

# Social Capital and the Willingness to pay for environmental Goods in African Countries

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## **ABSTRACT**

There are several studies investigating the willingness to pay (wtp) for environmental goods. Most of these studies highlight the fact that the relationship between the WTP for environmental good and the GDP per capita is an inverted U shaped one. In other words, the low income countries, specifically Africa countries exhibit a low or weak WTP. However, these studies have neglected the influence of social capital. In fact social capital can positively affect the WTP through two main channels, namely information effect and peer effect. Thus, even in low income countries, the WTP for environmental goods can be very high. Thus, the contribution of this paper is twofold. First, using five waves of the World Value Survey (1981-2007) and mobilizing ordered Logit specifications, we explore the effects of social capital on the WTP for environmental preservation in thirteen African countries. Second, unlike most studies in the social capital literature, we deal with the plausible endogeneity of social capital using instrumental variable approach. Then after factoring in the endogeneity of social capital, results suggest that social capital positively and significantly affects the WTP for environment preservation in African countries. This suggests that government should promote civil associations enable to convey reliable and useful information about environment issues and stimulate peer effects among their members.

**Key Words:** Environmental goods, Willingness to pay, Social Capital

**JEL Classification:** A13, C25, Q01

## **I.Introduction**

The decades-old debate over the relationship between economic development and environmental conditions has assumed renewed urgency in the wake of growing concern about global warming. (Roberts and Grimes, 1997).

According to Roberts and Grimes (1997), a central question in the debate has been whether effluents produced by industrial processes increase monotonically with economic development, or if countries reach a turning point” at which emissions begin to drop because they can afford more efficient infrastructure and more stringent pollution controls. Some studies have found such an inverted U-curve (also called Kuznet curve) in the relation between level of development and certain pollutants such as particulates, sulphur dioxide, toxic chemicals and a series of water pollutants (World Bank, 1992; Selden and Song, 1995; Stokey, 1998). In the same vein, Grossman and Krueger (1995) claimed that this turning point for several pollutants tended to occur before countries reach a gross domestic product of US\$8,000 per capita. In other words, in countries where the gross domestic product is below this threshold, environmental degradation increases with economic development. This is mainly the case for developing countries, especially African countries. For this regard, protecting environment has become a vital issue for the contemporary world.

In the richer countries, environmental awareness, and the necessity to incorporate ecological considerations in land management and the ability to subscribe to tenets of sustainable agriculture have contributed to national strategies for a rational use of biophysical resources. The poorer third world countries, on the other hand, are unable to embrace these ‘lofty’ ideals and continue on the road to reduced productivity and an inability to feed themselves (Udrescu and Man, 2010). One of a conventional wisdom as regard to this issue is that the emergence of environmental awareness depends of the level of development (Broad, 1994; Duroy, 2005). Specifically, low income country may exhibit a weak demand for environmental quality. Therefore, they are less likely to contribute in order to improve or to preserve environment quality

According to the previous statements, there is a wide range of studies devoted to environmental preferences. In this specific context, the willingness to pay for environmental good has been a controversial issue. In fact, environmental quality is most of the time perceived as a luxury good that becomes of concern only when basic needs have been met (Dasgupta,

2002). In other words, the willingness to pay for environmental goods<sup>1</sup> is negatively associated with the level of GDP (Duroy, 2005). However, some studies highlighted the fact that in some specific case, poor people become environmental protectors, notably when there is a collective management of natural resources (Broad, 1994). As far as collective action is of concern, there are several studies showing that where social capital is well developed, groups with locally-developed rules and sanctions are able to make more of existing natural resources than individuals working alone or in competition (Ostrom, 1990; Westerman, Pretty and Ashby, 2005). Notwithstanding the recognized positive effect of social capital (through collective action) on the efficient management of natural resources, little is known about the role that social capital can play in improving the willingness to pay for environmental goods. Dealing with the relationship between social capital and the willingness to pay for environmental preservation is relevant for at least two reasons:

1) The issue of environmental preservation is nowadays a common concern for both developed and developing countries. However, environment quality is still perceived as a luxury good that becomes of concerns only when basic needs have been met (Duroy, 2005). In other words, low income countries such as African countries are less likely to exhibit a strong demand and WTP for environment quality. This paper takes the opposite way, showing that while accounting for social capital, African countries can exhibit a strong demand for environment quality and consequently a high WTP.

2) Despite a wide range of papers related to environment concern and an increasing body of literature on social capital there is some gap as regard to the relationship between social capital and the WTP for environmental preservation. One exception is Polyzou and al (2011) who addressed the effects of social capital on the WTP for drinking water improvement in the specific case of Bulgaria. However, as many studies devoted to environment, this study is country specific and cannot be easily generalized. Moreover, it is difficult to find contributions related to a country or a group of countries and considering an environmental damage perspective as a whole (Israel and Levinson, 2004). While the whole perspective has the disadvantage of an excessive simplification which can lead to a downward bias of environmental WTP, with a general perspective, embedding effects which are usually linked to specific environmental commodities can be avoided (Torgler and Garcia-valinas, 2005).

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<sup>1</sup> By environmental goods, we mean environmental preservation.

In this vein, the main objective of this paper is to provide an empirical evidence of a positive relationship between social capital as measured by generalized trust and the willingness to pay for environment goods in the specific case of thirteen African countries. Thus, the contribution of this paper is twofold. First, using five waves of the World Value Survey (1981-2007)<sup>2</sup> and mobilizing ordered Logit specifications, we explore the effects of social capital on the WTP for environmental preservation in thirteen African countries. Second, unlike most studies in the social capital literature, we deal with the plausible endogeneity of social capital using instrumental variable approach. In this line, the estimated slave exports from African countries between 1400 and 1900 are used as an instrument for social capital.<sup>3</sup> Then after factoring in the endogeneity of social capital, results suggest that social capital positively and significantly affects the WTP for environment preservation in African countries.

The remaining of the paper is as follow: Section II provides a brief review regarding the relationship between social capital and the willingness to pay for environment goods. Section III presents a simple description of WTP and social capital data. Section IV documents the correlations that exist in the data while section V turns to the issue of causality. Section VI concludes.

## **II. Theoretical Background**

Over the recent years, social capital has been successfully connected to a wide range of topics in economic development. Specifically, social capital has been connected to economic growth (Chou, 2006; Sabatini, 2009), health (Rostila, 2007), environment (Pretty, 2007; Polyzou and al, 2011).

Despite the immense amount of research on it, however, the definition of social capital has remained elusive (Durlauf and Fafchamp, 2004). According to Putnam and al (1993), social capital refers to features of social organization, such as trust, norms, and networks that can improve the efficiency of society. In the same line, Lin (2001) defines social capital as resources embedded in social networks, accessed and used by actors for actions. As regard to Durlauf and Fafchamps (2004), one can distinguish three main underlying ideas: (1) social capital generates positive externalities for members of a group; (2) these externalities are achieved through shared trust, norms, and values and their consequent effects on expectations and behavior; (3) shared

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<sup>2</sup> This period have been chosen due to data availability.

<sup>3</sup> This choice is made according to Nunn and Wantchekong (2009) who have shown that there is a significant correlation between Slave exports and trust. Trust can also be instrumented by ethno linguistic fraction. However, we were not able to test this instrument in this preliminary version.

trust, norms, and values arise from informal forms of organizations based on social networks and associations. Sometime, this variety of definitions gives rise to a wide range of measures.

Several components have been identified as indicators of social capital (Coleman, 1990; Putnam and al, 1993; Sabatini, 2009; Polyzou and al, 2011). Firstly, social trust concerning trust towards people in general (Uslaner and Conley, 2003). Secondly, institutional trust, referring to trust in institutions (Paxton, 1999). Thirdly, social networks and civic participation, relating to the involvement of individuals in formal and informal networks and also their interest for collective issues of their community (Putnam, 2000). Finally, compliance with social norms, hence the tendency of individuals to comply with formal or informal community rules aiming to the protection of the common good (van Oorschot et al., 2006).

Trust is considered as one of the most important component of social capital<sup>4</sup> with significant influence on norms and social network (Polyzou and al,2011). According to Fafchamps (2004), trust may be understood as an optimistic expectation or belief regarding other agents'behaviour. Trust could arise from repeated interpersonal interaction. In this case we talk about personalized trust. In some other case, trust arises from general knowledge about population agents, incentives they face and the upbringing they have received (Platteau a, b). In this latter case, one talks about generalized trust. The main difference between the two is that, for each pair of newly matched agents, the former takes time and effort to establish while the latter is instantaneous, and more cheaply (Durlauf and Fafchamps, 2004). In this vein, generalized trust generates large efficient gains than personalized trust.

Trust is an essential ingredient in fostering exchange and the delivery of public goods. In this latter case, trust helps setting up collective action. Trust is also necessary to resolve conflicts among competing interests and to reduce fears of free riding. The literature has identified three main channels through which social capital could improve the efficiency: Information sharing, Group identity and explicit coordination.

Information sharing arises during the process of socialization. Thus it is a by-product of social interaction. Because interacting with others is also consumption good, collecting information through socialization benefits from a kind of subsidy, relative to non-social forms of information collection (e.g., going to the library). In the specific case of environment goods, social capital helps sharing informations about environmental issues and could lead to an awareness vis à vis those issues and therefore increase the WTP for environment preservation.

According to Durlauf and Fafchamps (2004), social capital could also act through group identity and the modification of preferences. This effect arises because identification with a group or

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<sup>4</sup> As from now social capital refers to trust.

network affects individual preferences and choices. In this vein, social trust influences individuals' environmental preferences due to their perception that other members of their community will act in a similar manner aiming on the protection of the common good (Pretty, 2003). Similarly, individual WTP is influenced from the expectation of others people intention to contribute money (Wiser, 2007). In case of public goods, trust in institutions (e.g. the state) is important due to their involvement in environmental management. Thus, the tendency of individuals to trust these institutions is connected with the perception for the efficiency of environmental management (Kim, 2005; Beierle and Cayford, 2002). In WTP studies, trust in the actor providing or managing the good being valued determines the level of monetary valuation and acceptance of the hypothetical scenario (Krystallis and Chrysohoidis, 2005; Donahue and Miller, 2006).

Some beneficial effects of social capital on individual preferences also occur through coordination and leadership. As argued by Durlauf and Fafchamps (2004), in very informal groupings, leadership is likely to be essential to alter individual preferences and elicit voluntary contributions to the common good. This observation also has implications for policy. Good leaders may improve efficiency by using the levers of social capital, by fostering altruistic preferences and concern for the common good; favoring group identification; preaching good behavior and making free-riders feel guilty; encouraging mimicry of good behavior through role models and the manipulation of group symbols and representations (e.g., religion, ideology). According to Jones, (2010); Poyzou and al,( 2011), individual leadership and the propensity to coordinate a group can improve civic engagement and participation in collective activities. These structural elements turn to be highly correlated with the level of awareness for environmental issues and the tendency to participate in action for their resolution. Consequently, it may be assumed that citizens who are more interested in collective issues are also expected to be more willing to pay for environment goods.

Finally, Social capital as measured by trust may have an effect on the WTP for environment preservation through information sharing, peer effects and leadership and coordination.

### **3. Willingness to pay and Social Capital data**

This paper makes use of data drawn from the World Value Survey. Five waves have been merged over years 1981-2007. As African countries are of concern, thirteen countries has been selected (list of countries in Appendix), that is a sample of 39821 individuals.

As mentioned in the theoretical framework, social capital is empirically captured by a wide range of variables, starting from generalized trust to civic participation. In this paper, social capital is

measured by trust and specifically generalized trust. Two reasons are behind this choice. First, this measure is available in the survey. Second, as stated by Durlauf and Fafchamps (2004) generalized trust seems to lead to more efficient gains than interpersonal trust and is strongly correlated with other dimensions of social capital such as norms, social network and civic participation. The question asked to measure generalized trust is: Generally speaking, would you say that most people can be trusted or you can't be too careful when dealing with people? This question give rise to a binary variable described as follows:

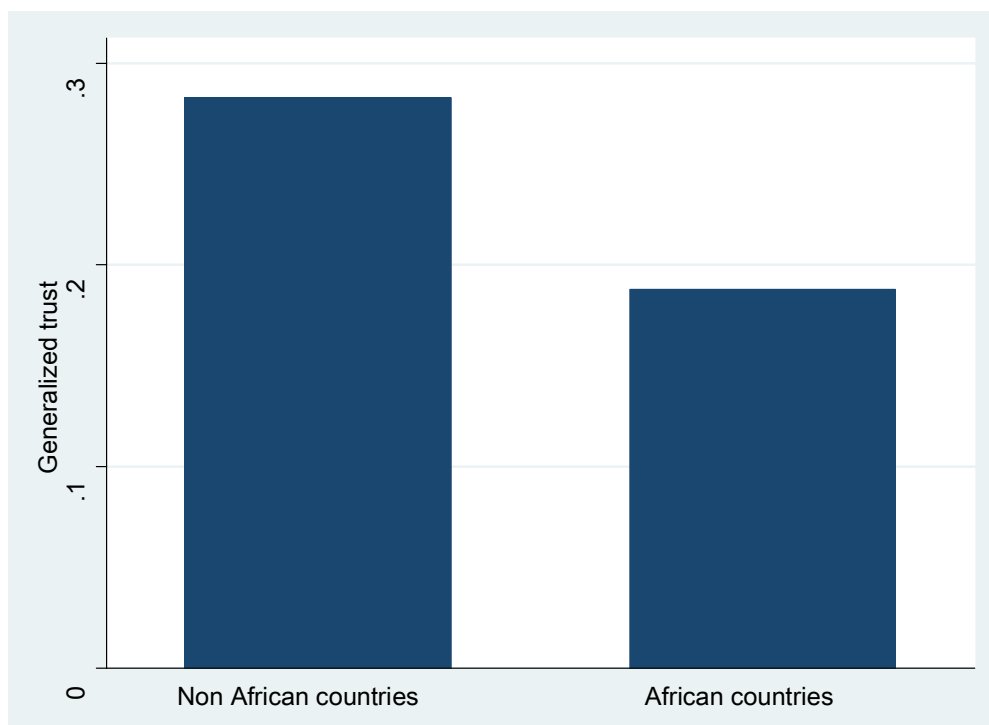
**Table I:** Measure of Social Capital, Generalized trust

	Frequencies	Percentage	Cumulative percentage
Most people can be trusted	7232	18.79	18.79
We can't be too careful	31247	81.21	100.00
Total	38479	100	

**Source:** Author's calculation

According to Table I in the thirteen African countries selected for this study, 81.21% of people consider that only few people can be trusted. As it is shown in Figure I, while comparing African and Non African countries, one may observe that in previous case, people seems to be less trustworthy.

**Figure I:** Mean of generalized trust comparing African versus non African countries



**Sources:** Author

This observation is quite surprising owing to the fact that there is a common believe on the so called “secular African solidarities”.

In the literature related to the WTP, the rule of thumb is using contingent valuation questions in order to assess whether a surveyed is able to give a part of his income or pay an additional amount to improve the provision or the supply of public good. Although this process has not been followed, in the World Value Survey, one can find such contingent valuation question. Then the question asked in order to measure the willingness to pay for environment preservation is: would you agree to give a part of your income for environment?<sup>5</sup> This question give rise to an ordered variable going from (1) strongly disagree to (4) strongly agree. Table II provides the descriptive statistics:

**Table II:** Willingness to pay for environment goods

	frequencies	Percentage	Cumulative percentage
Strongly agree	4351	20.88	20.88
Agree	8484	40.72	61.61
Disagree	5053	24.25	85.86
Strongly disagree	2946	14.14	100.00
Total	20834	100	

**Sources:** Author’s calculations

While most of responses are concentrated between “agree” and “disagree” (almost 65%), one may notice that the percentage of people who strongly agree to give a part of their income for the environment is higher than that of those who strongly disagree. Following this observation, one can try a simple comparison between African countries and non African countries according to the willingness to pay for environmental goods. Figure II help making this comparison.

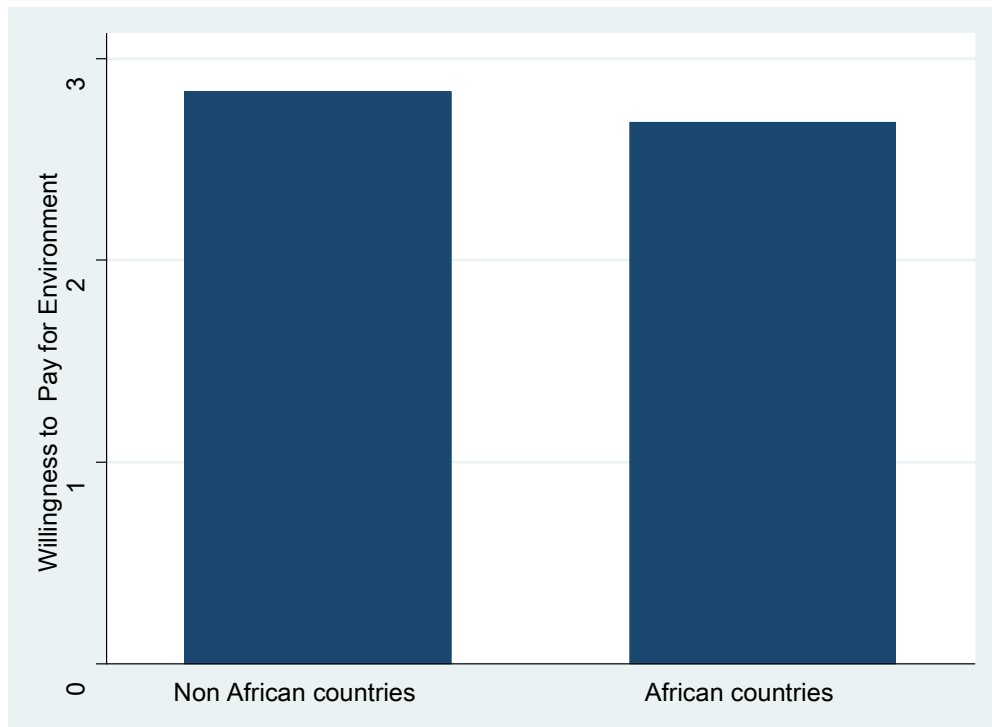
Figure II shows that African countries exhibit a weak WTP for environment as regard to the non African countries. As highlighted early in the paper, this observation follows a common believe according to which low income countries exhibit a weak WTP simply because of their low level of income. However, the difference between African countries and the rest of the world is very thin as we can see in Figure II.

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<sup>5</sup> There is another question that can be used to measure the WTP. The question is: Would you buy thing at a 20% higher price if it helped to protect environment. However, we were not able to use this variable, notably in instrumental variable regression, due to the fact that it does not allow for a full set of control variables in regressions.



**Figure II:** Mean of willingness to pay for environment, comparing African and non African countries



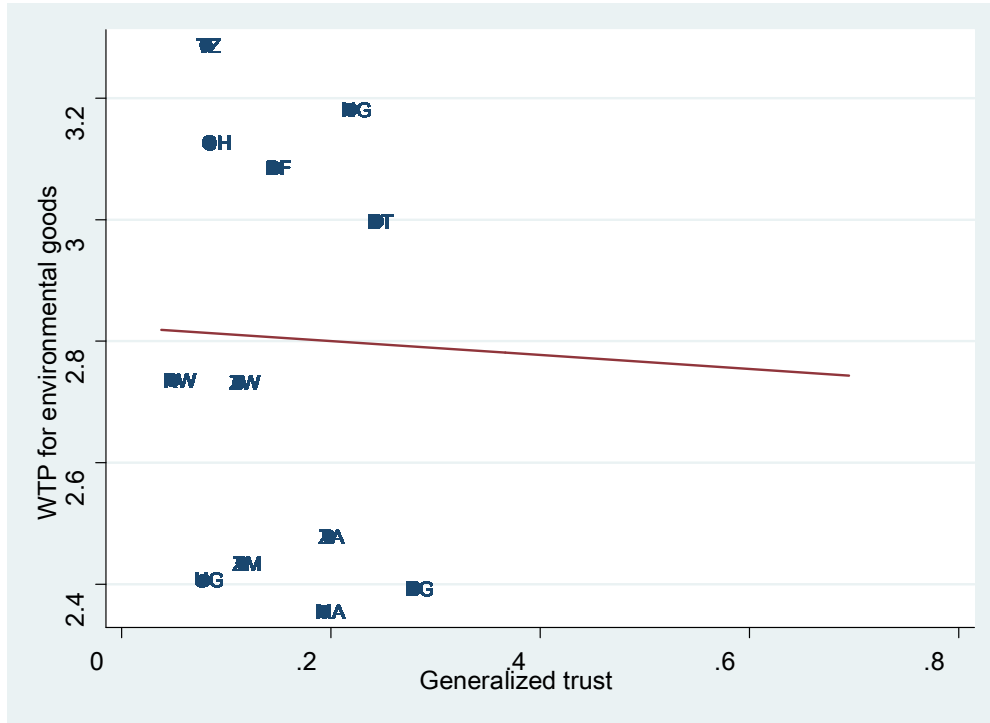
**Source:** Author

#### 4. Basic correlations: OLS Estimates

This section begins by examining a simple correlation between the WTP for environment and generalized trust. Further, we present simple OLS estimates of the effect of social capital on the willingness to pay for environmental goods.

Figure III shows the relationship between WTP in Y-axis and the generalized trust in X-axis. As shown in the Figure, few countries are beyond the trend line. In other words, most of them exhibit a weak WTP and a low level of generalized trust. These countries are Zambia, Zimbabwe, South Africa, Uganda, Morocco, Rwanda and Egypt. Beyond the trend line, we have countries that exhibit a low generalized trust and a high WTP for environmental goods. In this line, these countries are Tanzania, Burkina Faso, Ghana, Nigeria and Ethiopia.

**Figure III** : Relationship between WTP and Generalized Trust



Source: Author

This section further examines this relationship by controlling for other country characteristics that are also relevant in explaining the WTP for environment preservation. The baseline estimating equation is:

$$WTP_{ijt} = \beta_0 + \beta_1 Trust_{ijt} + X'_{ijt}\gamma + \varepsilon_{ijt} \quad (1)$$

Where  $WTP_{ijt}$  is the willingness to pay for environment for individual  $i$  in country  $j$  at time  $t$ , Trust is the generalized trust and  $X$  is a vector of control variables that are meant to capture differences in individual characteristics. Following Polyzou and al (2011), this vector includes individual age, sex, a dummy variable of education which takes 1 if the individual has a formal education and 0 otherwise, a variable of income level (1 for the high class income level and 0 otherwise), marital status (married), household size, a binary variable of religion (1 if the individual is a religious person and 0 otherwise), the importance of environment problems such as water pollution (1 if the problem is guessed important and 0 otherwise) and global warming (1 if the problem is guessed important and 0 otherwise), the size of town in order to control for population density which could affect the intensity of environment problems, union member (1 if

the individual is a union member and 0 otherwise), member of social and cultural association (1 if the individual is member and 0 otherwise), member of political party. Countries fixed effects and time dummies are also included in order to control for specific events occurred in a country and time effect related to the period where individuals have been surveyed. Countries fixed effects also control for country-specific factors that are potentially important determinants of trust, such as government regulation (see Aghion, Algan, and Cahuc, 2008a; Aghion, Algan, Cahuc, and Shleifer, 2008b). The descriptive statistics of data are given in Table III.

Table III: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Social Capital	246798	0.2682234	0.4430354	0	1
Willingness to pays	118467	2.809289	0.8591594	1	4
Age	224597	37.05158	12.78717	14	64
Age Squared	224597	1536.331	1013.906	196	4096
Sex	252941	0.4845003	0.4997607	0	1
Education	218696	0.9288647	0.2570513	0	1
Income class (high level versus low level)	52060	0.281425	0.4496988	0	1
Marital status-married	253001	0.5834048	0.4929955	0	1
Religion	231696	1.327489	0.5565489	0	1
Household size	236371	1.972848	1.817318	0	8
Importance of water and sanitation pollution	66012	0.6665455	0.4714509	0	1
Importance of global warming	66603	0.6444304	0.4786891	0	1
Size of Town	159343	5.049754	2.523728	1	9
Log(Slave Exports)	34850	9.759053	2.960786	6.993015	14.51953
Member of association for education and cultural activities	56041	0.1195375	0.3244228	0	1
Union member	54759	0.1023941	0.3031687	0	1
Member of political party	55039	0.0813605	0.2733904	0	1

**Source:** Author

Ordered Logit estimates of equation (1) are reported in Table IV. The first column reports estimates of (1) with the size of town, the importance of Water pollution and global warming included in the regression. Unfortunately, due to data availability these controls have not been introduced in other specifications.

The results suggest that social capital as measured by generalized trust positively and significantly influences the WTP for environment preservation. Specifically, relatively to the lack of generalized trust, in countries where people think that most people can be trusted, the WTP for environment increases by 0.02 point in average<sup>6</sup>.

<sup>6</sup> See the marginal effects after Ordered Logit in Appendix

**Table IV** :Relationship between Social Capital and the Willingness to Pay for environment goods

Dependent Variable	Willingness to pay for environment goods				
	(1)	(2)	(3)	(4)	(5)
<b>Social Capital</b>	<b>0.147**</b>	<b>0.223**</b>	<b>0.221**</b>	<b>0.222**</b>	<b>0.225**</b>
	<b>(0.0659)</b>	<b>(0.0905)</b>	<b>(0.0905)</b>	<b>(0.0906)</b>	<b>(0.0903)</b>
Age	-0.00995	-0.0417**	-0.0418**	-0.0430***	-0.0452***
	(0.0113)	(0.0162)	(0.0162)	(0.0163)	(0.0162)
Age Squared	0.000139	0.000461**	0.000461**	0.000476**	0.000499**
	(0.000145)	(0.000202)	(0.000202)	(0.000203)	(0.000202)
Sex	0.0541	0.164***	0.161***	0.160***	0.165***
	(0.0400)	(0.0584)	(0.0587)	(0.0587)	(0.0585)
Education	0.410***	0.110	0.110	0.106	0.122
	(0.0565)	(0.158)	(0.158)	(0.158)	(0.160)
Marital status-married	0.197***	0.0998	0.100	0.0987	0.0971
	(0.0502)	(0.0686)	(0.0687)	(0.0686)	(0.0686)
Religion	-0.0926	-0.268***	-0.268***	-0.269***	-0.272***
	(0.0662)	(0.0832)	(0.0832)	(0.0831)	(0.0829)
Householdsize	-0.0281**	-0.0130	-0.0136	-0.0129	-0.0184
	(0.0141)	(0.0199)	(0.0199)	(0.0200)	(0.0198)
Income class (high level versus low level)		0.0263	0.0270	0.0263	0.0444
		(0.0635)	(0.0635)	(0.0635)	(0.0633)
Importance of water and sanitation pollution	0.101				
	(0.0653)				
Importance of global warming	0.316***				
	(0.0600)				
Size of Town	0.0395***				
	(0.0132)				
Member of association for education and cultural activities		0.319***	0.312***	0.302***	
		(0.0849)	(0.0851)	(0.0863)	
Member of political party			0.0646	0.0571	
			(0.0944)	(0.0949)	
Union member				0.0778	
				(0.0982)	
Country dummies	Yes	Yes	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes	Yes	Yes
Log Likelihood	10683.066	-5091.6285	-5091.3777	-5091.0523	-5099.4744
Prob>Chi2	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]
Observations	4,195	4,195	4,195	4,195	4,195

Notes: Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Columns (2) to (5) report Ordered Logit estimates of (1) when the income level, union membership, political party membership and cultural association membership are included in the regression. The results show that the positive effect of social capital remains significant.

## **V. Causality Issue: Instrumental variable estimates**

Although the Ordered Logit estimates reveal a positive and significant relationship between social capital and the WTP for environment, it remains unclear whether this effect is causal. In fact the willingness to pay can be correlated with unobservable heterogeneity that is also correlated with social capital. In this case, maximum likelihood estimates could be downward biased. Besides, generalized trust could have been measured with error. Thus we need a better identification strategy in order to assess the causal effect of social capital on the WTP.

For this purpose, we use slave exports between 1400 and 1900 as an instrument for social capital<sup>7</sup>. This choice is made following Nunn and Wantchekong (2009) who have shown that slave trade is a historical origin of mistrust within Africa. Specifically, they show that individuals whose ancestors were heavily raided during the slave trade today exhibit less trust in neighbors, relatives, and their local government.

The IV estimates are reported in Table V. The first column reports the estimates without controlling for water pollution while the second column includes only the variable measuring the importance of global warming. The third controls for both water pollution and global warming. The first stage estimates are reported in column (4). It shows that the coefficient associated to slave exports is significant. In the same vein the F-statistic (22.93) is sufficiently higher compared to the Stock and al (2002) rule of thumb of 10 and shows that our instrument is not weak. Moreover, the Cragg-Donald Wald F-test of the Stock and Yogo (2005) test of weak instrument confirm this result.

The IV estimates confirm the positive effect of social capital on the WTP for environment. The point estimates range from 0.85 to 1.04. This was expected as far as the measurement error which affects the variable of trust leads to a downward biased maximum likelihood estimates.

Overall the instrumental variable estimates confirm the positive relationship between generalized trust and the willingness to pay for environment preservation, shown by Ordered Logit estimates.

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<sup>7</sup> Slave exports are weighted by the size of labour force in each country in order to get a time-varying instrument.

Table V: Relationship between social capital and the Willingness to Pay : IV regressions results

Dependent Variable	(1)	(2)	(3)	(4)
	IV regression WTP	IV regression WTP	IV regression WTP	First Stage Social Capital
<b>Social Capital</b>	<b>1.041***</b> <b>(0.159)</b>	<b>0.872***</b> <b>(0.152)</b>	<b>0.858***</b> <b>(0.152)</b>	
<b>Log(Slave exports)</b>				<b>-0.0161***</b> <b>(0.00335)</b>
Age	-0.00233 (0.00579)	-0.00363 (0.00563)	-0.00308 (0.00564)	-0.00365 (0.00244)
Age Squared	2.84e-05 (7.45e-05)	4.52e-05 (7.25e-05)	3.78e-05 (7.27e-05)	4.20e-05 (3.15e-05)
Sex	0.0333 (0.0207)	0.0332 (0.0204)	0.0337* (0.0204)	-0.0155* (0.00891)
Education	0.300*** (0.0284)	0.308*** (0.0280)	0.305*** (0.0280)	-0.0605*** (0.0130)
Marital status-married	0.0976*** (0.0256)	0.0943*** (0.0251)	0.0898*** (0.0251)	-0.00470 (0.0114)
Religion	-0.0217 (0.0336)	-0.0269 (0.0330)	-0.0267 (0.0329)	0.00978 (0.0136)
household size	-0.0170** (0.00693)	-0.0162** (0.00680)	-0.0147** (0.00681)	0.00630* (0.00327)
Importance of water and sanitation pollution	0.216*** (0.0281)		0.110*** (0.0337)	0.00945 (0.0141)
Importance of global warming		0.230*** (0.0241)	0.179*** (0.0294)	0.00107 (0.0121)
Size of Town	-0.0352*** (0.00528)	-0.0359*** (0.00518)	-0.0348*** (0.00519)	0.00989*** (0.00222)
Time dummies	Yes	Yes	Yes	Yes
Prob>Chi2	[0.000]	[0.000]	[0.000]	
Instrument F-test stat				22.93
Stock and Yogo test (Cragg-Donald Wald F Stat				45.41
Observations	8848	8848	8848	8848

Notes: Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Stock-Yogo weak ID test critical values are 18.37 at 5% and 10.83 at 10%.

## VI. Conclusion

In most of studies devoted to environment issue, environment quality is perceived as a luxury good that becomes of concern only when basic needs have been met. Thus poor countries are less likely to exhibit a strong demand for environmental quality than developed ones.

This paper follows the opposite view, and aims at showing that there is a positive relationship between individual social capital and the WTP for environmental goods.

Using five waves of the World Value Survey (1981-2007) on thirteen African countries, this paper shows that poor countries can exhibit a strong demand for environment quality and therefore a high willingness to pay for environment preservation. Specifically, this paper argues that social capital as measured by generalized trust has a positive and significant effect on the willingness to pay for environment. This result remains after factoring in the endogeneity of social capital.

The obtained result occurs through two main channels, namely information effect and peer effect.

Although we have not been able to test the relevance of these channels, this paper has clear policy implications.<sup>8</sup> The above results suggest that the protection of whole environment cannot be achieved without the willing participation of local people. In this vein, government and non government organizations should invest in participatory processes to bring people together in order to deliberate on common problems, and form new groups or associations capable of developing practices of common benefit. Besides, governments should promote civil associations enable to convey reliable and useful information about environment issues and stimulate peer effects among their members. Finally this paper calls to the broad recognition of the fact that one cannot hope to protect environment without the involvement of local communities and without reinforcing the credibility of institution managing environmental good (States, NGO). Indeed trust in the actor managing environmental goods determines the level of monetary valuation of this good and consequently the willingness to pay.

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<sup>8</sup> Another point is also to compare North African States and Sub-Saharan African States

## Appendix

Table VI: Relationship between social capital and WTP

Dependent Variable	Marginal effects after ordered Logit
	Prob(WTP=outcome(4):strongly agree)
<b>Social Capital</b>	0.02** (0.0111)
Age	-0,001 (0.0017)
Age Squared	0.00002 (0.00002)
Sex	0.008 (0.006)
Education	0.06*** (0.007)
Marital status-married	0.03*** (0.007)
Religion	0.014 (0.010)
Householdsize	0.004** (0.002)
Importance of water and sanitation pollution	0.01 (0.009)
Importance of global warming	0.04*** (0.008)
Size of Town	0.006*** (0.002)
Observations	8,789

Table VII: Different waves of survey

Waves	Frequencies	Percentage	Cumulative percentage
1981-1984	1,596	4.01	4.01
1989-1993	3,737	9.38	13.39
1994-1999	4,931	12.38	25.78
1999-2004	14,743	37.02	62.80
2005-2007	14,814	37.20	100.00
Total	39,821	100.00	



Table VIII: Different waves of survey by country

Country	Code	Waves	Number of waves	Observations
Algeria	DZ	1999-2004	1	1282
Burkina Faso	BF	2005-2007	1	1534
Egypt	EG	1999-2004,2005-2007	2	3000,3051
Ethiopia	ET	2005-2007	1	1500
Ghana	GH	2005-2007	1	1534
Morocco	MA	1999-2004,2005-2007	2	2264, 1200
Nigeria	NG	1989-1993,1994-1999,1999-2004	3	1001,1996,2022
South Africa	ZA	1981-1984,1989-1993,1994-1999,1999-2004,2005-2007	5	1596, 2736, 2935, 3000, 2988
Rwanda	RW	2005-2007	1	1507
Tanzania	TZ	1999-2004	1	1171
Uganda	UG	1999-2004	1	1002
Zambia	ZM	2005-2007	1	1500
Zimbabwe	ZW	1999-2004	1	3000
		Total	39,821	100.00

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