

**ENTERPRISES AND TAX COMPLIANCE IN GREECE:
A RESEARCH NOTE ON THE ROLE OF CORRUPTION¹**

**Vasileios Vlachos, University of Macedonia, Greece
Aristidis Bitzenis, University of Macedonia, Greece
Panagiotis Kontakos, UCLan Cyprus, Larnaka, Cyprus**

ABSTRACT

The discussion about informal economic activity and corruption in Greece has drawn significant attention during the country's experience of the recent economic crisis. Although both phenomena are not new, it is believed that either both have been partly responsible for the occurrence of the economic crisis, or that a reduction of their size is feasible and could improve public revenue. We look upon the less discussed theme about this matter, which concerns the factors shaping the tax morale of Greek businesses. Based on data from the World Bank we explore with conditional logistic regression the role of corruption on other factors influencing tax compliance decisions of Greek enterprises.

I. INTRODUCTION

The political, economic and social dimensions of the Greek economic, banking, social and sovereign debt crisis have turned attention to the size and impact of the unofficial economy to the official one. The relation between corruption and the unofficial economy in Greece and their role in the Greek crisis have stimulated discussion at an international level about the potential of unregistered economic activities to provide economic succor in times of crisis. The main themes of the discussion are about whether the unofficial economy is a substitute for the official one in economic downturns and by what means there can be a transfer of a part of the unofficial economy to the official one.¹

The aim of this paper is to explore the determinants of enterprises' tax compliance in Greece and the specific effect of corruption. The paper is organized as follows. The next section gives a brief background and discusses the method of analysis. The third section presents the findings of our study. Finally, the fourth section makes some concluding remarks.

II. BACKGROUND AND METHOD

The starting point of our analysis is the work of Vlachos and Bitzenis (2016) on tax compliance behavior of small firms in Greece. The authors discuss the severe consequences of the economic crisis on the Greek business environment and review the relevant literature about the factors influencing enterprises' tax compliance. We aim to expand the research of Vlachos and Bitzenis (2016), which is the first assessment of enterprises' tax compliance in Greece. Although like Vlachos and Bitzenis (2016), we also base our model on the approach of Alm and McClellan (2012), we differentiate it from Vlachos and Bitzenis (2016) with regard to the set of variables explored, the size of enterprises, and the sample. Our distinction is based on the analysis of matched data in order to control for the effect of corruption.

The data is from the World Bank's Business Environment and Enterprise Performance Survey and covers the year 2005 (see <http://data.worldbank.org/data-catalog/BEEPS>). Table 1 presents the frequencies of the set of variables explored for the total sample, prior to matching. We match the units of observations in pairs of 1x1 according to the propensity scores obtained from a logistic regression with SalRep as the dependent and Bribe as the

¹ This paper is part of the EU THALES project 'The shadow economy (black economy) in Greece: size, reasons and impact'.

independent variable. With propensity score matching we aim to detect the effect of corruption (bribing) on tax compliance behavior. The matched sample is analyzed with conditional logistic regression.

TABLE 1: Sample frequencies

Variable definition (codename)	Frequencies (546 cases)	
	Value = 0	Value = 1
How many full-time employees work for this company today? (small/medium/large)	440 small, 56 medium, 50 large	
Recognizing the difficulties that many firms face in fully complying with taxes and regulations, what percentage of total annual sales would you estimate the typical firm in your area of business reports for tax purposes? (SalRep)	235 cases tax complied (100% of sales reported)	267 cases tax noncomplied (less than 100% reported)
Was your establishment in the last 12 months either inspected or required to meet with officials from the Tax inspectorate or the Labor and Social Security agencies? (Insp)	280 cases inspected by Tax inspectorate and 270 cases inspected by the Labor and Social Security agencies	276 cases inspected by Tax inspectorate and 270 cases inspected by the Labor and Social Security agencies
Can you tell me how problematic are these different factors for the operation and growth of your business: Taxes? (ObstTax)	233 cases (no or minor obstacle)	308 cases (moderate or major obstacle)
Can you tell me how problematic are these different factors for the operation and growth of your business: Tax administration? (ObstTaxAdm)	300 cases (no or minor obstacle)	235 cases (moderate or major obstacle)
Can you tell me how problematic are these different factors for the operation and growth of your business: Labor regulations? (ObstLab)	426 cases (no or minor obstacle)	107 cases (moderate or major obstacle)
Can you tell me how problematic are these different factors for the operation and growth of your business: Corruption? (ObstCor)	430 cases (no or minor obstacle)	99 cases (moderate or major obstacle)
On average, what percent of total annual sales do firm's like yours typically pay in unofficial payments/gifts to public officials? (Brib)	428 cases do not pay	118 cases pay
Do firms in your line of business pay for protection payments (e.g., to organized crime to prevent violence or property damage)? [Prot]	477 cases do not pay	68 cases pay
Is the principal owner (or one of the principal owners) a female? (Gen)	113 cases females	350 cases males
Considering your main product line or main line of services in the domestic market, by what margin does your sales price exceed your operating costs (i.e., the cost material inputs plus wage costs but not overheads and depreciation) [GProf]	38 cases (1-10%), 87 cases (11-15%), 118 cases (15-20%), 165 cases (21-30%), 99 cases (31% or over)	

Source: World Bank Business Environment and Enterprise Performance Survey 2005.

III. FINDINGS

The findings of conditional logistic regression are presented on Table 2. Six different sets are indicated, three with main effects (without interactions) and three with two way interactions. The statistically significant main effect findings indicate that

- an inspection from Tax inspectorates or the Labor and Social Security agencies does not have a positive effect on compliance;
- those perceiving corruption as a major obstacle to doing business are more inclined to being tax noncomplied;
- those paying for protection are more inclined to being tax noncomplied;
- males are less inclined to being tax noncomplied,

- the enterprises with gross profit of 21-30% over operating costs are more inclined towards noncompliance;²
- small enterprises are more inclined towards noncompliance.³

The statistically significant interaction findings indicate that

- enterprises which are run by males and have been inspected decrease the odds ratio for noncompliance;
- enterprises run by males that pay for protection decrease the odds ratio for noncompliance;
- when enterprises are run by males, the highest the profit is the greater the odds ratio for noncompliance gets;
- when enterprises are run by males, the smaller the enterprise is the greater the odds ratio for noncompliance gets.

The marginal effects on Table 2 are calculated under the assumption of no fixed effects (i.e. constants per pair of matched cases) and thus the values presented do not account for them. Nonetheless, they become useful as they demonstrate the impact of the independent variable when it receives the value of 1 on the probability of being tax noncomplied. Accordingly, the marginal effect for an interaction indicates the impact when its value is greater than zero on the probability of being tax noncomplied.⁴

TABLE 2: Conditional logistic regression results (Odds Ratios for 6 models)

Variables in equation (dependent SalRep)	Regressions / Exp(B) ¹ & Marginal Effects ²											
	1 (376 cases)		2 (381 cases)		3 (381 cases)		4 (381 cases)		5 (376 cases)		6 (376 cases)	
Insp	1,308	6,7%	1,383	8,0%	-	-	-	-	1,32	6,9%	3,055**	25,3%
ObstTax	0,858	-3,8%	-	-	-	-	-	-	0,908	-2,4%	-	-
ObstTaxAdm	1,291	6,4%	-	-	-	-	-	-	1,153	3,6%	-	-
ObstLab	0,714	-8,3%	-	-	-	-	-	-	0,716	-8,3%	-	-
ObstCor	1,788	14,1%	1,805*	14,3%	1,829*	14,7%	-	-	1,749	13,6%	0,682	-9,5%
Prot	1,782	14,1%	1,904*	15,6%	1,715	13,2%	-	-	1,762	13,8%	15,872**	44,1%
Gen	0,606*	-12,3%	0,616*	-11,9%	0,651	-10,6%	-	-	-	-	0,529	-15,4%
GProf10	0,7	-8,8%	0,704	-8,7%	0,689	-9,2%	-	-	-	-	0,664	-10,1%
GProf15	0,704	-8,7%	0,697	-8,9%	0,68	-9,5%	-	-	-	-	0,668	-10,0%
GProf20	1,05	1,2%	1,024	0,6%	1,077	1,9%	-	-	-	-	0,958	-1,1%
GProf30	2,001**	16,7%	2,046**	17,2%	2,011**	16,8%	-	-	-	-	2,006**	16,7%
GProf30over	ref.		ref.		ref.		-	-	-	-	ref.	
Small	2,306	19,8%	2,899	24,4%	3,405*	27,3%	-	-	-	-	-	-
Medium	1,175	4,0%	1,474	9,6%	1,681	12,7%	-	-	-	-	-	-
Large	ref.		ref.		ref.		-	-	-	-	-	-
Insp*ObstCor	-	-	-	-	-	-	-	-	-	-	1,85	14,9%
Gen*Insp	-	-	-	-	-	-	-	-	-	-	0,269**	-28,8%
ObstCor*ObstTaxAdm	-	-	-	-	-	-	-	-	-	-	2,545	21,8%
Gen*ObstLab	-	-	-	-	-	-	-	-	-	-	0,643	-10,9%
Gen*ObstCor	-	-	-	-	-	-	1,26	5,8%	-	-	-	-
Gen*Prot	-	-	-	-	-	-	1,141	3,3%	-	-	0,084**	-42,3%
GProf10*Gen	-	-	-	-	-	-	0,088**	-41,9%	0,105**	-40,5%	-	-
GProf15*Gen	-	-	-	-	-	-	0,078***	-42,8%	0,107**	-40,3%	-	-
GProf20*Gen	-	-	-	-	-	-	0,122**	-39,1%	0,158**	-36,4%	-	-
GProf30*Gen	-	-	-	-	-	-	0,254	-29,7%	0,351	-24,0%	-	-
GProf30over*Gen	-	-	-	-	-	-	ref.		ref.		-	-
Gen*Small	-	-	-	-	-	-	5,22**	33,9%	3,637	28,4%	4,475*	31,7%
Gen*Medium	-	-	-	-	-	-	2,358	20,2%	1,869	15,1%	1,982	16,5%
Gen*Large	-	-	-	-	-	-	ref.		ref.		ref.	

Notes: The sign “-” indicates that there is no value because the variable is not included in the analysis. Reference category is “ref.”

¹Levels of statistical significance: *10%, **5%, ***1%. ²Marginal effects under the assumption of no fixed effects (i.e. constants per pair of matched cases) or without accounting for them.

IV. CONCLUSION

We explore the impact of formal (e.g. tax administration) and informal institutions on tax compliance in Greece, with particular emphasis on the role of corruption. We perform a conditional logistic regression with data from the Business Environment and Enterprise Performance Survey of the World Bank covering 546 Greek enterprises in 2005. We match the sample in pairs of 1x1 according to the propensity scores obtained from a logistic regression with sales reported as the dependent and bribery as the independent variable.

The findings indicate that involuntary compliance is not reinforced with inspections. Moreover, corruption and protection increase noncompliance. The presence of bribing and corruption may justify this finding and moreover, indicate that noncompliance of Greek enterprises is mainly voluntary. Gender also appears to be a factor influencing compliance. With regard to margins, higher profits may influence noncompliance. Finally, size also appears to be important, with small enterprises being more inclined towards noncompliance.

The limitations of our study concern the lack of differentiating among industries (i.e. it is expected that it is much easier to evade taxes in the services sector) the consideration of ownership (i.e. foreign ownership usually involves different cultures and norms, the exploration of the compliance behavior of large enterprises, and the effect of the economic crisis on compliance (i.e. data covering a period after the crisis).

ENDNOTES

1. For example, Bitzenis et al. (2016) review the literature on the Greek shadow economy and indicate the potential for accomplishing such a transfer.
2. Although not statistically significant, the odds ratio for noncompliance appear to rise with the size of the gross profit.
3. Although not statistically significant, the odds ratio for noncompliance appear to rise with the size of the enterprise.
4. Of course, a realistic representation would require to add the fixed effect constants in the equation used for calculating the marginal effects in both cases.

REFERENCES

- Alm, J. and McClellan, C. (2012). "Tax morale and tax compliance from the firm's perspective", *Kyklos*, Vol. 65, Iss. 1, pp. 1-17.
- Bitzenis, A., Vlachos, V. and Schneider, F. (2016). "An exploration of the Greek shadow economy: can its transfer into the official economy provide economic relief amid the crisis?" *Journal of Economic Issues*, Vol. 50, Iss. 1, pp. 165-196.
- Vlachos, V.A. and Bitzenis, A. (2016). "Tax compliance of small enterprises in Greece", *International Journal of Entrepreneurship and Small Business*, Vol. 28, Nos. 22/3, pp. 380-389.