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The impact of customs and trade regulations on the operations of African firms

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ABSTRACT

This paper uses data from the World Bank Enterprise Surveys to investigate the extent to which customs and trade regulations are perceived to be an obstacle to the operations of establishments in Africa. It examines variations in responses to a question on the impact of customs and trade regulations in establishments across a range of African countries and investigates the factors that determine the observed differences. The regression models focus particularly on three sets of influences. The results indicate that small establishments that engage internationally are less likely to report customs and trade regulations as an obstacle. In contrast, such obstacles were deemed to be more severe in establishments that also considered corruption and political instability to be obstacles. This was also generally the case for establishments located in lower income countries.

1. Introduction

The importance of trade facilitation in the pursuit of economic growth for African nations is well documented (Njinkeu and Wilson, 2008). Given the reach of complex Global Value Chains (GVCs), enterprises are increasingly part of global markets (Okonjo-Iweala and Coulibaly, 2019). Increased global engagement, in the form of international trade and/or foreign direct investment is 'good' for enterprises generally and for less developed economies particularly, as it offers a route to economic development by improving productivity, raising technology transfer (Driffield and Love, 2003) and wages domestically (Dunning 2000; Harrison, 1994). Practically, the economic benefits associated with internationalisation stem from firstly increasing the market base for goods and services produced. International exposure requires firms to 'up their game' to compete on the global scale. This improved practice finds its way back to domestic operations and diffuses through the domestic market improving all firms, including those that do not engage in international operations. Barriers to participating in international markets and inward investment means that long-term economic gains do not always materialise for domestic economies. Africa has struggled to reap the benefits of internationalisation, hampered by a low skilled workforce in the face of the fourth industrial revolution and poor digital infrastructure.

As well as these contextual economic factors that hinder internationalisation, international activity more generally is subject to customs and trade regulations in the form of product-specific tariffs (charges) and quotas (volume limits) on imports and exports which generally involve significant bureaucracy for firms to navigate. The burden of bureaucracy is generally assumed for fall disproportionately on smaller firms, however, evidence of trading incidence by firm size for Africa is scarce. Narteh and Acheampong (2018) provide some pan-African support for a positive relationship between firm size and internationalisation but do not focus on the impact of the customs and trade regulations specifically. Tandrayen-Ragoobur (2022) similarly considers the role of size on the propensity to export and find a positive relationship. While they also control for barriers in their estimation, the focus is on factors determining exporting and innovation rather than the impact of barriers on the decision to export. Leonidou (2004) provides a comprehensive summary of the evidence on the role of barriers to exporting for small firms but does not offer a comparison with larger firms.

Customs and trade regulations dissuade firms from engaging internationally and as a result, Africa saw a decline in their share of global international trade from 1970 to 1999 (Njinkeu and Wilson, 2008). Firms that do engage globally, either through exporting or importing may choose to engage in bribery to circumvent measures, to limit delays to production and to trade, although such time delays deter exporting. Martincus et al. (2015) found that a 10% increase in time delays

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accounted for a 3.8% drop in exports in the case of Uruguay. Together, this suggests a link between trade barriers and the incidence of bribery. As well as there being high levels of inefficiency within existing administrations, vital domestic institutional infrastructure can sometimes be missing, leading to an increase in costs facing those looking to export. Challenges face Africa around building value chains in such a segmented regional economy (The Economist, 2020) and the aim of this paper is to provide evidence on the perception of customs and trade regulations as barriers to the operations of the establishment amongst African firms. While previous studies have focused on specific countries and/or specific trade agreements, this paper takes a pan-African view and explores the perception of barriers at the enterprise level.

While the international community has broadly seen a successful reduction of tariffs on trade in recent decades, there has been a rise in Non-Tariff Barriers (NTBs), such as regulatory standards which act as obstacles to trade and are found to particularly affect exporters from poorer nations (Essaji, 2008). These may be considered to be a soft form of customs and trade regulation. A *meta*-analysis provides extensive evidence for the African agri-food sector suggests a broadly negative impact that varies significantly by product (Santeramo and Lamonaca, 2019), and the nature of the NTB matters. In the case of South East Asia, Doan and Rosenow (2019) estimate that there has been a 15% increase in non-tariff measures in the ASEAN area between 2015 and 18. Another study estimates the costs associated with NTBs to have doubled the cost of ordinary customs tariffs in Asia (Kumanayake, 2021). Thus they represent a significant cost that falls on internationally focussed enterprises.

This paper utilises the World Bank Enterprise Surveys (WBES), which offer a consistent dataset of establishments to provide a comprehensive picture of the influence of customs and trade regulations on their operations. We focus particularly on those establishments from a wide selection of African nations[1] that import and/or export, as well as those that do both. This is important because it allows us to consider various types of heterogeneity – both between firms and across countries. We focus on three broad factors when exploring this perception of customs and trade regulations as barriers to an establishment's operations. These are the perceived impact of corruption and political instability, firm size and the country's level of income. In addition, our regression models also contain a range of other control variables, to ensure that the impact of each set of factors takes account of other potential influences. As a result, our study provides an in-depth analysis of crucial barriers to international trade across the continent of Africa in the context of a global trading system that has become increasingly protectionist in recent years.

The paper is organised as follows. The next section contains a discussion of the literatures on internationalisation amongst African firms and on constraints to international trade. The data and descriptive statistics are discussed in Section 3, followed by sections that outline the econometric methods that have been applied to the data and discuss the results that have been obtained. The paper is completed with some concluding comments.

2. Customs and trade regulations: International context, existing empirical evidence and hypotheses development

2.1. International context

The past decade has seen considerable growth in African enterprises engaging in international markets, coinciding with the 'African Rising' – a period of observably high levels of economic growth in the region. Existing studies on the extent to which African firms engage in exporting and importing have highlighted the challenges faced, in terms of infrastructure and networks, as well as cultural differences and institutional barriers. Boso et al. (2019) summarises the current challenges and opportunities and highlights the considerable potential for inter-regional internationalisation through the harmonisation of regulatory requirements. To achieve this however, they argue there is significant work to do in terms of shaking off historical stereotypes and building trust both within and especially beyond Africa (Boso et al., 2019).

The internationalisation process of African economies has increased in terms of 'scale, scope and sophistication' (Boso et al., 2019; p. 5), extending their reach to most sectors, and having a presence beyond the African region alone. This growth has been attributed to a high level of private sector development through investment (increasing from a low starting point) as well as regional integration supported by a number of pan-African trade agreements. The introduction of international trade agreements to lower or limit customs and trade regulations have been beneficial, at least in the short run.

Fernandes et al. (2021) explores the benefits of the short-term Multifiber Arrangement (MFA) of 2001, which allowed for unfettered access to regional markets in the apparel sectors in Africa. Introduced on the grounds of the infant industry argument, its subsequent end in 2005 led to a worsening of the fortunes for African apparel producers generally as they once again became more exposed to global competition. Where domestic improvements continued to exist, these were due to the complementary domestic reforms that accompanied the MFA, evident in Ethiopia and start-ups in Kenya (Fernandes et al., 2021). They found little evidence of learning by doing benefits from the short-term international trade advantage offered through trade preference if not accompanied by domestic reforms.

It may be argued that through the combination of trade agreements and private sector investment, African firms have been successful in overcoming Institutional Voids (IVs) that are known to exist domestically, to facilitate international trade (Boso et al., 2019; Gao et al., 2017). The perception of corruption (one indicator of IVs) in Africa is pervasive and underpinned by weak institutional governance. This varies by both country and sector, with some more regulated than others. At a sector level, Amankwah-Amoah (2018) provides sector-specific analysis and highlights the importance of the regulatory framework in the airline industry in shaping the competitive pressures firms with international ambitions face.

The role of Institutions and infrastructure development in engaging with international activities is evident. Institutional theory highlights that IVs hinder economic development by inhibiting growth, survival and development of firms in less developed economies. Institutions define the 'rules of the game in a society' (North, 1990; 3) and without them, decision-making becomes uncertain and risky, hindering business functions. IVs make the business environment 'turbulent, costly and unpredictable' (Luiz et al., 2021: 2) causing some foreign firms to exit for more stable markets but also hampering domestic firms' ambitions to participate in international markets. Developing creative workarounds in the face of institutional voids can lead to imperfections and additional costs (Pfeffer and Salancik, 2003). Firms will develop strategic responses to mitigate the effects of IVs; such responses are shaped by domestic institutional arrangements. Recent evidence on Ghanaian SMEs highlights the positive benefits of cooperation, particularly in relation to R&D to overcome the barriers associated with IVs, but also that perception of IVs can lead to greater inter-firm cooperation than would otherwise occur and thus can have an indirectly positive effect on certain aspects of firm activity (Adomako et al., 2021).

Overcoming barriers to internationalisation is important for the economic development of the region. McKinsey (2016) identifies six priorities for productivity and growth in Africa, to begin to fully realise its potential: Mobilising domestic resources; Aggressively diversifying its economies; Accelerating infrastructure development; Deepening regional integration; Creating tomorrow's talent and Ensuring healthy urbanisation. These priorities recognise the need for economic diversification and improvements in domestic infrastructure, as well as the importance of regional networks, which is consistent with the need to

[1] A full list of the countries covered is provided in Table 1.

address existing IVs. Specifically, Africa is thought to suffer from a lack of intermediary markets, poor access to markets, and weak infrastructure, including regulation (Boso et al., 2019).

2.2. Existing empirical evidence

As previously discussed, the extent to which domestic firms internationalise varies by sectoral composition as well as domestic institutional factors. The existence of customs and trade regulations have a detrimental effect on trade and thus, trade facilitation (Grainger, 2011) eases the way for exporting activities, reducing associated transactions costs but it is a broad concept that encompasses economic, political, administrative, and technical issues (Butterly, 2003). It seeks to encourage the simplification of regulations, modernise compliance systems, smooth out customs procedures and ensure that there are institutional mechanisms to ensure effective implementation of smoother trading systems (Grainger, 2011).

While many empirical studies of internationalisation focus on a single country or sector, there are fewer studies that consider firm or establishment level information across a region. One notable exception is Kumanayake (2021) which utilises a wide cross-section of enterprises from across Asia to consider the role that NTBs play in a firm's decision whether to engage in bribery to facilitate trade. Our paper makes use of the same data source for Africa on a large group of countries to obtain a much richer picture of the extent of internationalisation amongst African firms. This enables us to obtain a greater understanding of whether certain factors connected to international trade affect the operations of establishments in these countries.

Since the financial crisis, there has been a noticeable increase in the anti-globalisation sentiment that has resulted in a growth in tariffs and more direct trade barriers.[2] Customs have a significant role to play in preventing trade and the extent to which such arrangements lengthen the time exporting takes a significant toll on exporting success (Martincus et al., 2015). Empirical evidence for Sub-Saharan Africa identifies the various components of trade costs and the damaging effects of these high costs (Portugal-Perez and Wilson, 2009). Trade facilitation reform is key, as is transport infrastructure improvements. It is worth noting that firms also face a choice between formal and informal trading arrangements and that this is directly influenced by the scale and scope of the customs and trade regulation. A study of Benin finds that a 10-percentage-point increase in tariffs led to a 12 per cent increase in the probability of informal importing (Bensassi et al., 2019).

Beyond Africa, empirical evidence from Uruguay reveals the extent of the negative effect of customs delays, which is worse for new exporters, those countries furthest away geographically and for exports of shorter shelf-life products. In the case of Asian enterprises, Kumanayake (2021) finds that those identifying customs and trade regulations as hampering their internationalisation have a higher likelihood to resort to bribery and are likely to offer a higher bribe. Interestingly, this perception and bribery appears to be negatively correlated with productivity.

Attempts to reduce customs and trade regulations are evident. Recent papers focus on the proactive development of simplified trading arrangements between China and Africa, and the gains associated with this trade. By 2010, China had concluded 31 trading arrangements with African countries and since 2013 it was the largest trade partner for Africa. Empirical studies for Ethiopia (Crescenzi and Limodio, 2021) and Ghana (Hou et al., 2022) suggest a mixed picture in terms of benefits to African nations, although Hou et al. (2022) conclude there is greater potential from Ghana-China trade than from that with OECD nations, although this varies by sector. On a related topic, Orji et al. (2022) explore the productivity-enhancing role of FDI, finding significant evidence of positive spillovers from FDI in West Africa. Their policy conclusions emphasise the importance of removing institutional barriers to doing international business.

Evidence suggest that barriers are more keenly felt by smaller firms and this may explain their lower propensity to internationalise. Establishment level analysis of African firms also using WBES that explores foreign engagement of African enterprises focussing on FDI has been undertaken by Narteh and Acheampong (2018). They argue that institutional factors drive internationalisation intensity, rather than being purely a firm-based decision. Their econometric analysis utilises data on 46 African nations and adopts a probit estimation of whether an enterprise operates internationally, with a range of determining variables including enterprise characteristics as well as infrastructure variables such as competition and bribery conditions. Their findings indicate that enterprises are more likely to enter international markets if their sector has a higher share of foreign participation and a positive association with size and higher performance measures at the enterprise level (Narteh and Acheampong, 2018).

Tandrayen-Ragoobur (2022) also uses the WBES but estimates the likelihood of innovation and exporting (separately) in Africa, controlling for size as well as assumed barriers. It is found that larger firms have a greater propensity to export, compared to small firms but the relationship between barriers and firm size is not explored. Leonidou (2004) identifies 39 barriers to exporting for SMEs and finds a moderately high impact of tariffs and non-tariff barriers on the decision to export. Chandra et al. (2020) review existing evidence on the barriers to internationalisation specifically for SMEs in a developing context. Their conceptual framework synthesises the findings from the literature and identifies firm size as an internal factor that influences a firm's propensity to internationalise. Externally, procedures and government barriers are also identified as factors that influence internationalisation (Figure 1, p. 1291). Thus, they acknowledge the importance of both size and institutional settings as determinants of the propensity to internationalise whereas here, we consider the interplay between the two. In summary, the benefits from internationalisation are likely to be significant both to the individual establishment and to the nation, but there are barriers to engaging in international markets. While some of these are direct, there has been a growing tendency for NTBs which indirectly cause delays and hamper smooth engagement within international markets. In these arenas, institutional weaknesses (or voids) can further exacerbate successful internationalisation. One mechanism to circumvent such barriers is through bribery, further increasing the direct cost of importing and exporting activities.

2.3. Hypotheses development

We now go onto build on the discussion in the proceeding parts of this section to develop three specific testable hypotheses.

As outlined above, weak or missing institutions can create a vacuum requiring firms to develop informal work-arounds, which increases the costs of international activities. Mondliwa et al. (2021) adopt a capabilities approach to focus on the implementation of competition law in South Africa using several case studies of MNEs. They argue that by and large, the competition policy as implemented in South Africa has discouraged investment in capabilities and has thus led to rent extraction and arguably a short termism within key internationalised sectors. Mondliwa et al. (2021) also makes the point that upstream and downstream sectors can benefit but only if competition law is designed in such a way as to be cognizant of existing competitive conditions. All of this points to the fact that addressing IVs with inappropriate arrangements can exacerbate existing biases inherent in the structure. This leads to our first hypothesis:

H1: Customs and trade regulations will be perceived to have greater negative effects where IVs - as captured by corruption and political instability - are greater.

[2] This trend is not limited to Africa as evidenced by the political turbulence in the US as well as the UK Brexit decision.

Table 1
Background Details on Firms/Establishments Included in the Sample.

	Year	N	% Small	% Medium	% Large	Mean: Customs & Trade Regs are Obstacle
Benin	2016	150	39.3	39.3	21.3	1.57
Burundi	2014	157	51.6	40.8	7.6	1.93
Cameroon	2016	361	67.3	18.6	14.1	1.45
Chad	2018	153	69.3	21.6	9.2	1.51
Cote d'Ivoire	2016	361	54.3	31.0	14.7	1.85
D. R. Congo	2013	529	72.8	22.5	4.7	1.52
Djibouti	2013	266	63.5	29.7	6.8	1.40
Egypt	2020	3,075	53.3	31.5	15.3	1.13
Eswatini	2016	150	46.0	42.0	12.0	1.66
Ethiopia	2015	848	48.8	30.3	20.9	0.96
Gambia	2018	151	63.6	28.5	8.0	1.33
Ghana	2013	720	63.3	28.2	8.5	1.39
Guinea	2016	150	71.3	20.0	8.7	2.03
Kenya	2018	1,001	44.1	37.4	18.6	1.26
Lesotho	2016	150	48.7	32.7	18.7	1.93
Liberia	2017	151	60.9	30.5	8.6	1.21
Madagascar	2013	532	60.3	24.1	15.6	1.21
Malawi	2014	523	55.6	28.3	16.1	1.45
Mali	2016	185	42.7	38.4	18.9	1.97
Mauritania	2014	150	42.0	41.3	16.7	1.91
Morocco	2019	1,096	36.8	34.9	28.4	1.59
Mozambique	2018	601	53.2	30.0	16.8	0.90
Namibia	2014	580	75.5	19.7	4.8	0.62
Niger	2017	151	57.6	32.5	9.9	1.38
Nigeria	2014	2,676	65.5	27.4	7.1	1.12
Rwanda	2019	360	52.8	32.2	15.0	0.36
Senegal	2014	601	69.4	22.8	7.8	1.01
Sierra Leone	2017	152	65.1	23.0	11.8	1.67
South Africa	2020	1,097	51.4	35.9	12.7	0.29
South Sudan	2014	738	87.7	11.0	1.4	2.10
Sudan	2014	662	56.2	36.6	7.3	2.07
Tanzania	2013	813	63.2	26.9	9.8	2.09
Togo	2016	150	48.0	36.7	15.3	1.85
Tunisia	2020	615	36.3	40.0	23.7	1.98
Uganda	2013	762	63.9	27.4	8.7	1.53
Zambia	2019	601	49.4	33.1	17.5	1.16
Zimbabwe	2016	600	57.7	26.5	15.8	1.40
All Countries		22,018	57.3	29.6	13.1	1.32

Our second hypothesis relates to the role of firm size. The *a priori* expectation is that transaction costs should fall disproportionately on smaller firms who have a lower capacity to benefit from economies of scale in undertaking customs-related bureaucracy and may face greater resource constraints (Chandra et al., 2020). Although, Verwaal and Donkers (2003) find no clear effect of customs-related transactions costs impacting more heavily on the incidence of small firms in international activity, Chandra et al. (2020) suggest both factors influence the propensity to internationalise. Furthermore, in contrast to our study, Verwaal and Donkers (2003) analyse data on European enterprises. They also speculate that larger firms rely on volume sales and may have smaller profit margins than smaller enterprises operating in higher profit margin markets. Therefore, we hypothesise:

H2: The impact of customs and trade regulations is reduced for larger firms.

Finally, we also expect a country's income level to influence the extent to which firms feel the impediment of customs and trade regulations. This relates to a range of correlated factors such as education and general infrastructure such as networks of transportation and digital services – factors that would alleviate the cost of international activity. Examining the sectoral composition of international activity, concern has been voiced about the possibility that African nations may be entering premature deindustrialisation (Rodrik, 2016) as they move into services without having undergone the industrialised phase of development. In part this is thought to have been driven by trade and globalisation and coincides with the growth in 'born global' enterprises (Knight and Cavusgil, 2004). This phenomenon is recognised as an important organisational development since these are dynamic entrepreneurial start-ups that can undertake internationalisation at the very earliest of stages of development. As such, these have been characterised as innovative, often high growth organisations that punch above their weight in terms of influence. As a result, our final hypothesis is:

H3: Firms in richer countries will be less affected by customs and trade regulations.

In the next section we describe the data (the WBES) that are used to examine each of these hypotheses, followed in the proceeding section by a description of the econometric methods that have been applied.

3. Data and descriptive statistics

The primary data source that we use to examine exporting and importing amongst African firms is the World Bank Enterprise Survey (WBES). Although surveys have been carried out since the early 2000 s, only those surveys that were undertaken in 2013 or after are included in this paper to provide as up to date a picture as possible. Table 1 contains a list of the countries that are included in our analysis, together with the year in which the survey took place in that country, the number of firms in the sample and the distribution of firms by size, that is, the percentage of firms that are classified as small (5–19 employees), medium (20–99 employees) or large (100 or more employees). In total, there are 37 countries in the table, which leaves 17 countries in the continent of Africa that have been excluded. Of these, surveys were undertaken before 2013 in 10 countries (Angola, Botswana, Burkina Faso, Cape Verde, Central African Republic, Congo, Eritrea, Gabon, Guinea Bissau and Mauritius) and surveys have not taken place in 7 countries (Algeria, Comoros, Equatorial Guinea, Libya, Sao Tome & Principe, Seychelles and Somalia). The subsequent analysis is based on unweighted data.

Some countries in the sample only have a relatively small number of firms, especially Benin, Burundi, Chad, Eswatini, Gambia, Guinea, Lesotho, Liberia, Mali, Mauritania, Niger, South Africa and Togo. In each of these countries the number of observations is between 150 and 185. At the other end of the scale, there are over 1,000 responses in Egypt, Kenya, Morocco, Nigeria and South Africa. For all countries in the sample, around 57% of firms are in the small size category, 30% in the medium size category and 13% in the large-size category. Again there is cross-country variation in the distribution of firms across these size categories. For example, the percentage of firms in the large size category ranges from 1% in South Sudan to 28% in Namibia. Similarly, the percentage of firms in the small size category is highest in South Sudan at 87% and lowest in Tunisia at 36%.

Table A1 reports the degree to which customs and trade regulations are an obstacle to the current operations of the establishment in the sample. This is the key variable of interest in the dataset and is the dependent variable in the subsequent regression analysis. The responses are reported for country income categories as defined by the World Bank 2016 Classification. There are three such categories of country in Africa: low income, lower middle, and upper middle.[3] 20 of the 37 African countries in the sample are in the low income category, 14 in the lower middle category and 3 in the upper middle category. There are some differences in relation to the degree to which customs and trade regulations are an obstacle according to the World Bank country income groupings. In particular, the percentage of establishments indicating that these regulations were a very severe constraint was highest amongst

[3] There are no African countries in the high-income categories as defined by the World Bank (2016).

Table 2
Degree to which Customs and Trade Regulations are Obstacles to the Current Operations of the Establishment by Country Income Group and Whether Imports and/or Exports.

	% Don't Know	% Does not apply	% No obstacle	% Minor obstacle	% Moderate obstacle	% Major obstacle	% Very severe obstacle	N
Importers (All countries)	0.7	4.2	23.1	23.8	23.1	18.3	6.8	6,990
Lower Income Countries	0.8	1.8	22.9	23.8	22.8	19.9	8.0	2,744
Lower Middle Income Countries	0.7	6.4	23.2	23.8	23.3	17.5	5.2	3,703
Upper Middle Income Countries	0.4	1.8	23.2	23.6	23.8	15.1	12.2	543
Exporters (All countries)	0.7	1.2	24.0	24.7	23.7	18.9	6.8	4,179
Lower Income Countries	0.8	1.4	24.3	23.5	21.0	20.8	8.2	1,307
Lower Middle Income Countries	0.8	1.0	20.9	26.7	26.0	19.1	5.5	2,401
Upper Middle Income Countries	0.4	1.7	38.6	17.8	19.1	12.1	10.2	471
Imports and Exports (All countries)	0.5	0.9	20.0	24.0	25.6	21.3	7.7	2,326
Lower Income Countries	0.3	1.0	22.4	22.4	22.1	23.4	8.6	783
Lower Middle Income Countries	0.7	0.8	17.7	25.7	28.1	21.4	5.7	1,275
Upper Middle Income Countries	0.0	0.8	24.3	20.9	24.3	14.9	14.9	268

Note: Quite a high percentage of the sample (31.7%) did not answer the question about importing, whereas it was much lower (4.7%) for exporting. See Table A2 for details.

low income countries at just over 7%, compared with 4.5% and 3.8% in upper- and lower-middle-income countries. The percentage of establishments reporting that these were severe constraints was by far the lowest in upper middle income countries. Moreover, over a half of the establishments in this category reported that this factor was not a constraint compared to 31% in lower-middle-income countries and 28% of low income countries. The percentage of establishments responding that they did not know was also highest in low income countries. Table A1 also reports the mean value of responses to the question on how severe a constraint customs and trade regulations are perceived to be based on a 0–4 scale. The mean values are highest in low income countries, followed by lower middle income countries and by far the lowest in upper middle income countries. This variable is also presented for individual countries in Table 1. It shows that customs and trade regulations were considered to have the most severe effect in South Sudan, Tanzania, Sudan and Guinea. They were perceived to have the least severe effect in South Africa, Rwanda and Namibia Establishments in South Africa and Rwanda were also the most likely to report that customs and trade regulations were no obstacle, with around three-quarters of responding establishments from these country in this category.

Table 2 presents responses to the question about the extent to which customs and trade regulations are obstacle for different groups of African establishments according to their World Bank classification category. The different groups are exporters, importers, those which both import and export and those that do neither. Table A2 in the Appendix reports the percentage of establishments in each country that import and/or export as well as the percentage not answering the importing and exporting questions.[4] It can be seen from the table that establishments that both import and export are most likely to report that customs and trade regulations are a very severe obstacle to their operations. This is most noticeable in the three upper middle income countries in the sample, where around 15% of firms indicated that these were a very severe obstacle. The percentage of establishments in this category was also relatively high amongst either just importers or exporters in upper middle income countries. In contrast, over two-thirds of establishments in these countries (68%) who did not import or export reported that customs and trade regulations were no obstacle, compared with just under a quarter of establishments who both imported and exported. This percentage was also considerably higher that than the comparable percentage in lower middle (38%) and low income (41%) countries.

4. Empirical methodology

The econometric models that are estimated in the next section relate to ordered probit models in which the dependent variable in each relates to the extent to which the current operations of the establishment (i) are affected by customs and trade regulations. The dependent variable (Y_{ij}) takes a value between 0 and 4, with 0 representing no obstacle and 4 a very severe obstacle. The intermediate outcomes of 1, 2 and 3 relate to establishments that perceive customs and trade regulations to be minor, moderate and major obstacle respectively. Establishments that gave other answers to this question, specifically don't know or can't say have been excluded from the regression analysis.

In order to test the three hypotheses outlined earlier in the paper, while the dependent variable remains the same - i.e. the extent to which customs and trade regulations are perceived to be a barrier - we include different sets of explanatory variables in the models that are estimated. Firstly, to test *H1* we include the vector of attitudinal variables, represented by S_{ij}, that measure obstacles to the establishment's operations in order to capture the influence of IVs. Specifically, these relate to the perceived impact corruption and political instability. These indicators are measured in a similar way to the dependent variable and from the responses two dummy variables have been created for each obstacle - large (comprising of major and very severe) and medium (moderate) - compared to the default category of small (minor or no). The second hypothesis (*H2*) is tested via the inclusion of two firm size dummies variables (medium and large firms measured relative to small firms), as indicated in Equation (1) by FS_{ij}. To test hypothesis *H3*, we include a set

[4] A relatively high percentage of establishments did not answer the question on importing and was very high in some countries such as South Sudan, Sudan and Djibouti, where it was over 80%. In contrast, it was much lower in some countries, including Gambia, Liberia, Mali, Mozambique, Rwanda, Sierra Leone, Togo and Egypt, where it was less than 1%. The percentage not answering the exporting question was much lower for many countries and only over 25% in Madagascar.

Table 3
Ordered Probit Estimates for Key Explanatory Variables on the Extent to Which Customs and Trade Regulations are Considered to be Obstacles.

	Exporting Establishments		Importing Establishments		Both Exporting and Importing	
	Coef.	St. Err.	Coef.	St. Err.	Coef.	St. Err.
Hypothesis *H1*						
Political Instability: Medium Obstacle	0.191***	0.048	0.251***	0.038	0.210***	0.063
Political Instability: Large Obstacle	0.299***	0.047	0.315***	0.036	0.296***	0.063
Corruption: Medium Obstacle	0.364***	0.049	0.352***	0.038	0.371***	0.064
Corruption: Large Obstacle	0.459***	0.047	0.423***	0.037	0.536***	0.063
Hypothesis *H2*						
Medium Sized Firm	0.133***	0.045	0.163***	0.034	0.161**	0.063
Large Sized Firm	0.191***	0.051	0.227***	0.041	0.171**	0.069
Hypothesis *H3*						
Lower Middle Income Country	0.05	0.05	0.002	0.036	0.145**	0.065
Upper Middle Income Country	−0.07	0.087	0.179***	0.067	0.163	0.111
N	3761		6127		2125	
Pseudo R-Squared	0.089		0.076		0.085	

Note: Default categories political instability and corruption are perceived as small obstacles, small firms and lower income country. The models also contain controls for location, whether part of larger firm, whether multi-site, industrial sector, ownership and perception of tax rates as well as year dummies. Robust standard errors reported. ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively using two-tailed tests.

of country income group dummies (G_{ij}), which use the definition produced by the World Bank. We also include variables in X_{ij} that capture other potential influences on the dependent variables. Specifically, these whether the establishment is located in the country's main business city, ownership type, the age of the establishment, whether it is part of a larger firm, the perceived impact of taxes and its broad industrial sector. The inclusion of a sufficient group of control variables in X_{ij} is required to limit omitted variable bias, particularly given that recent studies have argued that attempts to reduce multicollinearity in empirical international research can be problematic (Lindner et al., 2020). Finally, the models also include year of interview dummies to capture time effects. As a result, the first set of models that are estimated take the following form:

$$Y_{ij} = \alpha + \gamma IV_{ij} + \theta FS_{ij} + \delta G_{ij} + \beta X_{ij} + \mu t_{ij} + \varepsilon_{ij} \quad (1)$$

where $\alpha$is the constant γ, θ, δ, β and μ are the vectors of coefficients to be estimated and ε_{ij} is the error term. The models indicated by Equation (1) are estimated for the same four types of establishments (j) used in Table 3: exporters, importers, importers and exporters and those that do neither. In addition, the model is also estimated for all establishments.

In order to further examine *H3*, a second set of models is estimated where the dummies for the World Bank country income groups are replaced with individual country dummies (C_{ij}), with their associated vector of coefficients represented by $\boldsymbol{\eta}$, as shown in Equation (2):

$$Y_{ij} = \alpha + \gamma IV_{ij} + \theta FS_{ij} + \beta X_{ij} + \eta C_{ij} + \varepsilon_{ij} \quad (2)$$

This model is estimated for exporters, importers and firms that do neither. The country dummies are measured relative to the base group of South Africa, which is an upper middle income country according to the World Bank. Year dummies cannot be included because of their collinearity with the individual country dummies.

5. Results

The estimates obtained from the models outlined in the previous section are reported in Tables 3 and 4. The first of these tables contains the estimated coefficients, standard errors and significance levels related to the three hypotheses regarding influences on the perceived impact of customs and trade regulations that have been specified from ordered probit models for three samples of the data. In terms of the first hypothesis, there is a very strong relationship between the variables capturing IVs and the reported impact of customs and trade regulations. In particular, establishments indicating that corruption and political instability were medium or large obstacles were significantly more likely to report that customs and trade regulations were more of a problem. This is the case for the three types of establishments shown in Table 3: exporters, importers and those that both import and export. For each of these groups, small firms are significantly less likely than large firms to report that customs and trade regulations are obstacles. This is contrary to the signs predicted by the second hypothesis. There is some evidence in support the third hypothesis, especially for importing establishments and those that both export and import.[5] However, across the different groups there is some variation in the signs and significance levels attached to the dummy variables for lower middle and upper-middle-income countries compared to the base group of low-income countries. For example, the sign of the upper-middle-income dummy is positive and significant at the 5% level for importers but negative although insignificant for establishments that export.

The estimates for the other explanatory variables are reported in Table A3 in the Appendix. For the three separate groups, the signs attached to the explanatory variables tend to be similar. The significance levels do vary though – partly because the number of observations is smaller and hence the cell sizes for some of the dummy variables will be quite low. Despite this, there are a number of common findings across all three types of establishments. These include that those establishments that are located on a single site are less likely to report that customs and trade regulations are obstacles. The effects are significant for establishments that export and those that import. The same is true for the age variable, where younger establishments are more likely to report that they were affected by customs and trade regulations. All the dummy variables for the extent to which tax rates are obstacles are to the current operations of the establishment are significant at the 1% level for each of the categories. The controls for industry, ownership type and the location of the establishment in relation to whether it was situated in the country's main city are generally insignificant.

The estimates for the country dummy variables from the second set of regression models are presented in Table 4. The estimates for the

[5] Whilst for all establishments, those located in lower and upper medium income countries were significantly less likely to report that they were affected by customs and trade regulations than those in low income countries. This finding is not reported in the table but available from the authors on request.

Table 4
Ordered Probit Estimates for Country Dummies Regarding the Degree to which Customs and Trade Regulations are Obstacles.

	Exporting Establishments		Importing Establishments		Exports and Imports	
	Coef.	St. Err.	Coef.	St. Err.	Coef.	St. Err.
Lower Income Countries						
Benin	0.923***	0.193	0.488***	0.137	0.518**	0.223
Burundi	1.285***	0.281	0.881***	0.214	0.823**	0.359
Chad	1.158***	0.249	0.502***	0.149	0.677**	0.277
Dem. Rep. of Congo	0.823***	0.208	0.346**	0.165	0.216	0.312
Ethiopia	0.506***	0.190	0.302**	0.140	0.119	0.276
Gambia	1.576***	0.230	0.470***	0.153	1.142***	0.199
Guinea	1.558***	0.434	0.979***	0.158	1.122***	0.358
Liberia	0.908***	0.349	0.505***	0.154	0.566	0.366
Madagascar	0.940***	0.163	0.294*	0.152	0.546***	0.213
Malawi	0.653***	0.178	0.227*	0.137	0.411*	0.238
Mali	1.101***	0.200	0.588***	0.138	0.637***	0.224
Mozambique	0.745***	0.147	0.040	0.119	0.270	0.185
Niger	1.364***	0.266	0.383**	0.185	0.935***	0.340
Rwanda	−0.133	0.166	−0.438***	0.136	−0.570***	0.204
Sierra Leone	1.469***	0.167	0.603***	0.124	0.958***	0.210
South Sudan	1.333***	0.232	0.849***	0.163	−0.089	0.173
Tanzania	1.444***	0.148	1.197***	0.122	1.328***	0.200
Togo	1.030***	0.199	0.490***	0.158	0.598**	0.238
Uganda	1.052***	0.146	0.481***	0.138	0.509**	0.219
Zimbabwe	0.841***	0.154	0.430***	0.113	0.319*	0.187
Lower Middle Income Countries						
Cameroon	1.096***	0.189	0.538***	0.130	0.709***	0.229
Cote d'Ivoire	1.170***	0.200	0.572***	0.147	0.698***	0.265
Djibouti	1.023***	0.213	0.438*	0.228	0.602	0.622
Egypt	0.707***	0.125	0.215**	0.103	0.343**	0.158
Eswatini	1.336***	0.185	0.668***	0.157	0.911***	0.226
Ghana	0.838***	0.160	0.232*	0.127	0.416**	0.208
Kenya	0.648***	0.130	0.204*	0.113	0.381**	0.170
Lesotho	0.888***	0.258	0.599***	0.185	0.457	0.377
Mauritania	1.101***	0.252	0.593***	0.230	0.525	0.353
Morocco	0.863***	0.127	0.456***	0.110	0.402**	0.160
Nigeria	0.815***	0.125	0.406***	0.112	0.424**	0.172
Senegal	1.074***	0.174	0.493***	0.187	0.566**	0.272
Sudan	0.850***	0.207	1.005***	0.146	0.708***	0.240
Zambia	0.985***	0.150	0.407***	0.117	0.544***	0.186
Upper Middle Income Countries						
Namibia	0.372*	0.195	0.100	0.156	0.160	0.266
Tunisia	0.987***	0.137	0.720***	0.114	0.565***	0.172

Note: Default country is South Africa. Robust standard errors reported. ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively using two-tailed tests.

Table A1
Degree to which Customs and Trade Regulations are Obstacles to the Current Operations of the Establishment by Country Income Group.

	% Don't Know	% Does not apply	% No obstacle	% Minor obstacle	% Moderate obstacle	% Major obstacle	% Very severe obstacle	Mean: Cust. & Tr. Regs	N
Low Income Countries	3.3	4.9	28.2	21.4	19.2	15.8	7.2	1.48	7,849
Lower Middle Income Countries	0.9	7.1	30.5	23.5	20.7	13.6	3.8	1.31	11,846
Upper Middle Income Countries	0.4	5.2	54.0	19.0	11.0	5.9	4.5	0.81	2,291
All Countries	1.7	6.1	32.1	22.3	19.1	13.6	5.1	1.32	21,986

Note: Number of observations for each country are as reported in Table 1, apart from Madagascar, Namibia and Nigeria, where 6, 1 and 24 establishments respectively did not answer the question about obstacles from Customs and Trade Regulations.

other explanatory variables are generally similar to those found in Table 3 in that the only difference here is that the country dummies have replaced the income group dummy variables.[6] Virtually all of the coefficients shown in Table 4 are positive and in general significantly different from zero at the 1% level, particularly for establishments that export or import. This indicates that establishments in the reference country - South Africa - were by far the least likely to state that customs and trade regulations were obstacles to their operations after controlling for other influences. This was the case for all countries apart from Namibia (also an upper middle income country) and Rwanda (a low income country) in the model estimated for exporters, where the coefficient attached to the dummy variable for Namibia was still positive but only significant at the 10% level, whilst it was small and negative for

[6] These are available from the corresponding author on request.

Table A2
Propensity to Export and Import and Percentage Not Answered by Country.

	Exporting		Importing	
	% Involved	% Not Answered	% Involved	% Not Answered
Benin	29.9	2.0	71.6	1.3
Burundi	17.2	0.0	75.0	61.8
Chad	16.4	4.6	61.4	5.2
Dem. Rep. of Congo	9.7	0.2	49.8	54.8
Ethiopia	10.5	0.7	45.7	57.2
Gambia	17.2	0.0	58.0	0.7
Guinea	7.8	5.3	76.6	8.7
Liberia	9.3	0.0	48.7	0.7
Madagascar	28.4	25.9	35.3	25.9
Malawi	14.8	11.1	79.9	71.5
Mali	29.2	0.0	77.3	0.0
Mozambique	20.6	0.7	43.4	0.7
Niger	21.0	5.3	59.1	12.6
Rwanda	34.2	0.0	52.2	0.6
Sierra Leone	9.2	0.0	59.2	0.0
South Sudan	4.2	0.7	86.5	87.9
Tanzania	22.9	18.2	71.6	56.7
Togo	38.9	0.7	61.1	0.7
Uganda	21.8	4.2	39.5	51.8
Zimbabwe	16.3	0.0	63.2	1.3
Low Income Countries	**17.6**	**5.3**	**55.9**	**37.5**
Cameroon	21.0	1.1	59.7	3.1
Cote d'Ivoire	17.8	1.9	49.9	5.5
Djibouti	23.8	6.8	69.2	80.5
Egypt	13.2	0.1	40.6	0.3
Eswatini	27.1	4.0	52.0	32.0
Ghana	19.7	0.4	67.5	48.3
Kenya	30.5	0.5	45.6	1.2
Lesotho	24.8	0.7	60.7	10.0
Mauritania	27.7	1.3	74.5	68.7
Morocco	35.7	11.0	32.7	13.4
Nigeria	27.4	14.1	41.0	63.7
Senegal	12.7	0.3	33.8	61.1
Sudan	8.6	0.3	66.3	84.7
Zambia	21.1	0.5	53.5	1.3
Lower Middle Income	**21.2**	**4.7**	**44.6**	**30.1**
Namibia	12.8	4.1	58.2	73.6
South Africa	13.9	1.8	10.6	2.4
Tunisia	41.3	1.6	57.1	3.3
Upper Middle Income	**21.1**	**2.4**	**29.9**	**20.6**

Rwanda. For importers, the positive signs obtained for the dummies for Mozambique (a low income country) and Namibia were not significantly different, whilst those for Djibouti, Ghana and Kenya (all upper middle income countries) as well as Madagascar and Malawi (both low income country) are only significant at the 10% level. The Rwanda dummy has a negative sign in the regression for importers, which is significant at the 1% level. Whilst in the regression for establishments that both export and import there is slightly greater variation and fewer significant results. These results indicate that bar a few exceptions, customs and trade regulations are perceived to be a significantly more important obstacle in all other countries in comparison to two of the upper middle income countries (Namibia and South Africa). For Tunisia, the other upper middle income country, customs and trade regulations are perceived to be a significantly more severe obstacle.

6. Conclusions

Our comprehensive analysis has utilised large-scale establishment level data on virtually all African countries to examine the impact of customs and trade regulations. Our key findings indicate a clear impact of corruption and political instability since all of these were highly significant in each of the regressions. This is supportive of our hypothesis regarding institutional voids. In contrast, we find that small firms and single site establishments were least likely to report customs and trade regulations as obstacles. We also find that upper middle-income countries were the least and low-income countries the most likely to report customs and trade regulations as obstacles – especially when considering all establishments. In the models containing country dummies rather than those with income groups, establishments in South Africa (an upper middle-income country) were generally least likely to report that such obstacles were a constraint. Therefore, we find strong support in favour of our first hypothesis, evidence that is generally supportive of the third hypothesis, but our results are contrary to the second hypothesis.

In terms of the policy implications of our findings then adopting measures that reduce corruption and political instability would appear to be important considerations. In relation to the specific types of policies that could be introduced then Tavits (2007) argues that clarity of responsibility is key to reducing corruption since politicians face incentives to pursue good policies under such circumstances. In contrast, countries that have institutions that allow for less clear lines of responsibility are associated with higher levels of corruption. We do, however, recognise that our results may not be causal because of the potential co-determination of views regarding corruption and on the impact of customs and trade regulations. Therefore, future research that focuses more precisely on the relationship between corruption and customs and trade regulations in countries that are most affected by such

Table A3
Additional Ordered Probit Estimates for Degree to Which Customs and Trade Regulations are Obstacles.

	Exporting Establishments		Importing Establishments		Exports and Imports	
	Coef.	St. Err.	Coef.	St. Err.	Coef.	St. Err.
Age of Establishment	−0.002*	0.001	−0.002***	0.001	−0.002	0.001
Multi-site	0.074*	0.043	0.065*	0.034	0.066	0.056
Located in Main Business City	−0.058	0.038	−0.025	0.030	−0.086	0.053
Construction	−0.030	0.110	−0.013	0.070	−0.031	0.167
Services	−0.075*	0.039	0.094***	0.034	0.074	0.062
Shareholder owned - traded	0.109*	0.065	0.073	0.053	0.050	0.084
Shareholder owned - nontraded	−0.069	0.050	−0.030	0.041	−0.098	0.067
Partnership	0.154***	0.059	0.076*	0.046	0.110	0.081
Limited Partnership	0.095	0.058	0.041	0.044	−0.014	0.076
Other ownership	0.092	0.149	0.067	0.119	0.116	0.177
Tax Rates: Medium Obstacle	0.456***	0.044	0.370***	0.035	0.414***	0.059
Tax Rates: Large Obstacle	0.750***	0.050	0.705***	0.038	0.659***	0.066

Note: Default categories are manufacturing, sole proprietorship and tax rates are perceived as small obstacles. The models also contain year dummies. Robust standard errors reported. ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively using two-tailed tests.

barriers to international trade should be able to produce nuanced findings. Reducing tax levels is likely to be more problematic given the need for governments to receive sufficient tax revenues to finance their investments and to provide appropriate levels of social welfare for their citizens.

CRediT authorship contribution statement

Stephen Drinkwater: Writing – review & editing, Writing – original draft, Methodology, Formal analysis. **Catherine Robinson:** Writing – review & editing, Writing – original draft, Conceptualization.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A

See Table A1–A3.

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