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An Exploration of the Determinants of Bribery in Benin's Transborder Trade

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Abstract

Few studies give a systematic account of the bribes paid by smugglers to different groups of state actors. Nonetheless, smuggling is a very pervasive phenomenon in West Africa which could impact state revenues, trade routes, consumption patterns, and wealth in the region. This study is based on a survey conducted by the Benin Institute of Statistics that attempts to record all illegal transactions at Benin's borders for the span of one week. Our aim is to understand whether the quantity and/or the quality of the goods exchanged play a role in the determination of informal taxes. Better understanding the mechanisms driving the determination of the informal taxes will help authorities and local actors reduce informal trade.

Résumé

Peu d'études proposent une revue systématique des pots-de-vin payés par les contrebandiers aux acteurs étatiques. Pourtant, la contrebande est un phénomène très répandu en Afrique de l'Ouest qui impacte les revenues des Etats, les routes commerciales, les habitudes de consommation et la distribution des richesses dans la région. Cette étude est basée sur une enquête menée par l'institut national statistique du Benin qui avait pour objectif d'enregistrer toutes les transactions illégales aux frontières du Benin durant une semaine. Notre objectif est de comprendre si les quantités ou la qualité des biens échangés jouent un rôle dans la détermination des taxes informelles. Une meilleure compréhension des mécanismes conduisant à la détermination de celles-ci pourrait permettre aux autorités et aux acteurs locaux de réduire le commerce informel.

1. Introduction

Few studies provide a systematic account of the bribes paid to different state actors in order to smuggle goods across borders. Titeca and Celestin (2012) research the informal and formal payments made in several border localities in the Democratic Republic of Congo, Burundi, Rwanda, and Uganda. They note that these payments have are highly variable, with the informal tax being superior to the formal tax paid in some instances. Jibao, Prichard, and van den Boogard (2015) analyze data gathered at two border passages in Sierra Leone. They record the nature of the payments, goodwill payments, acceleration fees, and payments in nature, as well as the amount of the bribes paid by traders to government officials. Their findings underline the role of social norms, networks, and power imbalances in determining the amounts and types of payments made by informal traders.

Obtaining and analyzing information regarding the informal payments made to government officials is important for several reasons:

- Informal taxation is a direct cost to trade; its extent (number of different products for which an informal payment may be demanded) and its depth (the value of the tax) can have consequences on the nature and the quantity of goods exchanged.

- Different levels of informal taxation between countries may play a role in the trade routes selected by merchants.

- The revenue generated by informal taxation creates distorted incentives for government officials.

- Information taxation may have a strong impact on the formal tax revenue generated by the state, as one of the main motivations for informal tax payments is to avoid the payment of formal taxes. However, little is known about how much the formal tax rate serves as a benchmark for informal tax negotiations and payments.

In this paper, we focus on the role of informal taxation as a cost to trade in the case of Benin using the ECENE[1] survey. In Section 2, we give a brief overview of the literature directly concerned with Benin's informal trade. In Section 3, we present descriptive statistics showing the average amount of informal and formal taxes paid in different trading situations (import, export, re-export, transit, and for the goods most intensively exchanged at Benin's borders); in Section 4, we explore the relationship between informal taxation and the total value of the goods exchanged. Section 5 concludes.

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[1] Enquête sur le commerce extérieur non enregistré

2. Benin: An Entrepot Economy

Golub (2012) follows Igue and Soule (1992) in describing Benin as an Entrepot economy, writing: "Benin, Togo and Gambia serve as conduits for both legal transit to landlocked countries in West Africa (Niger, Mali and Burkina Faso) and illegal trade to more protectionist countries (Senegal and Nigeria)". His paper suggests the existence of various illegal trade channels in Benin, such as the use of third countries such as Niger to get goods into Nigeria. The trade of second-hand cars from Benin to Nigeria and the smuggling of Nigerian oil into Benin and Togo via Benin seem to be of particular importance.

Both of these products have been the object of several papers and reports; Golub (2012), INSAE (2008), and Bako-Arifari (2001) focus on the car trade, while Agbachi (2012) and LARES (2005) focus on the smuggling of gasoline. The INSAE (2008) report gives a detailed account of the steps required to export a second-hand car through the port of Cotonou; the customs procedures (apposition of special identification plates for transit vehicles), the payment made, and the economic actors involved (both informal and re-salers) are all clearly identified. According to the authors of the report, the multiplication and de-centralization of trade procedures was according the main reason for the existence of informal payments in 2008.

Golub (2012) suggests that taxes and fees on transit produce sizeable revenues for Benin's customs[2]. The LARES (2005) report describes the oil smuggling supply chain from Nigeria to Benin. Gasoline is bought legally in Nigeria and stocked close to the Beninese border. From there, the informal cycle of gasoline commercialization starts with forwarders, wholesalers, transporters, and paddlers from Benin. Agbachi (2012) details two main categories of wholesalers. One group has large capital assets and organizes smuggling and distribution activities in Cotonou through various agents. The other group, with less financial assets, has to go to Nigeria to organize passage of the goods. Wholesalers, both big and small, tend to avoid crossing borders with their goods themselves and instead delegate this activity to inhabitants of the border areas. While the studies mentioned here describe the mechanisms of this traffic, however, none provide an insight into how much illegal payment is needed to lubricate the engines of trade.

3. Informal and Formal Taxation of International Trade in Benin

The ECENE survey has been implemented by the National Institute of Statistics of Benin. Its objective is to quantify informal trade at Benin's borders. The survey, conducted in September 2011, covers 171 border crossing passages identified as actively used by smugglers. Questionnaires addressed to informal traders gathered information regarding the nature, quantity, and value of smuggled goods. The ECENE survey does

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[2] The World Trade Organisation, Trade Policy Review for Benin (Organization, 2010) notes that the custom escort, the mandatory escort for transiting vehicles from the port of Cotonou to Benin's borders, represented 4 percent of the state's fiscal revenue in 2008.

not contain information regarding the nature of the bribes; however, it provides the amount of both informal tax and formal tax paid by the traders for each transaction observed during the period of the survey. More specifically, the two questions regarding taxation encompass the following payments:

- How much the traders have paid informally to state agents to cross the borders with their merchandises. This includes all the payments made during the transport of the goods for which the traders received no official receipts. For example, bribes paid at road blocks manned by the army, the police, or the customs agency or to escape the control of these agencies, and

- How much traders have paid formally; that is to say, payments for which they have received a receipt during the export or import process. For example, taxes collected by local authorities.

The survey records 8,883 border crossings and identifies 10,415 flows of goods (INSAE, 2011). Of those, 1,165 border crossings are multi-products; that is to say, for example, a truck transporting yams, wheat flour, and worn clothing. Two-thirds of these border crossings (or 770) involve only two goods, while only 28 crossings involve more than six goods. These multi-products crossing encompass 2,945 flow of goods.

The average total value of the cargo per crossing crossings is USD 4,507, which is far more than the USD 1,841 average value of the cargo per crossing for the 6,820 single-product trade flows recorded. However, the average value per good transported in multi-product cargo, USD 428, is less important. The structure of the ECENE database attributes formal and informal payment to border passage and not to a specific good. In the following, multi-product trade flows will be included when we present descriptive statistics or regressions over aggregate figures corresponding to the total value of shipments. When we investigate particular products and the taxes (informal or formal) paid for their passage, the observations originating from multi-product cargo are left aside, as there is no way to attribute the informal and/or formal tax payment recorded to a particular good.

Column 2 of Table 1 shows the average level of informal and formal taxation for import, export, re-export, and transit trade for multi- and single-product flows. Goods considered under the re-export or transit regime benefit from formal tax exemptions at the entrance to Benin[3]. The maximum level of average informal and formal tax recorded is for transit trade (respectively, USD 24.3 and USD 123.22). In column 4 of the same table, the average of the ratio of informal (formal) taxation over the total value of the good transported is displayed. These rates are low no higher than 2 percent for informal taxes and no higher than 5 percent for formal taxes.

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[3] However, special taxes and duties might substantially increase the overall payment. The used vehicle trade constitutes a good example. Before being able to re-export a second-hand vehicle, the owner of the vehicle should pay a statistical tax (5 percent of the value of the vehicle), a custom stamp duty, a special standing advance (CFA50000) (these three taxes can be refunded in case of export to a landlocked neighboring country), a custom escort (CFA75000), a computer fee (CFA2000), and between 2004 and 2009, an eco-tax depending on the size of the vehicle (World Trade Organization, 2010). It must be noted that many of these special taxes and duties are dependent on the valuation made of the goods by customs agents

We believe it is important if a trader has reported paying either no formal or no informal tax, or both, because this may point to economic agents who have chosen to pay a bribe in order to avoid formal taxation (positive informal tax and zero formal tax), who have chosen to pay the formal tax and not the informal tax (zero informal and positive formal), or who are connected enough to avoid payment of both the formal and the informal tax (zero formal and informal). In column 6, of Table 2, we display the number of null observations, while column 7 shows the ratio of null observations over the total number of observations. Transit shows a remarkable rate of payment of the informal tax (only 8 percent of the respondents declare having paid zero against a maximum of 30 percent null payment for export) and formal tax (only 26 percent of the respondents declare having paid zero against a maximum of 64 percent for re-export). It should be noted that the number of respondents systematically drops when asked about the amount of formal tax paid. This may be due to the fact that respondents prefer to avoid answering when they have paid no formal tax at all. For transit, only 33 percent of the individuals who report having made no informal payment also report having paid nothing formally; this rate is very different for the other trade channels, which range from a minimum of 71 percent (import) to a maximum of 86 percent (re-export).

Table 1: Descriptive Statistics

	Mean	**SD**	**Average Tax Ratio**	**Number of Observations**	**Number of Null Payments**	**Ratio of Null Payments**
All transactions Informal Tax	13.85	84.67	2%	7920	1646	20%
Formal Tax	17.09	189.61	1%	5662	3035	53%
Import Informal Tax	16.35	101.55	2%	5000	979	20%
Formal Tax	14.93	222.39	1%	3564	1860	52%
Export Informal Tax	6.66	28.65	2%	1534	450	30%
Formal Tax	4.21	31.31	1%	1212	713	59%
Re-Export Informal Tax	9.53	55.49	1%	1017	175	17%
Formal Tax	6.73	65.24	0.06%	596	379	64%
Transit Informal Tax	24.35	46.08	1%	311	26	8%
Formal Tax	123.22	284.23	5%	235	61	26%

Source: ECENE survey 2011

Table 2 presents products for which we have decided to provide a more detailed analysis in terms of informal and formal taxation in Table 3. The data in the Table 2 come from single-product flows, as we cannot associate the level of taxation to a particular product with multi-product flows. The products in the table are the most intensively exchanged (at least over 100 observations per trade flow) over the period of the survey. We end up with 11 flows for 10 categories of goods (at the HS4 classification level). Table 2

indicates the type of flow (export, re-export, transit, import), the country of destination for export, re-export, and transit or origin for import, and an indication of the tariff regime in place for these products. Nigeria is the main destination of Benin's exports, re-export, and transit trade, apart for the re-export of gasoline. The products imported to Benin come from Nigeria and Togo. Foods (fresh tomatoes, rice, maize, manioc and yam) and processed foods (palm oil, chicken meat, wheat flour and manioc flour) are the most frequently traded items over the period of observation. Second-hand cars are the only manufacturing good that we capture. Trade in gasoline is frequent in terms of import to Benin and re-export to Togo.

Table 3 completes the information provided in Table 2 with data on the average informal and formal tax paid for these products, the average total value per transaction, and the unit value of the products (with the exception of second-hand cars, for which the total value is also the unit value of the car). The importance of the

Table 2: Products studied: Number and Direction of the flows

HS Code	Number of Observation	Flow	Product	Destination/ Origin	Tariffs
0702	207	Exportation	Fresh Tomatoes	Nigeria	20%
0714	158	Exportation	Manioc and Yam	Nigeria and Togo	Nigeria: 20% + 15%, Togo: 0%
1511	227	Exportation and Re-exportation	Palm Oil	Nigeria	Ban
1006	245	Re-exportation	Rice	Nigeria	10% levy [20%;60%]
0207	122	Re-exportation	Chicken meat	Nigeria	Ban
2710	288	Re-exportation	Gasoline	Togo	Illegal
8703	137	Transit	Second handed Cars	Nigeria	5% + [20%;35%]*
1005	186	Import	Maize	Togo	0%
1101	148	Import	Wheat Flour	Nigeria	20%
1106	118	Import	Manioc Flour	Togo	0%
2710	1851	Import	Gasoline	Nigeria	Illegal

* A ban exist for the second-hand cars older than 8 years

car, transit, and gasoline import trade is confirmed with a high average total trade value (USD 10,843 for second-hand cars and USD 2,800 for gasoline imports). The average value of rice re-export is close to these levels, but still lower than the average value of gasoline import (USD 2,173); however, formal and informal taxes are far more important for gasoline imports.

The existence of a formal tax for gasoline imports is per se an interesting element. Imports of oil by non-licensed companies in Benin is forbidden, and no taxes should be collected on illegal imports; nonetheless, according to Agbachi (2012), some customs agents applied a tariff of 10 percent on the value of the gasoline imported and/or informally taxed traders to abandon pursuits against smugglers. Interestingly, the import of maize and manioc flour from Togo to Benin show a positive formal tax (respectively, USD 6.43 and

USD 0.4) even though the two countries belong to the same regional trade agreement and no tariffs are officially applied on these goods. As the definition of formal tax includes taxes by local authorities, these observations might point to taxation on imports from these local institutions regardless of the origin of the products or to a formal tax constructed by them, as in the case of gasoline imports.

Column 4 of Table 3 displays the average informal (formal) tax ratio. The informal tax ratio, with the exception of the second-hand car trade, is systematically superior to the formal tax ratio. The relatively high formal tax ratio for second-hand car transit (10.30 percent) and the fact that this transit largely dominates the informal tax ratio (0.30 percent) might suggest that the central government has better control of the tax revenue generated through this trade. Even though it has been noticed (INSAE, 2008) that the multiplication of agents intervening in the car trade is a source of informal payment, the concentration of this trade on a well-identified single location – i.e., inside the port of Cotonou – might make the avoidance of formal tax payment difficult.

Table 3: Products studied: Formal and Informal Tax

	Mean	SD	Average Tax Ratio	Number of Observations	Number of Null Payment	Ratio of Null Payment
Maize (1005) Import						
Informal Tax	2.5	6.97	3.40%	186	27	15%
Formal Tax	6.43	62.89	1.80%	167	40	24%
Total value (Transaction)	150.49	430.63		186		
Unit Value	0.33	0.13		186		
Flour Wheat (1101) Import						
Informal Tax	10.81	29.94	1.60%	148	8	5%
Formal Tax	13.05	76.63	0.70%	92	76	83%
Total value (Transaction)	780.08	1797.38		148		
Unit Value	0.813	0.173		148		
Flour Manioc (1106) Import						
Informal Tax	1.58	3.2	5.20%	118	20	17%
Formal Tax	0.4	0.79	1.00%	87	45	52%
Total value (Transaction)	69.44	146.67		118		
Unit Value	0.36	0.83		118		
Mineral Fuel (2710) Import						
Informal Tax	31.68	157.03	1.60%	1851	110	6%
Formal Tax	35.16	390.54	1.00%	1078	436	40%
Total value (Transaction)	2800.08	7759.65		1851		
Unit Value	0.52	0.67		1851		
Tomatoes (0702) Export						
Informal Tax	5.48	21.15	2.10%	203	68	33%
Formal Tax	2.72	10.71	0.40%	141	110	78%
Total value (Transaction)	742.77	2263.6		203		
Unit Value	0.36	0.16		203		

Manioc (0714) Export						
Informal Tax	4.91	9.04	3.00%	158	47	30%
Formal Tax	4.24	8.6	1.60%	134	67	50%
Total value (Transaction)	270.97	557.08		158		
Unit Value	0.27	0.35		158		
Palm oil (1511) Export and Re-export						
Informal Tax	3.46	9.97	0.60%	227	34	15%
Formal Tax	3.94	23.43	0.20%	158	108	68%
Total value (Transaction)	877.43	2577.48		227		
Unit Value	1.36	0.42		227		
Rice (1006) Re-export						
Informal Tax	5.37	23.2	0.40%	245	60	24%
Formal Tax	4.63	22.44	0.10%	147	99	67%
Total value (Transaction)	2173.86	6223.19		245		
Unit Value	0.64	0.27		245		
Mineral Fuel (2710) Re-export						
Informal Tax	14.54	69.52	2.40%	288	82	28%
Formal Tax	2.61	6.37	0.70%	207	117	57%
Total value (Transaction)	708.63	2306.42		288		
Unit Value	0.76	0.25		288		
Car (8703) Transit						
Informal Tax	16.71	30.67	0.30%	137	4	3%
Formal Tax	259.74	384.1	10.60%	99	24	24%
Total value (Transaction)	10843.69	23448.19		137		

Source: ECENE survey 2011

4. A First Exploration of the Relationship between Informal Taxation and Total Value of the Goods Exchanged

4.1 Methodology

Jean and Mitaritonna (2010) propose a model that determines the amount of bribery paid to government agents. In this model, traders can choose whether or not to bribe the officials, and officials can choose whether or not to take those bribes. Traders can also try to hide the real value of shipments, and bribed officials incur the risk of being caught. We believe this model is well-suited to describing the reward of smuggling for officials and firms in the developed world, where functioning institutions can enforce punishment mechanism. However, anecdotal evidence suggests that it might be ill-suited to explaining bribery in the developing world.

Jibao, Prichard, and van den Boogard (2015) say about Sierra Leone that "both border officials and chatterman are able to exploit the information and power asymmetries...which effectively allow traders little option to opt out of the informal system." They also report a customs official saying at the border crossing, "The president may control the State House, but we determine what happens here and what we

obtain from the post". The situation in Sierra Leone may be an extreme case, but we tend to believe that even in Benin, the central government's control may not be strong enough to make the threat of punishment credible enough to play a role in traders' and officials' decisions regarding bribery.

Evidence from descriptive statistics also shows that informal payments are widespread. In addition, Walther (2015) shows that in the West African context, the trade network and the social capital of the traders embedded in that network can play an important role through the personal connections that individuals have with state government officials at border crossings or in the central government. In a situation in which central government control over the agencies acting at the borders is low and bribery widespread, the amount of bribes paid to government officials might depend on a function of the number of interactions between the government officials and traders during the export or import process, the total value of the smuggled goods identified by the government agent during each interaction, and the distance in terms of social capital between the trader and the government official negotiating formal and informal taxes during each interaction. More formally:

$$bribe_{ij} = \sum_{k=1}^{n} (\tau_{a_k b_k} \delta_{ij} v_{ij})$$

(1)

where the total informal amount paid *bribe* for a particular good *i* and a particular shipment *j* (import or export) is the sum of the number of interactions *k* between traders *a* and government officials *b* over this shipment. During each interaction, a bribe is negotiated. The value of the bribe depends on the distance in terms of social capital τ between individuals *a* and *b*, the effort made by the traders to conceal his shipment δ, and the total value v of the good transported *i* during this transaction *j*.

While it is clear that the number of interactions and the total value of the goods transported should have a positive impact on the total bribes paid to import or export that good, the effect of distance in terms of social capital is more ambiguous and might be different according to the type of payment made. For example, family links or friendships between traders/peddlers and customs agents at the border crossing might increase the probability that goodwill payments are made but might limit other types of payments. Similarly, agents of large traders/wholesalers might have the power to eliminate informal and formal payments at border crossings, but at the same time, they might hesitate to use this capital and prefer to maintain cordial relationships with local government officials through the payment of informal taxes. The more knowledge a trader develops in terms of how to conceal his shipment (by choosing routes that avoid government officers or by concealing the most valuable part of his cargo, for example), the less informal (and formal) tax they should pay. The ECENE survey provides a good record of the informal payments made and the total value of the goods exchanged; however, no specific module in the ECENE survey directly questions the respondents about their social capital or/and trade networks. We try to proxy these variables through

the nationality of the agent organizing the border passage and the function in the supply chain (wholesalers, intermediary, retailers, etc.) of the clients or suppliers of the firm organizing the border passage. We also control for the size of the firm, as bigger firms might be more connected to local or national governments than their smaller counterparts.

We observe all the outcomes at their true value. However, our dataset contains a significant number of 0, making our sample distribution censored to the left. In case of a corner solution response, as we do have with our dependent variable, the coefficient obtained from classic linear regression will be inconsistent. The Tobit model is appropriate to tackle the problems posed by corner solution response (Wooldridge, 2008). Our econometric specification is based on the following equation:

$$bribe_{ij} = \beta_1 uv_{ij} + \beta_2 Q_{ij} + \alpha X_{ij} + \mu \tag{2}$$

where uv_{ij} is the unit value of the good transported in CFA franc (we calculate a weighted average unit value for multi-products trade flows), Q_{ij} is the quantity of goods transported in kg (we use the total quantity of the shipment for multi-product trade flows), X_{ij} is a vector of control variables accounting for the nationality of the agent (Beninese or not), the function in the supply chain of the clients or suppliers of the agent organizing the border passage (wholesalers or not), the size of the firm (approximated through its number of workers: family members, employees, and casual workers), the different type of goods transported in one passage (ranging from 1 when only type of products is transported to 11), the type of flow of goods (import, export, re-export, or transit), and whether the trade is originated to or bound to Nigeria. μ is an error term.

4.2 Results

Table 4 shows our results for informal payments. We produce the same exercise for formal payment in Table 5. Both tables are divided into two parts; columns 2,3, and 4 show the results for the amount of informal tax paid (the formal amount paid in Table 5), while columns 5, 6, and 7 show the results for the informal tax ratio (the formal tax ratio in Table 5). Columns 2 and 5 in Table 4 and Table 5 present our results for all the trade flows observed, while columns 3 and 6 show only the multi-product trade flows and columns 4 and 7 show only the single-product trade flows.

We find a significant and positive relationship between the quantity of goods transported (weight in kg), their unit value (weighted unit value), and the informal tax paid. This relationship also holds for the formal tax paid. Not surprisingly, the amount of (in)formal tax paid increases with the value and the quantity of the goods transported. However, this relationship is reversed for the informal tax ratio, for which a negative and significant relationship links the quantity of goods transported, their unit value, and the informal tax

ratio. The more the smugglers transport in one load in terms of value and quantity, the less informal tax they will pay relative to the total value of the goods transported.

The relationship between quantity transported and the formal tax ratio is significant and positive (albeit it is not significant for the multi-product flows) and negative and significant between the unit value and the formal tax ratio (the same words of caution apply to the significance of the coefficient for the multi-product flows).

The variables we used to control the role of networks (firms domiciled in Benin) and the position in the smuggling value chain (connection to a wholesaler) show interesting linkages with the dependent variables, particularly when we contrast informal payments and the informal tax ratio on one side and formal payments and the formal tax ratio on the other. Smugglers who declared their activity domiciled in Benin seem to consistently pay more informal tax in terms of amount paid or ratio than their counterparts not domiciled in Benin. The same seems to be true for the smugglers connected to wholesalers.

Turning to formal taxation, the relationship between formal tax levels or the formal tax ratio and firms' domicile in Benin is negative and significant. The relationship with formal tax levels or the formal tax ratio and connection with wholesalers is also negative and significant for single-product trade flows. These results suggest that well-connected firms may be more efficient at avoiding formal tax payments by paying informal ones.

The number of different products is significantly and negatively linked to both the informal and the formal tax ratio when we consider all the products, pointing to the possibility that multi-product cargo might be used to deter the attention of the authorities from the most valuable goods.

We also control for the direction of trade flows: import, export, re-export, and transit. In comparison to imports, exports and re-exports generally show a significant and negatively relationship with the informal level of tax, the informal tax ratio, the formal tax level, and formal tax ratio. Transit does not show significant differences from imports in terms of its relationship with the level of informal tax and the informal tax ratio. However, transit does show a significant and positive relationship with the formal level of tax and the formal tax ratio in comparison to import flows. The results, at least in regards to the relationship of exports and re-exports with formal tax levels and the formal tax ratio, are as expected, considering that the tariff level for imports in Benin is higher on average that tariff level for goods exported or re-exported from Benin. The fact that these relationships hold for informal taxation tends to confirm that the level of informal taxation is negotiated in relation with the existing level of formal taxation. Transit flows confirm a specificity already alluded to in the descriptive statistics. The average level of tariffs and duty for transit (6 percent) are less than the average level of tariffs for import (7.8 percent); however we

have observed a higher level of tax collection for these flows, which may explain the positive relationship between the transit control variable and the formal level of tax and formal tax ratio.

Finally, we control whether Nigeria is the country at either end of the trade flows. Most of the imports observed in the ECENE survey come from Nigeria, and most of the exports, re-exports, and transit are bound to Nigeria. The difference in price between Benin and Nigeria for the same goods, which is due to several factors, helps to explain the importance of smuggling between the two countries. The Nigeria dummy we introduce allows us to check whether demand factors on the Nigerian side for products coming from Benin or on the Beninese side for Nigerian goods coming to Benin are associated with higher informal and formal tax payments. We find a negative and significant relationship between trade with Nigeria and the amount of formal tax paid or the ratio of formal tax and a positive and significant relationship between trade with Nigeria and the amount of informal tax paid or the ratio of informal tax. In this instance again, smugglers dealing with Nigerian trade seem to prefer avoiding formal payments by paying informal ones.

Table 4: Results for informal tax value per trade flow in CFA and informal tax ratio

Tobit Model

	Dependent Variable			Dependent Variable		
	Informal Tax Value in CFA			Informal Tax Ratio		
Weight in kg (log)	0.959***	0.903***	0.977***	-0.001***	-0.002*	-0.001**
	(0.02)	(0.08)	(0.02)	(0.00)	(0.00)	(0.00)
Weighted Unit value (log)	0.659***	0.938***	0.622***	-0.004***	-0.002	-0.004***
	(0.04)	(0.12)	(0.04)	(0.00)	(0.00)	(0.00)
Wholesaler links(d)	0.546***	0.568*	0.525***	0.003***	0.005*	0.003**
	(0.07)	(0.26)	(0.08)	(0.00)	(0.00)	(0.00)
Firm domiciled in Benin (d)	0.368***	0.753**	0.299**	0.002	0.005**	0.001
	(0.09)	(0.26)	(0.10)	(0.00)	(0.00)	(0.00)
Number of workers	0.008	0.026	0.007	0.000***	0.000	0.000**
	(0.01)	(0.03)	(0.01)	(0.00)	(0.00)	(0.00)
Number of different products	0.120	0.110		-0.002***	0.000	
	(0.06)	(0.10)		(0.00)	(0.00)	
Export (d)	-0.873***	-0.196	-0.949***	-0.005***	-0.000	-0.005***
	(0.10)	(0.34)	(0.10)	(0.00)	(0.00)	(0.00)
Re-export (d)	-0.550***	-0.698	-0.552***	-0.002	-0.006*	-0.002
	(0.11)	(0.40)	(0.12)	(0.00)	(0.00)	(0.00)
Transit (d)	-0.213	0.473	-0.315	0.001	-0.000	0.001
	(0.18)	(0.47)	(0.19)	(0.00)	(0.00)	(0.00)
Trade with Nigeria (d)	0.541***	1.029***	0.467***	0.003**	0.009**	0.002
	(0.09)	(0.28)	(0.10)	(0.00)	(0.00)	(0.00)
r2p	0.071	0.044	0.077	-0.013	-0.024	-0.013
N	7920	1099	6821	7920	1099	6821
Nlc	1646	290	1356	1646	290	1356

(d) for discrete change of dummy variable from 0 to 1
* p<0.05, ** p<0.01, *** p<0.001

Table 5: Results for formal tax value per trade flow in CFA and formal tax ratio

Tobit Model

	Dependent Variable			Dependent Variable		
	Formal Tax Value in CFA			Formal Tax Ratio		
Weight in kg (log)	0.849***	0.535***	0.908***	0.003***	0.001	0.004***
	(0.03)	(0.09)	(0.03)	(0.00)	(0.00)	(0.00)
Weighted Unit value (log)	0.239***	0.268*	0.222***	-0.002*	-0.000	-0.002*
	(0.05)	(0.13)	(0.05)	(0.00)	(0.00)	(0.00)
Wholesaler links (d)	-0.115	0.615	-0.256*	-0.003*	0.001	-0.004**
	(0.12)	(0.32)	(0.13)	(0.00)	(0.00)	(0.00)
Firm domiciled in Benin (d)	-0.372**	-0.224	-0.411**	-0.004**	-0.004*	-0.004*
	(0.13)	(0.29)	(0.14)	(0.00)	(0.00)	(0.00)
Number of workers	0.005	0.064**	-0.003	0.000	0.000*	0.000
	(0.13)	(0.29)	(0.14)	(0.00)	(0.00)	(0.00)
Number of different products	-0.125	0.037		-0.003***	-0.000	
	(0.08)	(0.12)		(0.00)	(0.00)	
Export (d)	-0.338**	0.777*	-0.471***	-0.002	0.001	-0.003
	(0.12)	(0.37)	(0.13)	(0.00)	(0.00)	(0.00)
Re-export (d)	-1.120***	-0.744	-1.184***	-0.008***	-0.002	-0.009***
	(0.14)	(0.45)	(0.15)	(0.00)	(0.00)	(0.00)
Transit (d)	1.612***	4.997***	1.220***	0.030***	0.050**	0.028***
	(0.32)	(1.04)	(0.32)	(0.01)	(0.02)	(0.01)
Trade with Nigeria (d)	-1.173***	-0.741*	-1.325***	-0.007***	-0.002	-0.009***
	(0.12)	(0.30)	(0.14)	(0.00)	(0.00)	(0.00)
$r2_p$	0.046	0.027	0.052	-0.290	-0.122	-0.390
N	5662	918	4744	5662	918	4744
N_{lC}	3037	516	2521	3035	516	2519

(d) for discrete change of dummy variable from 0 to 1
* p<0.05, ** p<0.01, *** p<0.001

Conclusion

Our descriptive statistic show the prevalence of informal taxation, which extends to all kinds of goods, even those very slightly formally taxed (i.e. imports of manioc flour and maize from Togo), and to all types of trade flows (imports, exports, re-exports, or transit). Moreover, the results of our econometric analysis suggest a trade activity bias toward well-connected smugglers who are able to exchange goods with a high unit value in large quantities. These smugglers seem to avoid paying formal taxes by paying informal ones. Knowing that the average informal tax ratio is 1.6 percent and the average formal tax ratio that should be applied is 6.5 percent, all the smugglers seem to be equal in the payments, both formal and informal, that they end up making to the authorities.

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