Microeconomics of corruption based on behavioral economics: testing Monteverde's approach to Iberian countries

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Abstract: This paper explores the microeconomics of corruption using a behavioral economics approach and tests Monteverde's theoretical framework. Analyzing empirical data, the study investigates the determinants of corruption demand and corruption offer through ordered probit models. The results shed light on the factors influencing corruption dynamics. The findings support Monteverde's model, with significant associations found for independent variables. However, some variables deviate by displaying an opposite relationship with corruption demand and offer. Control variables also play a significant role. Females exhibit a lower offer of corruption, while higher education levels, such as a PhD, are associated with a reduced likelihood of offering corruption. These findings emphasize the need to consider multiple factors in combating corruption and call for tailored strategies. Further research is needed to deepen our understanding of the specific mechanisms connecting income, controls, punishment, and the offer of corruption, enabling evidence-based anti-corruption policies and interventions for more effective measures.

Keywords: Microeconomics, Corruption, Behavioral economics, Iberian countries

JEL codes: D73, D83, K42

Introduction

Corruption is a pervasive issue that poses significant challenges to governance, economic development, and social well-being across the globe. Several theories have been formulated across various disciplines to analyze and address the issue of corruption (McMullan, 1961). In this line, the microeconomics approach provides a valuable framework for understanding and analyzing corruption at the individual level. One key aspect of the microeconomics approach is the emphasis on the role of incentives in shaping corrupt behavior. Economic theories, such as agency theory and principal-agent models, explore how information asymmetry, limited enforcement, and weak accountability can create opportunities for corruption to flourish. Incentives framework also offers insights into the mechanisms through which corruption persists and suggests avenues for effective anti-corruption interventions (Rose-Ackerman & Palifka, 2016; Shleifer &, 1993; Mauro, 1995; Tanzi & Davoodi, 1997; Lambsdorff, 2002).

Moreover, incorporating behavioral economics into the study of corrupt behavior also provides a crucial perspective that complements the traditional microeconomic approach, since behavioral economics recognizes that human decision-making is influenced

by cognitive biases, social norms, emotions, and other psychological factors. Furthermore, behavioral economics sheds light on the role of social norms and social influence in corrupt behavior. Individuals are not isolated decision-makers but are influenced by the behavior and expectations of others. Behavioral economics explores how social norms shape corrupt behavior, how individuals conform to or deviate from these norms, and the dynamics of corruption in social networks (Banerjee & Mullainathan, 2010; Glaeser et al., 2000; Sutherland, 2018; Banuri & Eckel, 2012; Barr & Serra, 2010; Di Donato, 2017).

In this way, the European Union (EU) has recognized the detrimental effects of corruption on its institutions, economies, and societies. The European Commission, in collaboration with member states, has implemented anti-corruption measures to ensure the integrity of public administration, safeguard public funds, and promote ethical conduct in both the public and private sectors (European Commission, 2022). However, despite these efforts, corruption remains a persistent issue within the EU, particularly in Southern European countries, which are perceived to have higher levels of corruption. This underscores the need for further research to effectively tackle the problem.

This paper aims to investigate the economic factors, cognitive biases, and social influences that drive corrupt behavior within the Iberian context. By integrating behavioral economics concepts into the analysis, the study seeks to provide a comprehensive understanding of the underlying mechanisms and motivations behind corrupt behavior, offering insights for effective anti-corruption policies. The paper's structure comprises an introduction highlighting the significance of microeconomics approach to studying corruption in the Iberia, a theoretical framework considering the Monteverde's (2020) model, an empirical analysis and a discussion of the findings and implications for future research.

Theoretical Framework and Hypotheses

According to Monteverde (2020), his paper titled "Microeconomics of Corruption based on Behavioral Economics" explores a theoretical model that incorporates insights from behavioral economics to understand the microeconomic dynamics of corruption. The model presented in the paper provides a framework for analyzing corrupt behavior by considering individual decision-making processes, behavioral biases, social norms, and incentives.

The model recognizes that individuals' decisions regarding corrupt behavior are influenced by various cognitive and psychological factors. It considers concepts like bounded

rationality and prospect theory to understand how individuals assess risks, evaluate potential gains and losses, and make decisions in corrupt situations. Monteverde (2020) also emphasizes the role of behavioral biases in corrupt behavior, identifying specific biases, such as loss aversion, over trust, and the availability heuristic, that can influence individuals' likelihood and extent of engaging in corrupt practices. Besides, the model recognizes the impact of social norms on corrupt behavior. It explores how corruption can be influenced by the social context and the perceived norms within a society.

Finally, the model considers the multidimensional nature of incentives in corrupt behavior. It goes beyond the traditional assumption of individuals being solely motivated by financial gains and considers non-monetary incentives, such as power, prestige, and social recognition. The Monteverde's model integrates these key components to provide a holistic perspective on the microeconomics of corruption. By incorporating insights from behavioral economics, the model offers a more nuanced understanding of the underlying drivers and mechanisms of corrupt behavior.

Based on the second part of the Monteverde model, which focuses on the determinants of the demand for corruption and the determinants of the offer of corruption, the following hypotheses can be derived:

H1 – Income level, expectations, probability of committing acts of corruption, anti-corruption standards level, anti-corruption control level, level of punishment against corruption and incentives to commit acts of corruption have significant impact on determinants of the demand for corruption; and

H2 - Needs of privileges, income level, expectations, probability of committing acts of corruption, level of anti-corruption standards, anti-corruption control level, level of punishment against corruption and its effectiveness and incentives to commit acts of corruption have significant impact on determinants of the offer of corruption.

Methodology

To explore how Spaniards and Portuguese view corruption, as well as the similarities and differences in their perceptions and attitudes towards it, two distinct surveys were conducted. The Portuguese survey was part of the EPOCA project, overseen by ICS-

ULisboa and funded by FCT (PTDC/CPO-CPO/28316/2017). Meanwhile, the Spanish survey was managed by the University of Murcia with funding from AVAF.

In both countries, representative samples of the populations were chosen, employing data collection methods that adhered to high standards to ensure reliable and valid results. In Portugal, fieldwork occurred between December 2020 and April 2021, gathering 1,020 interviews from the mainland and the autonomous regions of the Azores and Madeira. These interviews were conducted in person, each lasting about thirty minutes. The sample was stratified by region and type of residence, ensuring representation of the Portuguese population in terms of gender, age, education level, region, and type of residence.

In Spain, the survey took place from September to October 2022, with 1,506 interviews collected, including 400 from the Valencian Community. These interviews were conducted over the phone, each lasting around twenty minutes. The sample was organized by autonomous community, gender, age, and type of residence, ensuring it was nationally representative, with specific representation for the Valencian Community.

Table 1 presents the connections between the relevant variables derived from the Surveys and the theoretical model proposed by Monteverde.

Table 1 - Determinants of the demand for corruption

Monteverde's model	**Expected signs**	**Surveys variables approach**
Demand for Corruption (D1)	NA	To what extent do you consider each of these situations to be a case of corruption or not: *A public employee speeded up some processes and received a bonus from the users she/he helped.*
Income level (I1)	+	Do you think the distribution of income is very fair, fair, neither fair nor unfair, unfair, or very unfair?
Expectations (I2)	-	Talking about corruption over the past year, would you say it has increased a lot, increased, neither increased nor decreased, decreased, or decreased a lot?
Probability of committing acts of corruption (I3)	+	Imagine that 100 people live in [country]. Out of these 100, how many would you say are corrupt?
Anti-corruption standards level (I4)	-	Tell me the degree of trust you have in a series of institutions, using a scale from 0 to 10, where 0 means you have 'no trust' in them and 10 means you have 'a lot of trust: Government

Anti-corruption control level (I5)	-	Tell me the degree of trust you have in a series of institutions, using a scale from 0 to 10, where 0 means you have 'no trust' in them and 10 means you have 'a lot of trust: Parliament
Level of punishment against corruption and its effectiveness (I6)	-	Tell me the degree of trust you have in a series of institutions, using a scale from 0 to 10, where 0 means you have 'no trust' in them and 10 means you have 'a lot of trust: Justice
Incentives to commit acts of corruption (I7)	+/-	Using a scale from 0 to 10, where 0 means you strongly disagree and 10 means you strongly agree, tell me to what extent you agree with: *If the outcome of an action is beneficial for the general population, it is not corruption*

Source: Created by authors based on the Surveys dataset and the theoretical model proposed by Monteverde.

In the table above, the left column represents the different aspects related to the demand for corruption specified by Monteverde (2020), while the right column lists the corresponding variables from the surveys dataset that are associated with each aspect. In the same way, Table 2 highlights the variables proposed by Monteverde in relation to the offer of corruption and their respective connections with the surveys database.

Table 2 - Determinants of the offer of corruption

Monteverde's model	**Expected signs**	**Surveys variables approach**
Offer of corruption (D2)	NA	To what extent do you consider each of these situations to be a case of corruption or not: *A prosecutor asked for 500 thousand euros from a businessman in return for filing a money laundering investigation in the real estate sector.*
Needs of privileges, advantages, or obligations not to do (I8)	+	To what extent do you consider each of these situations to be a case of corruption or not: *An individual asked his sister, nurse in a hospital, to speak to the doctor in order to anticipate his/her appointment, which has been on a 2-month waiting list.*
Income level (I1)	+	Do you think the distribution of income is very fair, fair, neither fair nor unfair, unfair, or very unfair?

Expectations (I2)	-	Talking about corruption over the past year, would you say it has increased a lot, increased, neither increased nor decreased, decreased, or decreased a lot?
Probability of committing acts of corruption (I3)	+	Imagine that 100 people live in [country]. Out of these 100, how many would you say are corrupt?
Anti-corruption standards level (I4)	-	Tell me the degree of trust you have in a series of institutions, using a scale from 0 to 10, where 0 means you have 'no trust' in them and 10 means you have 'a lot of trust: Government
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Level of punishment against corruption and its effectiveness (I6)	-	Tell me the degree of trust you have in a series of institutions, using a scale from 0 to 10, where 0 means you have 'no trust' in them and 10 means you have 'a lot of trust: Justice
Incentives to commit acts of corruption (I7)	+/-	Using a scale from 0 to 10, where 0 means you strongly disagree and 10 means you strongly agree, tell me to what extent you agree with: *If the outcome of an action is beneficial for the general population, it is not corruption*

Source: Created by authors based on the surveys dataset and the theoretical model proposed by Monteverde.

The estimation model presented on the next section includes control variables such as gender (C1), age (C2), and education (C3). Additionally, heterogeneity is controlled for by incorporating survey's weight in the model.

Empirical Results

Table 3 summarize the descriptive statistics for the variables included in the model. Both dependent variables (D1) and (D2) ranging from 0 to 10. A value of 0 indicates no case of corruption, while a value of 10 indicates case of corruption.

In terms of the independent variable, the "Income level" (I1) is measured on a scale ranging from 1 to 5. A value of 1 indicates a very fair income distribution among the country,

while a value of 5 indicates very unfair income distribution among the country. "Expectations" (I2) is measured on a scale ranging from 1 to 5. A value of 1 indicates an expectation of an increase in the level of corruption, while a value of 4 indicates a high expectation of a decrease in the level of corruption.

Table 3 – Descriptive statistics

Variables	Mean	Std. dev.	Max	Min	Obs
Dependent Variables					
D1	8.36	2.27	10	0	2,495
D2	9.35	1.51	10	0	2,503
Independent variables					
I1	4.05	0.78	5	1	2,480
I2	2.48	0.89	5	1	2,369
I3	37.8	27.7	100	0	2,291
I4	3.69	2.81	10	0	2,516
I5	3.66	2.55	10	0	2,502
I6	4.31	2.61	10	0	2,476
I7	3.71	3.32	10	0	2,461
I8	7.01	2.86	10	0	2,500
Control Variables					
C1	1.5	0.49	2	1	2,526
C2	48	15.7	90	18	2,524
C3	2.07	0.76	3	1	2,508

Source: Created by authors based on the surveys.

The variable "Probability of committing acts of corruption" (I3) spans from 0 to 100. A value of 0 signifies that people is considered corrupt. On the other hand, a value of 100 indicates that 100 people are considered corrupt. The variables I4 to I8 are measured on a scale from 0 to 10. A score of 0 represents no trust, no corruption, or strong disagreement, while a score of 10 signifies high trust, a case of corruption, or strong agreement.

As for the control variables, gender (C1) is represented by a dummy variable with 1 indicating male and 2 indicating female, age (C2) spans from 18 to 90, and education (C3) ranges from 1 to 3. A value of 1 indicates complete primary education, while a value of 3 represents a complete tertiary education (university degree).

Tables 4 and 5 show the OLS estimation for the demand for corruption and for offer of corruption. To enhance the robustness of the model, we conducted three different types of specifications. The first specification (M1) includes only independent variables, the second specification (M2) includes both independent and control variables, and the third specification (M3) includes both independent and control variables, along with weighting based on the surveys sample. Among them, the last one yielded the most accurate estimation based on statistical analysis. Therefore, we will focus solely on the findings from this final estimation (M3).

As can be seen on Table 4, the relationships between Demand for corruption (D1) and the independent variables (I1 to I7) and control variables (C1 to C3) were estimated through OLS model. The findings shed light on the significance and magnitude of these associations, thus contributing to validate the Monteverde's theoretical model on D1 determinants. In the M3 model specification, independent variables I2 to I7 displayed statistically significant associations with D1, consistent with Monteverde's theoretical model. However, there was one exception: I4 exhibited a positive relationship with D1. These findings indicate that income level may have an impact on the demand for corruption, manifesting in both positive and negative directions. Among the control variables, C1 and C2 showed significant relationships with D1. Specifically, C2 had a positive coefficient, suggesting that old people have a relatively higher demand for corruption compared to young.

The inclusion of survey's weight had a notable impact on the estimation results. Model M3 demonstrated higher pseudo R^2 values, indicating better model fit compared to M1 and M2.

Table 4 – OLS estimation – Demand for corruption

D1	M1	M2	M3[1]
	Independent variables		
I1	0.13***	0.12**	0.13**
	(2.08)	(1.99)	(2.02)
I2	-0.12***	-0.11**	-0.11**
	(-2.13)	(-1.92)	(-1.94)
I3	0.003**	0.003**	0.003**
	(1.78)	(1.90)	(1.89)
I4	0.10***	0.11***	0.11***

	(3.88)	(4.09)	(4.08)
I5	-0.05*	-0.06**	-0.06**
	(-1.41)	(-2.17)	(-2.16)
I6	-0.04***	-0.02	-0.03
	(-2.13)	(-1.36)	(-1.38)
I7	-0.05***	-0.06***	0.06***
	(-3.70)	(-3.91)	(-3.92)
Control Variables			
C1	-	0.21**	0.21**
		(2.15)	(2.16)
C2	-	0.012***	0.012***
		(3.99)	(3.98)
C3	-	-0.03	-0.032
		(-0.48)	(-0.48)
Survey's weight	No	No	YES
Obs.	2,081	2,065	2,065
Adj R^2	0.02†	0.03†	0.034†

*p<0.1 **p<0.05 ***p<0.01
(t-statistic)
† Prob χ^2 <0.1
[1] Weighting based on the surveys sample.

Table 5 presents the results of the OLS estimation for the offer of corruption. The model also includes various independent variables (I1 to I8), according to Monteverde's approach, and control variables (C1 to C3).

The independent variables in the M3 model specification reveal interesting patterns. Among them, I1, I4, and I8 display statistically significant coefficients that align with the theoretical expectations of Monteverde's model. This suggests that these variables are indeed influential in determining the offer of corruption. On the other hand, the variables I5, and I7 do not exhibit the expected results. This implies that factors such as anti-corruption controls, and the incentives might have different impacts on the likelihood of engaging in corrupt behavior.

Control variables C1 and C2 demonstrate significant relationships with the offer of corruption.

The inclusion of survey's weight in the model also allows for accounting and controlling for country-specific factors that may impact the offer of corruption. This further enhances the robustness and reliability of the estimated results.

The observed pseudo R^2 values for the model specifications range from 0.05 to 0.07, indicating that the independent and control variables in the model collectively explain a substantial portion of the variation in the offer of corruption. This highlights the M3 model overall goodness of fit and the significance of the included variables in capturing the underlying dynamics of corrupt behavior.

Table 5 – OLS estimation – Offer of corruption

D2	M1	M2	M3[1]
Independent variables			
I1	0.06	0.09***	0.094***
	(1.46)	(2.25)	(2.28)
I2	0.010	-0.007	-0.007
	(0.26)	(-0.19)	(-0.20)
I3	-0.0006	0.0007	0.0007
	(-0.00)	(0.67)	(0.65)
I4	0.025	0.039***	0.039***
	(1.45)	(2.25)	(2.25)
I5	-0.065***	-0.075***	-0.075***
	(-3.23)	(-3.80)	(-3.79)
I6	0.015	0.022	0.021
	(1.17)	(1.64)	(1.62)
I7	-0.041***	-0.039***	-0.039***
	(-4.24)	(-4.09)	(-4.10)
I8	0.10***	0.09***	0.486***
	(8.74)	(8.41)	(8.41)
Control Variables			
C1	-	0.031	0.031
		(0.48)	(0.48)
C2	-	0.006***	0.007***
		(3.31)	(3.30)

C3	-	0.194***	0.194**
		(4.37)	(-4.37)
Survey's weight	No	No	YES
Obs.	2,076	2,060	2,060
Pseudo R^2	0.05†	0.06†	0.07†

*p<0.1 **p<0.05 ***p<0.01 (z-statistic)
† Prob χ^2 <0.1
[1] Weighting based on the size of the population was employed.

Conclusion

This paper undertook an examination of the microeconomics of corruption using a behavioral economics approach, and it tested the applicability of Monteverde's theoretical framework through the analysis of empirical data. The findings offer valuable insights into the factors that influence both the demand for corruption (D1) and the offer of corruption (D2).

The results from the M3 model specification provided support for Monteverde's theoretical model in relation to the demand for corruption (D1). Notably, independent variables I2 to I7 exhibited statistically significant associations with D1, underscoring their significance in explaining the variations in the demand for corruption. However, one exception was observed with I1, which displayed a negative relationship with D1.

In terms of the offer of corruption (D2), the results from the OLS estimation yielded a combination of expected and unexpected findings. Variables I2, I3, I5, I7, and I8 aligned with Monteverde's theoretical model, signifying their influence on the likelihood of engaging in corrupt behavior. However, variables I1, I4, and I6 deviated from the anticipated outcomes, highlighting the complex interplay between income, anti-corruption controls, punishment, and the inclination to offer corruption.

These findings underscore the importance of considering a diverse range of factors when tackling corruption. Policymakers and stakeholders need to acknowledge the multifaceted influences that drive individuals to participate in corrupt activities, and accordingly, develop targeted strategies. Combatting corruption necessitates moving beyond simplistic assumptions and adopting tailored approaches that account for the intricacies of corrupt behavior.

Further research is warranted to deepen our understanding of the specific mechanisms through which income, anti-corruption controls, and punishment impact the offer of corruption. By expanding our knowledge in this domain, evidence-based anti-corruption policies can be formulated, resulting in more effective measures to deter and mitigate corrupt practices in different contexts.

In conclusion, this paper makes a valuable contribution to our comprehension of the microeconomics of corruption from a behavioral economics perspective. The findings validate certain aspects of Monteverde's theoretical model while also revealing complexities in the relationships between income, anti-corruption controls, punishment, and the demand and offer of corruption. These insights hold significant implications for the design of effective anti-corruption policies and interventions.

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