

Full Length Research Paper

Tax collection gaps and overdue tax debts: Greece, 2000-2019

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This paper deals with the process of accumulating overdue tax debts in Greece and brings out its main features. It focuses on the consistently high collection gap ratios that have led to the accumulation of tax arrears and, although the role of tax administration and debt stock management are acknowledged as crucial factors in reducing the collection gap and the stock of arrears respectively, it explores the role that fiscal policy could play. While the literature usually centres on the administrative side of collection efficiency, the present paper shows that tax policy variables such as the tax burden may play a crucial role. The analysis makes use of data never employed before to the best of our knowledge, so that various aspects of the tax debt accumulation process are revealed. We employ a simple simultaneous equation model that focuses on tax policy aspects and we conclude that increasing tax assessments boosts collection gaps. This creates a vicious circle whereas collection gaps push to higher tax assessments and so forth. Given the fiscal constraints of the economy we conclude that although the stock of tax debt may be significantly reduced only through extensive write-offs of non-performing debts and penalties and improvement of the tax administration, tax policy, although a non-sufficient condition can ensure to a certain extent that tax debt increases are checked.

Key words: Tax administration, tax debt, tax collection, tax penalties, collection gap, compliance gap.

INTRODUCTION

The object of the present analysis is to examine the role of tax policy rather than tax administration in the formation of tax collection gaps and the subsequent piling up of tax debt. The tax collection gap which is a subset of the overall tax gap, whereas national tax administrations and international organizations use various approaches to measure the tax gap, mainly in the VAT and corporate tax domains. For a thorough review of definitions and methodologies regarding the tax gap see European

Commission (2016). In general, the tax gap is estimated on the basis of the amounts that should have been collected in theory, given the tax base and tax policy parameters and, therefore, it includes tax evasion (at least to some extent). The collection gap is a narrower concept based on actual tax assessments ("normal" or through audits) and the respective payments made on time (gross collection gap) or later, usually through some kind of enforcement measures (net collection gap).

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Unless otherwise stated, the concept of gross collection gap is used throughout the paper, albeit with a twist, since late payments made within the reference period are considered as timely payments.

Tax debt in Greece has traditionally belonged to and has been managed by the Ministry of Finance (MoF). In 2012, however, as the economic crisis culminated it was agreed with the lenders of the State that tax collection and the resulting arrears be transferred to the General Secretariat for Public Revenues, later (2016) turned to the Independent Authority for Public Revenues (IAPR). IAPR is in effect an autonomous body in the sense that it enjoys full operational freedom, although the Ministry of Finance may control or affect targets and strategies. IAPR lacks legal form (being part of the core Executive), while it may be more exposed to government rather than Parliamentary review (Δημητρίου, 2016; Κουτνατζής, 2018). IAPR regulates and manages tax and other debts to the State, which in 2019 stood at €105 or 57% of GDP. However, IAPR is not involved with social security collections and arrears which are managed by the National Social Security Agency (EFKA), whose Social Contributions Collection Centre (KEAO) keeps track of about €35bn. (2019) of overdue debt. To put uncollected receipts of the public sector in its right perspective, one should also count in the €69 bn. of (non-performing) overdue private debt to the banks (Hellenic Parliamentary Budget Office, 2020). Collecting public revenue in Greece has always been a weak point of the country's tax administration (Khwaja and Iyer, 2014). This weakness combined with the recent economic crisis led to a rapid accumulation of arrears and Greece to the top of the OECD countries with a debt exceeding 200% of receipts against an average of 32% (OECD, 2021). Enhancing the performance of tax administrations has always been a matter of concern to policy makers (OECD, 2017, 2019), given the fact that the outstanding debt to tax administrations globally is estimated at €2.1 trillion for 2019 (OECD, 2021).

LITERATURE REVIEW

It is almost common knowledge nowadays that low tax compliance imposes unnecessary fiscal constraints, degrades the effectiveness of policies, undermines growth and competitiveness and boosts inequity. There is a huge literature on the issue starting long before Tanzi and Shome (1993) and extending beyond Murphy (2019). Tax collection is strongly related to both external and internal factors, especially during profound crisis periods. According to Brondolo (2009) the economic impact of a crisis tends to influence negatively a country's tax compliance. For this reason, the state has to take preemptive action (such as upgrading services to the taxpayers, focusing on high-risk debtors, adopting statutory and organizational changes, as well as convincing

taxpayers about the necessity of reforms) in order to avoid a future inability to restore normality and tax equality caused both directly by the economic slowdown and indirectly by tax policies and administration measures taken in response. In this sense, as the pandemic is anticipated to cause a major decline in tax revenue in most countries, revenue agencies will have to be ready to restore their operations, safeguard tax collection and restore taxpayers' compliance at least to the pre-crisis levels (IMF, 2020).

Collecting taxes in Greece remains a most important facet of fiscal policy, and thereof, additional and immediate measures are required (Angerer, 2018). It is easily understood that, given the deficit constraints at any time, non-collection of assessed revenues, as part of the overall tax gap, may lead to higher tax rates which affect the whole of the economy. In the face of the economic consequences of the pandemic, various priorities and policies for the tax administration have been suggested (de Mooij et al., 2020; Betts et al., 2021). As already pointed out, the role of tax administration has been amply demonstrated in the literature, yet it is worth exploring the role of core tax policy in the formation of collection gaps and the accumulation of tax debt.

METHODS

Profiling overdue debt

For the purposes of this paper, our definition of overdue debt includes all amounts assessed by IAPR, due for payment, but not collected. The respective amount include taxes and various non-tax items, as well as guarantees extended to entities outside the general government sector and called, while they exclude Social Security Contributions. This is not the case for all countries (OECD, 2011) and, therefore, comparisons should be made with caution. Also, overdue debt includes tax penalties (which follow non-payment), but not surcharges (such as interest), which are assessed when payment is made. The main features of the overdue debt can be summarized as follows:

- a) Rapid buildup during the crisis. As shown in the Appendix Table A1), the stock of debt built up rapidly since 2000, bringing the total from €9 bn. to €105 bn. in 2019 (or from 6% to around 57% of GDP). In 2008, at the outset of the economic crisis, the stock of overdue debts stood at 12% of (GDP) compared to around 2% of the Eurozone average (OECD, 2011).
- b) The composition of the debt shows that non-collected tax penalties constitute a considerable part of arrears (Appendix Table A1). In particular, the share of tax penalties rose from 23% in 2000 to a peak of 44% in 2012 and marginally subsided to 38% in 2019. On the other hand, the share of loan guarantees called accounted for about 1/3 of the total in 2000. By the beginning of the crisis this share had fallen to below 4% (owing to the extensive debt write-offs of guarantees extended to the National Social Security Entity), only to gradually rise again to more than 10% (due to the assumption of the called guarantees of the Greek Railways debt). The combination of all the above has left the share of principal arrears for tax and non-tax obligations, i.e. excluding tax penalties and loans, to fluctuate rather stably around 50% over the last two decades.

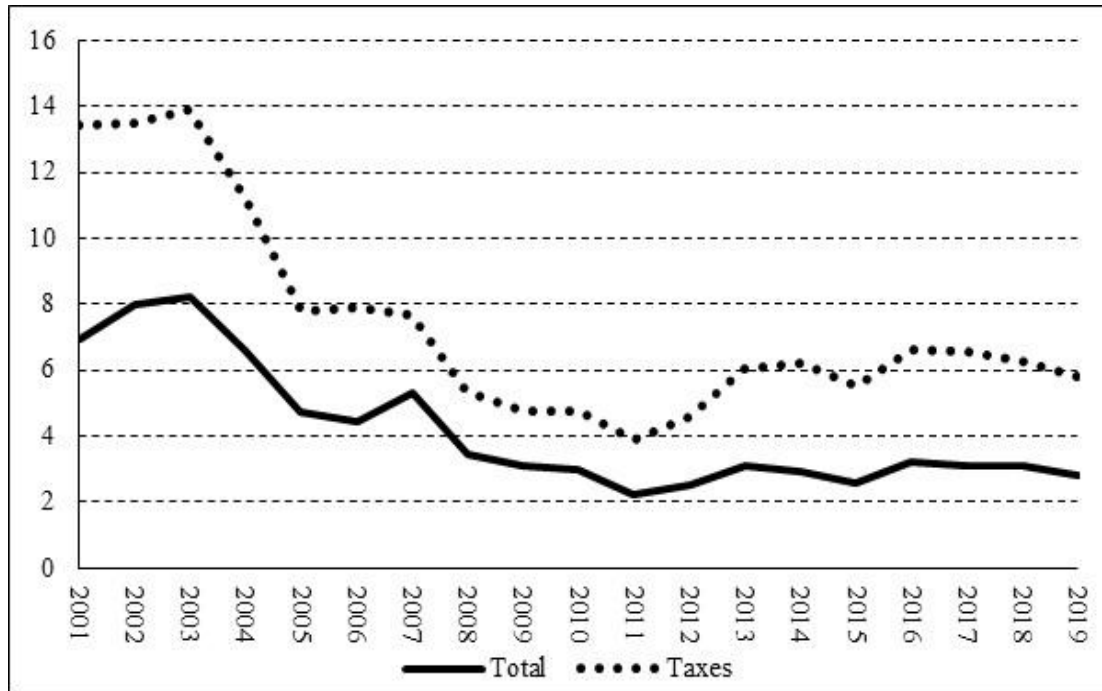


Figure 1. Recovery rate of arrears.

c) In 2019, the distribution of arrears by the size of individual debt showed that large debtors (we have arbitrarily set the threshold for large debtors at €1m.), their number not exceeding 0.2% of the total number of debtors, accounted for 81% of total arrears (Karavitis et al., 2021). A sizeable chunk of this particular amount comprises the Greek Railways debt mentioned earlier. Also, having in mind point (b) above, we should mention that almost 58% of this subtotal consists of tax penalties. In general, the problem is traced to the corporate sector that comprises 11% of the debtors but 65% of the debt (ibid.).

d) In 2019, about 47% of all collections of arrears referred to debt generated within the year, 27% to debt of one year of maturity, while collections fall sharply thereof to 6% in the second year and fade off to practically zero for higher maturities (ibid.).

Given the significant size of the debt to IAPR, the relevant question is whether and how its upward trend can be checked and eventually reversed. To explore the issue we first need to know the identity that produces the stock of arrears for a given period t :

$$(\text{Stock of arrears})_t \equiv (\text{Stock of arrears})_{t-1} + (\text{collection gap})_t - (\text{write-offs of arrears})_t - (\text{collection of arrears})_t + (\text{time adjustment item})_t$$

,whereas the collection gap stands for the amounts due for payment within the period but not collected, consisting of assessments net of write-offs minus the respective collections (Appendix Tables A1, A2 and A3). The time adjustment item refers to a correction term since the stock sizes are recorded on 1 December, while transactions are recorded on 31 December, and at times it may be sizeable, especially regarding tax penalties (Appendix Table A4). Given the sources of creation of the stock of arrears (also presented in the Appendix), we can conclude from the above identity that the stock of arrears can be reduced only through write-offs and recovery of arrears, while the collection gap not only should it be lower than write-offs plus recoveries but it should practically approach zero so that no new tax arrears accumulate. Also, Karavitis et al. (2021) have shown that significant write-offs

should be in order since removal of all non-performing items (including arrears of insolvent debtors and assumptions of debt of public enterprises by the State) would significantly reduce the stock of arrears from €105 m. to €61 m. Yet, this would still leave us with a stock of about €34m of taxes arrears, €22m of tax penalties arrears and another €5 m of other non-tax arrears (about 32% of GDP altogether; still a substantial amount). Bearing this in mind, we can now turn to some metrics in order to determine the degree of recoverability of these amounts.

Based on the primary data in the appendix, we can see that not only is the recovery of arrears (defined as the ratio of receipts over the stock of arrears of the previous period net of write-offs) very low but it has deteriorated over the years (Figure 1). The case for the subtotal of taxes in arrears is somewhat better, presenting a modest improvement in the last decade, but just as discouraging, while regarding tax penalties, their rate of recovery (not shown in Figure 1) has practically reached zero (same for loans).

The result of the low recovery rate is that currently receipts and write-offs of arrears are far from compensating for the collection gap. In particular, although this replenishment rate of tax non-collections has improved significantly since 2015 (Figure 2) (due to tax arrears collections rather than write-offs, as the data in the Annex reveal), it still is below 100%, leaving amounts of non-collections that are not covered (shown by the shaded area).

As mentioned earlier, it is important that the collection gap be curbed so that no new arrears pile up. The collection gap has two components, (net) assessments and collections. Figure 3 presents the collection gaps and the respective collection gap ratios, the latter defined as $(1 - \text{collections}/\text{net assessments})$, for the main sources of arrears (loans are excluded as irrelevant to taxation). Here we can notice that the collection gap for taxes expanded significantly until 2015 when it reached almost $\frac{1}{4}$ of net assessments. Despite its reduction in the years that followed, more than 10% of assessments (more than 2% of GDP) are still not being collected. However, there is not adequate information about the

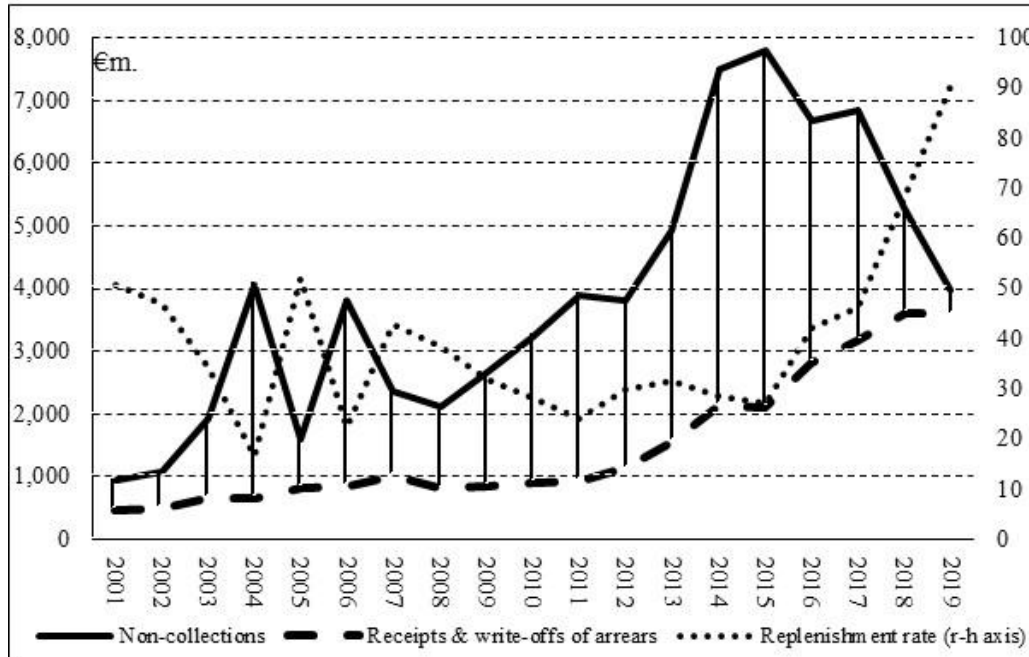


Figure 2. Replenishment of tax non-collections by collection of arrears.

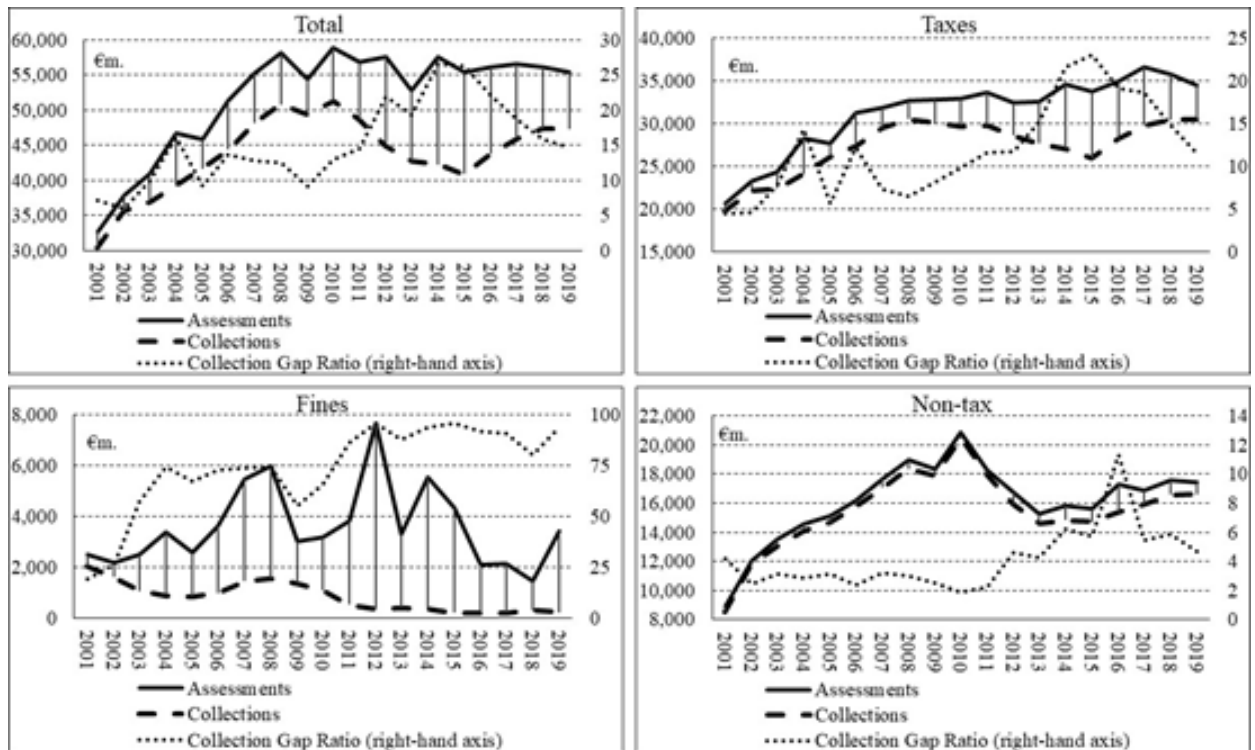


Figure 3. Collection gaps and the collection gap ratios.

part of these amounts that are produced through audits and/or are in legal dispute. The analysis above makes it clear that debt write-

offs are essential to reducing the overall stock of arrears, yet this operation will not be sustainable unless non-collections are

minimized.

Modeling the collection gap

In what follows we try to connect the collection gaps of currently (i.e. within the reference year) assessed taxes and fines to the tax burden. On the one hand, we model the taxpayers' behaviour through two functions showing the non-collection rates of taxes (**ntr**) and tax penalties (**npr**), respectively. On the other hand, we assume that the behaviour of the tax authorities is expressed through a notional average tax rate (**atr**) and the implicit average penalty rate (**apr**). More specifically, the basic economic model stands as follows (all variables refer to time period t unless otherwise stated):

$$(ntr) = \alpha_0 (atr)^{\alpha_1} (tnplr)^{\alpha_2} \quad (1)$$

where (**ntr**) is the tax non-collection rate, which is calculated as the ratio of non-collected revenue (NT) over net assessments (ASST), or $(ntr) = (NT/ASST)$. On the right hand side, we have α_0 (a constant) and (**atr**) as a proxy for the tax burden, equal to the ratio of net tax assessments over GDP, or $(atr) = (ASST/GDP)$, whereas it is expected that $\alpha_1 > 0$. Also, (**tnplr**) is a proxy for the pressure that net tax assessments as a ratio of non-performing bank loans (NPL) may or may not exert on non-collections, or $(tnplr) = (ASST/NPL_{t-1})$. The rationale of "may not" is that the explosive increase of NPLs during the crisis and the subsequent non-payment of debt servicing may have facilitated tax collections (in this sense, it might be more appropriate to have unpaid debt servicing in the denominator of (**tnplr**), but data for such a variable are not available). Nevertheless, (**tnplr**) serves to indicate the current tax burden relative to total non-served debt to the banking sector (of period $t-1$, roughly reflecting notional debt servicing in period t). In general, the literature provides extensive work carried out on the issue of the macroeconomic (and other) determinants of NPLs (indicatively Charalambakis et al., 2017) and NPLs' dynamics in times of crisis (Ari et al., 2020). These growth-led finance approaches, however, are counterbalanced by supply-leading and bi-directional approaches (SenGupta, 2020), which lead us to believe that to the extent that NPLs have an impact on financing costs and liquidity (and subsequently investment, growth, employment etc), then servicing bank debt may "compete" with tax obligations (the rationale of "may"). In practice, this is verified by Directive (EU) 2019/1023 of the European Parliament and of the Council as applied in Greece by Law 4738/2020 (which provides for across-the-board private debt arrangements) which also extends its scope beyond the corporate sector. Hence, the intuition is that to the extent that NPLs reflect sluggish generation of incomes and inadequate liquidity of the economy, then tax collection is affected accordingly. In this sense we expect that α_2 will be also positive rather than negative.

The tax burden, however, expressed by (**atr**) is not exogenous to the system, as it is specified as:

$$(atr) = \beta_0 (ntr_{t-1})^{\beta_1} GDP^{\beta_2} \quad (2)$$

where, according to (2), the implicit tax rate (**atr**) is assumed to depend on the non-collection rate of the previous period (ntr_{t-1}) and income (approximated by GDP), while β_0 is the constant term. The rationale is that the inability to collect assessed taxes drives the tax authorities to increased assessments in the next period (by increasing tax rates, intensifying tax audits etc). If this is true, it is expected that $\beta_1 > 0$, which intuitively seems more plausible than the opposite case (the policy maker reducing the tax burden in response of a rising non-collection rate, despite any fiscal

constraints). Moreover, normally one would anticipate the overall progressivity of the tax system to lead to higher (lower) (**atr**) as incomes rise (fall), or $\beta_2 > 0$ (where, in fact, $(1 + \beta_2)$ is the buoyancy of (assessed) taxes). On the other hand, rising incomes may lead to relaxing tax policies or, conversely, falling incomes may drive to higher tax rates in order to replenish tax revenues ($\beta_2 < 0$). Therefore, the sign of β_2 may go either way.

Turning to penalties, (3) shows the non-collection rate of penalties (**npr**) which is the ratio of the difference of (net) assessments less collections (NP) over penalties assessed (ASSP), or $(npr) = (NP/ASSP)$. The specification below shows (**npr**) as a function of the tax non-collection rate (**ntr**) and the implicit penalty rate (**apr**), whereas $(apr) = (ASSP/NT)$ and γ_0 is a constant.

$$(npr) = \gamma_0 (ntr)^{\gamma_1} (apr)^{\gamma_2} \quad (3)$$

It is expected that as non-collections of taxes rise so do non-collections of penalties since this is the logical order of things (a penalty is imposed after a tax obligation is not met), therefore $\gamma_1 > 0$, while it is tested whether tax payers react to rising penalty rates by not paying them ($\gamma_2 > 0$).

Finally, (4) shows how the tax authorities respond to the non-collection rate of taxes (**ntr**) by adjusting the penalty rate (**apr**) which is the ratio of assessed penalties imposed (ASSP) over their bas of non-collections of taxes, or $(apr) = (ASSP/NT)$.

$$(apr) = \delta_0 (ntr)^{\delta_1} \quad (4)$$

One may expect that as the non-collection rate rises, the implicit penalty rate would either be raised in an effort of the tax authorities to enforce compliance ($\delta_1 > 0$) or be reduced in order to facilitate payment of penalties ($\delta_1 < 0$) (δ_0 is the constant term).

EMPIRICAL TESTING AND RESULTS

Taking logarithms of functions (1) to (4) we arrive at a system of loglinear regressions. Since all dependent variables are ratios, their logs will be differences of the logs of nominators from the logs of the denominators with the latter being rearranged to the left-hand side of the relations. A further transformation is introduced at this stage by bringing in a dummy variable (**ADM**) to catch a possible effect of the establishment of IAPR in 2016 (1 from 2016 onwards, 0 otherwise). This is an attempt to test whether IAPR has played a significant role in shaping the non-collection rate for taxes and penalties (in functions (1) and (3)) and in exercising whatever discreet powers it has in imposing and collecting penalties (function (4)). Moreover, since most assessments are the direct result of tax policy dictated by the Ministry of Finance rather than IAPR and given that the deep fiscal crisis of the previous decade was addressed mainly through taxation (Karavitis, 2018) another dummy variable, (**SUR**), has been introduced in function (2) to test for the effect of the surveillance regimes from 2010 onwards (when SUR takes the value of 1, 0 otherwise). Thus, a system of semilog regressions can be written as follows (\ln denotes natural log):

Table 1. Model estimates and statistics.

Parameter	Estimate	S.E.	t-st.	P-value
α_0	6.798	1.461	4.653	[.000]
α_{01}	-0.461	0.116	-3.991	[.000]
α_1	4.883	0.802	6.086	[.000]
α_2	0.334	0.111	3.010	[.003]
β_0	2.426	1.364	1.778	[.075]
β_{01}	0.152	0.028	5.436	[.000]
β_1	0.129	0.029	4.413	[.000]
β_2	-0.332	0.113	-2.941	[.003]
γ_0	1.176	0.137	8.581	[.000]
γ_{01}	0.300	0.056	5.338	[.000]
γ_1	0.683	0.063	10.822	[.000]
γ_2	0.317	0.041	7.667	[.000]
δ_0	-1.846	0.420	-4.395	[.000]
δ_{01}	-0.756	0.181	-4.168	[.000]
δ_1	-0.897	0.186	-4.820	[.000]

$$\ln NT = \alpha_0 + \alpha_{01}ADM + (1 + \alpha_1 + \alpha_2) \ln ASST - \alpha_1 \ln GDP - \alpha_2 NPL_{t-1} \tag{5}$$

$$\ln ASST = \beta_0 + \beta_{01}SUR + \beta_1(\ln NT_{t-1} - \ln ASST_{t-1}) + (1 + \beta_2) \ln GDP \tag{6}$$

$$\ln NP = \gamma_0 + \gamma_{01}ADM + (\gamma_1 - \gamma_2) \ln NT - \gamma_1 \ln ASST + (1 + \gamma_2) \ln ASSP \tag{7}$$

$$\ln ASSP = \delta_0 + \delta_{01}ADM + (1 + \delta_1) \ln NT - \delta_1 \ln ASST \tag{8}$$

Regressions (5) to (8) were simultaneously estimated, covering the 2001-2019 period (Appendix; no earlier data were available) and applying the LSQ procedure of TSP 5.0. The results are shown in Table 1 and as can be seen, although the small number of observations remains a concern the relevant statistics are quite satisfactory. R²s are high with the lowest (48.8%) being registered in (8), possibly reflecting the *ad hoc* procedures followed in the assessment of fines. All parameters are significant at least at the 1% level, except for β_0 which is significant at 7.5%. The signs and sizes of the parameters confirm the main proposal, i.e. that tax policy has indeed contributed to piling up tax debt.

In particular, we notice that α_1 , the elasticity of the non-collection rate relative to the implicit tax rate, is strikingly high at 4.9. On the other hand, β_1 is low at 0.13 but not zero and the combination of the two shows that the overall feedback process is far from negligible. In practice, every reduction of one percentage unit of (ntr) (which corresponds to a reduction of 8.3%) could lead to a decrease of near 0.2 percentage units for (atr) which in turn would lead to a further reduction of (ntr) by 0.6 percentage units (assuming that on average (ntr)=12% and (atr)=16.5%). This may not seem much at first sight but, nevertheless, for collection inefficiencies alone, it is a

considerable impact on revenues (Table 2).

Furthermore, it is worth noticing the effect of NPLs on non-collections with $\alpha_2=0.334$ being significantly different from zero and negative. This finding indicates that a subsidence of NPLs would also contribute to reducing the non-collection rate of taxes. Finally, we can discern the positive effect of establishing IAPR since α_{01} is negative and quite large. However, due attention must be paid to the true size of the estimates of the parameters of the dummy variables ADM and SUR (Halvorsen and Palmquist, 1980). In this case, following Kennedy (1981), the true size of α_{01} is -0.374. Also, the true size of β_{01} is 0.164 which confirms that during the surveillance period there was an extra pressure in raising tax assessments. In (6) we can also see that β_2 is negative which leads us to accept that tax policy has been procyclical.

Turning to tax penalties, the parameter estimates of (7) and (8) indicate that the collection gap for penalties follows that of taxes ($\gamma_1=0.683$), which is quite natural, while taxpayers react to higher penalty rates by not paying ($\gamma_2=0.317$). On the other hand, the tax authorities tend to respond to a rising (falling) penalties collection gap by reducing (increasing) the implicit penalty rate ($\delta_1=-0.897$). Also, the coefficients of ADM in (7) and (8)

Table 2. Model estimates and statistics continue.

Dependent variable: <i>InNT</i>		Dependent variable: <i>InASST</i>	
Mean of dep. var.	8.253	Mean of dep. var.	10.381
Std. dev. of dep. var.	0.485	Std. dev. of dep. var.	0.102
Sum of squared residuals	0.462	Sum of squared residuals	0.039
Variance of residuals	0.027	Variance of residuals	0.002
S.E. of regression	0.165	S.E. of regression	0.048
R-squared	0.880	R-squared	0.773
LM het. test	1.246 [.264]	LM het. test	0.010 [.921]
Durbin-Watson	2.506	Durbin-Watson	2.603
Dependent variable: <i>InNP</i>		Dependent variable: <i>InASSP</i>	
Mean of dep. var.	7.895	Mean of dep. var.	8.138
Std. dev. of dep. var.	0.494	Std. dev. of dep. var.	0.423
Sum of squared residuals	0.141	Sum of squared residuals	1.470
Variance of residuals	0.008	Variance of residuals	0.086
S.E. of regression	0.091	S.E. of regression	0.294
R-squared	0.964	R-squared	0.488
LM het. test	1.747 [.186]	LM het. test	0.205 [.650]
Durbin-Watson	2.323	Durbin-Watson	2.211

Std. dev, Standard deviation, dep. Var., Dependent variable; LM het. test Lagrange multiplier hettest test.

show although IAPR has been more “lenient” in imposing penalties ($\delta_{01}=-0.756$, true size -0.538), it has not been able to collect these amounts ($\gamma_{01}=0.3$, true size 0.347). All the above indicate that although the tax authorities respond correctly by reducing the relative size of penalties, this reduction is not adequate to allow for significant progress in collecting them, rendering the whole process of penalties rather ineffective. However, more information is required regarding disputes, individual cases (outliers) etc, in order to have a more complete picture.

Conclusion

As argued earlier, the stock of IAPR-related arrears can and should be significantly reduced through a thorough clear-out of non-performing debts. This should not be seen as a one-off but rather as a continuous screening process that will prevent the accumulation of “bad” debts in the future. This would involve, of course, improvements in the administrative arm of tax collection, as indicated by the values of the ADM parameters. Yet, it becomes clear that possible reductions of the average tax and penalty rates would also improve their respective collection rates. Our results make apparent that increasing the tax burden relative either to income or NPLs deteriorates the collection rate of taxes.

As confirmed by the findings of the empirical analysis, the establishment of IAPR has had a positive impact so far, although there certainly is ample room for

improvements, especially in the area of penalties. A more efficient tax administration brings about fewer non-collections. The results show that such an improvement will feed back to lower tax assessments and non-collection of penalties. Lower tax non-collections will certainly alleviate the pressure on tax payers and soften the strains on the stock of debt, while there may be spillover effects to the extent that higher collection rates signify a potential for lower tax rates. This could also help tax policy regain its anticyclical character. Having in mind that non-collection rates are higher for large debtors (mainly found in the corporate sector) further appropriately targeted research, maybe in the vein of Canada Revenue Agency (2016), may prove quite useful. In addition, the deepening of the holistic approach to private debt (i.e. including social security and bank NPLs), recently activated under Act 4738/2020, could assist to rationalize the collection procedures and make the system more equitable and efficient along the lines suggested by Bird (2015).

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CONFLICT OF INTEREST

The authors have not declared any conflict of interest.

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APPENDIX

Data on debt from arrears

Source: IAPR. All data are in €m.

Notes:

- (a) The stock of arrears for a given year (t) should be given by: $stock(t) = [stock(t-1) - write-offs(t) + assessments(t) - receipts(t)]$. However, the transition requires an adjustment item, given the fact that it measures stock on 1 December and transactions on 31 December. To the extent that during the last month of the year non-collections exceed write-offs the stock may be underestimated accordingly.
- (b) "Non-tax" includes several non-tax items, such as several duties, administrative surcharges and, notably, customs receipts.
- (c) "Fines" refers to penalties for tax and non-tax offenses. However, the latter constitute a much lesser part of the total.
- (d) "Loans" include both non-servicing of loans and guarantees called for which there exists a claim of IAPR against third parties.
- (e) "Assessments for current year" are net of "Write-offs for current year's assessments".
- (f) "Write-offs for current year's assessments" refer both to non-overdue obligations and overdue payments which fall within the reference period.

Table A1. Stock of arrears and Net Assessments.

Year	Stock of arrears by source					Net Assessments for current year				
	Taxes	Non-tax	Fines	Loans	Total	Taxes	Non-tax	Fines	Loans	Total
2000	2,757	871	2,072	3,384	9,084					
2001	3,153	962	2,372	2,835	9,323	20,693	8,910	2,490	539	32,632
2002	3,672	1,061	2,724	997	8,454	23,258	12,078	2,152	340	37,829
2003	4,902	1,239	3,767	954	10,863	24,372	13,517	2,498	504	40,891
2004	8,346	1,388	6,052	1,277	17,063	28,244	14,539	3,380	562	46,725
2005	8,912	1,614	7,578	1,269	19,373	27,723	15,123	2,550	418	45,814
2006	11,915	1,708	10,065	1,247	24,935	31,225	16,200	3,612	350	51,386
2007	13,208	1,818	11,010	1,028	27,063	31,883	17,648	5,441	299	55,271
2008	14,559	1,895	11,455	1,078	28,988	32,675	18,949	5,948	550	58,123
2009	16,285	2,088	12,877	1,205	32,455	32,779	18,360	3,026	221	54,387
2010	18,497	2,296	14,407	3,129	38,329	32,941	20,836	3,150	1,990	58,918
2011	21,611	2,474	17,127	3,049	44,260	33,656	18,306	3,795	1,122	56,879
2012	24,051	2,974	24,379	3,730	55,135	32,426	16,712	7,654	726	57,519
2013	27,457	3,272	26,913	5,355	62,997	32,594	15,234	3,284	1,752	52,864
2014	32,028	3,829	31,654	6,703	74,214	34,562	15,822	5,516	1,690	57,589
2015	37,175	4,272	35,440	8,612	85,500	33,740	15,618	4,335	1,721	55,414
2016	41,207	5,450	37,193	9,030	92,880	34,913	17,324	2,093	1,816	56,146
2017	44,729	5,732	38,722	10,606	99,790	36,658	16,844	2,138	880	56,519
2018	46,470	5,999	39,736	11,844	104,049	35,737	17,597	1,460	1,390	56,184
2019	47,662	6,174	40,164	11,428	105,427	34,455	17,449	3,395	130	55,429

Table A2. Receipts.

Year	Receipts from current year's assessments					Receipts from arrears				
	Taxes	Non-tax	Fines	Loans	Total	Taxes	Non-tax	Fines	Loans	Total
2000										
2001	19,758	8,538	2,009	21	30,326	354	51	83	53	542
2002	22,175	11,783	1,593	22	35,573	412	49	76	18	556
2003	22,452	13,092	1,068	232	36,845	485	50	78	37	651
2004	24,174	14,125	880	19	39,199	533	52	71	29	685
2005	26,130	14,652	841	20	41,643	632	61	59	16	769
2006	27,420	15,818	986	135	44,358	694	52	66	19	831
2007	29,519	17,084	1,435	168	48,206	906	111	75	145	1,237
2008	30,556	18,379	1,533	363	50,831	703	63	86	25	876
2009	30,114	17,904	1,360	43	49,422	681	88	86	28	884
2010	29,694	20,448	1,087	39	51,269	769	47	114	21	952
2011	29,755	17,904	529	424	48,612	709	40	70	14	832
2012	28,619	15,940	352	24	44,935	980	47	58	8	1,093
2013	27,649	14,580	403	8	42,640	1,443	87	62	119	1,711
2014	27,068	14,840	361	2	42,271	1,685	68	67	12	1,832
2015	25,947	14,725	199	11	40,882	1,748	69	64	8	1,889
2016	28,229	15,366	181	1	43,777	2,442	155	75	52	2,724
2017	29,803	15,930	205	2	45,940	2,671	90	89	9	2,859
2018	30,444	16,564	292	10	47,310	2,765	150	75	84	3,073
2019	30,483	16,627	220	1	47,330	2,632	98	100	19	2,849

Table A3. Write-offs.

Year	Write-offs for current year's assessments					Write-offs of past arrears				
	Taxes	Non-tax	Fines	Loans	Total	Taxes	Non-tax	Fines	Loans	Total
2000										
2001	275	13	54	131	473	122	36	97	1,022	1,277
2002	456	11	63	118	649	95	34	69	2,140	2,339
2003	804	24	131	155	1,114	173	32	66	270	541
2004	1,073	38	46	90	1,248	138	55	131	193	518
2005	285	17	42	73	417	196	56	161	398	811
2006	1,340	63	41	54	1,497	152	67	124	217	560
2007	224	14	446	29	713	105	30	1,358	217	1,710
2008	197	34	1,305	22	1,558	109	257	1,048	94	1,508
2009	267	23	36	19	345	170	29	102	20	321
2010	260	26	45	14	345	143	43	355	2	543
2011	261	25	78	208	572	227	52	350	757	1,386
2012	203	26	101	308	638	165	30	141	42	377
2013	329	24	128	7	489	124	34	114	2	275
2014	565	28	104	2	699	450	74	290	103	916
2015	1,071	34	102	2	1,208	358	54	159	6	577
2016	330	25	109	6	470	382	137	284	505	1,308
2017	491	22	51	470	1,035	496	86	352	131	1,064
2018	1,445	161	160	1	1,767	842	55	199	50	1,146
2019	480	97	10,188	1	10,765	963	136	212	551	1,862

Table A4. The time adjustment Item.

Year	Change of stock of arrears					Non-collections					Receipts and write-offs of arrears					Time Adjustment item				
	Taxes	Non-tax	Fines	Loans	Total	Taxes	Non-tax	Fines	Loans	Total	Taxes	Non-tax	Fines	Loans	Total	Taxes	Non-tax	Fines	Loans	Total
2001	396	91	300	-549	239	935	372	481	518	2,306	476	87	180	1,076	1,818	-63	-194	0	8	-249
2002	519	99	352	-1,839	-869	1,084	295	559	318	2,256	507	83	146	2,159	2,895	-57	-113	-61	2	-230
2003	1,230	178	1,043	-42	2,409	1,920	425	1,429	272	4,046	659	82	144	308	1,192	-31	-165	-243	-6	-445
2004	3,444	148	2,285	322	6,200	4,070	414	2,500	542	7,526	671	106	202	223	1,203	45	-159	-13	3	-124
2005	566	226	1,526	-8	2,310	1,592	471	1,710	397	4,171	829	116	220	415	1,580	-197	-129	36	10	-280
2006	3,003	94	2,487	-22	5,562	3,805	382	2,626	215	7,028	846	119	190	236	1,391	43	-169	51	-1	-75
2007	1,293	110	945	-219	2,128	2,363	564	4,006	131	7,065	1,011	141	1,433	363	2,947	-59	-314	-1,629	12	-1,989
2008	1,352	78	445	50	1,925	2,120	570	4,415	186	7,292	812	320	1,133	119	2,384	44	-173	-2,836	-18	-2,983
2009	1,725	193	1,421	127	3,467	2,665	456	1,666	178	4,965	851	116	188	49	1,205	-88	-146	-56	-3	-293
2010	2,212	208	1,530	1,924	5,874	3,247	388	2,063	1,951	7,649	912	91	469	23	1,494	-123	-89	-64	-5	-281
2011	3,114	178	2,720	-80	5,932	3,902	402	3,265	698	8,267	936	91	420	771	2,218	148	-134	-125	-7	-118
2012	2,441	500	7,253	681	10,875	3,807	772	7,302	702	12,584	1,144	77	198	50	1,470	-222	-196	149	30	-239
2013	3,405	298	2,534	1,625	7,862	4,944	654	2,880	1,745	10,223	1,567	121	177	121	1,986	28	-236	-170	1	-376
2014	4,571	557	4,741	1,348	11,217	7,493	982	5,155	1,688	15,318	2,134	142	357	115	2,748	-788	-283	-57	-225	-1,353
2015	5,147	443	3,786	1,910	11,286	7,793	893	4,136	1,710	14,531	2,105	123	223	14	2,466	-541	-326	-126	213	-780
2016	4,032	1,177	1,753	418	7,380	6,684	1,958	1,912	1,815	12,369	2,824	292	359	557	4,032	172	-489	200	-840	-957
2017	3,522	283	1,529	1,576	6,909	6,855	914	1,933	877	10,580	3,166	176	441	140	3,924	-167	-455	36	839	254
2018	1,741	266	1,014	1,238	4,259	5,293	1,034	1,168	1,379	8,874	3,606	205	274	134	4,220	55	-562	120	-7	-395
2019	1,192	175	428	-416	1,379	3,973	822	3,175	129	8,099	3,595	234	312	570	4,711	814	-413	-2,435	25	-2,010