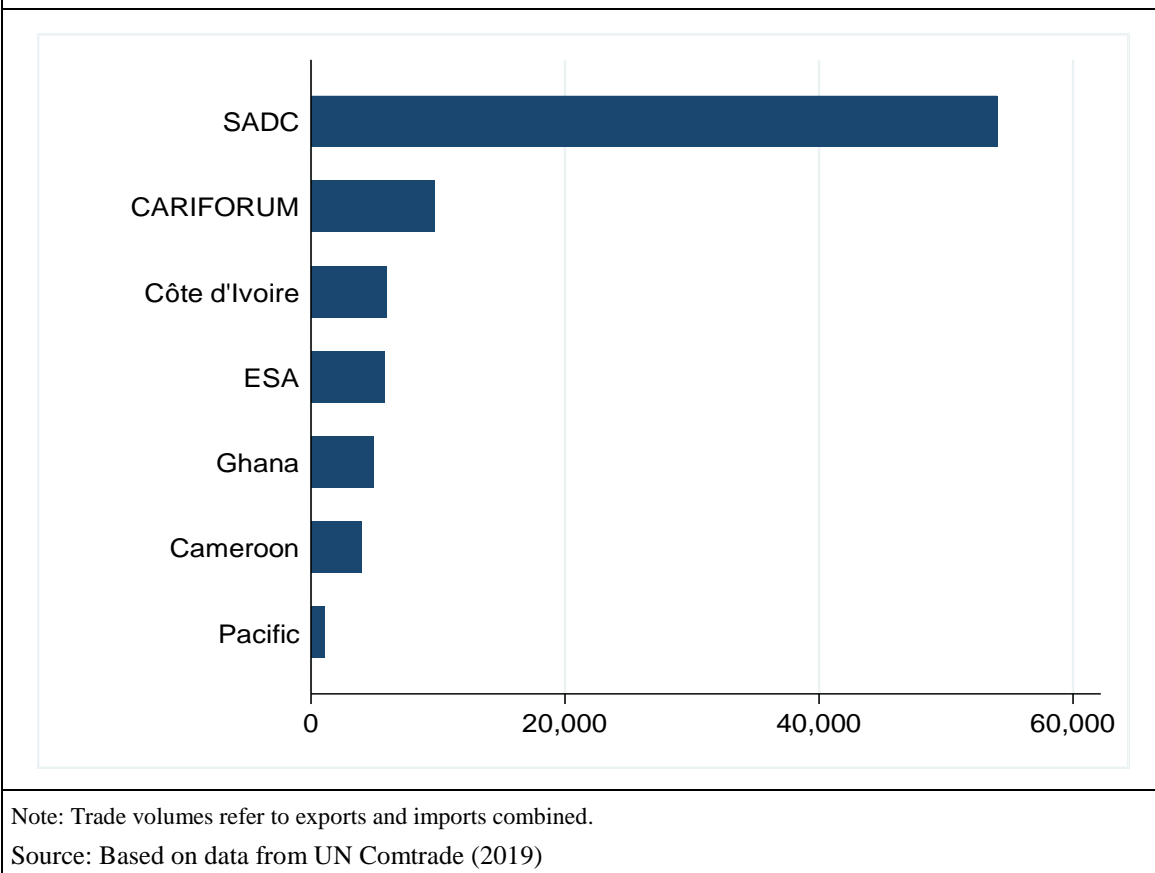
workhorse” in international trade analysis. In contrast to ex-ante methods, used to simulate *future* effects of trade agreements (forward perspective), the gravity model allows for an assessment of trade agreements based on trade developments of (participating) countries since their inception (backward perspective).

3.1 Data

As dependent variables, we use both exports and imports between the world’s top-100 trading nations (based on export performance) and 79 ACP countries for the period from 2000 to 2018 (see Tables A1.1 and A1.2 of the Appendix for the complete list of countries in the sample). More specifically, we consider three different commodity aggregations: (1) total trade flows; (2) agricultural trade flows (sum of Sections 0, 1, 22, and 4 under the Standard International Trade Classification (SITC) Revision 3); and (3) manufactures trade flows (sum of Sections 5, 60, 61, 62, 63, 64, 65, 66, 67, 69, 7, and 8 under SITC Revision 3). All current member countries of the European Union (EU28) are recorded in the data and treated as individual countries. We merge the trade data with the membership information of all seven EPAs, which have by now entered into provisional application.

Our sample covers approximately 84 and 92 per cent of total ACP imports and exports, respectively. Trade with the EU28 alone accounts for some 25 per cent in our sample period, making the bloc the ACP countries’ main trading partner. All trade data are taken from United Nations (UN) Comtrade. Although the source is the most comprehensive in its coverage of international trade flows, data availability essentially depends on the reporting of individual countries, and developing countries are notoriously negligent in this respect. On the conceptual front, we therefore rely on export and import values from/to ACP countries reported by the world’s top-100 trading nations. Compared with reversely reported trade flows, this increases observation sizes averaged over all our commodity aggregations by factor 1.8 and 1.3, roughly, for ACP exports and imports, respectively.

When analysing the effects of the EPAs that are under provisional application, it is important to consider that volumes of trade between the regional groupings and the EU differ substantially. That said, although the underlying reasons for these differences vary – from (combined) domestic market sizes to trade openness – the perceptibility of the trade effects associated with EPAs in absolute terms might well be heterogeneous, depending on the regional grouping. Figure 1 shows that the SADC EPA covers the largest trade volume by far among the partner countries that have an EPA with the EU. Within SADC, South Africa accounts for more than 80 per cent of exports and imports with the EU. All other regions and partner countries trade in similar dimensions with the EU in absolute terms.

Figure 1: Annual average trade volumes with the EU by EPA country grouping, in million USD, 2000-2018

3.2 Estimation strategy

Considering an augmented gravity equation, our baseline model specification reads as follows:

$$\ln(T_{ijt}) = \alpha_0 + \beta_1 EPA_{ijt-1} + \pi_{ij} + \eta_{it} + \mu_{jt} + u_{ijt} \quad (1)$$

where $\ln(T_{ijt})$ denotes the natural logarithm of either country i 's imports or exports expressed in current USD from/to ACP countries (j) in year t , α_0 is a constant and u_{ijt} is the error term. Trade values are logarithmised to allow for an interpretation of coefficient estimates in terms of percentage changes. For the identification of the trade creation effects associated with EPAs, we employ as our main independent variable the dummy variable EPA , which equals unity if i (member of the EU28) and j (ACP country) are both members of a common provisionally applied EPA in t , and zero otherwise.¹⁰ Note that we code the dummy according to the formal start year of the provisional application of the respective EPAs.¹¹ There are arguments both for and against this approach.

¹⁰ Despite a growing body of empirical literature on trade policy that uses continuous explanatory variables (e.g., Cipollina & Salvatici, 2010; Hayakawa et al., 2016), most notably, preferential tariff margin measures, relying on policy dummy variables to assess the “overall” trade effects of trade agreements remains the predominantly pursued methodological strategy when employing the gravity model of trade to analyse FTAs’ effects. See below for a more detailed discussion.

¹¹ See Table 1 for information on the start years of provisional application. For the EU-CARIFORUM and EU-Ghana EPAs, however, we code the dummy to 2009 and 2017, respectively, as both entered into force in December.

On the one hand, while the EU has granted duty-free market access to ACP countries immediately after the formal launches of the respective EPAs, ACP countries are allowed to schedule gradual tariff reductions towards EU imports over time. The formal start years of the EPAs are thus not necessarily accompanied by any actual liberalisation of ACP markets. Precise isolation of the trade effects associated with tariff reductions, however, would require a data-intensive analysis at the highly disaggregated tariff level because tariff schedules vary widely, not only across participating ACP countries, but even more so across various types of goods. As a remedy and to mitigate against the potential discrepancy between formal and actual implementation, we lag our policy dummy variable by one period.¹²

On the other hand, a number of empirical studies (e.g., Magee, 2008; Mölders & Volz, 2011; Lakatos & Nilsson, 2017) provide evidence that trade agreements entail significant anticipatory trade effects even before tariff reductions have been effectively implemented. One explanation might be that the general reduction of trade policy uncertainty (for both importers and exporting firms) in the wake of formally agreed but not yet ratified or implemented trade agreements.¹³ Omission of such anticipatory trade effects would thus underestimate the total trade effects resulting from trade integration. Moreover, the formal start of EPAs is often complemented by AfT and other types of trade-related development assistance for ACP countries, which might in turn increase trade flows. AfT support, however, may impact trade flows only in the medium term when external support increases the competitiveness of local enterprises. With this in mind, our policy dummy variable might well absorb a mixture of potential anticipatory and implementation trade effects. Given pending tariff reductions on EU imports for a number of ACP countries (Côte d'Ivoire, Ghana, Comoros and Samoa), for these countries our policy dummy variable only captures the former. This needs to be considered in the context of the interpretation of estimation results below. We also conducted robustness tests that incorporated the actual start year of the tariff reductions in ACP countries as determining the EPA dummy. Our general findings presented below do not hinge on the decision of when exactly we consider an EPA to be effective, as considering the actual start of agreed tariff reductions on the import side of ACP countries does not affect the estimation outcomes qualitatively.¹⁴

An alternative approach to estimate the trade effects associated with EPAs would be to consider trade policy more explicitly, for instance through a continuous tariff measure. While this strategy would allow us to estimate a causal link between tariff concessions and trade patterns, it comes at the price of three distinct concerns.¹⁵

First, even relying on the most comprehensive database with respect to tariffs (i.e., the World Integrated Trade Solution (WITS) Trade Analysis and Information System (TRAINS) provided

12 Our general findings are not affected by refraining from the lag-structure of the EPA dummy variable.

13 One may argue that, in the case of some EPAs, negotiations began 10 to 15 years prior to signing. This negotiation history could have caused a substantial degree of anticipation to the extent that formal conclusion of the agreement would not have added much to the reduction of uncertainty. This argument, however, neglects the fact that the sheer length of negotiations does not determine their success, an argument that is supported by the fact that a number of EPAs have not yet been signed or are not applied.

14 Using this coding, however, it is no longer possible to estimate the imports effects for the Côte d'Ivoire- and Ghana EPAs as both countries have not yet started to liberalise their markets for EU imports. Estimation results using a tariff schedule adjusted (not lagged) EPA policy dummy variable (taking into account agreement-specific start years of tariff reductions) are available upon request.

15 In the case of the EU-CARIFORUM EPA, there is a fourth reason. Given the more comprehensive nature of the EPA, which covers not only trade in goods liberalisation but also, inter alia, services, investment and intellectual property rights, a focus on tariffs would underestimate the potential trade effects of the other provisions.

by the World Bank) does not avert the fact that data are missing for several, mainly African, ACP countries. In comparison with our baseline estimation results reported in Table 2, for instance, we would lose 31,689 observations (38 per cent) when employing applied tariffs as explanatory variable instead of the EPA policy dummy variable. Moreover, in view of the fact that tariff data are non-randomly missing across imposing countries, incorporating tariffs might thus lead to a severe sample selection bias.

Second, using applied tariffs as an explanatory variable does not allow us to distinguish between tariff concessions resulting from multilateral, regional or bilateral developments. Using such an approach would thus imply that it is no longer possible to clearly assign changes in bilateral trade to the event of EPAs.

Lastly, our analysis focuses on total trade, and aggregate agricultural and manufactures trade. Tariff policy, by contrast, is implemented at the most disaggregated tariff line level. Any aggregation in turn disregards the heterogeneity of tariffs across traded goods, which would be needed in order to appropriately draw inference from the effect of tariff concessions on trade patterns. Thus, we focus here on a *general* EPA effect.

Exploiting the panel nature of our data, we incorporate a battery of fixed effects into Equation (1). Following the methodology in Baier and Bergstrand (2007) we use time-invariant country-pair- (π_{ij}), and two-way importer-year- and exporter-year fixed effects (η_{it} and μ_{jt} , respectively). The former controls for historical ties between trading partners, their mutual distance and, more generally, the endogeneity of trade agreement formation. The latter two fixed effects account for time-varying multilateral trade resistance (Baldwin & Taglioni, 2006) but also pick up any country-year specific supply or demand shock. If omitted from Equation (1) but correlated to our policy dummy variables, estimation results would be biased.

From a technical point of view, for the identification of the trade effects resulting from EPA formation, estimation relies on the temporal variation of bilateral trade within country pairs. More precisely, we compare relative changes in trade with the EU between EPA signatories after the provisional application of the EPA with changes in the respective trade volumes of either partner country with all other countries. In comparison with a plain descriptive approach, this may generate different insights. Take for example the case in which an ACP country suddenly imports more agricultural goods in the period after the enforcement of an EPA because of a drought. A mere look at the development of agricultural imports from EU countries would suggest a positive effect of the EPA on trade volumes. However, if the respective ACP country imported more agricultural goods from other countries as well, this should rather be ascribed to the country-specific demand shock. Our estimation strategy thus only attributes a change in import levels from EU EPA partner countries to the EPA, if the percentage change in imports is higher than the imports from other countries in the same period, given that the EU partner countries did not generally export proportionally more to other countries either.

Ideally, we would control for further time-varying bilateral determinants. However, apart from, for instance, bilateral financial flows and exchange rate volatility, it is virtually impossible to comprehensively capture all such effects. This is particularly true for expectations of the developments of future trade flows that may be correlated with the decision to enter an EPA and that may be captured by our results. From an econometric point of view, we cannot proxy bilateral events that occurred contemporarily with EPA formation with time-varying dyadic fixed effects (in exchange for those included) as this would perfectly predict our dependent variable. Hence, estimating the link between trade integration and trade patterns would no longer be possible. This caveat needs to be kept in mind when interpreting our results.

4 Estimation results

4.1 Total trade

Table 2 presents ordinary least squares (OLS) estimation results for ACP countries' total exports (Columns 1-3) and imports (Columns 4-6). As can be seen in Columns 1 and 4, the coefficient estimate for the generalised EPA policy dummy variable is never statistically significant at any of the standard levels, neither for ACP exports nor for ACP imports. This indicates that provisionally applied EPAs have thus far, on average and all else held equal, not affected ACP-EU trade flows in either direction when aggregated across all economic sectors. The finding does not come as a surprise. First, as outlined above, ACP countries have enjoyed widespread tariff preferences in the EU market already in the pre-EPA phase. With this, market access improvements offered by the EPAs are, if at all, only marginal. Second, participating ACP countries are granted between 10- and 25-year transition periods in the legal frameworks of EPAs to liberalise market entry for EU imports. Even for those countries already putting forward tariff elimination, full liberalisation is pending across the vast majority of economic sectors.

	<i>ACP Exports</i>			<i>ACP Imports</i>		
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
EPA_{ijt-1}	-0.0436 (0.0855)			-0.0680 (0.0550)		
__ w/ EU12		-0.00736 (0.0969)			0.0461 (0.0550)	
__ African Group			-0.0239 (0.103)			0.145* (0.0767)
__ Caribbean Group			-0.108 (0.120)			-0.208*** (0.0740)
__ Pacific Group			0.394 (0.253)			0.133 (0.192)
Constant	13.05*** (0.00417)	13.04*** (0.00238)	13.05*** (0.00445)	14.45*** (0.00290)	14.44*** (0.00137)	14.45*** (0.00305)
Observations	79,855	79,855	79,855	83,302	83,302	83,302
Country-pairs	6,281	6,281	6,281	5,961	5,961	5,961
R ² adj.	0.779	0.779	0.779	0.842	0.842	0.842
Fixed effects:						
<i>Country-pair</i>	✓	✓	✓	✓	✓	✓
<i>Country-year</i>	✓	✓	✓	✓	✓	✓
Notes: Asterisks denote the level of statistical significance with *** p<0.01, ** p<0.05 and * p<0.1. Robust, clustered (at the country-pair level) standard errors are in parentheses. EU12 members include Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain and the United Kingdom. See Table A1.1 of the Appendix for the regional grouping of ACP countries.						
Source: Authors						

Complementing these generalised results, we also focus on potential regional implications. To assess region-specific effects, we interact the EPA dummy variable with a number of regional groupings. To begin with, we estimate the EPA effects on ACP exports and imports, respectively, exclusively for EU12, representing long-standing EU member countries before the 1995 enlargement.¹⁶ As can be seen in Columns 2 and 5, the above findings are not altered.

A different picture is painted, however, when categorising EPAs by the regional affiliations of participating ACP countries. While estimation results in Column 3 confirm that ACP exports to the EU28 are unaffected by EPAs to date, the results reveal some heterogeneity on ACP countries' imports. Notably, according to sign and magnitude of the coefficient estimate, the findings in Column 6 suggest an increase of EU exports to those African ACP countries that have concluded EPAs. The effect is estimated to be statistically significant at the 10 per cent level and translates into growth of import values caused by the EPAs of 15.6 per cent.¹⁷ A possible explanation could well be found in the stepwise liberalisation of ACP markets for EU imports already underway in at least some African EPA countries and general anticipatory trade effects as a result of a more certain trading environment. Findings for the African ACP countries are thus likely driven by the trade effects resulting from the ESA-, Cameroon-, and SADC EPAs.¹⁸ Other possible drivers of positive EPA effects might be the potential anticipation effects or different types of trade-related development assistance.

In comparison, estimation results reveal no statistically significant EPA effect on EU imports for the ACP countries located in the Pacific region. For the group of Caribbean ACP countries, the estimated coefficient indicates a reduction of imports from the EU by some 18.8 per cent in the course of trade integration. Although missing a direct causal link, estimation results could point towards potential re-orientation of EU export activity to African EPA markets, or a re-orientation of Caribbean ACP countries to other markets, such as the US.

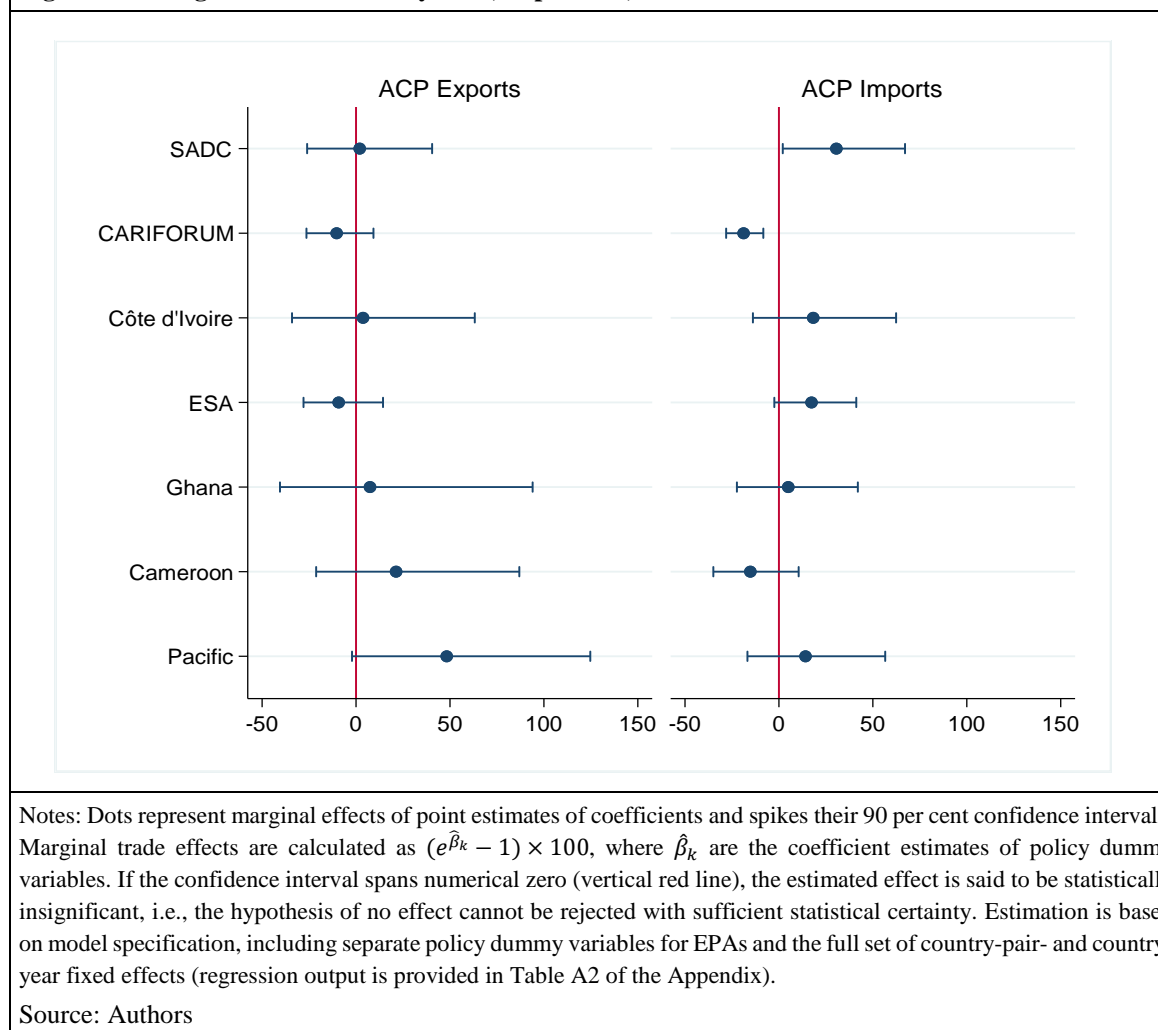
For the next step, we further investigate agreement-specific effects for individual EPAs. To do so, we estimate Equation (1) by replacing the generalised policy dummy variable with separate policy dummy variables for the individual EPAs. Figure 2 depicts the findings. Dots and spikes represent (point) coefficient estimates and their 90 per cent confidence intervals, respectively. Reflecting our results in Table 2, we do not find any statistically significant effects of EPAs on ACP exports (left panel). Note that confidence intervals are comparatively broad for nearly all EPAs. This is because estimation is based on only a few observations, either due to data gaps, non-existing trade relations, or only short implementation phases to date, especially for the cases of the Côte d'Ivoire- and Ghana EPAs.

16 Before a number of enlargement rounds, the EU consisted of 12 countries: Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain and the United Kingdom. In 1995, Austria, Finland and Sweden joined the EU.

17 Marginal trade effects are calculated as $(e^{\hat{\beta}_k} - 1) \times 100$, where $\hat{\beta}_k$ represents the coefficient estimates of policy dummy variables.

18 Findings are not altered when excluding South Africa from estimation.

Figure 2: Marginal trade effects by EPA, in per cent, total trade



On the ACP import side (right panel), imports from the EU seem to be boosted only for SADC (30.6 per cent), mirroring our finding in Table 2. With the exception of CARIFORUM, for which we estimate a decrease of imports from the EU (by some 18.8 per cent as is the case for the group of Caribbean ACP countries in Table 2 given conformity of countries considered), all other EPA dummy variables render no statistically significant effects. While the negative result for CARIFORUM imports from the EU remains rather puzzling, there is some anecdotal evidence that the participating countries have not yet implemented the agreed liberalisation schemes. In this light, trade creation effects stemming from either other trade agreements including CARIFORUM countries (e.g., CAFTA-DR, which has been in force since 2006) or the EU with other trading partners within the same time period, may provide a possible explanation for a re-orientation of CARIFORUM imports, and better explain why the expected positive effect is in fact negative.

4.2 Agricultural trade

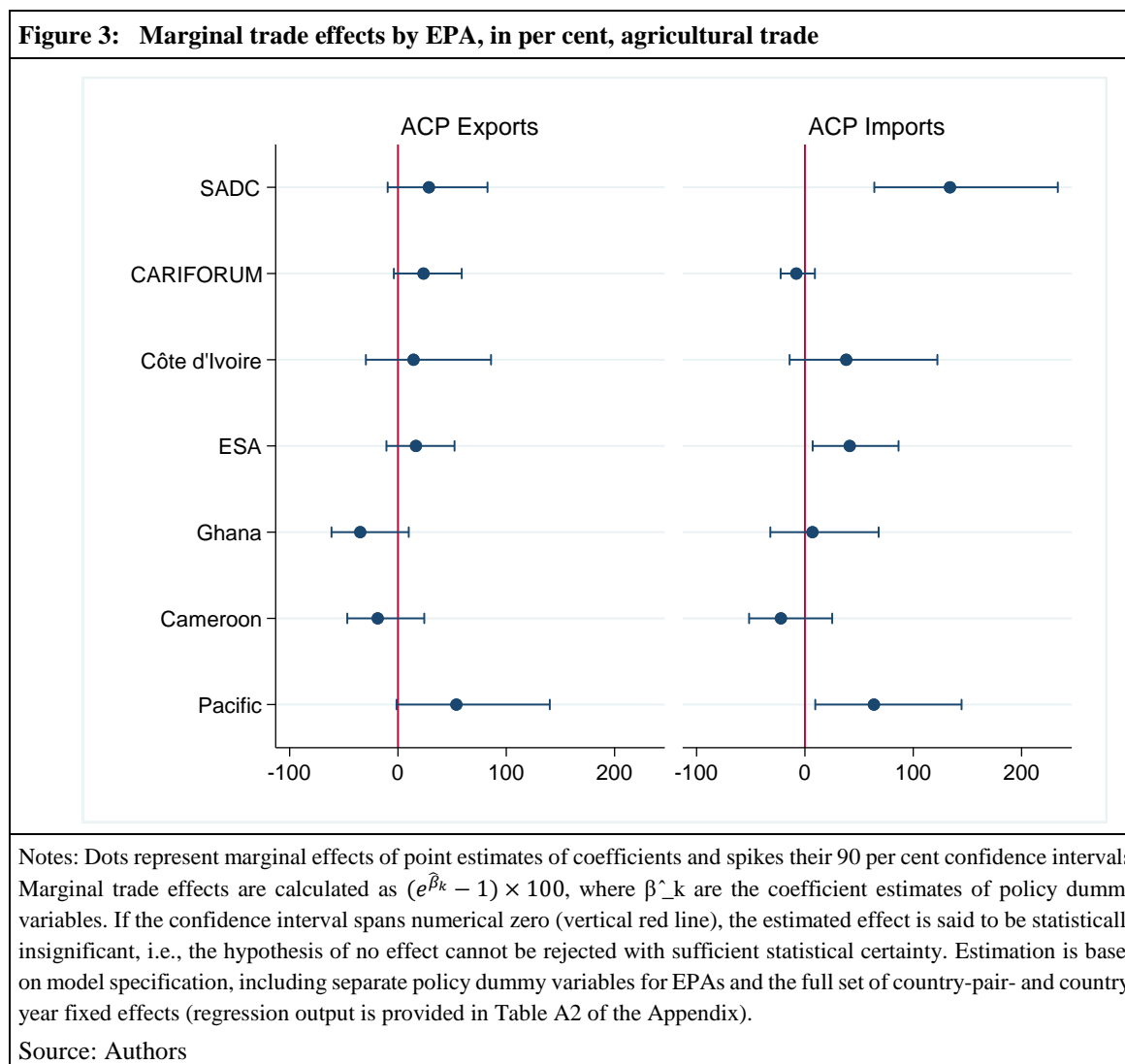
Given the importance of the agricultural sector for most developing countries, agricultural trade liberalisation has traditionally been an area of tension, both at the regional and multilateral level. For all ACP countries combined, applied average tariffs in the agricultural sector (10.1 per cent) were still markedly higher in 2018 compared with those imposed on manufactures (6.8 per cent)

and total trade (6.6 per cent).¹⁹ Despite the fact that liberalisation commitments on agricultural imports are lower in most EPAs, many ACP countries still fear an increase in competition pressure from EU agricultural imports. Originating in well-established or until recently, partly heavily subsidised European markets, these hold comparative advantage across a wide range of products, which may put severe adverse effects on domestic ACP markets.

We address these concerns by estimating the agreement-specific effect of EPAs in agricultural trade. Estimation results are graphically displayed in Figure 3. As shown in the left panel, we do not find any evidence for a statistically significant impact on ACP agricultural exports across the provisionally applied EPAs to date. As stated above, this finding is hardly surprising since EPA signatories have previously enjoyed trade preferences and hardly find market access improvements in the EU market as a result of the EPA. Furthermore, ACP countries may find it difficult to comply with EU SPS standards. These standards are found to be a significant impediment to agricultural and food exports of developing countries (e.g., Henson & Loader, 2001; Jongwanich, 2009). Despite duty-free market access in the course of EPAs, these non-tariff trade barriers could hamper agricultural exports of ACP countries to the EU.

The right panel of Figure 3, however, provides evidence for a statistically significant increase of ACP agricultural imports from the EU for the ESA- (41.3 per cent), SADC- (134 per cent), and Pacific (63.7 per cent) EPAs. Putting these region-specific findings into perspective, unreported estimation results for individual members of the two African EPAs suggest that findings might be driven by Zimbabwe (ESA) and South Africa (SADC). For Zimbabwe, the data furthermore suggest that the surge in imports from the EU partly occurred in the highly sensitive sector of milk powder. While this import surge could have happened for reasons other than the ESA EPA, it is notable that the increase in demand in milk powder was covered mainly by imports from the EU after the EPA entered into provisional application. For the increased imports by South Africa from the EU, where the EPA provisionally entered into force only in 2016, the result seems to be mainly driven by an increase in the already large share of malt and wheat imports from the EU, in particular Germany, in 2018. Moreover, in view of the fact that our assessment of the SADC EPA makes use of only two years of observation given the lag-structure of Equation 1, our findings for South Africa could well be seen as a mere snapshot rather than the expected long-term trade pattern of the country with the EU.

19 Own calculation based on data from World Bank (2019).



4.3 Manufactures trade

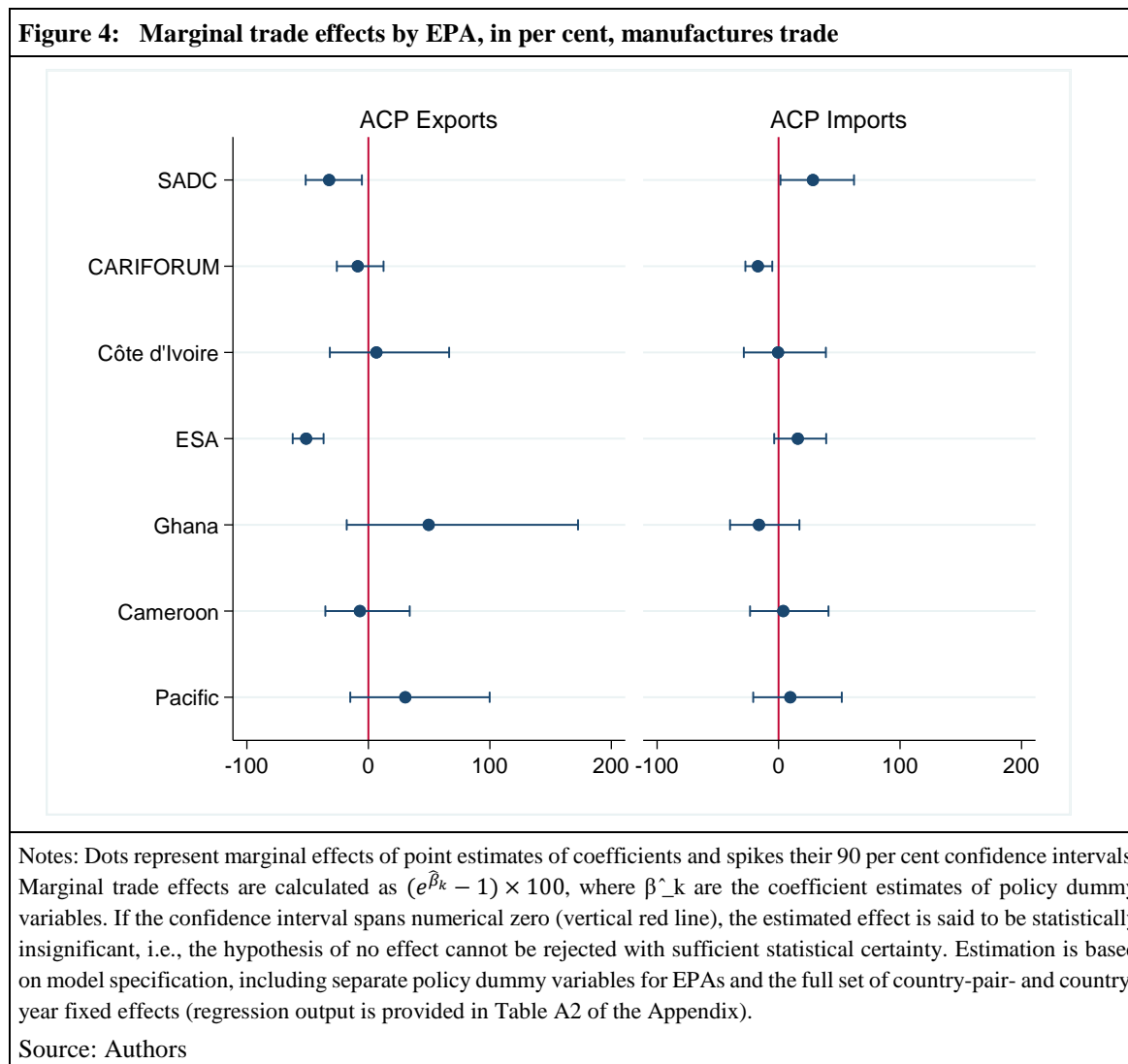
Export diversification, both horizontally and vertically, is seen as an essential component for sustained economic development in developing countries among scholars and policymakers alike (Cadot, Carrere, & Strauss-Kahn, 2013; Hesse, 2009). Trade integration, and more specifically tariff preferences, might help foster this transformation (e.g., Regolo, 2013; Nicita & Rollo, 2015). Evidence by Persson and Wilhelmsson (2016), however, only allows a sobering conclusion regarding the impact of EU GSP preferences on export diversification in developing countries, suggesting that preferential market access may result in a specialisation in even fewer goods.

Against this background, we also analyse the agreement-specific effect of EPAs on ACP manufactures trade flows. Findings are displayed in Figure 4. As regards ACP exports (left panel), our estimation indicates a statistically significant decrease of manufactures exports to the EU for the ESA- (51.2 per cent) and SADC (32.3 per cent) EPAs. While these results might simply reflect current revealed comparative disadvantage for manufactures, however, future research is required to follow up on whether EPAs could be a trade policy induced bridge or compromise for long-term industrialisation in the regions.

Turning towards ACP manufactures imports in the right panel, our results suggest a slight statistically significant increase of imports from the EU for SADC (28.3 per cent). Similar to our findings in agricultural trade discussed above, this effect not only seems to be driven by SADC's largest member by far, South Africa, but its estimation is additionally based on only two years of observation and thus needs to be treated with caution since it is not clear that this is a longer-term effect. Moreover, South Africa's economic structure is quite different to that of other ACP countries, with a deep rootedness of the mining sector, which requires the import of both machinery equipment and technological know-how.

Lastly, CARIFORUM is estimated to have experienced a drop in EU manufactures imports in the course of trade integration to date by some 17 per cent. This is in line with the generally rather negative effect on trade flows between the EU and CARIFORUM member countries after the application of the EPA.

Figure 4: Marginal trade effects by EPA, in per cent, manufactures trade



5 Conclusion and outlook

This paper aimed to analyse the trade effects arising from EPAs between the EU and a number of ACP countries. While we do not find any general EPA effect regarding aggregate exports, our findings suggest that specific agreements do affect trade flows. While the EU-CARIFORUM agreement, if anything, decreased imports from the EU, the agreements with African partners tended to raise imports from the EU. More specifically, our findings suggest an increase in overall EU exports to the members of the SADC EPA. For the EU's agricultural exports, we find statistically significant increases to SADC, ESA and the Pacific. In the area of manufactures trade, we find a reduction of exports from the ESA and SADC countries to the EU.

The results presented in this paper, however, must be viewed in the context of the relatively short time frame that most EPAs have been provisionally applied. While our analysis of early EPA effects is important if one seeks to monitor the trade implications of the EPAs, there is reason to expect these to alter over time (in either direction). It is therefore beyond the scope of this paper to evaluate the longer-term impacts of EPAs on trade between the EU and ACP signatories. Nevertheless, our analysis generates some important initial insights. These early findings suggest that some of the developmental concerns regarding EPAs may be justified. While on the one hand, we do not observe an increase in exports from ACP partner countries to the EU, some of our results even show a decrease in manufactures exports from African partner countries. On the other hand, our estimation results suggest an increase in imports by African partner countries from the EU due to the EPAs, which seem to be mainly driven by agricultural imports.

Importantly, our findings need not necessarily be a negative report card for the EPAs, especially for African countries. More precisely, the non-result on ACP exports demonstrate that EPAs seem to do well in terms of maintaining market access of previously granted preferential treatment. On the import side, increased quantities at cheaper prices may also generate welfare gains in ACP countries and help export-oriented companies to increase their competitiveness in regional and global value chains. This is true in particular with regard to agricultural imports when considering a temporary shortage in domestic (food) supply. The above trade effects must however be weighed against the losses of customs revenues in ACP countries due to agreed tariff reductions. Equally importantly, prospects of industrialisation need to be carefully evaluated in light of increased competition from foreign markets.

A number of factors underline the importance of future research on the trade effects of EPAs. First, multiple elements of the EPAs, including many foreseen gradual reductions of trade barriers in ACP countries, remain to be implemented. Second, a number of ACP countries that have not yet joined are considering acceding existing EPAs and, potentially, future regional agreements might substitute some of the existing bilateral ones, which in turn would affect the trade effects for the participating countries. It would then not only be interesting to assess whether EPAs result in increasing trade between the ACP countries and the EU but also among the ACP countries that are party to an EPA.

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Appendix

Table A1: Country sample (ACP countries)
<p>Angola, Antigua and Barbuda, Bahamas, The Barbados, Belize, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo, Dem. Rep., Congo, Rep., <i>Cook Islands</i>, Côte d'Ivoire, Cuba, Djibouti, Dominica, Dominican Republic, <i>East Timor</i>, Equatorial Guinea, Eritrea, Ethiopia, <i>Fiji</i>, Gabon, Gambia, The, Ghana, Grenada, Guinea, Guinea-Bissau, Guyana, Haiti, Jamaica, Kenya, <i>Kiribati</i>, Lesotho, Liberia, Madagascar, Malawi, Mali, <i>Marshall Islands</i>, Mauritania, Mauritius, <i>Micronesia, Fed. Sts.</i>, Mozambique, Namibia, <i>Nauru</i>, Niger, Nigeria, <i>Niue</i>, <i>Palau</i>, <i>Papua New Guinea</i>, Rwanda, <i>Samoa</i>, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, <i>Solomon Islands</i>, Somalia, South Africa, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Sudan, Suriname, Swaziland, Tanzania, Togo, <i>Tonga</i>, Trinidad and Tobago, <i>Tuvalu</i>, Uganda, <i>Vanuatu</i>, Zambia, Zimbabwe</p>
<p>Note: African Group countries are presented in the default font. Countries belonging to Caribbean and Pacific Group in bold and italics, respectively.</p>
<p>Source: Authors</p>

Table A2: Country sample (trading partners)
<p>Algeria, Angola, Argentina, Australia, Austria, Azerbaijan, Bahrain, Bangladesh, Belarus, Belgium, Bulgaria, Bolivia, Brazil, Botswana, Cambodia, Canada, Chile, China, Congo, Dem. Rep., Côte d'Ivoire, Colombia, Costa Rica, Croatia, Cyprus, Czech Republic, Germany, Denmark, Dominican Republic, Ecuador, Egypt, Arab Rep., Estonia, Finland, France, Ghana, Greece, Guatemala, Honduras, Hong Kong, Hungary, Indonesia, India, Iran, Islamic Rep., Iraq, Ireland, Israel, Italy, Japan, Jordan, Kazakhstan, Korea, Rep., Kuwait, Latvia, Libya, Lithuania, Luxembourg, Malaysia, Malta, Mexico, Morocco, Myanmar, Netherlands, The, New Zealand, Nigeria, Norway, Oman, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Romania, Russian Federation, Saudi Arabia, Serbia, Singapore, Slovak Republic, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Thailand, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Ukraine, United Arab Emirates, United Kingdom, United States, Uruguay, Uzbekistan, Venezuela, Vietnam, Zambia</p>
<p>Source: Authors</p>

	<i>ACP Exports</i>			<i>ACP Imports</i>		
	Total Trade	Agriculture	Manu- factures	Total Trade	Agriculture	Manu- factures
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
<i>SADC</i> _{<i>ijt-1</i>}	0.0193 (0.195)	0.252 (0.213)	-0.390* (0.204)	0.267* (0.150)	0.850*** (0.216)	0.249* (0.142)
<i>CARIFORUM</i> _{<i>ijt-1</i>}	-0.109 (0.120)	0.212 (0.152)	-0.0915 (0.127)	-0.208*** (0.0739)	-0.0827 (0.104)	-0.186** (0.0809)
<i>Côte d'Ivoire</i> _{<i>ijt-1</i>}	0.0366 (0.276)	0.135 (0.295)	0.0640 (0.271)	0.168 (0.193)	0.323 (0.289)	-0.00412 (0.202)
<i>ESA</i> _{<i>ijt-1</i>}	-0.0969 (0.140)	0.154 (0.162)	-0.717*** (0.157)	0.160 (0.112)	0.346*** (0.168)	0.147 (0.112)
<i>Ghana</i> _{<i>ijt-1</i>}	0.0718 (0.359)	-0.428 (0.318)	0.403 (0.364)	0.0486 (0.184)	0.0671 (0.275)	-0.176 (0.203)
<i>Cameroon</i> _{<i>ijt-1</i>}	0.193 (0.263)	-0.207 (0.258)	-0.0721 (0.222)	-0.165 (0.161)	-0.250 (0.288)	0.0380 (0.186)
<i>Pacific</i> _{<i>ijt-1</i>}	0.394 (0.253)	0.431 (0.270)	0.265 (0.259)	0.132 (0.192)	0.493** (0.244)	0.0925 (0.198)
Constant	13.05*** (0.00446)	13.14*** (0.00591)	11.36*** (0.00499)	14.45*** (0.00306)	13.52*** (0.00399)	14.03*** (0.00348)
Observations	79,855	52,707	67,419	83,302	56,061	76,986
Country-pairs	6,281	4,514	5,864	5,961	4,591	5,584
R ² adj.	0.779	0.791	0.721	0.842	0.818	0.836
Fixed Effects:						
<i>Country-pair</i>	✓	✓	✓	✓	✓	✓
<i>Country-year</i>	✓	✓	✓	✓	✓	✓
Notes: Asterisks denote the level of statistical significance with *** p<0.01, ** p<0.05 and * p<0.1. Robust, clustered (at the country-pair level) standard errors are in parentheses.						
Source: Authors						

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