

## **Did the Customs Union of the East African Community Increase Overall Trade of Kenya, Tanzania and Uganda?\***

*David Stadelmann\*\**

*Raymond Boadi Frempong\*\*\**

### **Abstract**

We investigate the effect of the customs union of the East African Community (EAC) on overall trade per capita for its founding members Kenya, Tanzania and Uganda employing a synthetic control group as a counterfactual parameter. We do not find any systematic evidence that the customs union affected overall trade per capita for the founding members. Robustness and placebo tests support our main empirical findings. We briefly discuss potential reasons why the EAC customs union may not have contributed to increasing overall trade for its founding members and stress that further evidence is required to draw definitive policy conclusions.

### **Key words:**

East African Community, customs union, regional trade, trade growth, synthetic control method

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\*\* Professor David Stadelmann is the holder of the Chair of Development Economics at the University of Bayreuth and a research fellow at the Center for Research in Economics, Management, and the Arts, Zurich, Switzerland, (Email: david.stadelmann@uni-bayreuth.de).

\*\*\* Dr Raymond Boadi Frempong is a postdoctoral researcher at the University of Bayreuth, Chair of Development Economics (Email: raymond.frempong@uni-bayreuth.de). His position is currently financed by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) under Germany’s Excellence Strategy – EXC 2052/1 – 390713894.

## 1 Introduction

Economic science has consistently shown that higher trade openness is associated with higher levels of income expressed in terms of Gross Domestic Product (see, e.g., Frankel and Romer 1999, Irwin and Terviö 2002, Feenstra and Weinstein 2017). The link between trade openness and income per capita is even likely to run causally from trade to income. Income per capita is known to be strongly associated with numerous outcomes considered to be welfare enhancing, such as low child mortality, high life expectancy and even life satisfaction (see, e.g., Stevenson and Wolfers 2013).

A global trend towards the establishment of regional economic communities and different types of free trade agreements can be noted (see World Trade Organisation 2018). The Copenhagen Consensus (2015) argues that fostering trade openness may yield around 2000 US\$ for every single US\$ invested. Regional integration is expected to raise trade on average and produce similar outcomes as world trade liberalisation, which may allow countries to reap economic benefits (see, e.g., Baier and Bergstrand 2007, Badinger 2008, Magee 2018). In Africa, the World Trade Organisation (2018) counts 24 regional trade agreements currently in force. Among them is the East African Community (EAC), which was re-established in 2000 and has launched a customs union in 2005.

This article explores whether or not the customs union of the EAC has increased (logarithmic) overall trade per capita for the EAC's founding members Kenya, Tanzania and Uganda. Thereby, it does not focus on internal trade within the EAC but overall trade, that is, trade inside the EAC and external trade. We focus on overall trade for each of the founding members as welfare gains due to trade would stem from an overall increase in trade. To investigate potential causal effects of the customs union on (logarithmic) overall trade per capita, we employ the Synthetic Control Method (see Abadie and Gardeazabal 2003). Accordingly, we construct a synthetic control group for each of the founding members. Each synthetic control group is set up so that it closely matches the evolution of actual trade before the establishment of the customs union. After the establishment, the actual trade of each of the founding members is compared to the respective synthetic control group. This allows us to investigate whether or not overall trade for the founding members has increased due to the customs union in comparison to a counterfactual, i.e., in comparison to the synthetic control.

Our empirical evaluation does not yield statistically relevant positive effects of the customs union on trade per capita. While trade has increased over time for all founding members of the EAC, there seems to be no additional trade increase due to the EAC. If anything, our point estimates suggest lower trade per capita for Kenya in comparison to the synthetic control group for all years after the establishment of the customs union. However, the error margin of these estimates is high. Among others, Castro and colleagues (2004) projected that the EAC customs union might lead to trade-diverting effects, which could level-out trade-creating effects. These projections and our results contrast with Shinyekwa (2015) and Buigut (2016) who find trade-creating effects of the EAC but tend to show heterogeneous impacts on individual member states. Odhiambo (2011) suggests that that member states of the EAC have, in part, failed to eliminate non-tariff barriers and might even have introduced new ones.

Similarly, Nixdorf (2013) and Hangi (2010) point to differences in de facto and de jure implementation of the customs union as well as different types of non-tariff barriers,

infrastructure insufficiencies, and transit procedures, which might have prevented further trade growth in the EAC. A potential substitution of tariff barriers with non-tariff barriers and lack of de facto implementation of the EAC's agreements might explain the absence of additional trade creation for the EAC founding members. Further research in this domain is necessary to ensure trade gains for the future of the EAC.

The remainder of this article is structured as follows: we briefly present the institutional setting and empirical evaluation method in Part 2. Part 3 provides our empirical results followed by a critical discussion in Part 4. Part 5 offers concluding remarks.

## **2 Institutional background and evaluation method**

### **2.1 Institutional setting**

The current EAC has been active since 2000. However, the idea of a customs union in East Africa has a long history. Kenya and Uganda formed their first customs union in 1917, which Tanganyika (a predecessor of mainland Tanzania) joined in 1927. The first EAC was active from 1967 to 1977. However, it collapsed due to a supposedly unequal distribution of benefits, with the other members claiming Kenya had reaped disproportionate profits (see Odhiambo 2011). An East African Co-operation was founded in 1993 and resulted in commencement of the second EAC in 2000.

Members of the EAC are among the fastest-growing economies in Sub-Saharan Africa. Nevertheless, the region has been suffering from a range of issues, including high poverty, insufficient infrastructure, and a low level of industrialisation. Burundi and Rwanda joined the EAC in 2007 and entered the customs union on 1st July 2009. South Sudan became a member in 2016. As of 2018, the EAC is home to an estimated population of 178 million people. Some EAC states are members of other regional organisations as well. Rwanda, Kenya, Uganda and Burundi are members of the Common Market for Eastern and Southern Africa (COMESA), while Tanzania belongs to the Southern African Development Community (SADC). The EAC seeks to foster regional co-operation with COMESA and SADC. Being classified as the Least Developed Countries, Burundi, Rwanda, Tanzania, and Uganda have preferential access to the market of the European Union under the Everything-But-Arms Initiative. EAC countries enjoy duty-free access to the market of the United States of America under the African Growth and Opportunity Act.<sup>1</sup>

The EAC is eventually supposed to incorporate four broad pillars: a customs union, a common market, a monetary union and a political federation. It has taken several steps to facilitate and enhance trade. A major step has been the establishment of the customs union. It is aimed at intra-regional trade liberalisation as well as the promotion of production efficiency, diversification, the attraction of investment and general economic development. Among other potentially trade-facilitating regulations and export-promoting schemes, internal tariffs and non-tariff trade barriers were to be eliminated. The customs union became operational on 1st January 2005 with a five-year transitional period. Nevertheless, informal cross-border trade is common in the EAC, and it has been seen as a response to inefficient border procedures and regulations affecting individuals and firms,

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<sup>1</sup> Burundi's eligibility was terminated by the U.S. as of 2016, because of a lack of progress towards "rule of law and political pluralism" (see African Growth and Opportunity 2015).

and as a source of income generation due to lack of formal employment (see, e.g., Ogalo 2010).

Our evaluation of the effect of the EAC on overall trade per capita focuses on the three founding states: Kenya, Tanzania and Uganda. Kenya is considered a middle-income country, according to the World Bank. Its average applied tariff rate is 7.6 percent, the value of exports and imports combined equals 38 percent of Kenya's GDP (see The Heritage Foundation 2018). Tanzania's government, though ambitiously working to attract investment and to pursue economic development, struggles with the management of public finances, governance and its legal system. It has one of the world's lowest levels of per-capita income. At an average applied tariff rate of 6.5 percent, export and import values combined amount to 37 percent of its GDP (see The Heritage Foundation 2018). Uganda's ethnic fractionalisation has made governance challenging since its independence in 1962. It has an abundance of agricultural resources as well as gold and oil. More than two-thirds of workers are employed in the agricultural sector. Uganda's average applied tariff rate is 5.9 percent, and the value of its trade equals 45 percent of GDP (see The Heritage Foundation 2018). Kenya, Tanzania and Uganda recently scored 3.98, 3.71 and 3.70 on a scale from 1 to 7 on the World Economic Forum's Global Competitiveness Index (see Schwab 2017) thereby ranking in places 91, 113, and 114, respectively. Kenya surpasses the Sub-Saharan average in most areas of the index, which includes infrastructure, education, goods and labour market efficiency, financial development, and other pillars. Tanzania and Uganda are close to the Sub-Saharan average.

## **2.2 Evaluation method**

We employ the synthetic control method (SCM) to evaluate the effect of the EAC customs union on (logarithmic) overall trade per capita in Kenya, Tanzania and Uganda. Since its introduction in 2003 (see Abadie and Gardeazabal 2003), the SCM has been used to estimate the impact of several national and regional policies and events, which can be referred to as treatments. In our case, the treatment is the introduction of the customs union. The SCM creates a synthetic counterfactual of the treated unit (Kenya, Tanzania or Uganda in our case). The synthetic control group (counterfactual) is created out of a weighted combination of other units (other nations around the world in our case) that are presumably unaffected by the treatment. These unaffected units compose the donor pool for the synthetic control group. The weight of the synthetic control group is adjusted so that it represents the treated unit as accurately as possible in the pre-treatment period (see also Abadie et al., 2010). That is the respective synthetic control groups for Kenya, Tanzania, and Uganda mirror development of trade as closely as possible before the establishment of the customs union. The post-treatment development of the synthetic control group and the treatment unit is then compared, and the difference can be attributed to the treatment. By creating a synthetic control out of a large donor pool, the method aims to avoid the caveats of a Differences-in-Differences approach, where the control unit is real rather than constructed.<sup>2</sup> Using the SCM can help to lower the risk that developments caused by unobserved unit-specific or time-invariant factors and unrelated to the treatment are falsely attributed to the treatment effect. However, the method does not allow to account for feedback effects or any other type of general

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<sup>2</sup> To use Differences-in-Differences, researchers assume that the investigated unit and the control units would have developed in parallel if the treatment had not occurred.

equilibrium effects. As general equilibrium effects are essential for trade (see, e.g. Yoto et al., 2016), we highlight this caveat of SCM for our application upfront.

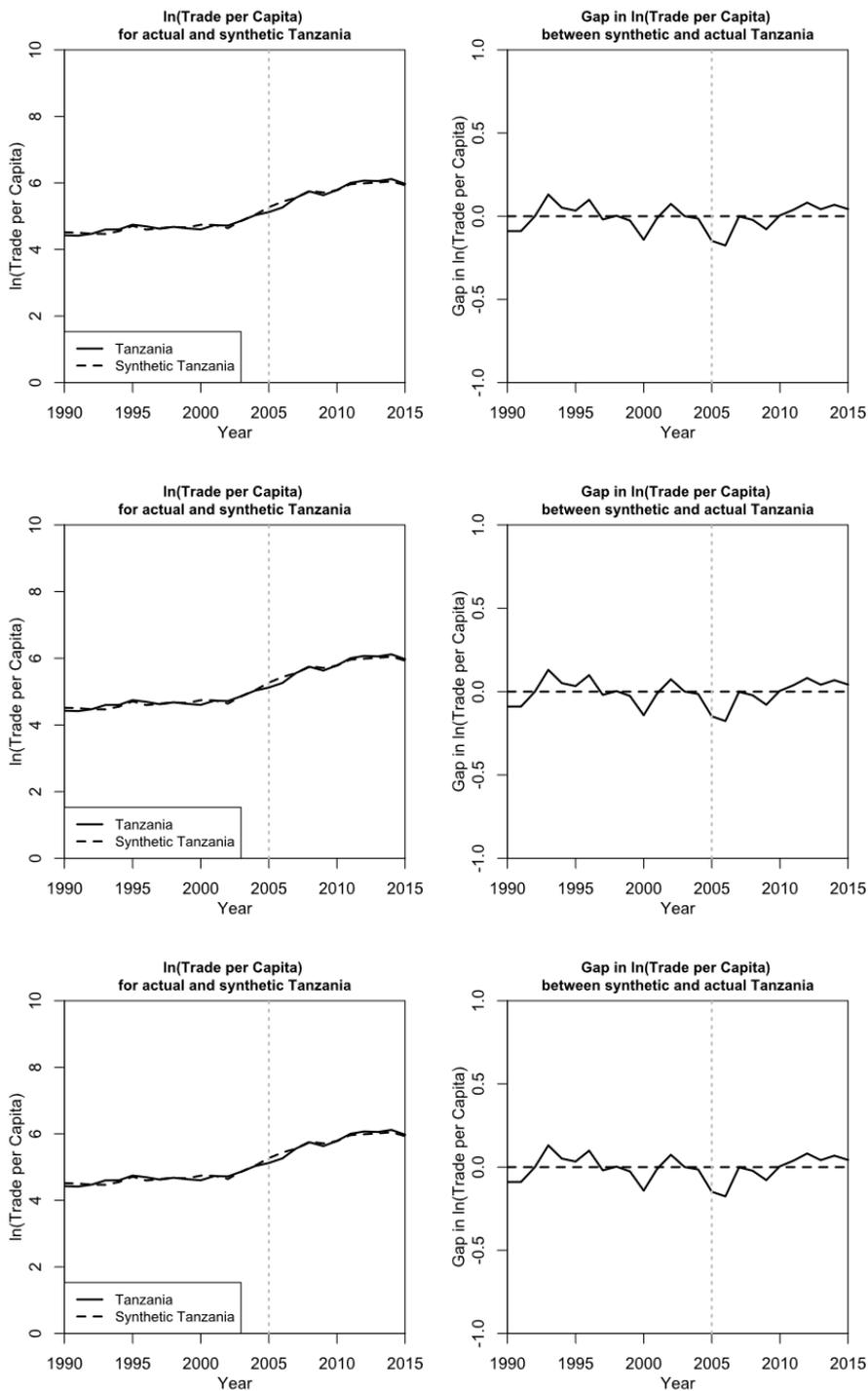
SCM has been applied successfully in several domains, for example, to estimate effects of terrorism (see Abadie and Gardeazabal 2003), to analyse a tobacco-control program (see Abadie et al., 2010), to study the influence of economic liberalisation on GDP (see Billmeier and Nannicini 2013), to investigate the effect of natural disasters (see Cavallo et al., 2013), to estimate trade flows of the United Kingdom in the fictional scenario in which the UK is a member of the European Monetary Union (see Saia 2017) or to investigate consequences of the Brexit vote in June 2016 (see Born et al., 2018).

We use the SCM to predict the counterfactual development of the variable  $\ln(\text{Trade per Capita})$ , for Kenya, Tanzania and Uganda if they had not joined the customs union of the EAC. Trade per capita is defined as total exports plus imports divided by the total population of the respective country. For the SCM, the time frame under consideration is from 1990 to 2015. It is divided into a period before and after the establishment of the customs union. The development of trade per capita before the customs union is approximated with the aid of a synthetic control group constructed out of a donor pool of 125 countries. The countries for the composition of the synthetic control group will be optimally selected and weighted for this purpose according to the standards of the method. We choose  $\ln(\text{GDP per capita})$ ,  $\ln(\text{Population})$ , Area, Distance to Coast and Rivers, and  $\ln(\text{Trade per capita})$  itself as predictors to construct our synthetic control groups for the three founding members. All predictor variables for construction of the synthetic control group and their descriptive statistics are presented in the Appendix, Table A1. Consistent with the existing literature, we expect that richer countries, that is, countries with a high per-capita GDP, will trade more, and more trade will occur in years with higher per-capita output. Population and area capture the size of an economy, which can affect trade (see, e.g., Frankel and Romer 1999). We also assume that average proximity to the sea or a navigable river, captured by the variable Distance to Coast facilitates trade (see, e.g., Jetter et al., 2017).

### **3 Empirical results**

#### **3.1 Main results**

To analyse the effects of the customs union for Kenya, Tanzania and Uganda, we apply the synthetic control group method to  $\ln(\text{Trade per Capita})$  as the variable to be explained. Our main results for the trade effects of the EAC customs union are presented in Figure 1.



**Figure 1:** Trade of the synthetic control groups compared to actual trade for Kenya, Tanzania and Uganda

The graphs on the left present the development of actual  $\ln(\text{Trade per Capita})$  for Kenya, Tanzania and Uganda as a solid line. The dashed line represents the constructed development of  $\ln(\text{Trade per Capita})$  for the synthetic control group. The vertical grey dotted line highlights the introduction of the customs union. The graphs on the right present the difference between the synthetic control group and value of actual trade in the respective countries. Thus, a systematic positive gap indicates that trade per capita has increased by the introduction of the customs union. In contrast, a systematic negative gap indicates that the customs union has lowered trade.<sup>3</sup>

For all founding members, the results show a reasonable match between the actual value of  $\ln(\text{Trade per Capita})$  and the constructed synthetic control for the pre-treatment period, that is, from 1990 to 2004, before the introduction of the customs union. Thus, the synthetic control group captures the development of trade before the introduction of the customs union well.

After 2005, we generally find that there is no systematic difference between the synthetic control group and the actual development of trade for the respective countries (graphs on the right in Figure 1). This implies that there has not been a clear increase, but also no decrease in trade due to the customs union. If the expectation had been that the EAC customs union fosters more trade per capita, our empirical results do not support such a view. If anything, results for Kenya instead show that total trade per capita has decreased after Kenya had joined the EAC customs union. Kenya's actual trade per capita appears to lag behind the prediction for a scenario without the customs union as the trade of the synthetic control group is higher for all years after the establishment of the customs union. This leads to a negative gap between synthetic and actual trade. For both Tanzania and Uganda, there appears to have been no clear and consistent positive or negative trade effect caused by the customs union.

We further explore the quantitative results in Table 1. Table 1 presents the values of the estimated gaps in  $\ln(\text{Trade per capita})$ , and we also report the corresponding gap in current US\$. We calculate bootstrapped standard errors for the gap in  $\ln(\text{Trade per capita})$  with 10,000 repetitions. We note that the average gap in current US\$ for each of the founding members from 1990 to 2004 is almost zero. This indicates that the SCM is doing a good job in the construction of the synthetic control group to match the actual trade flows over the whole period closely.

From 2005 onwards, we consistently observe negative gaps for Kenya. Calculating the average trade from 2005 to 2015, we find that trade per capita has been on average 69.93 US\$ lower than synthetic trade. These results would imply that Kenya's overall trade potential would have been higher had it not joined the EAC customs union. However, it is important to note that the standard errors for the gap in  $\ln(\text{Trade per Capita})$  indicate that none of the gaps is statistically significant. Thus, we cannot reject the hypothesis that Kenyan trade has not been affected by the customs union (or that it might have even been positively affected). Indeed, the trade loss fluctuates for different years.

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<sup>3</sup> Table A2 in the Appendix reports the TOP-10 countries from the donor pools and their respective weights in the construction of the synthetic control group for each of the founding members of the EAC.

**Table 1:** Gaps between counterfactual trade (synthetic control group) and actual trade for Kenya, Tanzania and Uganda

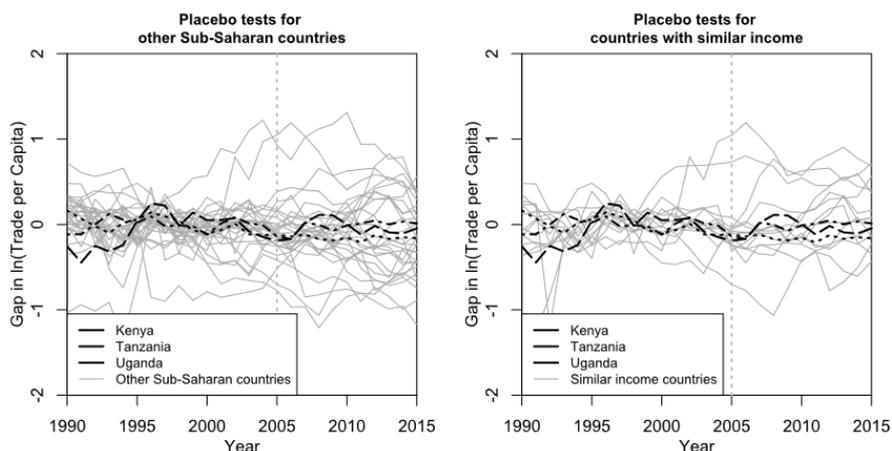
Year	Kenya		Tanzania		Uganda	
	Gap in ln(Trade per Capita)	Gap in current US\$	Gap in ln(Trade per Capita)	Gap in current US\$	Gap in ln(Trade per Capita)	Gap in current US\$
Average 1990-2004		<b>-0.16</b>		<b>0.05</b>		<b>-3.14</b>
2005	-0.098 (1.504)	-34.41	-0.148 (1.912)	-26.79	-0.245 (2.594)	-34.18
2006	-0.124 (1.551)	-50.99	-0.176 (1.975)	-37.17	-0.238 (2.664)	-39.43
2007	-0.104 (1.605)	-49.72	-0.001 (2.028)	-0.30	-0.051 (2.706)	-9.86
2008	-0.161 (1.677)	-92.26	-0.022 (2.111)	-6.92	0.045 (2.807)	11.12
2009	-0.167 (1.639)	-85.04	-0.078 (2.086)	-22.80	0.059 (2.817)	14.89
2010	-0.131 (1.63)	-73.14	0.005 (2.096)	1.56	-0.047 (2.905)	-13.04
2011	-0.168 (1.673)	-109.55	0.039 (2.166)	15.38	-0.135 (3.026)	-43.85
2012	-0.084 (1.68)	-58.24	0.082 (2.175)	33.98	-0.009 (3.032)	-3.07
2013	-0.123 (1.687)	-85.21	0.041 (2.185)	17.33	-0.076 (3.068)	-26.38
2014	-0.102 (1.699)	-73.55	0.069 (2.203)	30.15	-0.087 (3.051)	-29.62
2015	-0.091 (1.65)	-57.12	0.043 (2.16)	16.39	-0.039 (3.01)	-12.90
<b>Average 2005-2015</b>		<b>-69.93</b>		<b>1.89</b>		<b>-16.94</b>

**Notes:** The *Gap in ln(Trade per Capita)* represents the difference between the trade of the synthetic control group and actual trade observed for the respective country. Numbers in parenthesis represent bootstrapped standard error estimates. The *Gap in current US\$* corresponds to the monetary equivalent per capita in current US\$.

Consequently, our analysis does not confirm that trade has increased or decreased due to the customs union, but it suggests that the customs union did not affect overall trade in Kenya. For Tanzania, we do not observe any relevant difference between the synthetic control group and the actual development of ln(Trade per Capita). Thus, there is no indication that trade has increased or decreased due to the customs union. Finally, comparisons between the synthetic control group and actual trade for Uganda indicate mixed results. We find positive and negative gaps for different years. On average, the gap expressed in current US\$ is negative, but all point estimates have a high standard error, and statistical significance at conventional levels is not achieved.

### 3.2 Robustness tests

We perform several robustness checks for our main results. They all support our interpretations above. For brevity, we report two placebo tests in Figure 2 below for other Sub-Saharan countries and countries with similar incomes as Kenya, Tanzania and Uganda.



**Figure 2:** Placebo tests for other Sub-Saharan countries and countries with similar income as Kenya, Tanzania and Uganda

The placebo tests apply SCM to countries that did not enter the EAC customs union. Each placebo country's gap in  $\ln(\text{Trade per Capita})$  is depicted in grey, with the lines for Kenya, Tanzania, and Uganda highlighted. Note that post-intervention gaps (gaps after 2005 when the customs union is established) do not show larger changes for the founding members than the gaps for the placebo interventions. This is consistent with our previous interpretation and highlights that any potential trade effects of the EAC customs union appear to be statistically insignificant. Thus, there is no statistical indication that the customs union has led to a substantial increase or decrease in trade for Kenya, Tanzania and Uganda.

## 4 Discussion

Given the literature, which suggests that regional integration often leads to higher trade, our findings for the founding states of the EAC customs union suggest that trade has not increased for them. We would like to discuss the potential caveats of our evaluation.

Firstly, SCM does not allow to investigate general equilibrium effects. For example, trade can foster income growth and income growth, in turn, fosters more trade. The method does not account for other feedback effects. It is unclear whether our results are biased upwards or downwards because of the omission of such feedback effects. If we exclude GDP per capita as a predictor variable for trade, our main empirical insights do not change.

Furthermore, the EAC customs union has grown over time, and it may have affected some of its neighbouring countries, which are included in the donor pool to construct

the synthetic control group. Of course, we always exclude all the founding members when running SCM. If we exclude other EAC members and neighbouring countries, our main empirical results do not change. Moreover, the African Development Bank (2017) reports that the share of exports from the EAC to its member countries made up 18.1 percent in 2015 of total exports, a decrease by 1.6 percentage points from 19.7 percent in 2012. Thus, internal trade in the EAC is comparatively small, which highlights the importance of focusing on overall trade for each of the founding members. Excluding other important trading partners of Kenya, Tanzania and Uganda from the donor pool means that our main results are not influenced, to a large degree, by single countries in the donor pool.

It might be argued that our trade data are not fully reliable over the whole period of the analysis and that more recent data are of higher quality. Trade data quality from other countries has also improved over time so that there need not be a systematic bias in our results. We note, however, that a non-reporting of trade activities may bias our results. Apart from smuggling, under-declaration may lead to distorted trade statistics in the EAC. There may have been incentives for more informal cross-border trade before the introduction of the EAC customs union. If this is the case, our results would have an upward bias and should represent an upper bound for the trade effects of the EAC. This is because the customs union may have facilitated a shift from informal trade to formal trade, which would be registered and picked up in our data.

Other policies in Kenya, Tanzania and Uganda may have been changed due to the customs union, and it may be the case that systematic policy changes in all countries prior to 2005 as a preparation for the customs union have affected trade, too. The SCM does take into account such potential policy changes. Similarly, we cannot include potential trade conflicts that may have arisen between the EAC and other regional economic communities. In general, it seems that founding members are still pursuing individual external trade policies.

We also note that our prediction variables are, of course, not exhaustive. For example, we did not include institutional controls, investment data or a measure of infrastructure (see, e.g., Busse et al., 2016). However, for the period prior to the customs union, the synthetic control group follows the actual trade of Kenya, Tanzania, and Uganda well. Moreover, our data pool was larger than most donor pools applied in other SCM analyses.

We cannot explore mechanisms of how the customs union may affect trade. In particular, we cannot measure if non-tariff barriers have been reduced over time. We know that overall tariff barriers were reduced. However, if tariff barriers were replaced, to some extent, by non-tariff barriers, we would expect to find rather weak or statistically insignificant results for trade due to the customs union.

Since all founding states entered the customs union at the same time, the analysis might have focused on their aggregate rather than each country. Given that a supposedly unequal dispersion of benefits partly affected the demise of the first EAC, we consider an analysis of the heterogeneous effects for each member to be highly relevant.

## **5 Conclusions**

We investigated effects of the EAC customs union for Kenya, Tanzania and Uganda employing the Synthetic Control Method (SCM). Our results show that trade per capita

has not increased for the founding members of the EAC in comparison to a synthetic control group.

We are cautious about drawing immediate policy consequences from our empirical results. Further research is required to explain why expectations regarding increases in trade may not have materialised. Moreover, additional research using other empirical methods than SCM is vital to investigate whether trade inside the EAC and overall trade for its members has increased due to the integration in the EAC.

We speculate that one reason for small trade increases in comparison to a synthetic control group could be due to differences in de facto and de jure implementation of the customs union. There may have been a relevant discrepancy in the officially planned and actual integration process. Odhiambo (2011) argues that the member states have not only failed to eliminate non-tariff barriers but also introduced new ones to compensate for the tariff liberalisation. For example, different transit procedures, such as restrictions for vehicles' axle weights, also continued to differ between the member states. Moreover, the participation of Kenya, Tanzania and Uganda in different regional economic communities with competing aims may have slowed down the overall integration process.

Trade integration can potentially yield large benefits. However, the mere act of ratifying contracts is not enough, the implementation of the changes, cutting down regulations and opening borders are required to facilitate exchange and realise the benefits.

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### Appendix

**Table A1:** Descriptive statistics and variable descriptions

Variable description	No. obs.	Min	Max	Mean	SD
ln(Trade per Capita) represents the logarithmic value of all goods and other market services exported to or imported from the rest of the world per capita in current U.S. dollars. World Bank.	3328	2.916	13.028	7.597	1.826
ln(GDP per Capita) represents the logarithmic value of GDP per capita in purchasing power parities (PPP) and current international dollars. World Bank.	3328	5.489	11.538	8.788	1.25
ln(Population) represents the logarithmic total population. World Bank.	3328	12.142	21.039	16.233	1.593
Area represents land area in 1000 square kilometres. World Bank.	3328	2.59	16389.95	928.074	2199.228
Distance to Coast represents the mean distance to the nearest ice-free coastline or sea-navigable river in 1000 kilometres. Portland State University.	3328	0.108	978.166	329.39	271.29

**Table A2:** Weights employed to construct the synthetic control groups

Kenya		Tanzania		Uganda	
Country	Weight	Country	Weight	Country	Weight
MDG	0.236	MDG	0.232	BFA	0.37
BDI	0.165	BGD	0.211	BGD	0.25
BGD	0.120	BDI	0.200	SDN	0.19
IND	0.014	IND	0.096	BDI	0.18
VNM	0.013	MOZ	0.049	ALB	0.00
MWI	0.010	BFA	0.048	DZA	0.00
NPL	0.010	SDN	0.041	AGO	0.00
IDN	0.009	CHN	0.024	ARG	0.00
GNB	0.008	MWI	0.010	ARM	0.00
MOZ	0.008	RWA	0.009	AUS	0.00
<b>Top-10</b>	<b>0.59</b>	<b>Top-10</b>	<b>0.92</b>	<b>Top-10</b>	<b>1.00</b>

**Notes:** The table reports the TOP-10 countries from the donor pool and their respective weights to construct the synthetic control groups for Kenya, Tanzania and Uganda.