Disability, Empathy and Trade: Evidence from Small-Scale Cross-Border Transactions in Uganda

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December 2021

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Abstract

Small-scale cross-border trade is ubiquitous in Africa. This paper uses disaggregated trade data to assess the determinants of the product portfolio of different groups of small-scale traders at the border between Uganda and Kenya. Using a weighted fractional response model, it finds that wheelchair-bound traders have a significantly higher propensity to handle products that are subject to high protection than other traders. This result suggests that border officials discriminate in favor of traders with disability in the enforcement of trade policies or the solicitation of bribes. More generally, the findings question the effective implementation of preferential trade agreements in Africa and call for trade policy reforms to be complemented by targeted measures to reduce the hardship faced by vulnerable groups within the population.

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1.   Introduction

There is wide-spread recognition among economists that small-scale cross-border trade (SSCBT) is of substantial importance in Africa (Lesser & Moisé-Leeman, 2009; Golub, 2012 & 2015). Imports and exports of small consignments are exempt from Customs duties and other border formalities, giving rise to vibrant exchanges between border communities. At some border crossings, 20,000 to 30,000 traders carry merchandise into the neighboring country every day.[1] The aggregate value of these unrecorded import or export transactions has been estimated to often reach or exceed official, Customs recorded trade between countries (Nkendah, 2013; Bouët, Pace & Glauber, 2018).

Despite the considerable magnitude of SSCBT, there has not been much research on the nature and characteristics of this trade, partly due to the lack of respective data. Aker, Klein, O'Connell & Yang (2014) collect and analyze price data for millet and cowpeas from 70 markets in Niger and Nigeria and find that the common ethnicity of informal traders on both sides of the common border results in better integration of markets compared with trading locations that span ethnicities within the two countries. The importance of social networks for SSCBT is confirmed through a survey of 490 entrepreneurs undertaken by Walther, Tenikue & Trémolières (2019). They investigate the rice value chain in West Africa and find that women are less well connected and as a result less prosperous than men. In another study of SSCBT, Bensassi, Jarreau & Mitaritonna (2019) analyze survey data for Benin and find that products that are subject to high tariff and non-tariff barriers are more likely to be traded informally rather than formally.

This paper uses a new dataset based on SSCBT monitoring undertaken by the Uganda Bureau of Statistics (UBOS) to build on and extend previous research on informal trade. The

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[1] Cecile Fruman and Carmine Soprano, Women traders in Africa's Great Lakes, 15 October 2015; https://blogs.worldbank.org/trade/women-traders-africa-s-great-lakes

data cover the period of a full calendar year and are, hence, not biased by seasonality. The latter is important for trade in agricultural products, which constitute a large share of SSCBT. Most earlier studies of SSCBT rely on data that are collected over a much shorter period of time (e.g., Bensassi, Jarreau & Mitaritonna, 2019; Kenya National Bureau of Statistics, 2011; Namibia Statistical Agency, 2015) and might, hence, not be representative. Moreover, the UBOS-data are collected through unobtrusive observation and thereby avoid problems of trust, social desirability, and truthfulness associated with questionnaire-based surveys.

The dataset is used to study the trading behavior of one particular group within the border population that is economically disadvantaged and suffers from multi-dimensional poverty – the disabled. At several border-crossing between Uganda and its neighbors, wheelchair-bound traders account for a substantial share of all small-scale traders and for up to 35 percent of all SSCBT in value terms (see section 4 below for further detail).

The employment status and coping strategies of individuals with disabilities have received relatively little attention in the literature on economic development. Mizunoya and Mitra (2013) compare employment rates between persons with and without disabilities in 15 developing countries using the World Health Survey. They report significantly lower employment rates for persons with disabilities in 9 countries and find that observable characteristics only explain a small part of the gap in employment rates. These findings confirm earlier research by Mitra and Sambamoorthi (2008) that point to discrimination as a determining factor of the employment gap between individuals with and without disability in India. Also, several studies (Filmer, 2008; Mont & Nguyen, 2011; Bakhshi *et al*., 2018) have established a link between disability and low educational attainment, which depresses the prospects for disabled persons to find wage employment. The disabled are, thus, often pushed towards household-based self-employment or left dependent on aid from their families and communities. This paper contributes to the literature on disability and employment in

developing countries by investigating one particular coping strategy for individuals with disabilities – small-scale cross-border trade.

Anecdotal evidence from interviews at border crossings suggests that disabled traders are subject to positive discrimination from border officials. [2] Customs and other border officials appear more lenient with respect to the application of prevailing regulation and practices for disabled than able-bodied traders. The analysis thus also contributes to the literature on Customs integrity and trade.

Several studies have investigated the solicitation of illicit payments by border officials and its impact on trade. For example, Dutt and Traca (2010) use a corruption-augmented gravity model to assess the impact of informal payments on trade flows. They find that corruption impedes trade in the majority of cases, but in high-tariff environments the marginal effect is trade enhancing. Sequeira and Djankov (2014) confirm the ambivalent effect of corruption on trade using information on bribe payments in African ports matched to firm-level data. While corruption can either increase or decrease overall trade costs, they find that the uncertainty of bribe levels reduces the demand for corrupt public services by encouraging importers to ship through less corrupt ports. Furthermore, Sequeira (2016) explains the low trade elasticities to trade liberalization that are observed in Southern Africa as being the result of corruption. She combines trade flow data with primary data on firm behavior and bribe payments and shows that tariff liberalization schemes are less likely to affect firms' import behavior if small illicit payments can significantly reduce border taxes. Concerning informal trade, Bensassi & Jarreau (2019) investigate the determinants of corruption in West Africa based on a trader survey and report that trade liberalization reforms

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[2] For example, The Economist magazine quoted a Customs officer at the Busia border post as saying: "stop a wheelchair and people will lynch you" (The Economist, 2018, The river between – informal trade is ubiquitous in Africa, but too often ignored, 1 September).

lead to lower bribes being demanded by border officials from informal traders, without, though, eliminating the illicit payments altogether.

This study also investigates the link between Customs integrity and trade but uses a different perspective. Rather than seeking personal financial gains at the expense of official tax collection and regulatory compliance, border officials in the context of this investigation derive non-financial benefits from a discriminatory application of border clearance practices *vis-à-vis* traders with disabilities. They derive satisfaction from showing compassion with the disabled. The preferential treatment might eighter consist of flouting formal regulations or showing restraint with respect to illicit payment demands.

The empirical analysis brings together data on SSCBT flows by product and transport mode with information on regulatory and physical characteristics of the traded products. The econometric results reveal that disabled traders have a different product portfolio than other small-scale traders. In particular, traders who are using wheelchairs to cross the border engage to a significantly larger extent in imports of products that are subject to high border taxes. This finding confirms the anecdotal evidence that disabled traders benefit from leniency on the part of border officials in the form of less stringent enforcement of trade regulations or fewer demands for illicit payments. The finding is robust to comparisons of wheelchair-based trade with different sub-groups of able-bodied traders.

More generally, the core finding of this study points to the continuing existence of substantial barriers to intra-regional trade even within the East African Community – a Customs Union. On paper, trade between Kenya and Uganda should be free, but the observation that wheelchair-based traders can make a living based on rents that accrue to them because of lenient treatment by border officials suggests that border clearance costs for non-disabled traders remain substantial.

Another important finding is that the livelihood of disabled traders depends on distortions in the current trade regime. If trade policy reforms were to reduce the high rates of protection for "sensitive products", wheelchair-based traders would see their preference margins and incomes shrink. In order to avoid hardship, any tariff reforms should therefore be accompanied by efforts to generate alternative employment opportunities for the disabled.

The remainder of this paper falls into five sections: section 2 provides a context for the subsequent analysis by discussing some relevant characteristics of the border region between Uganda and Kenia, including trade patterns, the nature of SSCBT, and the situation of the disabled population. Section 3 describes the dataset and provides descriptive statistics. Section 4 presents the empirical strategy used to investigate the trading behavior of respectively, disabled and able-bodied small-scale traders, and section 5 reports the econometric results of the study. Section 6 concludes.

2.   SSCBT at the Uganda-Kenya border

Uganda and Kenya are two developing countries in East Africa that share a land border that stretches for 480 miles (772 km). As a landlocked country, Uganda depends upon trade with its contiguous neighbors, and Kenya is the country's most important trading partner in the region. Also, most of Uganda's exports to and imports from global markets transit through Kenya. There are five official border crossings between the two countries, with the one at Busia being the most important for SSCBT (UBOS, 2019).

Both Uganda and Kenya are members of the East African Community (EAC). EAC is a customs union that operates a common external tariff regime and provides for free intra-regional trade. However, in order to benefit from these regional preferences, traders have to present a certificate of origin for their load. Producing this documentation is a major challenge for small-scale traders, many of whom are poor, illiterate, have incomplete

knowledge of trade regulations, and carry consignments whose values are low compared to the costs of obtaining the certificate. Thus, many small-scale traders do not carry the required documents to benefit from regional trade preferences and are vulnerable to being forced to pay non-preferential tariffs or to make illicit payments. Indeed, there is ample evidence from small-scale trader surveys on the prevalence of bribe solicitation from border officials (Bensassi & Jarreau, 2019, World Bank, 2020a).

In terms of the traded products, the exchange between Uganda and Kenya is asymmetric, with mainly agricultural produce going to Kenya, and manufactured goods coming into Uganda. Since small-scale traders do not fill out any customs declaration, SSCBT imports and exports are not captured in Customs-based trade statistics. However, the Uganda Bureau of Statistics has put a separate monitoring system for SSCBT into place to gather information on these import and export flows (see the section on data description below for more details).

It should be noted that SSCBT is different from smuggling of illicit products and is not necessary illegal (Karkare *et al.*, 2021). While some part of SSCBT occurs through unmonitored, insecure crossings along porous borders, most small-scale traders pass through official border crossings or in close proximity to the latter in order to connect to border markets or the transport network. They are, thus, within reach of the immigration, Customs and other border services. SSCBT is also not necessarily informal, as small-scale traders may operate a registered business (Bouët, Cissé & Traoré 2020).

Some Ugandan border posts, including Busia, have seen recent infrastructure upgrades and the creation of One Stop Border Posts (OSBP). However, Siu (2020) reports that few small-scale traders have formalized and pass through the new facilities, which are mainly designed to facilitate truck-based trade. At Busia, small-scale traders continue to use a narrow dirt path that runs beside the OSBP and leads into a strip of no-man's land between

Uganda and Kenya. Along this dirt path are surveillance posts by the immigration police and other border services to prevent illegal transactions from taking place. Hence, small-scale trade has not benefitted from the infrastructure investments and institutional consolidation in OSBP that has expediated truck and container traffic.

One striking feature of the community of small-scale traders at the Uganda-Kenya border is the high prevalence of disabled traders. The latter are often polio survivors or war veterans, who operate hand-crank tricycles or wheelchairs that have been assembled from bicycle parts and are fitted underneath with sturdy baggage carriers. These disabled traders straddle the border back and forth with small quantities of merchandise. Anecdotal evidence suggests that wheelchair-bound traders thereby benefit from leniency on the part of border officials, who do not enforce trade regulations to the same extent as for able-bodied traders or refrain from demands for illicit payments. Whyte & Muyinda (2002) report that disabled traders at Busia have formed an association that regularly organizes meetings with border officials. The aim of these gatherings is to sensitize the latter to the disabled traders' challenging life situation and their limited employment alternatives.

3.   Empirical strategy

If disabled traders benefit from empathy by border officials and as a result pay lower formal and informal border taxes and fees or are exempt from these altogether, then, conditional on the existence of differences in border transaction costs across products, the product portfolio of disabled traders should be overweighted towards products that face relatively high border clearance costs. In other words, if the overall share of disabled traders in total SSCBT is X-percent, it would be expected that the share of disabled traders for product A in all small-scale trade of product A would be higher than X, if product A were to be subject to high border clearance costs. Conversely, the share of disabled traders in total

SSCBT of product B should be lower than X, if product B were to be subject to low border clearance costs.

Fractional response variables, such as the share of a particular product being handled by disabled traders in overall SSCBT, are bounded between 0 and 1. Thus, the predicted values from an OLS estimation can never be guaranteed to lie within the boundaries, even if non-linear functional forms were to be used for the independent variables. Similarly, a Probit regression is not appropriate, as the dependent variable is continuous. To address this issue, the empirical strategy in this paper follows Papke & Wooldridge (1996), who use a quasi-maximum likelihood estimation of the fractional response variable. In this approach, E(y|x) is represented as a logistic function, where y is the dependent variable and x is a set of regressors. This econometric model ensures that the predicted values of y fall into the interval [0, 1] and that the effect of any x_i on E(y|x) diminishes as βx converges toward infinity.

The specification thus takes the following form:

$$E (y_i \mid x) = G (ß_0 + \Sigma_j ß_j X_{j,i}) \tag{1}$$

where y_i is the share of disabled traders in total SSCBT of product *i*, $X_{j,i}$ is a set of *j* different regulatory and physical characteristics of product *i*, and *G(.)* is the logistic function.

Equation (1) is estimated using analytical weights, with the product share in total SSCBT being used as the weight attributed to each product. The rationale for the trade-weighted estimation is that a larger trade flow will tend to be the result of a larger number of individual trade transactions by different traders or repeated trips by the same trader. These individual transactions are unobserved in the available dataset.

There might, of course, be cases where one cross-border trip with a high-value product generates a trade value that exceeds the aggregate value of several trade transactions

in low-value products. Also, given the variety of transport means, individual traders shipping a product, for example, by pushcart can generate different trade values per border crossing from others who are carrying the same product, for example, by headload. Another consideration is that a trader might well carry more than one product during a cross-border trip, generating trade values for the individual products that are a fraction of the value of a full load. The correlation between trade value and number of trade transactions is, hence, far from perfect but is expected to be positive.

4.   Data

The analysis brings together two datasets on, respectively, SSCBT and product characteristics, which are described below.

SSCBT data

Conscious of the importance of SSCBT for regional integration and food security, the Uganda Bureau of Statistics has been monitoring SSCBT since 2005. UBOS stations enumerators dedicated to SSCBT data collection at 20 border crossings with neighboring countries. These locations have been carefully selected based on the volume of SSCBT that passes through the border posts (UBOS, 2019).

The SSCBT enumerators are placed in locations from where they can overlook the border crossing and collect their data through unobtrusive observation.[3] The weight or volume of products is estimated and noted alongside the type of product, the means of transport, and the direction of trade. The traded product value is then at the end of the day determined by multiplying the trade volume with the prevailing price in local markets that UBOS also collects. Only in cases when the nature and value of the shipment cannot easily

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[3] Unobtrusive observation has the advantage of not slowing down traders as they cross the border.

be determined will the enumerator stop a trader and ask for information on the shipment (World Bank, 2020b).

In addition to the standard information found in Customs-based trade statistics (product, volume/weight, value, and direction of trade), UBOS also collects information on the means of transport of SSCBT. Observations are grouped into several categories, notably head/hand, pushcart, wheelchair, bicycle, motorcycle, and vehicle.[4]

This study takes advantage of this additional transport-related information. It uses monthly SSCBT data for 2018 that is disaggregated by border crossing, product type, and transport mode. In particular, the product portfolio of wheelchair users is contrasted with the products traded by other means of transport.

Descriptive statistics on SSCBT

In 2018, the value of Uganda's exports (large-scale plus SSCBT) amounted to US$3,634 million, of which about 15 percent (or US$547 million) was SSCBT. Concerning imports, SSCBT amounted to US$60 million or 0.9 percent of overall imports of US$6,789 million (UBOS, 2019).

Yet, these overall export and import figures do not reveal the true importance of SSCBT, which lies at the level of regional trade. Kenya was Uganda's most important regional trading partner in 2018, both with respect to exports and imports, and SSCBT contributed, respectively, 21 percent and 5 percent to Uganda's total export and import trade with Kenya.

By far the most important border crossing between Uganda and Kenya for SSCBT is Busia. In 2018, this single border crossing accounted for 89 percent of Uganda's SSCBT exports to Kenya and for 63 percent of all SSCBT imports from Kenya.

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[4] The transport category "vehicle" comprises notably merchandise that passengers on minibuses might carry.

Table 1 provides a summary of small-scale trade at Busia with a breakdown by transport mode. It is notable that the aggregate value of SSCBT exports in 2018 amounted to more than eight times the total value of imports. This imbalance is partly the result of Customs and other border agencies being more rigorous in the application of the regulatory regime for imports than exports, due to the differing implications of the two trade flows for revenue generation and security. Importers are more intensely scrutinized and forced into the formal channel, while exporters tend to get less attention as there are no revenues to collect and no risks for the domestic population to be concerned about.

Table 1: SSCBT at Busia in 2018 by transport mode

	Imports		Exports	
	(USD)	(%)	(USD)	(%)
Wheelchair	$5,488,825	35.0%	$122,118	0.1%
Head/hand	$1,320,342	8.4%	$2,730,372	2.1%
Pushcart	$1,509,016	9.6%	$34,033,855	25.6%
Bicycle	$5,539,303	35.3%	$34,574,904	26.0%
Motorcycle	$962,386	6.1%	$3,932,331	3.0%
Vehicle	$876,427	5.6%	$57,712,497	43.4%
Other	$209	0.0%	$23,634	0.0%
TOTAL	15,696,509	100.0	133,129,712	100.0

Another salient observation is that wheelchair trade is very important for SSCBT imports, accounting for 35 percent of the total. On the other hand, wheelchair-bound traders are virtually irrelevant for SSCBT exports. In value terms, SSCBT wheelchair imports are more than 43-times larger than SSCBT wheelchair exports.

The composition of trade by wheelchair and by other means is notably different (Table 2). Wheelchair trade is more concentrated, with the top-3 products accounting for 70 percent of all SSCBT imports, while the same metric for other transport means is 39 percent. Moreover, wheelchair trade seems to be more focused on "sensitive products", like rice, wheat and sugar, that are subject to high import protection.

Table 2: Product Composition of SSCBT Imports at Busia in 2018

	Imports by Wheelchair			Imports by non-Wheelchair Transport	
Rank	Product (HS Code)	%	Rank	Product (HS Code)	%
1	Rice (100630)	40.1	1	Rice (100630)	17.7
2	Wheat flour (110100)	18.4	2	Worn clothing (630900)	13.6
3	Vegetable oil (151590)	11.7	3	Jute sacks (630510)	7.7
4	Chewing gum (170410)	6.8	4	Wheat flour (110100)	6.0
5	Pasta (190230)	3.9	5	Fish (030659)	5.3
6	Sugar confectionery (170490)	2.8	6	Potatoes (070190)	5.3
7	Fruit juice (200990)	2.1	7	Vegetable oil (151590)	3.9
8	Toast bread (190540)	1.6	8	Cement (252329)	3.5
9	Baking powder (210230)	1.3	9	Toast bread (190540)	3.4
10	Petroleum jelly (271210)	1.0	10	Mango (080450)	2.9

The natural geography in Uganda is not equally amenable to wheelchair-based trade at all border stations. For example, some of Uganda's border posts are river or lake crossings that are not practicable for wheelchair-bound traders. That said, in 2018 UBOS reported wheelchair trade for 11 of the 20 locations where it monitors SSCBT. Hence, the participation of disabled individuals in SSCBT is a phenomenon that is widely observed throughout Uganda and possibly beyond.

Product characteristics

The second dataset used in this study includes information on characteristics of products traded at the Uganda-Kenya border. It includes measures of border taxes (TARIFF), trade regulations (SPSREG), seasonality of supplies (SEASON), and degree of perishability (PERISH). These product characteristics are described below.

TARIFF: Both Uganda and Kenya are members of the EAC Customs Union. The common external tariff (CET) comprises three tariff bands: zero on raw materials and capital goods, 10 percent on intermediate goods, and 25 percent on finished goods. In addition, there are 63 tariff lines with products that are deemed sensitive and for which the applied tariff ranges from 25 percent to 100 percent. Sensitive products are, inter alia, dairy products, wheat, rice, sugar, woven fabrics, and worn clothing (WTO, 2019).

One issue that has been creating distortions in the EAC tariff regime is the duty remission scheme. Individual companies can apply for an exemption on a tariff if the imported good is used as an input for domestic production. This duty remission scheme has been criticized for being biased towards large, politically well-connected firms and for enabling fraudulent leakage of tax-exempt production inputs into the domestic market (Frazer & Rauschendorfer, 2019). As a result, the domestic market price of products imported from international markets can be lower in one EAC member country, for example, Kenya, than in another one, such as Uganda. Other sources of price differentials on internationally sourced products within the EAC include the application of different rates of value-added taxes on imports (Kenya: 16 percent, Uganda: 18 percent) or country-specific import charges. For example, Uganda collects a withholding tax on imports that is supposed to cover the tax on the profits that importers presumably make from selling their merchandise in the Ugandan market. Wheelchair-based traders are expected to have a trade portfolio that is overweighted in highly taxes products, given the underlying presumption that they benefit from positive discrimination by Customs officials.

SPSREG: Imports are subject to border inspections to ensure compliance with national regulations. The WTO's Integrated Trade Intelligence Portal database contains comprehensive information on non-tariff measures that countries apply.[5] For the empirical analysis in this study, all measures notified to the WTO before 2018 are taken as applying to cross-border trade. A dummy variable is constructed that takes the value of 1 if a product is subject to at least one sanitary or phyto-sanitary measure and zero otherwise. Disabled traders are expected to trade more intensively in products that are subject to border inspection, as they are presumed to benefit from leniency from border officials in the application of regulatory requirements.

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[5] https://i-tip.wto.org/goods.

SEASON: A significant share of SSCBT consists of agriculture and food products whose availability is seasonal. The degree of seasonality of different products is being measured through the coefficient of variation of monthly SSCBT trade between January and December 2018. Highly seasonal SSCBT tends to be undertaken by farmer-traders, who transport and sell their own produce across the border after harvest. Since farming is an activity that wheelchair-bound individuals are unlikely to pursue, it is expected that the share of wheelchair-based trade in seasonally traded products is relatively low.

PERISH: One rationale for SSCBT instead of customs-declared trade is that the delays of clearance by customs and other border agencies can be considerable, which can cause increased wastage for perishable products. The following products are taken as perishable, as their quality deteriorates quickly through time: meat and meat by-products, fish and seafood, dairy products, fruit and vegetables, and flowers. Wheelchair-bound traders are arguably not as quick and nimble as their able-bodied colleagues and would, hence, not be expected to trade as intensively in time-sensitive products.

All product characteristics are represented at the 6-digit level of the Harmonized System to match the recording of SSCBT data by UBOS. In 2018, there were 286 tariff lines with SSCBT imports and 374 tariff lines with SSCBT exports.

Empirical specification

Based on the above discussion, the regression model sketched out in equation (1) can be more explicitly specified as follows:

$$E\,(SDT_i \mid x) = G\,(\text{\ss}_0 + \text{\ss}_1\,TARIFF_i + \text{\ss}_2\,SPSREG_i + \text{\ss}_3\,SEASON_i + \text{\ss}_4\,PERISH_i) \quad (2)$$

where SDT_i is the share of disabled traders in total SSCBT of product i, $TARIFF_i$ is the ad-valorem EAC-CET on product i, $SPSREG_i$ is a dummy variable that takes the value of 1 if

product i is covered by an SPS measure, *SEASON$_i$* is an indicator of seasonality of product i,

and *PERISH$_i$* is a dummy variable that takes the value of 1 if product i is classified as

perishable. *G(.)* is the logistic function.

5.   Findings

Table 2 summarizes the results from the weighted maximum likelihood estimation of

equation (2) using data on SSCBT imports from Kenya into Uganda at Busia border station

during 2018. It shows that tariff protection (TARIFF) is a significant determinant of a product

being traded using wheelchairs as the means of transport. This finding is in line with the

hypothesis that disabled traders benefit from empathy by border officials. If they are not

stopped and controlled by Customs personnel, then wheelchair-based traders maximize their

benefit from evaded trade costs by focusing their trade on highly taxed products.

Table 2: Estimation results: SSCBT imports

	Dependent variable: Share of wheelchair-based trade in all SSCBT imports		
	[a]	[b]	[c]
Constant	-0.5413 (0.708)	-0.4332 (0.6245)	-0.5263 (0.6614)
TARIFF	0.0162 ** (0.007)	0.0159 ** (0.0066)	0.0155 ** (0.0067)
SPSREG	0.313 (0.368)		
TARIFF x SPSREG			0.0089 * (0.0053)
SEASON	-1.1876 ** (0.4804)	-1.2601 ** (0.4931)	-1.1875 ** (0.4652)
PERISH	-2.6233 *** (0.9259)	-2.5852 *** (0.9857)	-2.6633 *** (0.8856)
Observations	286	286	286

Note: *, **, and *** denote significance, respectively, at the 90%, 95% and 99% level.

The presence of non-tariff measures (SPSREG) also shows the expected impact direction, with products that are subject to SPS measures being overweighted in the product portfolio of wheelchair-based traders. However, the effect on the product portfolio is found not to be significant (regression [a]). Dropping the variable from the estimation (regression [b]) results in a somewhat more significant result for TARIFF, which suggests that part of the impact of NTMs is now attributed to tariff protection. Indeed, if an interaction term (TARIFF x SPSREG) is introduction into the analysis (regression [c]), both the TARIFF variable and the interaction term turn out to be significant determinants of traders' portfolio. Non-tariff measures, thus, seem to have a marked effect on the type of product traded if they are present at the same instance as high import tariffs.

The two variables that capture physical characteristics of the traded products (SEASON and PERISH) have the expected sign and are found to be significant factors for influencing the product choice of wheelchair-based traders. Disabled individuals are less likely to carry products across the border that are perishable or seasonal in supply.

Sensitivity analysis: narrowing the reference group of traders

The regression results reported in Table 2 suggest a link between the level of tariff protection, the extent of seasonality, and the degree of perishability with the likelihood of a product being traded by wheelchair-bound traders. The available monthly data for the dependent variable on SSCBT for 2018 was pooled, as no variation in trade policy measures was observed during the year that would have made a panel analysis and the investigation of causal inference possible. While reverse causality, implying that handling certain highly taxed products, such as sugar, rice, and wheat flour, leads to disability, seems far-fetched, the existence of other, uncontrolled determinants of traders' product portfolio cannot be entirely dismissed.

In particular, the regression does not account for the suitability of different products to be shipped by alternative transport means. For example, bulky items, such as pieces of furniture, can be readily carried by hand or on a pushcart across the border, but might not be apt for wheelchair transport. To remedy this potential bias from product characteristics for which no obvious control variable is available, such as bulkiness, fragility, or geographical origin, the dependent variable is redefined as the share of wheelchair trade in similar-mode trade, with the latter being taken as wheelchair plus bicycle-based SSCBT. The transport bicycles used by small-scale traders have about the same carrying capacity as a wheelchair and are equally muscle propelled.

Table 3 summarizes the regression results for the narrower group of traders. The qualitative findings remain unchanged, with all independent variables showing the expected impact direction, and tariffs, seasonality and perishability being significant determinants of trade by disabled individuals. Wheelchair-bound traders have a product portfolio that is overweighted towards products that face high import tariffs, are non-seasonal, and non-perishable.

Table 3: Estimation results: SSCBT imports, selected groups of traders

	Dependent variable: Share of wheelchair-based trade in wheelchair plus bicycle-based SSCBT imports		
	[d]	[e]	[f]
Constant	-0.0436 (0.5643)	0.0031 (0.5271)	-0.0617 (0.5478)
TARIFF	0.0097 * (0.0059)	0.0096 * (0.0057)	0.0093 (0.0057)
SPSREG	0.1517 (0.3903)		
TARIFF x SPSREG			0.0067 (0.0051)
SEASON	-0.7562 * (0.4182)	-0.775 * (0.4241)	-0.7425 * (0.41)
PERISH	-1.7803 ** (0.7996)	-1.7456 ** (0.8327)	-1.8636 ** (0.7394)
Observations	204	204	204

Note: *, **, and *** denote significance, respectively, at the 90%, 95% and 99% level.

The number of observations for the regressions of the narrower trader group dropped by about 30 percent from 286 to 204, as some products are carried neither by wheelchairs nor by bicycles. This reduction in the number of observations means that the standard errors are higher and that the level of significance of the findings drops for regressions [d] to [f] compared to the regression results for the entire trader population (regressions [a] to [c] in table 2). In particular, the introduction of the interaction term between tariffs and non-tariff measures in regression [f], leads to a significance of the tariff determinant that is (just) below the 90 percent threshold. Only seasonality and perishability remain as significant determinants in that specification.

SSCBT exports from Uganda

As noted earlier, there is a fundamental asymmetry in SSCBT at the Busia border crossing. The value of overall SSCBT exports from Uganda into Kenya by far exceeds

Uganda's SSCBT imports from Kenya. Yet, exports by wheelchair are only a fraction of imports in both absolute and relative terms.

The results from the estimation of equation (2) using export data on SSCBT confirms the findings from the earlier analysis of imports that the level of border taxes (TARIFF) and the perishability of products (PERISH) are important determinants of the product portfolio of wheelchair-bound traders (Table 4). Conversely, the results on non-tariff measures (SPSREG) and seasonality (SEASON) are inconsistent and depend on whether wheelchair-based trade is compared to all SSCBT (regressions [f] and [g]) or to the narrower group of wheelchair and bicycle traders (regressions [h] and [i]).

Table 4: Estimation results: SSCBT exports

	Dependent variable: Share of wheelchair-based trade in …			
	all SSCBT exports		wheelchair plus bicycle exports	
	[f]	[g]	[h]	[i]
Constant	-9.5025 *** (0.7239)	-9.3785 *** (0.5737)	-7.8479 *** (0.7195)	-7.6605 *** (0.7998)
TARIFF	0.0829 *** (0.0166)	0.0842 *** (0.0172)	0.0518 *** (0.0165)	0.0303 *** (0.0052)
SPSREG	-2.6324 ** (1.2906)	-2.5808 ** (1.3127)	-1.753 (1.3091)	
SEASON	0.1689 (0.404)		0.797 ** (0.322)	0.8732 ** (0.3677)
PERISH	-1.402 ** (0.6774)	-1.3186 * (0.7342)	-2.2712 ** (1.0363)	-2.0774 ** (1.0427)
Observations	374	374	270	270

Note: *, **, and *** denote significance, respectively, at the 90%, 95% and 99% level.

There are two factors that might drive the inconsistency of findings with respect to non-tariff measures and seasonality on the export side. First, in addition to the only marginal importance of wheelchair-based exports (0.1 percent of total SSCBT-exports), this trade is also concentrated in only a small number of products. Only 58 out of the 374 products that

are exported from Uganda to Kenya show some wheelchair trade. Hence, a large number of the observations for the dependent variable are zeros.

Second, the SSCBT monitoring activity by UBOS is undertaken from the Ugandan side of the border. The enumerators observe whether traders bypass the Ugandan Customs house and other border services, but they do not know whether the trade that left Uganda informally stays informal on the Kenyan side of the border or is forced into the official channel there. Hence, informal Ugandan exports might well become formal, Customs-recorded imports once traders get into Kenya and be subject to all the taxation, inspections, and documentary requirements associated with large-scale trade.[6] As a result, the dependent variable in the regressions reported in Table 4 is possibly of poor quality and contains substantial noise.

6.   Conclusion

This study used data on SSCBT, disaggregated by product and transport mode, in combination with information on product characteristics to assess the trading practice of different groups of small-scale traders at the border between Uganda and Kenya. The econometric analysis finds that disabled, wheelchair-bound traders tend to carry products that are subject to high trade protection. This finding confirms anecdotal evidence that suggests that disabled traders benefit from leniency on the part of border officials.

The analysis contributes to the literature on disability and employment in developing countries by providing evidence on an informal coping strategy that enables disabled individuals to gain an independent livelihood. The community of traders and border officials at the border between Uganda and Kenya has developed a customary practice and understanding that makes it possible for wheelchair-bound individuals to pursue gainful

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[6] To date, Kenya does not monitor SSCBT at its borders.

entrepreneurship. As noted by Whyte & Muyinda (2002), despite a large population of handicapped people in the Busia area, there are no beggars on the street even on Fridays when Muslims frequently give alms.

The coping strategy depends on the persistence of distortions in the EAC trade regime, though. If trade policy reforms were to bring down import tariffs and, in particular, remove the exceptionally high protection afforded to "sensitive products", the preferential rents of wheelchair traders would decline, threatening their livelihood. This calls for trade adjustment assistance, which is generally aimed at import competing producers, to be extended to vulnerable groups of traders and, in particular, to create alternative employment opportunities for wheelchair-bound individuals who engage in cross-border trade.

Moreover, the fact that disabled traders can make a living from preferential margins on intra-regional trade within the EAC raises questions about the effective implementation of the free trade provisions of that Customs Union, and potentially other preferential trade agreement in Africa. Documentary requirements continue to be cumbersome and intra-regional trade costs remain high, not least because of frequent demands by border officials for illicit payments from traders (Benassi & Jarreau, 2019; World Bank 2020a).

The analysis also links up with the academic discourse on whether a lack of Customs integrity is enhancing or suppressing trade (e.g., Dutta & Traca, 2010; Sequeira & Djankov, 2014). Officials at the Kenya-Uganda border appear to disregard regulations and standard practices on import taxation and control and, thus, harm government finances and public security by discriminating in favor of wheelchair-bound traders. By doing so, they derive non-financial benefits for themselves in the form of the joy from helping others. This empathetic behavior enhances the imports by wheelchair-bound traders. Yet, the present study does not address the issue of whether border officials compensate for the loss of formal

and informal revenue on wheelchair-based trade by upping charges on able-bodied traders, so that, overall, the trade impact might be ambivalent. This question is left for further research.

More research seems also warranted on the characteristics and importance of SSCBT in general. The dearth of reliable data on SSCBT has meant that important trade flows between neighboring countries are not taken into account by analysts and policy makers. Using only official, Customs-recorded trade transactions fundamentally underestimates regional trade flows and might lead to erroneous findings and policy recommendations, for example concerning the degree of regional integration in Africa. Luckily, an increasing number of countries have recognized the value of systematically collecting information on SSCBT (World Bank, 2020b), so that researchers will increasingly have the opportunity to rigorously investigate the nature and contribution of small-scale traders to cross-border commerce, food security, employment, and income.

7. References

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