

How to give a proper 12 miles an hour handshake ? An exploration of the determinants of bribery in Benin's transborder trade

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Preliminary Version

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 phenomena in West Africa. It might impact state revenues, trade routes, consumption patterns and wealth in the region. This study is based on a survey realized by the Benin Institute of Statistics attempting to record all the illegal transactions at Benin's borders for a week. Our aim is to research the elements (quantity and/or the quality of the goods exchanged, size of the firms, nationality, type of trade flow) participating to the determination of the informal tax. To precise these mechanisms help to understand how bribery might distort (or not) international trade.

Keywords: Smuggling, Bribery. Informal taxation **JEL classification:** O17, F14, F15.

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1 Introduction

In a 2008 travel guide about Nigeria the author describes a 12 miles an hour handshake: a minibus driver slows down at a checkpoint and hands a couple of 20 Naira notes to a policeman manning a roadblock (Williams, 2008). While anecdotal evidences of systematic bribery hindering flows of goods in West Africa are numerous, few studies give a systematic account of the bribes paid to different groups of state actors in order to smuggle goods across borders.

Obtaining and analysing information on the informal payments made to officials during this process 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) have consequences on the nature and the quantity of goods exchanged; different levels of informal taxation between countries might play a role in the trade routes selected by merchants; the revenue generated by informal taxation creates distorted incentives for officials; and informal taxation might have a strong impact on the formal tax revenue generated by the state as one of the main motivation for informal tax payments is to avoid the payment of formal ones.

Corruption has been widely analysed in the context of African economies. However due to the difficulty of gathering data at the microeconomic level, a large number of studies have compared the level of corruption between countries (Musila and Sigué, 2010; Worku, Mendoza, and Wielhouwer, 2016), more recently a stream of research have analysed corruption, its origin, consequences and size at the level of the firm (Svensson, 2003; Pelizzo, Araral, Pak, and Xun, 2016; Faruq, 2017). Even fewer studies have attempted to analyse corruption at the transactional level. Titeca and Celestin (2012) research the informal and formal payments made in several borders localities in the Democratic Republic of Congo, Burundi, Rwanda and Uganda. They note the very high variability of these payments with, in some instances, the informal tax being superior to the formal tax paid. Jibao, Prichard, and van den Boogard (2015) analyse data gathered at two border passages in Sierra Leone. They record the nature of the payments (goodwill payment, acceleration fees and payment in nature) and the amount of the bribes paid by traders to government officials. Their findings underline the role of social norms, networks and power imbalances to explain how much is paid and what kind of payments are made by informal traders.

In this paper, we focus on the role of informal taxation as a cost to trade in the case of Benin's export. We exploit the rich set of information provided by the ECENE survey ¹. We look at the level of the bribes paid by traders and their determinants. We are able to compare the amount paid by traders to formal tax payment. Our work is in the line of Svensson (Svensson, 2003) intending to understand who pays bribes and how much, at the difference that our analysis is at the transactional level and the transactions concern are export flows from Benin to its neighbours.

Benin is characteristic of countries that have been described as "Entrepôt economy" (Igue and Soule, 1992). Golub (2012) writes: "Benin, Togo and Gambia serve as conduits for both legal transit to landlocked countries in West Africa (Niger,

¹The acronym stands for *Enquête sur le Commerce Extérieur Non-Enregistré*, Survey of Non Recorded External Trade.

Mali and Burkina Faso) and illegal trade to more protectionist countries (Senegal and Nigeria)". Of particular importance in Benin, seems to be the trade of second hand cars from Benin to Nigeria and the smuggling of Nigerian oil into Benin and Togo via Benin. Both products have been the objects of several papers and reports. Golub (2012), INSAE (2008) and Bako-Arifari (2001) focus on the car trade while Agbachi (2012) and LARES (2005) 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 a special identification plates for transit vehicle), the type of payment made (illegal and legal) and the economic actors (some informal as the re-salers) are clearly identified. The multiplication of procedures is according to the authors the main reason of the existence of informal payment in 2008. Golub (2012) suggested that taxes and fees on transit produce a sizeable revenue for Benin's customs². The LARES (2005) report describes the supply chain of oil smuggling from Nigeria to Benin. The gasoline is bought legally in Nigeria and stocked close to the Beninese border. From there the informal cycle of commercialisation of gasoline starts with mostly forwarders, wholesalers, transporters and paddlers from Benin. Agbachi (2012) details two main categories of wholesalers, some with large assets in terms of capital who organize the smuggling and distribution activities in Cotonou through various agents. The other group with less financial assets has to go to Nigeria to organize the passage of the goods. Wholesalers, big and small, tend to avoid crossing the borders with their goods and delegate this activity to inhabitants of the border areas. These studies describe how smuggling works, only Agbachi (2012) provides information on the revenue of the agents participating to the smuggling of oil activities; none proposed a systematic view in how much illegal payment is needed to lubricate the engines of trade.

In section 2, we present descriptive statistics showing the average amount of informal and formal tax paid in different trading situations (export, re-export, transit, and for the goods most intensively exchanged at Benin borders); in section 3 we explore the relation between informal taxation and its potential determinant. In section 4, we conclude.

2 Informal and formal taxation of Benin's Exports

The ECENE survey has been implemented by the national institute of statistics of Benin (INSAE). Its objective has been to quantify informal trade at Benin borders. To realise this, 171 border crossing passages identified as actively used by smugglers were surveyed in the month of September 2011 (Map 1 in the appendix shows the repartition of the border crossings surveyed). Information through questionnaire addressed to informal traders were gathered on the nature, quantity and the value of smuggled goods. The ECENE survey does not contain information of the nature of the bribes as in Jibao, Prichard, and van den Boogard (2015), however it provides

²The 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 in 2008 4 per cent of the State's fiscal revenue.

for each transaction observed during the period of the survey the amount of informal tax and formal tax paid by the traders. 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. It includes all the payments made during the transport of the good for which the traders have received no official receipts. For example bribes paid at road blocks manned by the army, the police or the custom agency or to escape the control organised by these agencies,
- and how much they have paid formally, that is to say payments for which they have received a receipt during the export or import process. It can be for example taxes collected by local authorities

According to our discussion with the authors of the survey, these 2 questions have posed a problem regarding the trade flows with Nigeria. The interviewers during the survey should have recorded the information in Benin domestic currency, the CFA franc, however the value of the bribes paid and the formal tax for some of trade flows with Nigeria might have been recorded in the Nigerian currency, the Niara. During interviews we conduct at the borders with Nigeria in the summer 2016, traders also confirmed the prevalence of payments in Niara for the trade flows coming from Nigeria. Hence we focus on the trade flows leaving Benin for its neighbouring countries: export, re-export and transit.

Table 1 column 2 shows the average level of informal and formal taxation for export, re-export and transit trade for multi and mono product flows ³. Goods considered under the re-export or transit regime benefits from formal tax exemption at the entrance in Benin ⁴. The maximum level of average formal and informal tax recorded is for transit trade (respectively USD123.22 and USD24.35). In column 4, the average of the ratio of informal (formal) taxation over total value of the good

³1165 border crossings in the survey are multi-products, that is to say for example a truck transporting yam, wheat flour and worn clothing. Two third of these border crossings concerns only two different goods (770). Only 28 crossings concerns more than 6 goods. They encompass 2945 flow of goods. The average total value of the cargo per crossing is USD4507 which is far more than USD1841 the average value of the cargo per crossing for the 6820 mono-products trade flows recorded. However the average value per good transported in multi-products cargo, USD428, is less important. The structure of the ECENE database attribute formal and informal payment to border passage and not to a specific good. In the following multi-products trade flow will be included when we present descriptive statistics or regressions over aggregate figure 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-products cargo are left aside as there is no way to attribute the informal and/or informal tax payment recorded to a particular good.

⁴However special taxes and duties might increase substantially the overall payment. The used vehicle trade constitutes a good example. Before being able to re-export a second handed vehicle, the owner of the vehicle should pay a statistical tax (5% of the value of the vehicle), a custom stamp duty, a special standing advance (CFA50000) (these 3 taxes can be refund in case of export to a landlocked neighbouring country), a custom escort (CFA75000), a computer fee (CFA2000) and between 2004 and 2009 an eco-tax depending on the size of the vehicles (Organization, 2010). It has to be noticed that many of these special taxes and duties are dependent on the valuation made of the goods by custom agents

transported is displayed. These rates are low, no higher than 2% for informal taxes and no higher than 5% for formal taxes.

Table 1: Descriptive Statistics

	Mean	SD	Average Tax Ratio	Number of Observations	Number of Null Payments	Ratio of Null Payments
All transactions						
Informal Tax	9.58	42.03	1.6%	2911	664	22%
Formal Tax	20.08	114.28	1.6%	2089	1174	56%
Export						
Informal Tax	6.66	28.65	2%	1534	456	30%
Formal Tax	4.21	31.31	1.3%	1212	725	59%
Re-Export						
Informal Tax	9.53	55.49	1.4%	1017	182	17%
Formal Tax	6.73	65.24	0.8%	596	388	64%
Transit						
Informal Tax	24.35	46.08	0.7%	311	26	8%
Formal Tax	123.22	284.23	5%	235	61	26%

Source: ECENE survey 2011

We perceive the information regarding the fact that a trader has declared paying no formal or informal tax as important. Indeed it might point to economic agents who have chosen to pay a bribe to avoid formal taxation (positive informal tax and zero formal tax), who have chosen to pay the formal tax and not the informal (zero informal and positive formal) or who are connected enough to avoid payment of the formal and the informal tax (zero formal and informal). In column 6 and 7 of table 1, we display the number of null observations and the ratio of null observations over the total number of observations. Transit shows a remarkable rate of payment of the informal tax (only 8% of the respondents declare having paid no informal tax against a maximum of 30% null payment for export) and formal (only 26% of the respondent declare having paid no formal tax against a maximum of 64% for re-export). It has to be noticed that the number of respondents systematically drop when asked about the amount of formal tax paid. This might be due to the fact that respondents might prefer to avoid answering when they have paid no formal tax or an amount lower than the one provided by the law. For transit, only 3.12% of the individual declaring having made a zero payment informally declare having paid nothing formally, this rate is very different for the other trade channels with 15.43% for re-export and 21.64% for export (Table 2).

Table 2: Formal or Informal Tax Payment ?

	All transactions	Exports	Re-exports	Transit
Informal Tax= 0, Formal Tax= 0	17.38%	21.64 %	15.43 %	3.12%
Informal Tax> 0, Formal Tax= 0	22.95%	25.05 %	21.99 %	15.89%
Informal Tax= 0, Formal Tax> 0	5.43%	7.73 %	2.12 %	4.98%
Informal Tax> 0, Formal Tax> 0	26.52%	25.31 %	20.15 %	52.96%
Informal Tax> 0, Formal Tax= .	27.72%	20.28 %	40.31 %	23.05%

Source: ECENE survey 2011

Tables 3 and 4 present some data for the products the most intensively exchanged (at least over 100 observations per trade flow) over the period of the survey. The

data in the table come from mono-products flows as we cannot associated the level of taxation to a particular product with multi-product flows. We end up with 7 flows of goods (at the HS4 classification level). Table 3 indicates the type of flow (export, re-export, transit), the country of destination and an indication of the tariff regime in place for these products in the country of destination. Nigeria is the main destination of Benin exports, re-export and transit trade, apart for the re-export of gasoline. Foods (fresh tomatoes, rice, manioc and yam) and process foods (palm oil, chicken meat) dominate the most frequently traded items over the period of observation. Second hand cars is the only trade of manufactured good that we capture. An insight into the activity generated by the trade in gasoline is given through the fact that it is a frequent trade in terms of re-export to Togo.

Table 3: Main Products exported: Number and Direction of the flows

HS Code	Number of Observations	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%]*

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

Table 4 completed the information provided in table 3 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 product (at the exception of the second hand cars trade where the total value is also the unit value of the car). The importance of the car transit is confirmed with a high average total trade value (USD10843 for the second hand cars).

Column 4 displays the average informal(formal)tax ratio. The informal tax ratio at 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%) and the fact that it dominates largely the informal tax ratio (0.30%) might suggest a better control of the central government of the tax revenue generated through this trade. Even if 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, inside the port of Cotonou, might make the avoidance of the formal tax payment difficult.

Table 4: Products studied: Formal and Informal Tax

	Mean	SD	Average Tax Ratio	Number of Observations	Number of null payment	Ratio of null Payment
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

3 Methodology and Results

3.1 methodology

Jean and Mitaritonna (2010) propose a model that determines the amount of bribery paid to government agents. In this model traders have the choice or not to bribe the officials and officials can take or not the bribes. Traders try also to hide the real value of shipment and bribed officials incur the risk of being caught. We believe this model well suited to describe the reward of smuggling for officials and firms in the developed world where functioning institutions can enforce punishment mechanisms. However anecdotal evidences suggest that it might be ill conceived to explain bribery determination in the developing world. Jibao, Prichard, and van den Boogard (2015) write about Sierra Leone "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 custom 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 might describe an extreme case but we tend to believe that even in Benin the control of the central State might not be strong enough to make the perspective of punishment credible enough to enter as an important component of the determinants of bribes. In addition, Walther (2015) shows that in the West African context the network and the social capital of the traders embedded in the network can play an important role. This role can be through the connections individuals have with the state government officials at border crossings or in central government.

Evidence from descriptive statistics shows also that informal payment is widespread. Nonetheless, we observe also transactions for which no bribe and no formal tax were paid. Our first task is then to understand if some characteristics of these transactions made them distinctive from the ones where only the formal or informal tax is paid or both taxes are paid. Several likely explanations coexist: some traders have such a social capital they might be able to avoid any form of taxation even if they are controlled; the quantity and unit value of the goods transported could be so low that even if state agents encountered a smuggler with such a cargo they might considered the effort of controlling the cargo not worthy the taxes formal or informal they might be able to extract from it; finally the distance covered to transport the goods from the point of embarkment to the border is so short that it limits drastically the number of interactions between smugglers and state agents. To summarize our argument, we start from a baseline situation where an encounter between a trader and an agent of the state results in a payment of a bribe. The trader will not pay it only if he can avoid completely the agent of the state, he knows them too well or the cargo is of a very low value. Formally:

$$\nu_{ij} = \beta'_j x_i + \alpha_j \quad (1)$$

where ν_{ij} is the probability that transaction i belong to the group j for $j = 1, 2, 3$, β'_j is a coefficient vector, x_i a vector of transactions characteristics and α_j is an unobserved error term.

In a situation where the central government control over the agencies acting

on the borders is low and bribes are paid, the amount of bribe paid to government official might depend on a function of the number of interactions between government officials and traders during the export or import process, the total value of the goods smuggled 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 tax during each interaction. More formally:

$$bribe_{ij} = \sum_{k=1}^n (S_{a_k b_k} C_{ij} V_{ij}) \quad (2)$$

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 informal payment made for each interaction *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 *S* between individual *a* and *b*, the effort consented by the traders to conceal his shipment *C* and the total value *V* of the good transported *i* during this transaction *j*.

Equation 2 can be re-written:

$$bribe_{ij} = (C_{ij} \cdot V_{ij}) (\bar{S}_{ab} \cdot n) \quad (3)$$

If it is clear that the number of interactions and the total value of the good transported should have a positive impact on the total bribes paid to import or export a good, the effect of distance in terms of social capital is more ambiguous. For example closeness between traders/peddlers and custom agents at the borders crossing through family links or friendships might limit the amount paid. Agents of large traders/wholesalers might have the possibility to mobilise network of powers with the ability to eliminate informal and formal payment at border crossings but at the same time might hesitate to use this capital and prefer to maintain cordial relations with local government officials through payment of informal taxes. The more knowledge a trader develop in how to conceal his shipment (by choosing routes avoiding government officers, or by concealing the most valuable part of their cargo) the less informal tax (and formal) they should pay.

Based on equation 3, we obtain the following:

$$\ln(bribe_{ij}) = \beta_1 \ln(uv_{ij}) + \beta_2 \ln(Q_{ij}) + \beta_3 \ln(C_{ij}) + \beta_4 \ln(\bar{S}_{ab}) + \beta_5 \ln(n) + \mu \quad (4)$$

where uv_{ij} is the unit value of the good transported in USD (we calculate a weighted average unit value for multi-products trade flows), Q_{ij} is the quantity of good transported in kg (we use the total quantity of the shipment for multi-products trade flows),

3.2 Results

Table 5 shows the results for our multinomial logit model, the coefficients are indicated in their exponentiated form.

The relative probability to belong to the group of transactions where an informal tax has been paid and no formal tax has been paid (group 1) rather than no informal and formal tax (group 0, our baseline group) increases with the weight (55.9% higher for a 1% increase of the average weight of the cargo), the value (54.8% for a 1% increase of the unit value of the cargo) and whether the destination of the cargo is Nigeria (more than double the probability). It decreases if the firm is domiciliated in Benin (35% lower).

The relative probability to belong to the group of transactions where only the formal tax has been paid (group 2) rather than no informal and no formal tax (group 0) increases with the weight (95.7% higher for a 1% increase of the average weight of the cargo) and the unit value (56.8% higher for a 1% increase of the unit value of the cargo). It decreases for larger firms in term of number workers (10% lower), with an increase of the number of different products in the cargo (51.5% lesser), if the firm is in business with wholesalers (58.9% lower), if the transaction concerns Nigeria (71.4% lower), and if the transaction is a re-export (79.3% lower).

The relative probability to belong to the group of transactions where an informal and formal tax have been paid (group 3) rather than no informal and no formal tax (group 0) increases with the weight (94.5% higher for a 1% increase of the average weight of the cargo), the unit value (41% higher for a 1% increase of the unit value of the cargo) and if the transaction considered is a transit (more than 7 times the probability). It decreases if the firm is domiciliated in Benin (26.4% lower), the destination is Nigeria (37.5% lower) and if the transaction is a re-export (32% lower).

The relative probability to belong to the group of transactions where an informal payment has been paid and the formal tax payment remains unknown (group 4) rather than no informal and no formal tax (group 0, our baseline group) increases with the weight (59% higher for a 1% increase of the average weight of the cargo), the unit value (46.6% higher for a 1% increase of the unit value of the cargo), if the trader is in business with wholesalers (64.7% higher), if the transaction considered is a transit (more than 5 times the probability), or a re-export (more than 60% higher) and if the transaction is at destination of Nigeria (more than double). It decreases with an increase of the number of different products in the cargo (40.3% lower), and slightly with the size of the firms (6.4% lower).

Tables 6 shows our results for our OLS specification on the positive outcomes. Column 2 and 3 deals with informal taxation (specification 1 and 2); column 4 and 5 with formal taxation (specification 3 and 4). In column 3 and 5 we introduce the dummy variable indicating if the destination country for the goods exported is Nigeria.

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 and formal tax paid. More precisely an increase of one percent of the average weight of the cargo translates in an increase of more than 50% of the average bribe paid and over 40% of the average formal tax paid. The impact of an increase of one percent of the average unit value of the goods transported translated in a lower increase of the bribes paid (over 28%) and the formal taxes paid (at least over 23%).

Table 5: Who gives the handshake ? Multinomial Logit Model

	Group 1 informal tax>0 formal tax=0	Group 2 informal tax=0 formal tax>0	Group 3 informal tax>0 formal tax>0	Group 4 informal tax>0 formal tax=.
Weight in kg (log)	1.559*** (0.083)	1.957*** (0.161)	1.945*** (0.111)	1.590*** (0.088)
Weighted Unit value (log) (USD)	1.548*** (0.099)	1.568*** (0.151)	1.410*** (0.095)	1.466*** (0.093)
Wholesaler links(d)	0.985 (0.14)	0.411** (0.118)	1.04 (0.15)	1.647*** (0.226)
Firm domiciliated in Benin (d)	0.746* (0.108)	0.808 (0.181)	0.736* (0.109)	1.006 (0.143)
Number of workers	1 (0.013)	0.900** (0.035)	0.996 (0.012)	0.936*** (0.017)
Trade with Nigeria (d)	2.271*** (0.335)	0.286*** (0.06)	0.625** (0.093)	2.865*** (0.43)
Number of different products	0.991 (0.121)	0.485* (0.154)	1.09 (0.121)	0.597* (0.143)
Re-export (d)	0.774 (0.119)	0.207*** (0.06)	0.680* (0.111)	1.602** (0.243)
Transit (d)	1.647 (0.777)	1.597 (0.897)	7.685*** (3.475)	5.020*** (2.326)
Constant	0.000*** 0	0.001*** (0.002)	0.000*** 0	0.000*** 0
Transport Modes	yes	yes	yes	yes
<i>ll</i>			-3673.158	
<i>chi2</i>			7679.537	
<i>N</i>			2891.000	

(d) for discrete change of dummy variable from 0 to 1

* p<0.05, ** p<0.01, *** p<0.001

The variables we use to proxy the impact of the economic network of the traders shows interesting pattern in particular when put in relation with the Nigeria dummy for the informal payment. Being in business relations with a wholesaler appears to decrease significantly the amount of bribe paid. While the significance and the size of the effects over the other coefficients remains unchanged once the "trade with Nigeria" dummy variable is introduced, the significance of the impact of the "Wholesaler links" disappears. Trading with Nigeria is associated with a significant and strong decline of the amount of bribe paid. These results suggest that part of the impact of the Nigeria dummy could be channeled through the fact that the traders passing the border with Nigeria are part of larger or more complicated business operations. Being in relation with a wholesaler and being a Beninese firm reduce very significantly the amount of formal tax paid. The introduction of the Nigeria dummy does not change the significance of the result. In addition the Nigeria dummy is positively associated with the amount of formal tax paid.

We consider the variable indicating the number of different products transported as a proxy for the effort to conceal some or part of the shipment. It shows a positive and significant relationship with the amount of bribe paid and no significant relationship with the amount of formal tax paid. We would have expected at first sight a negative relationship, however this result might be consistent with the behaviour of the state agents accustomed to deal with multi-products shipment. If the agents suspect that a trader hide the most valuable part of its cargo among other products, they will try to extract a higher bribe from him.

Finally we control for the size of the firm and the type of export trade flow.

Larger firms in terms of number of workers pay a significant higher informal tax. Re-export flows doesn't show any difference with export ones, however transit flows show a strong specificity. They are significantly associated with a higher amount of informal tax and formal tax.

Table 6: How much should be given ? OLS Model on positive

	1	2	3	4
Weight in kg (log)	0.534*** (0.023)	0.573*** (0.022)	0.504*** (0.037)	0.408*** (0.039)
Weighted Unit value (log) (USD)	0.288*** (0.027)	0.331*** (0.027)	0.304*** (0.049)	0.234*** (0.049)
Wholesaler links(d)	-0.187** (0.059)	-0.098 (0.057)	-1.051*** (0.133)	-1.020*** (0.129)
Firm domiciliated in Benin (d)	-0.128 (0.065)	-0.056 (0.062)	-0.956*** (0.126)	-0.832*** (0.118)
Number of workers (log)	0.209*** (0.039)	0.119** (0.037)	-0.033 (0.061)	0.036 (0.061)
Number of different products (log)	0.433*** (0.115)	0.472*** (0.111)	0.256 (0.163)	0.136 (0.162)
Trade with Nigeria (d)		-0.946*** (0.066)		0.943*** (0.154)
Re-export (d)	-0.073 (0.073)	-0.135 (0.07)	-0.048 (0.146)	0.084 (0.149)
Transit (d)	0.572*** (0.112)	0.542*** (0.106)	1.061*** (0.224)	0.980*** (0.223)
Transport Modes	yes	yes	yes	yes
r^2	0.52	0.56	0.55	0.575
N	2229	2229	913	913

(d) for discrete change of dummy variable from 0 to 1

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4 Conclusion

Our descriptive statistic show the prevalence of informal taxation. It extends to all kind of goods, from the even the very slightly formally taxed (i.e import from Togo of Manioc flour and Maize) and to all types of trade flows (import, export, re-export or transit). Moreover The results of our econometric analysis suggest a trade activity bias toward smugglers able to exchange good with a high unit value in large quantity. These smugglers might to avoid paying formal tax by paying informal ones. Knowing that the average informal tax ratio is 1.6% and the average formal tax ratio that should be applied is 6.5%, all the smugglers seems far to be equal in their formal and informal payments according to their size, networks, the destination and products of their trade.

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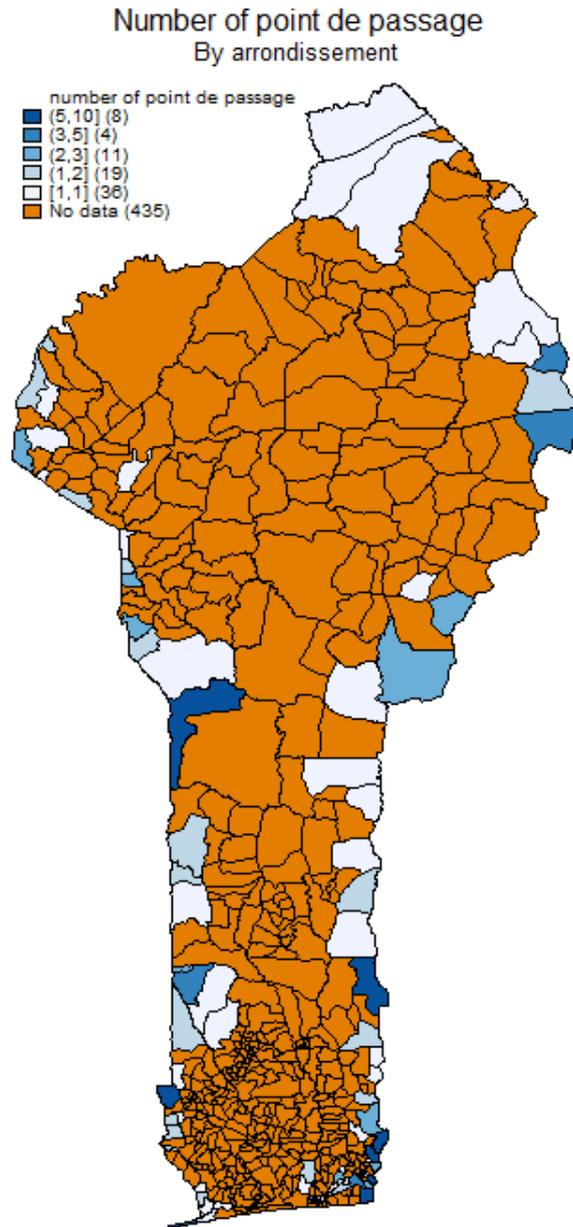


Figure 1: Number of border crossing by arrondissement

Arrondissement is one of the smallest administrative unit in Benin. An arrondissement contain a group of villages or districts in a city. The country counts 545 of them