Corruption and Anxiety in Sub-Saharan Africa

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September 2015

Abstract

This paper examines the relationship between individuals' experience of corruption and their anxiety using microeconomic data from the Afrobarometer surveys. The results show a statistically significant and economically meaningful relationship in probit models using both an experience of corruption index and a simple dummy variable. Having to pay a bribe to obtain documents and permits, to avoid problems with the police or to access medical care are the scenarios in which this relationship is strongest. Some evidence is presented that an individual needs to experience such corruption more than 'once or twice' for these relationships to become evident.

Keywords: Anxiety; Corruption; Bribery; Well-Being; Sub-Saharan Africa

JEL: D73; I15; I31; O12; O55

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1 Introduction

Corruption makes frequent appearances in popular and academic debates on foreign aid, democratisation and a host of other development issues. Given this prominence, it is important to understand all the benefits that policies aimed at curbing corruption might bring. Using Afrobarometer data, this paper assesses the relationship between an individual's experience of providing bribes in exchange for various services and their self-reported anxiety. While corruption has been found to be an undesirable phenomenon in terms of many outcomes, its relationship with this aspect of well-being has so far escaped the attention of applied researchers.

Well-being is an increasingly popular dependent variable in applied microeconomics and related disciplines. Carol Graham provides an excellent overview in her book 'Happiness Around the World' and Helliwell and Putnam (2004) is notable for using both life satisfaction and happiness as dependent variables. In terms of Africa, this literature has a relatively long history and continues to develop. For example Møller and Jackson (1997) and Ebrahim, Botha and Snowball (2013) document the factors associated with happiness and life satisfaction in South Africa.

There are studies examining the impact of corruption on happiness (e.g. Graham and Chattopadhyay (2009)) and on self-reported life satisfaction (e.g. Tavits (2008)). There is a pertinent literature that empirically examines various determinants of mental health. Good examples of this literature are Heflin, Siefert and Williams (2005) and Gardner and Oswald (2007). Azfar and Gurgur (2008) show that corruption can have deleterious effects on physical health outcomes in the specific case of the Philippines. This paper though is concerned with the potential anxiety costs of corruption (and tangentially on its relationship with self-reported living standards).

To the best of my knowledge, there are no existing studies that empirically examine corruption's relationship to anxiety. However, the possibility of such a relationship has been noted by scholars. Shavell (1993) argues that similar events such as robbery and extortion can lead to anxiety for the victim. Ari (2008) presents survey evidence that suggests that bribery is rife in Kyrgyz education and claims that such practices will generate anxiety for the students. Pedigo and Marshall (2009) provide qualitative evidence that bribery is a source of anxiety for Australian business managers working in international settings. Wiesenfeld (1997) finds that a perception of procedural unfairness is associated with higher anxiety in managers. While one could argue that some of these are likely to be more or less applicable in the context of petty corruption in sub-Saharan Africa, the literature thus points to victimhood, uncertainty, a sense of unfairness, and ethical discomfort as being potential drivers of anxiety.

Anxiety is an interesting outcome in its own right and an understudied one in the context of the developing world. There is also a channel through which corruption could operate on more traditional economic outcomes through anxiety. If experiencing corruption causes stress, then lowering corruption may carry an indirect economic benefit. Banerjee and Duflo note in their recent book 'Poor Economics', that stress is associated with the level of cortisol produced in the body and point to

research presented in van den Bos, Harteveld and Stoop (2009) that shows that cortisol is detrimental to rational decision making (Banerjee and Duflo (2011) pp. 140-141). Porcelli and Delgado (2009) show that stressed subjects are more likely to exhibit a bias in risk taking behaviour in a financial decision making setting. Relatedly, trait anxiety has been shown to predict more conservative investment decisions (Gambetti and Giusberti (2012)) and also less risky decision making in a non-financial setting (Peng et al (2014)). Rational decision making is important in any setting and even more so in countries where resources are especially scarce. Finally, while the simple binary measure of self-reported anxiety used in this paper is very different from a proper medical categorisation of anxiety disorders, there is a literature that has demonstrated that anxiety disorders have large costs for both the individual and society both in terms of direct medical costs and lost productivity (Greenberg et al (1999); Marciniak et al (2004)).

The remainder of this paper proceeds as follows: Section 2 describes the data and the econometric approach; Section 3 presents the results from the pooled data and contrasts them with those obtained from a model that uses living standards as the dependent variable; Section 4 includes some round specific variables; Section 5 considers some variables that are potentially endogenous and shows that their inclusion does not change the key result; Section 6 looks at the type and level of corruption and Section 7 concludes.

2 Data and Methodology

2.1 Anxiety

The data for this paper comes from rounds two and three of the Afrobarometer. The Afrobarometer is a representative (calculated for each country) cross sectional survey of public perceptions, social and economic conditions and political attitudes in Sub-Saharan Africa.

Rounds 2 and 3 of the Afrobarometer contain the necessary variables for this study; a measure of anxiety and information on the respondent's experience of corruption. Round two was conducted in 2002 and 2003 in sixteen countries and round three covered eighteen countries and was carried out in 2005 and 2006. Both rounds of data from Zimbabwe were dropped due to missing variables.[1]

The measure of anxiety in the Afrobarometer comes from the following question: 'In the last month, how much of the time have you been so worried or anxious that you have felt tired, worn out or exhausted?' The possible (usable) responses are 'never', 'just once or twice', 'many times' and 'always.' The values 0 (never) to 3 (always) are attached to the responses. By asking the respondent to attribute a physical response (tiredness) to their anxiety, the variable is at least somewhat objective. That is not to say that the measure is perfect. People are unlikely to be able to perfectly attribute their tiredness to its various determinants and there are other elements to well-being beyond anxiety levels.

[1] The full data and methodology as well as summary statistics can be obtained from www.afrobarometer.org.

The fact that the variable captures only one aspect of a broader concept and is self-reported must be kept in mind throughout.

Figure 1 shows the distribution of the anxiety data (pooled over both rounds) in each country and overall. The distribution varies across countries as one would expect but in almost all cases over 20% of respondents fall in the two least desirable categories. As one person's once or twice may be another's many times, and in the absence of a corrective measure such as an anchoring vignette, I create a binary variable which takes a value of one if the respondent answers 'many times' or 'always' and zero otherwise.

<Figure 1: Anxiety in the Afrobarometer Countries>

2.2 Corruption

The Afrobarometer offers a rare opportunity in that it has information on an individual's experience of corruption as opposed to perceived corruption. Specifically, it has information on how often the respondent has had to pay a bribe in several situations. The question takes the form: 'In the past year, how often (if ever) have you had to pay a bribe, give a gift, or do a favour to government officials in order to X?' The potential responses are very similar to the options for the anxiety question, namely 'never', 'once or twice', 'a few times' and 'often.'[2] Table 1 shows the specific corruption questions used from each round.[3]

Table 1: Construction of the Experience of Corruption Index

	Bribe for Document or Permit	Bribe for School Placement	Bribe for Household Service	Bribe to Avoid Problem with Police	Bribe for Anything Else	Bribe for Medicine or Medical Attention
Round 2	X	X	X	X	X	
Round 3	X	X	X	X		X
Pooled	X	X	X	X		

By using the numerical values attached to the responses (0-3 where 0 is never and 3 is often) and adding across the questions, I create an experience of corruption index. What exactly is included in the index varies with the data being used as indicated in Table 1.

[2] The Round 2 survey for Mozambique allowed the additional response of 'always.' As only a tiny proportion of the sample opted for this option in any of the corruption questions and it was not an option in other countries, I add those who did to the 'often' category.

[3] Round 2 asks about paying a bribe to cross a border. I opt not to use this as it is not possible to tell if the bribe is paid to agents of the respondents own country or of another and it was not asked in Mozambique.

Thus, for the pooled data the index takes values from 0-12 and from 0-15 for the individual rounds. Figure 2 shows the breakdown of this index for the pooled data. On first inspection, the fact that 77% of people in this representative survey do not report any experience of corruption in the past year may seem incongruent with the narrative often told about Sub-Saharan Africa. However, one can of course flip this and say that 23% of people have had some recent experience of corruption. It must also be recognised that not all possible scenarios in which corruption can take place are covered in these surveys. While a simple index such as this has its flaws, it does allow for the frequency (or intensity) of corruption to be taken into account.[4] As an alternative I employ a dummy variable that takes a value of 1 if the respondent has had any experience of paying a bribe in any of the above categories at any level of intensity. Using this variable reduces concerns about the endogeneity of anxiety and corruption as one channel of reverse causality arises from the possibility that people with higher anxiety levels may report that they have experienced corruption more frequently than they actually have. For example, a one-time bribery request could be misremembered or misreported as "many times." The dummy variable should be free of this particular problem as it measures corruption history in a binary manner.

<Figure 2: Experience of Corruption in the Afrobarometer Countries>

Figure 3 plots the country averages (for each round) of the anxiety variable against the corruption index. At the macro level, and with admittedly few data points, there does seem to be a relationship between the two. Countries with higher corruption scores tend to have less desirable anxiety outcomes.

<Figure 3: Country Averages of Anxiety and Experience of Corruption>

2.3 Poverty and Crime

While most of the control variables used in this paper are self-explanatory or can be explained as they come up, two warrant detailed description. The first is the poverty index which for most of the analysis will be used as a control for material living standards. The Afrobarometer collects data on what they refer to as 'lived poverty.' The surveys ask 'over the past year, how often, if ever, have you or your family gone without X?' With options (and their attached values) 'never' (0), 'just once or twice' (1), 'several times' (2), 'many times' (3) and 'always' (4). In the spirit of Amartya Sen's 'Development as Freedom' and similar to the approach of Mattes, Bratton and Davids (2003) and others who have used the Afrobarometer data, I create an index from these lived poverty variables by adding them. The index for Round 2 is comprised of shortages of food, water, medical care, electricity, cooking fuel, and a cash income, while Round 3 uses all of these bar electricity (which was not asked).[5]

The second important control variable is an experience of crime index. Being a victim of a crime is commonly held to be a stressful event and so it must be controlled for in a study such as this one. Indeed, Stafford, Chandola and Marmot (2007) find that the fear of crime is detrimental to a host of

[4] Constructing the index using a principal components approach does not alter the results.
[5] While Round 3 does ask about school expenses, I omit this as there are many things which could fall under this category that we may not wish to include in a poverty index such as private school fees.

mental health indicators, including an anxiety measure. While the fear of crime will be included along with other potentially endogenous variables, all specifications will contain a variable that captures an individual's reported experience of crime. Following Graham and Hoover (2007), the answers to the questions 'over the past year, how often (if ever) have you or anyone in your family had something stolen from your house?' and 'over the past year, how often (if ever) have you or anyone in your family been physically attacked?' are added, where the possible responses are identical to the poverty questions.

2.4 General Approach

For the majority of this paper, the results presented will be the marginal effects obtained from simple binary probit models where the outcome takes a value of one if the respondent suffers from anxiety as defined above. Thus, positive marginal effects indicate that increases in the variable in question are detrimental in terms of anxiety. Standard errors are clustered by country and region and all specifications include country fixed effects (and where appropriate year fixed effects). I begin with the pooled data before moving on to examine the two rounds separately. The reason for this is that there are interesting variables in each round that do not appear in the other. The surveys also have interesting variables that are potentially endogenous but that could dampen or eliminate the estimated relationship between anxiety and corruption. As there are no suitable instruments, I cautiously include these variables to see if they alter the relationship. Finally, I remove the restrictions inherent in the corruption index that requires all types of corruption and all intensities to have the same relationship to anxiety.

3 Pooled Results

3.1 Effects of Control Variables

Before turning to the main concern of the paper, the relationship between corruption and anxiety, it is worth commenting on other findings that are interesting in their own right.

While not the main focus, they do suggest where resources to combat anxiety in developing countries might be best spent. Looking at the first two columns of Table 2, one can see that being older increases the probability of being in the anxiety suffering group by a considerable amount. This is a consistent finding throughout, as are the findings that women are roughly 4% more likely to be in the undesirable category and that the more educated are less likely to be suffering from anxiety.

<Table 2: Main Results: Pooled Data>

The dummy variable for whether the individual is an urban dweller is insignificant in the pooled data. However looking ahead, one can see that the urban variable can be significant when one uses each round of data on its own, but in opposite directions. Examination of the data reveals that in both rounds the proportion coded as urban is roughly 38%. In addition, the variable is only significant at the conventional cut-off of 5% in one specification using the Round 3 data and that specification uses a

much reduced sample. The explanation for this appears to be electricity. If the poverty index is constructed for the Round 2 data omitting the electricity component, the urban variable is insignificant. Once we include a control in the model for good access to electricity, which is likely more common in cities than in rural settings, living in a city is detrimental in terms of anxiety.

The results in terms of the unemployed dummy are mixed. While insignificant in the pooled and Round 3 results, the relationship is negative and significant in the baseline Round 2 model but insignificant if one uses income decile as opposed to the poverty index. This is at odds with what one might expect and could be because being unemployed in the sense of not having a job that pays a cash income (and looking for one), might not be as appropriate a definition of unemployment in Sub-Saharan Africa as it is in the developed world. That said, when I use living standards as an alternative measure of well-being in Table 2, I find that being unemployed by this definition significantly and sizably increases the probability of reporting bad living conditions. This suggests that it may not be a problem with the definition of unemployment used to create the variable. This puzzling result warrants further study but for the issue at hand it is sufficient to note that it does not alter the main finding. Finally, both crime and poverty have significant and sizable negative relationships with anxiety as one would expect.

3.2 Main Results

Turning to the main focus of this paper, columns 1 and 2 of Table 2 present the marginal effects obtained from running a model of the type outlined in Section 2.4 above. From Column 1, we can see that each step on the experience of corruption index is associated with a 1.3% increase in the probability of being in the anxiety category. This is a sizable association. Someone with an experience of corruption score of six, midway along the index, is 7.9% more likely to suffer with anxiety. By comparison, the increase in probability for someone midway along the poverty and experience of crime indices are 14% and 9% respectively.

One problem with this comparison is that, as can be seen from Figure 2, very few people experience such high levels of corruption. To address this issue, and some others that could be raised in the construction of the index, Column 2 uses a dummy variable that takes a value of one if the respondent has any experience of corruption and zero otherwise. Even throwing away the information on the intensity of a person's experience of corruption, the link is still statistically significant at the 1% level and the magnitude is still sizable. At 5%, it is larger than the effect of being a woman and similar to the effects of completing primary and secondary education. Corruption seems to be a serious problem in terms of anxiety, even when compared against such stressful factors as poverty and crime.[6]

Before moving on with the main focus of the paper, we will briefly examine the role that experiencing corruption might play in determining another aspect of well-being. Life satisfaction questions have been used widely in the economics of happiness literature. Alesina, Di Tella, and MacCulloch (2004),

[6] While it is far from clear that people have a common understanding of 'always' and 'many times', I am potentially ignoring information by using a dummy variable to measure anxiety. The results of an ordered probit model support the results presented here and are available on request.

for example, use such a question and point out that it is very highly correlated with happiness. The Afrobarometer contains a related measure of well-being, self-reported living conditions. The question asked is 'in general, how would you describe your own present living conditions?' While the Afrobarometer question asks about attitudes to living conditions rather than directly about life satisfaction, there is clearly a significant conceptual overlap between the two. The correlation between this measure and the anxiety variable is only 7%. By creating a dummy variable that equals one if the respondent answers 'very bad' or 'fairly bad' and zero if the answer was 'neither good nor bad', ' fairly good' or 'very good', we can examine whether experiencing corruption is detrimental to this aspect of well-being.

Carol Graham and Soumya Chattopadhyay have found that corruption is detrimental to happiness in Latin America (see Graham (2009) pp. 206-210) but does not seem to be so in Afghanistan (Graham and Chattopadhyay (2009)) and attribute this to different norms and to adaptation. Columns 3 and 4 of Table 2 show that the probability of expressing dissatisfaction with one's living standards in Sub-Saharan Africa is not associated with experiencing corruption. The results for age, employment status and poverty are in agreement with those of Ebrahim, Botha and Snowball (2013) who study the determinants of life satisfaction in South Africa.[7] It is interesting that two well-being measures, neither of which has theoretical superiority over the other, can yield very different answers. It points to a need for caution when forming or evaluating a policy or an intervention. In the current context, it reinforces the need to use alternative variables such as anxiety to study the effect of corruption on individuals.

A final point to note is that these may be underestimates of the true relationship as the anxiety question asks about the individual's anxiety over the past month but the corruption question asks about the individual's experience of corruption over the past year. The negative effect of corruption may fade, or disappear, over time.

4 Additional Explanatory Variables

Each round of the Afrobarometer contains variables that are not present in the other. Many of these could plausibly play a role in generating anxiety. This section allows these variables to enter the specification.

4.1 Round 2

Table 3 presents results obtained using just the data from the second round of the Afrobarometer. Column 1 replaces the poverty index with dummy variables showing where the individual roughly falls

[7] Using the Round 2 data, Graham and Hoover (2007) find a negative effect of crime on living conditions. The main difference in their specification is that they use the data on income decile as opposed to a lived poverty index. When I do likewise, I too find that crime and corruption are detrimental to self-reported living conditions. However, when I include both lived poverty and income, neither crime nor corruption is significant at the 5% level, though corruption is significant at 10%.

in the income distribution. With this control for material well-being, our main result is unchanged, compared with both those from the baseline specification and using just Round 2 data (columns 2 and 3).

The final column includes variables that capture the time the respondent spends caring for various categories of people. The results suggest that caring for children, be they your own or orphans, is not associated with anxiety. However, caring for sick people in the household has a significant and undesirable effect in terms of anxiety.

<Table 3: Main Results: Round 2 Data>

4.2 Round 3

The data from the third round allows one to address an important question. Might people who go for these services be more likely to be suffering with anxiety to begin with? If that were the case, then the corruption variable could be just picking up this effect. By comparing those who never experienced the need for each of the services in question with those who did, we can see if this is the case. In the third round of the Afrobarometer, people were offered the option of responding 'no experience with this in past year' to the various corruption questions.[8] Up to this point, this response has been recoded as 'never.' I create dummy variables which take a value of one if the individual has no experience of the service in question in the past year and zero if he has sought the service regardless of his experience of corruption in the situation. Thus, if people who try to access these services are more likely to be suffering from anxiety, the marginal effect should be negative and significant.

<Table 4: Is There Anxiety Associated With Needing The Services?>

Table 4 presents these results. Column 1 shows that only one of these dummy variables has a significant marginal effect. If anything, people who seek out a document or permit are less likely to be suffering from anxiety than those who do not. The marginal effect of corruption is always significant and sizable and we see no evidence that the issue raised above is a cause for concern.[9]

Column 1 of Table 5 reports the results obtained from running the main specification on the data from Round 3. Once again, those with an experience of corruption are more likely to report suffering from anxiety. This is also the case when using the experience of corruption dummy (Column 3). In a similar vein to Table 4, the second column modifies the corruption index by dropping those who have not experienced all situations. While the magnitude of the relationship decreases, it is still significant and economically meaningful.

[8] 32% of the respondents choose this response for the documents and permits question, 28% for the school placement question, 36% for the household services question, 22% for the accessing medicine or medical treatment question and 32% for the avoiding problems with the police question.

[9] Another way to tackle this issue is to use dummies which contrast those with no experience with those who do but did not experience corruption. The results from this exercise lead to the same conclusions as those presented here.

<Table 5: Main Results: Round 3 Data>

In the final column I include some additional controls. One might think that corruption is only detrimental in terms of anxiety when it is at your expense. To test this, I include a variable that takes a value of one if the respondent was offered an incentive for their vote 'a few times' or 'often.' As can be seen from the table, this beneficial corruption makes no difference. In fact, the sign points to such corruption being bad in terms of anxiety. The finding from Table 3 that having to spend time with children has no effect is supported. The final two variables are included to allow for entertainment, or stress relief. While owning a television decreases the probability suffering from anxiety by 2% it is only significant at the 10% level and owning a radio has no statistically significant effect. The inclusion of these variables does not change the main result.

5 Endogenous Variables

In this section I introduce variables that are potentially endogenous. As in the last section, some of these variables appear in only one round of the data. Due to the lack of appropriate instrumental variables in the Afrobarometer, I cautiously add these variables one by one to the main specification before including them all simultaneously. The objective here is to see if the corruption result remains after introducing factors that intuition says should be key factors in determining anxiety. Tables 6 and 7 present the results.

<Table 6: Endogenous Variables: Round 2 Data>

<Table 7: Endogenous Variables: Round 3 Data>

For the most part, the reason these variables must be regarded as endogenous is that they are perceptions based. Others require judgments that could be influenced by mental state. The most obvious variable in this category is physical health.[10] The first columns of tables 6 and 7 show that individuals who report poor physical health are roughly 50% more likely to report suffering from anxiety. While the inclusion of this variable reduces the magnitude of the relationship, experiencing corruption remains significantly associated with anxiety.

The next two variables relate to material well-being, are common to both tables and one would have prior cause to believe that they are harmful in terms of anxiety. The first captures whether the individual perceives that their living standards have declined since the previous year. Unsurprisingly, declining living standards are associated with anxiety, as is the second of these variables. Having worse living standards than others, or at least a perception that this is the case, has a very similar effect to a decline in living standards. The size and significance of the corruption result remains unchanged in the

[10] The physical health dummy is created from the question 'in the last month, how much of the time has your physical health reduced the amount of work you normally do inside or outside your home?' The dummy takes a value of one if the respondent answers 'many times' or 'always' and zero otherwise.

face of both of these, as it does when one controls for an individual's fear of crime, which is significant, and whether or not the individual is an active member of a religious group, which is not.

Column 6 of Table 6 suggests that having the perception that the corruption problem is worsening does not matter in terms of anxiety. One conclusion that could be drawn from this is that it is the level of experienced corruption that matters as opposed to a perceived growth rate. Even if one runs the model of Column 6 again without the experience of corruption index, this perception is insignificant. The final variables to be included in Table 6 control for the person's experience of violence in various settings. Violent confrontations in the family and between different ethnic groups are associated with a higher probability of anxiety, which will be no surprise to those with a family and to those who are familiar with inter-ethnic conflict in Sub-Saharan Africa. Once again, the corruption index emerges as significant, as it does when all of these variables are included at the same time (Column 8).

Column 6 of Table 7 controls for a common measure of social capital, trust in others, and finds no effect. The final potentially endogenous variable to be considered is the perception that the individual's ethnic group is often or always treated unfairly. This variable too is significant and economically meaningful, though the lack of a concrete measure of persecution warrants caution in interpretation. Including all of these simultaneously does not eliminate the significance of the corruption variable. As mentioned above, these variables are, to varying degrees, potentially endogenous. However, the fact that even huge effects such as that of physical health do not destroy the significance of the experience of corruption index reinforces the confidence we can have in the robustness of the result.

6 Disaggregated Corruption Results

So far, excepting those instances where a dummy variable has been used, the implicit restriction has been that corruption has the same relationship to anxiety no matter what the situation and that each level of frequency matters equally. This is obviously a questionable, even unrealistic, assumption. This section relaxes these restrictions and examines whether being asked for a bribe in some arenas is more negatively associated with anxiety than in others and whether all levels of intensity matter to the same extent. As each round has a unique bribery question, and given that the results have been shown to be consistent across the pooled and un-pooled data, this exercise is undertaken on each round of the data separately. One caveat with the second part of this analysis is that there is no guarantee that people have a common scale in their minds when answering questions such as these. Tables 8 and 9 show the results.

<Table 8: Disaggregated Corruption Results: Round 2 Data>

<Table 9: Disaggregated Corruption Results: Round 3 Data>

Each row represents a separate specification. Row 1 of Table 8 says that having to pay a bribe for a document or permit and to avoid a problem with the police are both associated with a higher likelihood of reporting anxiety. The marginal effects are rather large with an increase in either associated with an

increase in the probability of being in the bad category by 2%. The corresponding row in Table 9 tells a similar story. The same two are significant in the Round 3 data, as is having to pay a bribe for medicine or medical attention. These categories are arguably the ones that best represent what people expect a state to provide for them; bureaucracy, protection and care. One potential conclusion is that a sense of entitlement to the service is required for a demand for a bribe to have a damaging effect in terms of anxiety. The second row of each table examines the issue of intensity. Once again the same corruption categories emerge as significant (with the exception of the 'often' level for school placements which is significant at 5% in Table 8). The general pattern suggests that people need to experience corruption more than once or twice for the relationship to become evident.

7 Conclusions

This paper has presented evidence that in Sub-Saharan Africa there is a strong link between individuals' experience of corruption and their self-reported anxiety. This finding is robust to changes in specification, different estimation methodologies and across different subsamples of the data. Corruption is a major problem in this part of the world and there are many ideas on how to solve it and programs that use up resources in an attempt to do so. Therefore, this work can be justified on the grounds that it adds to our understanding of exactly how people experience corruption.

That said, two results in particular may be of interest to policymakers. The first policy relevant finding was that depending on how one measures well-being, corruption may be found to have serious relationships with the well-being of the people who experience it or to have no relationship. This has implications for how an organisation should design their evaluations and indeed how their resources should be targeted to best improve well-being. The second is that the evidence suggests that the negative relationship only becomes apparent when the victim is exposed more than once or twice. If this is the case then imperfect anti-corruption interventions could stop people paying this well-being cost of corruption.

It is important to note that I have made no claims regarding causality though two problems in this regard have been addressed. Firstly, I used a dummy variable for experience of corruption as one can imagine that those suffering from anxiety will be biased towards stating that they experience corruption "always", for example, relative to those who are not. Secondly, it was shown that the relationship is not driven by people who need the services being more anxious to begin with. However, there remains the possibility that more anxious people are more likely to pay a bribe or to report having had to do so. This paper is thus careful to avoid making any causal claims. It is hoped that this paper will lead to and motivate further work on this important topic. Experiments both in laboratory settings and in the field can be readily envisioned that would allow us to make claims regarding causality. This paper, even with this limitation, presents some evidence that there is a previously undocumented cost to corruption and thus adds to the case for anti-corruption policies and interventions.

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Table 2: Main Results: Pooled Data

Dependent Variable:	Anxiety[a]		Bad Living Conditions[b]	
	1	2	3	4
Age Category: (Relative to 18-24)				
25-44	0.046**	0.046**	0.065**	0.065**
	(0.007)	(0.007)	(0.008)	(0.008)
45-64	0.109**	0.110**	0.098**	0.099**
	(0.011)	(0.011)	(0.010)	(0.010)
65+	0.208**	0.210**	0.109**	0.109**
	(0.015)	(0.015)	(0.013)	(0.013)
Female	0.391**	0.040**	-0.016**	-0.017**
	(0.005)	(0.005)	(0.006)	(0.006)
Urban	-0.003	-0.003	-0.006	-0.006
	(0.009)	(0.009)	(0.010)	(0.010)
Unemployed	-0.008	-0.008	0.065**	0.065**
	(0.008)	(0.008)	(0.008)	(0.008)
Education: (Relative to Informal\Incomplete Primary)				
Complete Primary\Some Secondary	-0.040**	-0.040**	-0.038**	-0.038**
	(0.007)	(0.007)	(0.010)	(0.010)
Complete Secondary	-0.058**	-0.058**	-0.078**	-0.078**
	(0.010)	(0.010)	(0.014)	(0.014)
Post-Secondary Qualification\Some University	-0.075**	-0.075**	-0.150**	-0.149**
	(0.011)	(0.011)	(0.014)	(0.014)
University Complete\Postgraduate	-0.080**	-0.078**	-0.209**	-0.208**
	(0.018)	(0.018)	(0.023)	(0.023)
Poverty Index (0-20 Scale)	0.014**	0.014**	0.029**	0.029**
	(0.001)	(0.001)	(0.001)	(0.001)
Experience of Crime Index (0-8 Scale)	0.023**	0.024**	0.002	0.002
	(0.003)	(0.003)	(0.004)	(0.004)
Experience of Corruption Index (0-12 Scale)	0.014**		0.004	
	(0.002)		(0.002)	
Experience of Corruption Dummy		0.53**		0.009
		(0.009)		(0.009)
Country Dummies	YES	YES	YES	YES
Year Dummies	YES	YES	YES	YES
Observations	43901	43901	44115	44115
Pseudo R^2	0.069	0.069	0.138	0.138
Predicted Probability	0.297	0.297	0.480	0.498
Observed Probability	0.310	0.310	0.480	0.480

Notes: Probit marginal effects reported. The corresponding standard errors are clustered by country and region and reported in parentheses. * and ** indicates significance at the 5% and 1% levels respectively.

a The dependent variable takes a value of 1 if respondent answers 'always' or 'many times' to the question 'in the last month, how much of the time have you been so worried or anxious that you have felt tired, worn out, or exhausted?' and 0 if the answer was 'never' or 'just once or twice.'

b The dependent variable takes the value of 1 if respondent answers 'very bad' or 'fairly bad' to the question in general, how would you describe your own present living conditions?' and 0 if the answer was 'neither good nor bad', 'fairly good' or 'very good.'

Table 3: Main Results: Round 2 Data

Dependent Variable: Anxiety				
	1	2	3	4
Age Category: (Relative to 18-24)				
25-44	0.066**	0.058**	0.058**	0.056**
	(0.010)	(0.009)	(0.009)	(0.009)
45-64	0.141**	0.125**	0.126**	0.122**
	(0.015)	(0.015)	(0.015)	(0.015)
65+	0.263**	0.250**	0.252**	0.255**
	(0.024)	(0.024)	(0.024)	(0.024)
Female	0.034**	0.037**	0.036**	0.032**
	(0.008)	(0.008)	(0.008)	(0.008)
Urban	0.000	0.026*	0.0267*	0.028*
	(0.014)	(0.013)	(0.013)	(0.013)
Unemployed	-0.017	-0.023*	-0.024*	-0.024*
	(0.0130)	(0.011)	(0.011)	(0.012)
Education: (Relative to Informal\Incomplete Primary)				
Complete Primary\Some Secondary	-0.043**	-0.036**	-0.035**	-0.035**
	(0.011)	(0.010)	(0.010)	(0.010)
Complete Secondary	-0.056**	-0.037**	-0.036**	-0.037**
	(0.012)	(0.013)	(0.013)	(0.013)
Post-Secondary Qualification\Some University	-0.088**	-0.067**	-0.065**	-0.065**
	(0.016)	(0.017)	(0.017)	(0.018)
University Complete\Postgraduate	-0.087**	-0.069*	-0.065*	-0.070*
	(0.027)	(0.028)	(0.028)	(0.028)
Forth to Seventh Income Decile	-0.032**			
	(0.010)			
Eight to Tenth Income Decile	-0.060**			
	(0.019)			
Poverty Index (0-24 Scale)		0.013**	0.013**	0.012**
		(0.001)	(0.001)	(0.001)
Experience of Crime Index (0-8 Scale)	0.035**	0.028**	0.029**	0.027**
	(0.004)	(0.004)	(0.004)	(0.004)
Experience of Corruption Index (0-15 Scale)	0.018**	0.015**		0.014**
	(0.003)	(0.003)		(0.003)
Experience of Corruption Dummy			0.043**	
			(0.012)	
Time Spent Caring for Own Children				0.002
				(0.003)
Time Spent Caring for Orphans				0.003
				(0.005)
Time Spent Caring Sick in Household				0.018**
				(0.006)
Country Dummies	YES	YES	YES	YES
Observations	17844	20278	20278	19557
Pseudo R^2	0.074	0.085	0.084	0.089
Predicted Probability	0.303	0.298	0.298	0.298
Observed Probability	0.316	0.313	0.313	0.314

Notes: Probit marginal effects reported. The corresponding standard errors are clustered by country and region and reported in parentheses * and ** indicates significance at the 5% and 1% levels respectively. The dependent variable takes a value of 1 if respondent answers 'always' or 'many times' to the question 'in the last month, how much of the time have you been so worried or anxious that you have felt tired, worn out, or exhausted?' and 0 if the answer was 'never' or 'just once or twice.'

Table 4: Is There Anxiety Associated With Needing The Services?

Dependent Variable: Anxiety							
	1	2	3	4	5	6	7
Experience of Corruption Index		0.012**	0.013**	0.012**	0.012**	0.012**	0.011**
(0-15 Scale)		(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Dummy For No Experience of Needing:							
A Document or Permit	0.029*	0.034*	0.000				
	(0.015)	(0.014)	(0.015)				
A School Placement	-0.022	-0.022		-0.020			
	(0.014)	(0.013)		(0.015)			
A Household Service	0.023	0.022			-0.005		
	(0.016)	(0.016)			(0.013)		
To Avoid a Problem with Police	-0.028	-0.024				-0.020	
	(0.020)	(0.020)				(0.016)	
Medicine or Medical Attention	-0.039	-0.035					-0.030
	(0.023)	(0.023)					(0.019)
Country Dummies	YES	YES	YES	YES	YES	YES	YES
Standard Controls	YES	YES	YES	YES	YES	YES	YES
Observations	22889	22889	22889	22889	22889	22889	22889
Pseudo R^2	0.069	0.071	0.070	0.070	0.070	0.070	0.071
Predicted Probability	0.293	0.292	0.293	0.293	0.293	0.293	0.292
Observed Probability	0.307	0.307	0.307	0.307	0.307	0.307	0.307

Notes: Probit marginal effects reported. All specifications include the controls from Column 1 of Table 5. The corresponding standard errors are clustered by country and region and reported in parentheses. * and ** indicates significance at the 5% and 1% levels respectively. The dependent variable takes a value of 1 if respondent answers 'always' or 'many times' to the question 'in the last month, how much of the time have you been so worried or anxious that you have felt tired, worn out, or exhausted?' and 0 if the answer was 'never' or 'just once or twice.'

Table 5: Main Results: Round 3 Data

Dependent Variable: Anxiety				
	1	2	3	4
Age Category: (Relative to 18-24)				
25-44	0.040**	0.041**	0.040**	0.043**
	(0.008)	(0.010)	(0.008)	(0.009)
45-64	0.098**	0.096**	0.100**	0.104**
	(0.014)	(0.017)	(0.014)	(0.014)
65+	0.187**	0.194**	0.189**	0.193**
	(0.020)	(0.026)	(0.020)	(0.202)
Female	0.043**	0.040**	0.043**	0.043**
	(0.007)	(0.009)	(0.007)	(0.007)
Urban	-0.022	-0.028*	-0.022	-0.019
	(0.012)	(0.014)	(0.012)	(0.012)
Unemployed	0.006	0.013	0.007	0.005
	(0.010)	(0.013)	(0.010)	(0.010)
Education: (Relative to Informal\Incomplete Primary)				
Complete Primary\Some Secondary	-0.045**	-0.040**	-0.046**	-0.041**
	(0.010)	(0.013)	(0.009)	(0.010)
Complete Secondary	-0.079**	-0.092**	-0.079**	-0.072**
	(0.013)	(0.014)	(0.012)	(0.013)
Post-Secondary Qualification\Some University	-0.084**	-0.074**	-0.084**	-0.074**
	(0.016)	(0.018)	(0.016)	(0.016)
University Complete\Postgraduate	-0.095**	-0.109**	-0.094**	-0.085**
	(0.021)	(0.025)	(0.021)	(0.020)
Poverty Index (0-20 Scale)	0.014**	0.015**	0.014**	0.013**
	(0.002)	(0.002)	(0.002)	(0.002)
Experience of Crime Index (0-8 Scale)	0.019**	0.020**	0.019**	0.019**
	(0.003)	(0.004)	(0.004)	(0.003)
Experience of Corruption Index (0-15 Scale)	0.013**			0.012**
	(0.002)			(0.003)
Modified Experience of Corruption Index (0-15 Scale)		0.007**		
(Dropping those without Experience of all Situations in Past Year)		(0.003)		
Experience of Corruption Dummy			0.062**	
			(0.012)	
Election Incentives Offered				0.020
				(0.022)
No Children				0.003
				(0.013)
Owns Television				-0.020
				(0.010)
Owns Radio				-0.014
				(0.010)
Country Dummies	YES	YES	YES	YES
Observations	22889	13295	22889	22593
Pseudo R^2	0.070	0.074	0.070	0.071
Predicted Probability	0.293	0.284	0.292	0.293
Observed Probability	0.307	0.299	0.307	0.307

Notes: Probit marginal effects reported. The corresponding standard errors are clustered by country and region and reported in parentheses. * and ** indicates significance at the 5% and 1% levels respectively. The dependent variable takes a value of 1 if respondent answers 'always' or 'many times' to the question 'in the last month, how much of the time have you been so worried or anxious that you have felt tired, worn out, or exhausted?' and 0 if the answer was 'never' or 'just once or twice.'

Table 6: Endogenous Variables: Round 2 Data

Dependent Variable: Anxiety								
	1	2	3	4	5	6	7	8
Experience of Corruption Index	0.011**	0.015**	0.015**	0.015**	0.015**	0.014**	0.013**	0.009**
(0-15 Scale)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Poor Physical Health Dummy	0.466**							0.459**
(Self-Reported)	(0.018)							(0.018)
Reports Worse or Much Worse Living		0.020*						0.008
Standards than One Year Ago		(0.009)						(0.010)
Reports Worse or Much Worse Living			0.025*					0.014
Standards than Others			(0.010)					(0.010)
Fear of Crime in the Home Index				0.011*				0.011*
(0-3) Scale				(0.005)				(0.005)
Active Member of a Religious Group					0.019			0.022
					(0.013)			(0.013)
Perception of Worsening of Corruption						0.008		0.008
Problem						(0.012)		(0.013)
Violent Conflicts in Family							0.034*	0.020
							(0.013)	(0.012)
Violent Conflicts in Community							0.009	0.003
							(0.010)	(0.010)
Violent Conflicts Between Different							0.038**	0.033**
Groups in the Country							(0.012)	(0.012)
Country Dummies	YES	YES	YES	YES	YES	YES	YES	YES
Standard Controls	YES	YES	YES	YES	YES	YES	YES	YES
Observations	20237	20060	19360	20259	20246	18492	19062	16645
Pseudo R^2	0.197	0.086	0.084	0.086	0.086	0.085	0.087	0.193
Predicted Probability	0.287	0.298	0.297	0.298	0.298	0.299	0.294	0.286
Observed Probability	0.313	0.313	0.312	0.313	0.313	0.314	0.310	0.312

Notes: Probit marginal effects reported. All specifications include the controls from Column 2 of Table 3. The corresponding standard errors are clustered by country and region and reported in parentheses. * and ** indicates significance at the 5% and 1% levels respectively. The dependent variable takes a value of 1 if respondent answers 'always' or 'many times' to the question 'In the last month, how much of the time have you been so worried or anxious that you have felt tired, worn out, or exhausted?' and 0 if the answer was 'never' or 'just once or twice.'

Table 7: Endogenous Variables: Round 3 Data

Dependent Variable: Anxiety								
	1	2	3	4	5	6	7	8
Experience of Corruption Index	0.008**	0.013**	0.013**	0.012**	0.013**	0.012**	0.012**	0.008**
(0-15 Scale)	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.003)	(0.003)	(0.002)
Poor Physical Health Dummy	0.504**							0.490**
(Self-Reported)	(0.017)							(0.018)
Reports Worse or Much Worse Living		0.034**						0.016
Standards than One Year Ago		(0.011)						(0.011)
Reports Worse or Much Worse Living			0.041**					0.029*
Standards than Others			(0.010)					(0.012)
Fear of Crime in the Home Index				0.018**				0.016**
(0-3) Scale				(0.005)				(0.005)
Active Member of a Religious Group					-0.003			-0.006
					(0.011)			(0.011)
Reports Most People Can be Trusted						-0.004		-0.006
						(0.013)		(0.015)
Reports Ethnic Group is Often or							0.043**	0.040**
Always Treated Unfairly							(0.014)	(0.013)
Country Dummies	YES	YES	YES	YES	YES	YES	YES	YES
Standard Controls	YES	YES	YES	YES	YES	YES	YES	YES
Observations	22861	22720	22027	22855	22843	22454	19979	18888
Pseudo R^2	0.204	0.071	0.071	0.072	0.070	0.071	0.068	0.197
Predicted Probability	0.280	0.292	0.291	0.292	0.293	0.291	0.297	0.281
Observed Probability	0.307	0.307	0.306	0.307	0.307	0.306	0.311	0.308

Notes: Probit marginal effects reported. All specifications include the controls from Column 1 of Table 5. The corresponding standard errors are clustered by country and region and reported in parentheses. * and ** indicates significance at the 5% and 1% levels respectively. The dependent variable takes a value of 1 if respondent answers 'always' or 'many times' to the question 'In the last month, how much of the time have you been so worried or anxious that you have felt tired, worn out, or exhausted?' and 0 if the answer was 'never' or 'just once or twice.'

Table 8: Disaggregated Corruption Results: Round 2 Data

Dependent Variable: Anxiety					
	Bribe for Document or Permit	Bribe for School Placement	Bribe for Household Service	Bribe to Avoid Problem with Police	Bribe for Anything Else
1) Separate Category Indices (0-3 Scale)	0.021*	0.016	-0.002	0.019*	0.017
	(0.008)	(0.009)	(0.010)	(0.009)	(0.013)
	Pseudo R^2 0.086	Predicted Probability 0.298		Observed Probability 0.313	
2) Separate Category Frequency Dummies					
(Relative to Never)					
Once or Twice	-0.017	0.011	0.007	0.003	0.029
	(0.015)	(0.021)	(0.024)	(0.018)	(0.031)
A Few Times	0.053*	0.013	0.016	0.068**	0.066
	(0.027)	(0.025)	(0.026)	(0.027)	(0.050)
Often	0.089**	0.081*	-0.031	0.050	0.007
	(0.032)	(0.037)	(0.034)	(0.027)	(0.059)
	Pseudo R^2 0.086	Predicted Probability 0.298		Observed Probability 0.313	

Notes: Probit marginal effects reported for corruption variables only. Both specifications include the controls from Column 2 of Table 3. The corresponding standard errors are clustered by country and region and reported in parentheses. * and ** indicates significance at the 5% and 1% levels respectively. N = 20278. The dependent variable takes a value of 1 if respondent answers 'always' or 'many times' to the question 'in the last month, how much of the time have you been so worried or anxious that you have felt tired, worn out, or exhausted?' and 0 if the answer was 'never' or 'just once or twice.'

Table 9: Disaggregated Corruption Results: Round 3 Data

Dependent Variable: Anxiety					
	Bribe for Document or Permit	Bribe for School Placement	Bribe for Household Service	Bribe to Avoid Problem with Police	Bribe for Medicine or Medical Attention
1) Separate Category Indices (0-3 Scale)	0.013*	0.006	-0.008	0.016*	0.030**
	(0.006)	(0.010)	(0.009)	(0.007)	(0.007)
	Pseudo R^2 0.071	Predicted Probability 0.293		Observed Probability 0.307	
2) Separate Category Frequency Dummies					
(Relative to Never)					
Once or Twice	-0.008	0.017	-0.007	0.020	0.027
	(0.014)	(0.018)	(0.020)	(0.017)	(0.017)
A Few Times	0.021	0.024	-0.011	0.027	0.075**
	(0.017)	(0.027)	(0.025)	(0.021)	(0.019)
Often	0.065*	-0.013	-0.030	0.052*	0.079**
	(0.028)	(0.037)	(0.032)	(0.026)	(0.025)
	Pseudo R^2 0.071	Predicted Probability 0.293		Observed Probability 0.307	

Notes: Probit marginal effects reported for corruption variables only. Both specifications include the controls from Column 1 of Table 5. The corresponding standard errors are clustered by country and region and reported in parentheses. * and ** indicates significance at the 5% and 1% levels respectively. N = 22889. The dependent variable takes a value of 1 if respondent answers 'always' or 'many times' to the question 'in the last month, how much of the time have you been so worried or anxious that you have felt tired, worn out, or exhausted?' and 0 if the answer was 'never' or 'just once or twice.'

Figure 1: Anxiety in the Afrobarometer Countries

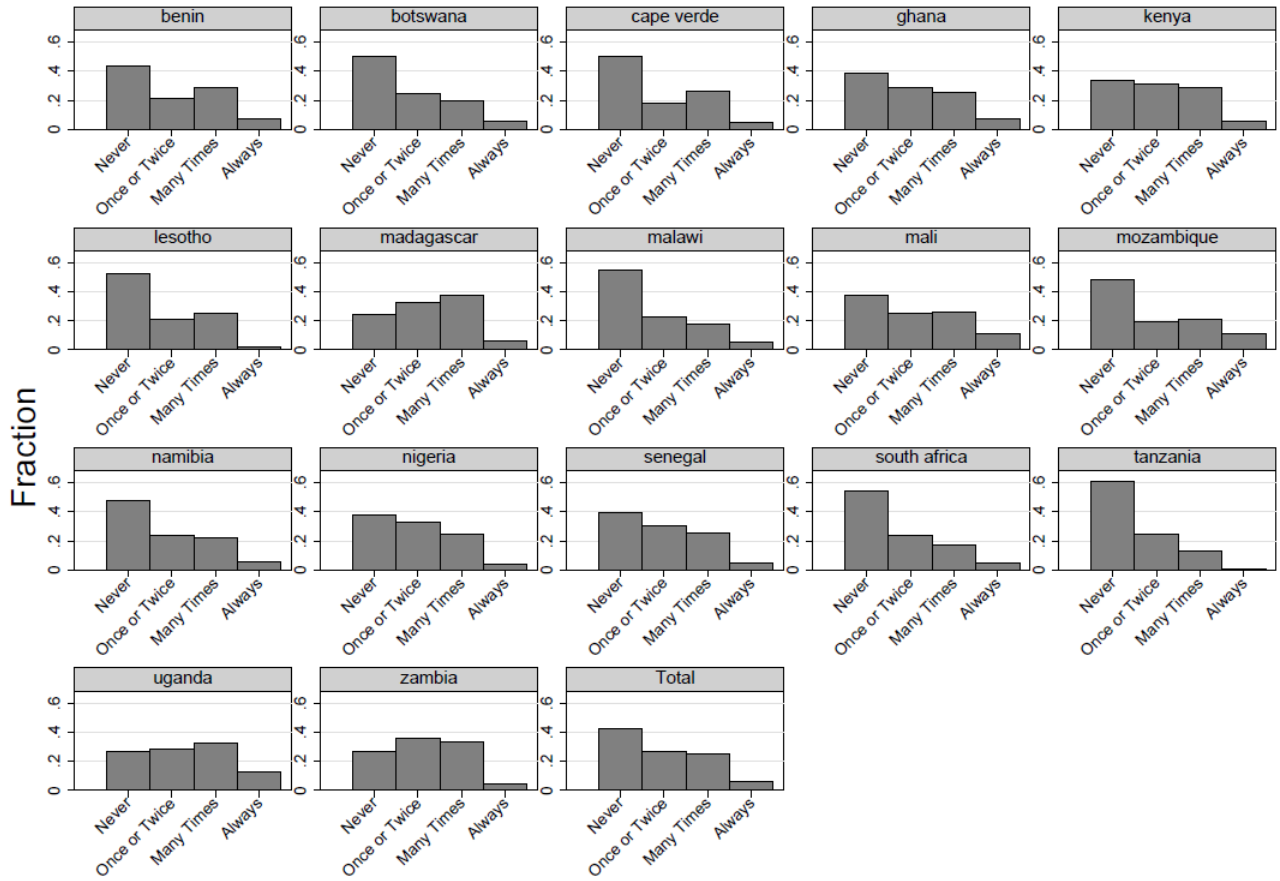

Figure 2: Experience of Corruption in the Afrobarometer Countries

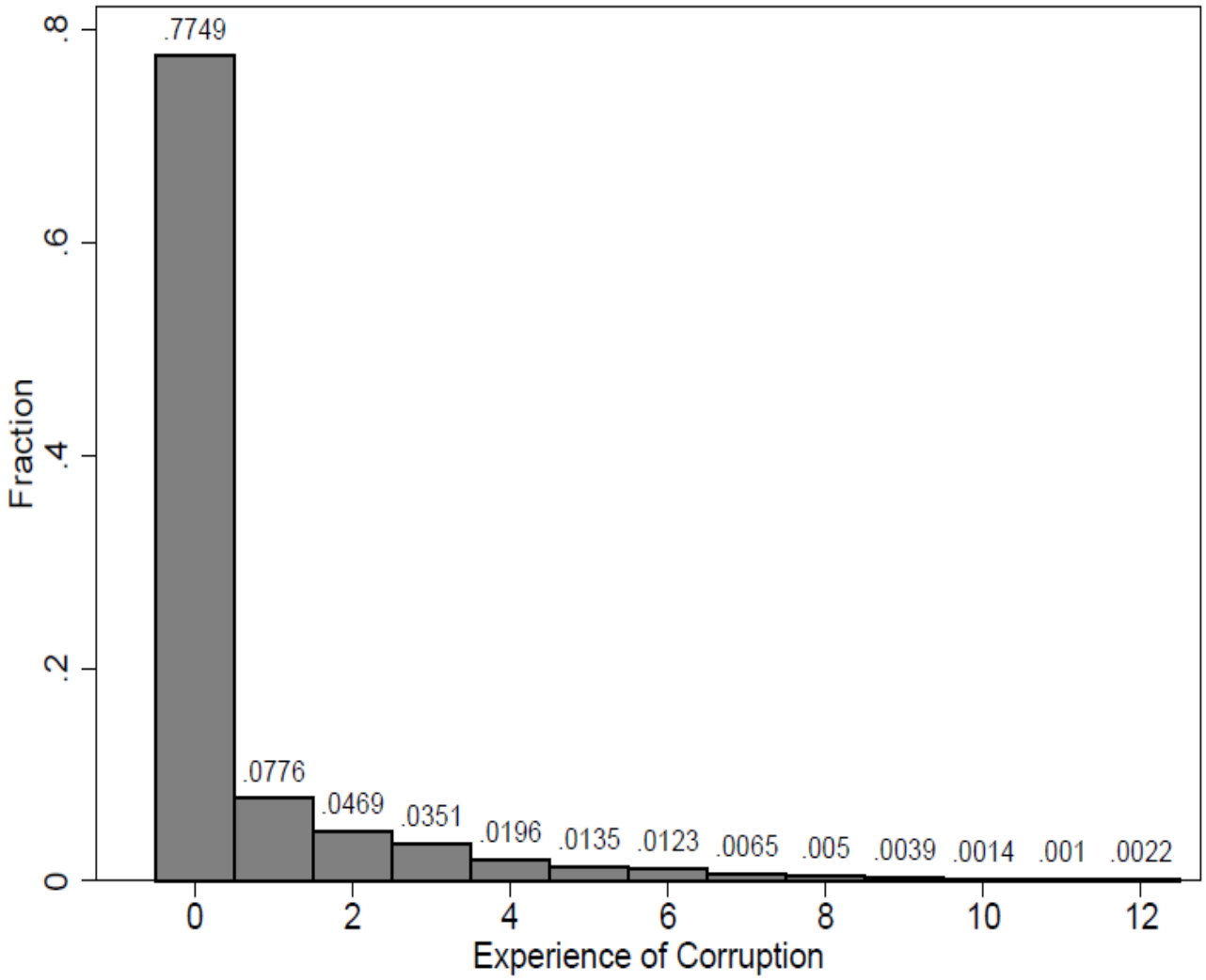

Figure 3: Country Averages of Anxiety and Experience of Corrupt