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#40 Shareholders Loans: A Simple Method of Money Laundering >>

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SHAREHOLDERS LOANS: A SIMPLE METHOD OF MONEY LAUNDERING

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>> RESUMO

O presente estudo propõe-se discutir a lavagem de dinheiro sob uma nova perspetiva. Para Mitchell et al. (1998) e Bingham (1992), entre outros, subjacente a tal lavagem existem complexas teias de transações com o propósito de "limpar" fundos ilícitos, transmitindo-os "através do sistema bancário de modo a disfarçar a origem ou a propriedade dos fundos".

Lê-se esta descrição e pensa-se em ambientes escuros, "gangsters" e traficantes de drogas. No entanto, pode lavar-se dinheiro de modos simples que a literatura não discute, mas são familiares a muitas pessoas. É o caso dos empréstimos de sócios, que podem ser utilizados como solução de lavagem dos montantes resultantes das vendas sem fatura (subfacturação) que as empresas possam fazer.

Para o caso português, recolhe-se evidência e testa-se a hipótese de que tais empréstimos são usados com o referido propósito. Utiliza-se uma metodologia baseada em dois passos. Primeiro, ela classifica as empresas de acordo com o respetivo comportamento no que concerne às vendas sem fatura; segundo, relaciona os empréstimos de sócios aos montantes arrecadados por essa via. A evidência empírica mostra uma relação positiva entre aquele tipo de vendas e os referidos empréstimos.

Este resultado é um contributo para a literatura, trazendo à discussão um novo modo de lavagem de dinheiro.

Palavras-chave: Fraude fiscal; vendas sem fatura; lavagem de dinheiro; empréstimos de sócios; contabilidade.

JEL: M41, C2

>> ABSTRACT

This study aims to discuss money laundering from a new perspective. For Mitchell et al. (1998) and Bingham (1992), among others, underlying money laundering there are complex webs of transactions with the purpose of "cleaning" illicit funds, transmitting them "through the banking system in such a way as to disguise the origin or ownership of the funds".

One reads this description and thinks of dark environments, gangsters and drug dealers. However, money can be laundered in simple ways that the literature does not discuss, and are familiar for many people. It is the case of shareholders loans that can be used as a solution for cleaning the proceedings of invoiceless sales firms make.

For the Portuguese case, we gather empirical evidence and test the hypothesis that such loans are used as a laundry solution for those proceedings. We use a methodology based on two main steps. First, it classifies firms according to their tax fraud behavior by invoiceless sales; second, it relates shareholders loans to such proceedings. We found a positive relationship between these two variables. This result will be a contribution to the literature bringing into the discussion another money laundry tool.

***Keywords**: Tax fraud; invoiceless sales; money laundering; shareholders loans; accounting.*

***JEL**: M41, C2*

>> 1- INTRODUCTION

For several years the Portuguese Tax Authority (PTA) have been concerned with invoiceless sales undertaken by companies. The dimension of the problem worried every government. This is apparent in the attitude of the PTA that for a long time kept in the media and on its official site on the internet an advertising campaign subject to the theme "***Please ask the bill. The bill moves the country forward***". This campaign sought to raise citizens' awareness of the social importance of always requesting an invoice.

More recently, in 2012, after the PTA have identified the sectors of activity where the practice of invoiceless sales was more intensive, started to assign benefits to allow the deduction on the Personal Income Tax (PIT) of a part of the Value Added Tax (VAT) inscribed in invoices issued in those sectors.

In 2013 the PTA reinforced the fight against invoiceless sales and imposed rules requiring that entities issuing invoices should report them almost immediately the PTA. At the beginning of 2014, and to encourage the request of invoices by taxpayers, it launched the contest "Bill of luck", which consists in a weekly national raffle for a luxurious car.

On October 2014, the draft of the Law of the Budget for 2015 was contained a clause imposing that companies will have to communicate in January 2015 their beginning inventories of merchandise and products. The government also motivated citizens to fight against informal economy by promising to refund in 2016 a portion of the PIT surcharge collected in 2015 if the amount of collected taxes would overcome a given level.

This is no surprise at all if one realize that the invoiceless sales are a part of the so called "informal economy", that in Portugal represents around 23% of Gross Domestic Product (GDP) (e.g. Afonso & Gonçalves, 2009; Anno, 2007). Among other consequences, invoiceless sales imply a significant decrease in tax collection, namely Value Added Tax (VAT) and Corporate Income Tax (CIT).

The relationship between invoiceless sales and shareholders loans has been acknowledged several years ago. In 2005, on the 2nd of April, a news report published by *Correio da Manhã*, mentioned the intention of the PTA to inspect the accounting books of companies that potentially make a part of their business in the informal economy. The report added that "... one of the factors the PTA will be paying more attention is to the account of 'sha-

reholders loans'.[1] It is through this mechanism that the company can sell in the 'informal economy' and survive financially. Shareholders loans are the vehicle to introduce the cash in the company".

In fact, shareholders loans were a very common practice used by companies until 2007. Companies making invoiceless sales had their accounting earnings managed downward, and the income tax bill shrank. However, unless such companies were able to buy the inputs in the informal economy, and pay them with undeclared funds, invoiceless sales practice sooner or later would tend to lead the company into treasury management problems, and difficulties in honoring financial commitments. To prevent this constraint, the financial amounts collected from invoiceless sales needed to be pumped into the company treasury. This could be done through shareholders financial loans, "laundering" the cash that was in the informal circuit and, at the same time, providing the funds that assured companies' financial stability.[2]

Under these circumstances, this paper aims to test empirically the anecdotal evidence showing a connection between shareholders loans increases recorded in companies' books and the invoiceless sales these made, i.e. to test whether such loans were a vehicle adopted for "laundering" the proceeds of this accounting and tax fraud.

Two main factors motivate our study. Firstly, there is no evidence in the literature, at the national and international levels, shedding light on this type of fraud. The areas of fraudulent financial reporting and tax fraud "... have been somewhat neglected in the literature" (DeFond, 2010:406), although these types of phenomena are costly for the society as a whole, a motive of strong inequality among citizens, and seems to be more widespread in the business world than one could expect.

Secondly, as we explained above, there is a particular context, a temporary window of opportunity, that makes possible the design of the research in a way that avoids the access to privileged corporate information. Until 2007, despite the PTA recurrent menaces, it was quite easy for Portuguese companies to introduce in their treasury the informal proceeds of invoiceless sales. They just needed to take these proceeds and record them in the books as shareholders loans. This implied thus that associated to increases in such loans one had a high probability of finding traces of invoiceless tran-

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1 For the sake of simplicity, throughout the paper we will label this type of loans as "shareholders loans". However, for entities that take a legal structure of "limited liability partnership" a more precise definition would be "partners loans".

2 Throughout the paper we will label corporate entities as "companies", even when they have a partnership structure.

sactions. This is what we will be doing. It is a unique opportunity, namely because nowadays the legal and accounting mechanisms of control in place, namely more intense and regular audit inspections by the PTA when companies report increases in shareholders loans, and the bank system obligation to control the origin of all funds that enter a person or company account, even for small amounts, narrowed somehow companies window of opportunity for laundering the money related to the type of fraud activities we have mentioned.

The study adopts a relatively simple two-step methodology. Firstly, as we justify in detail later in the paper, invoiceless sales leave traces in the accounting numbers, not only in the cash flow that affects the treasury but also in companies' gross margin. Companies are classified according to their fraud behavior into groups of "fraudster" and "non fraudster", based on predictions of their abnormal cash flow from operations (CFO) and cost of goods sold (COGS) (e.g. Cohen et al., 2008; Roychowdhury, 2006). Secondly, a model is developed and regressed to test the relationship between companies' fraud behavior underlying invoiceless sales and the sign of shareholders loans change.

The empirical evidence supports the ex-ante expectation of an empirical positive relation between shareholders loans increases and tax fraud through invoiceless sales. The evidence suggests that at least a part of those loans was related to accounting and tax fraud, and these loans were the vehicle for "laundering" the proceeds of informal transactions and, simultaneously, keep the involved companies financially solvable.

The current study makes, at least, two main contributions. Firstly, it shows that in the particular context described in the paper shareholders loans were used as a way of "laundering" the proceeds of invoiceless sales, serving simultaneously to keep companies solvable. This double purpose of the "money laundering" vehicle is in itself also a novelty in the literature, contributing for a better understanding of what can be in each moment and context the determinants underlying the choice of the vehicles adopted to reintroduce illicit money in the formal economy. Secondly, based on a sample of southern European unlisted companies, our study also makes a contribution to the yet scarce literature on these firms, namely by bringing information about the way tax evasion evolves in this region (e.g. Richardson, 2006).

On a more practical perspective, this study is of particular interest for the PTA, because of the contribution it makes to a better understanding of Portuguese business reality and the relationship between companies, consumers and that Authority. Moreover, it is also of interest for authorities in

other countries that face similar challenges in dealing with tax evasion and "money laundering".

The study contains four additional sections. Section 2 presents a short literature review on methods of money laundering and how shareholders loans can be seen as a method or technique for such an activity. In section 3, the research hypothesis is developed and discussed. The empirical results are discussed in section 4. Finally, a summary of the main conclusions and contributions is made available in section 6.

>> 2- SHAREHOLDERS LOANS AND DISCUSSION OF THE RESEARCH HYPOTHESIS

2.1- Shareholders loans as a method of money laundering

Before any other discussion a definition of money laundering is required. To Bingham (1992:25) money laundering "means transmitting illicit funds through the banking system in such a way as to disguise the origin or ownership of the funds". Underlying this definition, are the two key-characteristics Masciandaro (1999) mentions: ***Illegality***, implies the use of revenues originated illegally or from criminal activities; ***Concealment***, because de first goal of money laundering is to hide the illegal source of such revenues. This definition fully complies with the issue discussed in the current paper, where the money lent has illegal origin, and the purpose of the loan is to hide its origin.

There are a lot of methods and techniques of money laundering (e.g.Quirk, 1997; Sarigul, 2013). Following Sarigul's taxonomy, we select those that may be closer to the issue under discussion:

- *Smurfing*: consists in the use of multiple deposit accounts to deposit cash amounts smaller than the minimum cash reporting requirement;
- *Currency Smuggling*: this is an illegal cross-border movement currency. This process can be made by persons (cash couriers) that carry the currency, or by concealing the money in vehicles (e.g. commercial shipments or express packages) or in private aircrafts or boats;
- *Cash Conversion*: the illegal cross-border movements of high value items such as diamonds and gold which are physically easy to smuggle and easy to reconvert into cash;
- *Cash Intensive Business*: using some kind of business that can deal with large amounts of money and can register illegitimate incomes like restaurants, vending machines operators and parking garages. Somehow, invoiceless transactions proceeds tend to be treated with this technique before formally be transformed into shareholders loans;
- *Casinos*: this kind of places is frequented by many people with a lot of money and is very difficult to monitor everybody. People change their illicit money by casino chips and tokens. After some gaming, chips and tokens are changed again into casino cheques that can be deposited in a bank account.

Companies in Portugal are generally small and medium enterprises, and in addition to being managed by the owners their corporate structure is mostly familiar. This implies that the company's interests match exactly

those of the managers/shareholders and that there is an incentive to minimize corporate taxes. In this context, the "tax morale" (Richardson, 2006) tends to be low, i.e. the moral principles or values individuals hold about paying taxes tend to be weak, mainly because citizens do not have a good relationship with the State. This explains, at least partly, the high level of Portuguese tax evasion.

As mentioned in the Introduction, a way companies have to minimize corporate taxes is through invoiceless sales. Since company's interests match exactly those of managers/shareholders, the values received from invoiceless sales go directly to the managers/shareholders. Thus, is necessary to found a mechanism to launder this money. The *Smurfing* is one of the ways that managers/shareholders use nowadays because since 2007 changes in the tax rules limited the opportunities to money laundering, and the PTA is closely scrutinizing shareholders loans.

As mentioned above, shareholders loans related to invoiceless sales fit Masciandaro (1999) characteristics. They use illegal money, that haven't been reported for tax purposes, and conceal the origin of the funds, taking advantage of existing soft bank and tax rules. Moreover, as we also mentioned above, such loans were more than just a mere money laundering technique, given their role in keeping solvable companies making invoiceless sales.

Arguably there is a link between accounting fraud, through invoiceless sales, and money laundering, and accounting professionals can play a very important roll in drawing it (e.g. Compin, 2008; Sikka & Hampton, 2005). For Mitchell et al. (1998), accountants and auditors may use their expertise to create complex webs of transactions with the purpose of "cleaning" illicit funds. In the case of shareholders loans, that can be seen as a technique adding to the common lists of methods and techniques for money laundering (e.g. Quirk, 1997; Sarigul, 2013), the web is far from being complex. It is very simple indeed.

2.2- Discussion of the research hypothesis

Let's remind that the aim of this study is to discuss whether there is an empirical connection between shareholders loans recorded in companies' books and the invoiceless sales they make, i.e. that such loans are a vehicle adopted by some companies for "laundering" the proceeds of the accounting and tax fraud.

Anecdotal evidence of companies' daily life, and of known results of upward tax corrections applied by the PTA, allow to expect that the fraud

occurs, at least partly, through invoiceless sales. It is also informally known that companies tend to acquire in the formal circuit, and record in their books, the inputs underlying invoiceless sales, implying that their costs will not suffer the same downward impact as their revenues, making the gross margin decline. Earnings are negatively affected, as intended, and companies' treasury will suffer the grip resulting from the asymmetric evolution of costs and receipts. It will be difficult for the company to ensure the payment to suppliers and other creditors unless the proceeds of invoiceless sales are reintroduced in the treasury. In such a context, shareholders loans are adopted as a vehicle that has the above mentioned double purpose of "laundering" those proceeds, reintroducing them in the formal economy, and keep the company financially solvable.

Thus, in sum, this fraud process has two main consequences. Firstly, there is a negative impact on companies' recorded turnover, and on the gross margin, because they tend to record in their accounting all purchased inputs. Secondly, the treasury is negatively affected, constraining companies in solving timely their financial commitments, unless the proceeds of the invoiceless sales are "laundered" and enter companies' accounting books. This is expected to be accomplished through shareholders loans.

This general intuition is synthesized in the following hypothesis:

H1: Shareholders loans increases are related to accounting and tax fraud through invoiceless sales.

The next subsection introduces the methodology and statistical sample adopted to test this hypothesis.

>> 3- METHODOLOGY AND SAMPLE SELECTION

3.1– Classification of invoiceless sales companies

As we mentioned, it is expected that invoiceless sales influence negatively the gross margin[1], because the sales recorded are lower than current sales and at least a part of the inputs underlying the invoiceless sales tend to be recorded in the books. This asymmetric movement implies two consequences: the COGS increase relatively to the volume of invoiced sales; the CFO deteriorates beyond the effect of the invoiceless sales.

The assumption that the cost of all inputs tends to be recorded as a cost, regardless of the sales invoicing nature, is based on anecdotal concrete evidence. It permits us to classify the companies regarding their invoiceless sales behavior based on two models available in the literature to detect earnings management through real activities (e.g. Cohen et al., 2008; Ge & Kim, 2014; Gunny, 2010; Roychowdhury, 2006).

The first model, adapted from Roychowdhury (2006) and Cohen et al. (2008), allows the estimation of the normal level of COGS based on companies' revenue:

$$\frac{COGS_t}{TA_{t-1}} = \alpha_1 + \alpha_2 \frac{1}{TA_{t-1}} + \alpha_3 \frac{REV_t}{TA_{t-1}} + \xi_t \quad (1)$$

where,

COGSt - Cost of goods sold of year t

REVt - Revenues of year t;

TAt-1 - Total assets at the end of year t-1;

ξ_t - The model residuals.

Because the intercept (α_1) absorbs the average effect of the uncorrelated omitted variables of the model, in this particular case at least the control for the impact of invoiceless sales on the *COGS*, it is expected that coefficient to be higher for firms having invoiceless sales (*YIS*) than for firms with no invoiceless sales (*NIS*). As suggested by Moreira (2006), when the model is estimated cross-sectionally by industry with no control for invoiceless sales one may expect that the size of the intercept will lie somewhere in between the extreme cases characterised by having only one type of sales (*NIS* or *YIS*). Let us call it the "average intercept" (α_{1m}). Given the higher impact of *REV* on *COGS* for invoiceless sales companies, it is expected that

[1] The "gross profit margin", or simply the "gross margin", is defined as the revenue (sales + services) minus the cost of goods sold and consumed.

this intercept is understated for *YIS* firms, and overstated for *NIS* firms, i.e. $\widehat{\alpha_1}\ YIS > \widehat{\alpha_{1m}} > \widehat{\alpha_1} NIS$. The consequence is the existence of a measurement error (*ER*R) that translates into the estimation of $\widehat{COGS}$ and is defined as $ERR1=COGS_t-\widehat{COGS}$. It follows the expectation: $ERR1_{YIS}>0$ and $ERR1_{NIS}<0$.

The second model, adapted from Ge and Kim (2014), is used to estimate the normal level of *CFO* (Cohen et al., 2008; Roychowdhury, 2006):

$$\frac{CFO_t}{TA_{t-1}} = \beta_1 + \beta_2 \frac{1}{TA_{t-1}} + \beta_3 \frac{REV_t}{TA_{t-1}} + \beta_4 \frac{\Delta REV_t}{TA_{t-1}} + \varepsilon_t \qquad (2)$$

where CFOt is the cash flow from operations and ΔREV_t is the change in revenues, both in yeart. The other variables are defined as per equation (1).[3]

To discuss the impact of invoiceless sales on the estimation of *CFO* we adopt a deductive reasoning similar to the one used in model (1). For a given amount of recorded revenue, the impact on *CFO* of the cost of the inputs underlying the sales tends to be higher for *YIS* than for *NIS* companies. This means that it is expected the *CFO* will be smaller for a company classified as a *YIS*, because the cost of the inputs that impact *CFO* is higher than for a *NIS* company, given that such a cost is expected to be related to an amount of sales higher than that recorded in the books. This implies that the "average intercept" (β_{1m}) is expected to follow this hierarchy: $\widehat{\beta_1}\ NIS > \widehat{\beta_{1m}} > \widehat{\beta_1} YIS$. Defining $ERR2 = CFO_t - \widehat{CFO_t}$, then it is expected that: $ERR2_{YIS}<0$ and $ERR2_{NIS}>0$.

Based on the above models, and on the economic intuition underlying each of them, we define a variable to classify fraudster companies based on the methodology proposed by Gunny (2010), the "invoiceless sales companies" variable (*ISC*).

Companies having an estimated *ERR2* less than or equal to the 1st quartile of the distribution of such measurement errors, i.e. that have *CFO* quite below the normal expectation, are more likely to have undertook invoiceless sales. The same is true for companies that have an estimated *ERR1* greater than or equal to the 3rd quartile of the distribution of this type of measurement error, i.e. having *COGS* above the normal expectation. Thus, companies that most likely made invoiceless sales are those that fill simultaneously both conditions.

According to Gunny (2010), there is a simple way of combining both criteria and define a unique classifying variable. Firstly, both error variables distributions are sorted in ascending or descending order. Secondly, the dis-

[3] The models (1) and (2) are estimated cross-sectionally by year and industry whenever this has at least 15 observations (Roychowdhury, 2006) in the sample defined in subsection 3.4 below

tribution of one of these variables is multiplied by minus one, in order to get its symmetric. We have chosen the *ERR1* variable, and named it *SERR1*. Thirdly, each observation of SERR1 is summed with its counterpart in the *ERR2* sorted distribution, creating the variable *ΣERR*. In this new distribution companies that most likely made invoiceless sales are those with the lowest *ΣERR* values. Thus, finally, the ISC variable is defined as a dummy variable that takes value 1 if the value of *ΣERR* for a particular observation is less than or equal to the 1st quartile of its distribution, 0 otherwise.

3.2- The model

The aim of the current research is to test whether shareholders loans are related to accounting and tax fraud by invoiceless sales. As the working hypothesis states, we predict a positive relationship between increases of such loans and the existence of this type of manipulation. The global model, estimated by Ordinary Least Squares (OLS), is the following:

$$\Delta \mathrm{LOA}_{it} = \alpha_1 + \alpha_2 \mathrm{ISC}_{it} + \alpha_3 \mathrm{FL}_{it} + \alpha_4 \mathrm{SIZE}_{it} + \alpha_5 \mathrm{AUDIT}_{it} + \alpha_6 \mathrm{LF}_{it} + \alpha_7 \mathrm{IMPEXP}_{it} + \alpha_8 \mathrm{SUB}_{it} + \sum_{n=1}^{46} \alpha_l \mathrm{IND}_n + \sum_{t=2000}^{2007} \alpha_j \mathrm{YEAR}_t + \varepsilon_{it} \quad (3)$$

The dependent variable of the model is the positive changes in shareholders loans (*ΔLOA*), using *ISC* as the main variable that qualifies companies as fraudster by invoiceless sales. The other are control variables. The complete set of variables is defined as follows:

ΔLOA_{it} – Positive changes in shareholders loans of companyi and yeart, deflated by lagged total assets;

ISC_{it} – Dummy variable that takes the value 1 if companyi in yeart is classified as a fraudster by invoiceless sales, 0 otherwise. Given the above discussion, we expect its coefficient to be positive;

FL_{it} – Financial leverage or the ratio of equity to total assets of companyi and yeart. According to the discussion above, we expect its coefficient to be negative;

$SIZE_{it}$ - Size of companyi in yeart, proxied by the natural logarithm of total revenues. It is assumed that small companies are more likely to make invoiceless transactions, and thus we predict its coefficient to be negative;

$AUDIT_{it}$ - Dummy variable that controls for the existence of an auditor in yeart, a way of constraining the occurrence of invoiceless sales and thus the use

of shareholders loans. It takes 1 if there is an auditor, 0 otherwise, and the expected sign of its coefficient is negative;

LF_{it} - Dummy variable taking value 1 if the legal structure of the company is a limited company, 0 if it is a limited liability partnership. It is assumed that the use of shareholders loans arising from invoiceless sales is easier for the latter given their smaller number of partners that makes less difficult to get an agreement on such a matter. Thus, it is expected its coefficient to be negative;

$IMPEXP_{it}$ - Dummy variable taking value 1 if the company has import/export activity, 0 otherwise. Due to existence of control procedures and extra documentation, it is assumed that companies with this type of activity may have additional difficulties to make invoiceless sales, and therefore to have related shareholders loans. Thus, it is expected its coefficient to be negative;

SUB_{it} - Dummy variable that takes value 1 if the company is deemed as an affiliate/ subsidiary of another company, 0 otherwise. In affiliates/subsidiary companies shareholders loans can be the visible effect of the financial relations in the group. Thus, we predict its coefficient to be positive;

$\sum_{n=1}^{46}\alpha_i IND_n$ - Set of dummy variables that take value 1 if the observation belongs to a particular industry[4] $_n$, 0 otherwise. We do not issue a prediction about the sign of these variables;

$\sum_{t=2000}^{2007}\alpha_j YEAR_t$ - Set of dummy variables that take value 1 if the observation belongs to year$_t$, 0 otherwise. Also in this case we do not issue a prediction about the sign of their coefficients;

ε_{it}, - Estimation error which complies with the classical assumptions of the models estimated by OLS.

The continuous variables are deflated by lagged total assets. This procedure is intended to circumvent heteroscedasticity problems (e.g. García-Teruel et al., 2009; Jones, 1991).

3.3- Selection of the sample and descriptive statistics[5]

The sample includes limited companies (hereafter LTD) and limited liability partnerships (hereafter LLP) available in the Iberian Balance Sheet Analysis System (SABI), database of Bureau van Dijk, with data for the years

[4] The industries were defined as a two-digit code of the Portuguese industry classification (v.3). The Portuguese Industry Classification v.3 is closely linked to the NACE - Statistical Classification of Economic Activities in the European Community v.2

[5] All statistical treatment is carried out using the Statistical Analysis System (SAS) software

1998-2007.[6] The global sample is composed by companies with positive changes in shareholders loans.

Table 1 describes the sample selection. Listed, financial and companies belonging to the public sector were deleted in the selection process because they are expected to have distinct incentives and freedom to make invoice-less sales (e.g. Coppens & Peek, 2005).

Table 1-Sample selection

Description	N. Obs.
SABI data base (2009). The number of companies and partnerships reaches 28814, for the period 1998-2007	288,140
After removal of listed, financial sector, and public sector companies	243,072
After deletion of missing data and lagging of variables.	102,181
After imposing a minimum of 15 observations per industry and year	101,389
Global sample: After elimination of observations with ΔLOA negative, null or missing, and outliers (1% +1%) of this variable.	4,027

To estimate models (1) and (2) we eliminated all industries with less than 15 observations per year (e.g. Roychowdhury, 2006). To estimate model (3), we considered only observations with positive *LOA*. After deletion of outliers (1% +1%) for variable *ΔLOA*, by year and industry, the number of observations reduced to 4,027.

The following tables present descriptive statistics in order to describe the sample.

Table 2-Observations distribution by year and activity sector

Sector/year	2000	2001	2002	2003	2004	2005	2006	2007	Total	%
Primary	2	2	7	8	16	9	28	30	102	2.53%
Secondary	84	141	140	182	202	163	222	302	1,436	35.66%
Tertiary	94	156	220	257	314	265	530	653	2,489	61.81%
Total	180	299	367	447	532	437	780	985	4,027	100.00%

Table 2 shows that observations increased in more recent years. This is due to the fact that we are dealing with a recent database. The number of

[6] Since 2007 changes in the tax rules circumvent enormously companies' window of opportunity to use shareholders loans as a money laundering technique.

observations of the tertiary sector represents more than 60% of the total sample, followed by approximately 36% in the secondary sector. The primary sector represents only 2.5% of the sample.

Table 3-Descriptive statistics

Panel A: Characterization of the sample

Variable	Model	Mean	Median
Abnormal *COGS*	1	0.028	0.026
Abnormal *CFO*	2	-0.222	-0.025
Revenues (Euros)	3	16,217,162	2,709,269
Financial leverage	3	0.227	0.231
Shareholders loans (Euros)	3	1,120,034	60,807

Panel B: Analysis of the model (3) dummy variables

Variable	YES (1)	%
ISC	1,783	44,28%
AUDIT	1,899	47,16%
LF	1,150	28,56%
IMPEXP	1,815	45,07%
SUB	95	2,36%

Notes:

1. "Abnormal *COGS*" are the residuals of model (1), also labeled *ERR1*, and "Abnormal CFO" are the residuals of model (2), *ERR2*. The number of observations used to estimate model (1) and model (2) was 101,389. "Revenues (Euros)" is total revenues in Euros. "Financial leverage", also labeled *FL*, is the ratio of equity to total assets. " Shareholders loans (Euros)" is the change in shareholders loans in Euros.
2. Variables definition: *ISC* - dummy variable that takes value 1 if the company is classified as fraudster by invoiceless transactions, 0 otherwise; *AUDIT* - dummy variable that takes value 1 if the company report is audited, 0 otherwise; *LF* - dummy variable that takes value 1 if the legal structure is a limited company, 0 if it is a limited liability partnership; *IMPEXP* - dummy variable that takes value 1 if the company has importing/exporting activity, 0 otherwise; SUB - dummy variable that takes value 1 if the company is deemed an affiliate/ subsidiary of another company, 0 otherwise.
3. The number of observations used to estimate model (3) was 4,027.

The Table 3 – Panel A shows that mean and median values of the Abnormal *COGS* are positive, according to the expectation referred in 3.1. The same happens to Abnormal *CFO*, but with negative mean and median values. Another important aspect is related to *FL*. As expected, the values, for the

mean and median, are low since 0.25 is the minimum value that companies need to reach, for example, when they apply for a subsidy or a grant.

In Table 3- Panel B we can see that almost 50% of the cases (44.28%) are classified as invoiceless sales companies. This evidence is in line with the expectation underlying the research hypothesis (H1). 47.16% of the observations are associated with companies for which their report is audited. Only 2.36% of observations represent companies that are an affiliate/subsidiary of another company.

Table 4 shows the correlation coefficients of Pearson between the different variables used in model (3).

Table 4 – Correlation Coefficients of Pearson

	ΔLOA	*ISC*	*FL*	*SIZE*	*AUDIT*	*LF*	*IMPEXP*	*SUB*
ΔLOA	1	0.090	-0.274	-0.044	0.034	0.061	-0.108	0.096
(P- Value)		(<.0001)	(<.0001)	(0.006)	(0.029)	(0.000)	(<.0001)	(<.0001)
ISC		1	-0.043	0.005	-0.015	-0.024	0.028	0.029
(P- Value)			(0.006)	(0.731)	(0.347)	(0.129)	(0.081)	(0.062)
FL			1	0.068	0.006	-0.031	0.162	-0.057
(P- Value)				(<.0001)	(0.696)	(0.053)	(<.0001)	(0.000)
SIZE				1	0.484	0.371	0.153	0.069
(P- Value)					(<.0001)	(<.0001)	(<.0001)	(<.0001)
AUDIT					1	0.837	0.074	0.086
(P- Value)						(<.0001)	(<.0001)	(<.0001)
LF						1	0.023	0.092
(P- Value)							(0.145)	(<.0001)
IMPEXP							1	0.001
(P- Value)								(0.970)
SUB								1

Notes:

1. Variables definition: *ΔLOA* – Positive change in loans deflated by lagged total assets; *SIZE* - Company size defined as the natural logarithm of total revenues. The remaining variables are as per Table 3.
2. The correlation coefficients of Spearman are identical to the Pearson.

The correlation coefficients displayed in Table 4 are in line with the expectations, namely the positive and significant correlation between *ΔLOA*/*ISC* (0.090). The same happens with the negative and significant correlation between *ΔLOA*/*FL* (-0.274) and *ΔLOA*/*SIZE* (-0.044). Thus, this evidence is also in line with the expectation underlying the research hypothesis (H1). In the next subsection we discuss the empirical results of model (3).

>> 4- EMPIRICAL RESULTS

In the previous subsections we discussed the research hypothesis (H1), the model (3) to test it, and the data. Now we analyse the empirical evidence available from its estimation.

4.1- Relation of shareholders loans with invoiceless transactions fraud

Table 5 displays the estimated coefficients for the relationship between increases in shareholders loans and the existence of invoiceless transactions.

Table 5- Change in shareholders loans and invoiceless transactions

Independent Variables	Expected Sign	Coefficient	P-Value
INTERCEPT	?	0.132	(<.0001)
ISC	+	0.014	(<.0001)
FL	-	-0.098	(<.0001)
SIZE	-	-0.004	(0.008)
AUDIT	-	0.001	(0.873)
LF	-	0.010	(0.075)
IMPEXP	-	-0.012	(0.001)
SUB	+	0.042	(<.0001)
R^2 (%)		12.00	
AJUST. R^2 (%)		10.71	

Notes:

1. The variables are defined as per Table 3 and Table 4.
2. The model was regressed with a set of control variables for year and industry. For the sake of parsimony their coefficients were not displayed. Observations: 4,027.

The model is globally significant and its explanatory power has an Adjusted R2 of 10.71%. The coefficients of the variables tend to show the expected sign, and the relationship between the increase in shareholders loans and the variable that classifies companies as fraudster by invoiceless sales (*ISC*) is positive and significant (0.014). This evidence supports hypothesis H1, showing that such a relation exists and is significant at the conventional degree of statistical confidence.

Unexpectedly, the *AUDIT* variable shows a no significant coefficient, suggesting that auditors are unable to control the deep source of (at least part of) shareholders loans. A potential explanation for this result may be the fact that auditors' role is not to control the existence of fraud, rather to assure companies' compliance with accounting standards. However, if we think that invoiceless transactions do not comply with the rules, auditors should have a significant role, unless companies more prone to undertake the fraud are smaller and may not have their accounts audited.

The variable *SIZE*, as expected, shows a significant coefficient, suggesting that shareholders loans are negatively driven by company size. Similarly, shareholders loans in companies that have a group relationship (*SUB*) are at least partly driven by such group connections. Companies' *IMP/EXP* activity (*IMPEXP*) also seem to affect shareholders loans, showing a significant coefficient.,

On concerning the *IND* control variables, we only identified 2 (4.35%) among 46 with positive and significant coefficients. Such *IND* are: 20 – Manufacture of synthetic fibers; and 63- Activities of architectural, engineering and related techniques. The coefficients for the *YEAR* control variables are generally not significant. Only year 2002 and 2003 present positive and significant coefficients.

Additional tests were performed. One of them discusses the possibility of changes in shareholders loans being mere loans between the mother company and its subsidiaries. Using the previous methodology, we eliminated from the samples companies classified as subsidiaries of other companies, implying to remove larger companies where shareholders loans may not be related to invoiceless sales. Given this adjustment, variable *SUB* was removed from the original model. The results are similar to those displayed in Table 5. Thus, after having controlled for the effect of group relations, the evidence still supports the intuition underlying the research hypothesis: changes in shareholders loans are related to fraud by invoiceless sales.

We also regressed de model (3) for subsidiaries only. In this case the relationship ceases to exist, suggesting that for these companies shareholders loans are not significantly related to invoiceless sales. A potential reason for this result may be the size of companies belonging to groups that could constrain somehow invoiceless sales fraud.

In summary, the empirical evidence collected supports the findings discussed in the previous subsection, i.e. it supports the hypothesis that companies making alleged invoiceless sales fraud use shareholders loans as a vehicle to introduce in their treasury the money that were generated in the informal economy.

>> 5- CONCLUSION

The current study tested whether there was an empirical and positive relation between shareholders loans increases recorded in companies' books and the invoiceless sales they made, i.e. whether such loans were a vehicle adopted for "laundering" the proceeds of this fraud.

The existence of a particular context, a temporary window of opportunity, made possible the design of the research in a way that avoids the access to privileged corporate information. The study adopted a relatively simple two-step methodology. Firstly, based on the traces invoiceless sales leave in the accounting numbers companies are classified according to their fraud behavior, into groups of "fraudster" and "non fraudster", based on predictions of their abnormal cash flow from operations and cost of goods sold. Secondly, a model is built and regressed to test the relationship between companies' fraud behavior underlying invoiceless sales and the sign of shareholders loans change.

The empirical evidence supports the ex-ante expectation of a positive relationship between shareholders loans increases and accounting and tax fraud through invoiceless sales. The evidence suggests that at least a part of those loans is related to this fraud, and they are the vehicle for "laundering" the proceeds of informal transactions and, simultaneously, for keeping financially solvable the involved companies.

The current study makes two main contributions to the literature. Firstly, it shows that in the particular context described in the paper shareholders loans are used as a way of "laundering" the proceeds of invoiceless sales, serving simultaneously to keep companies solvable. This double purpose of the technique usage is in itself also a novelty in the literature, contributing for a better perception of what can be in this particular context the determinants underlying the choice of the vehicles to reintroduce illicit money in the formal economy. Secondly, based on a sample of southern European unlisted companies, our study also makes a contribution to the yet scarce literature on these firms, namely in the way tax evasion evolves in this region (e.g. Richardson, 2006).

This study is of particular interest for the Portuguese Tax Authority, because of the contribution it makes to a better understanding of Portuguese business reality and the relation between companies, buyers and that Authority. However, its interest is geographically broader because it may be

helpful for similar authorities in other countries facing similar challenges in dealing with tax evasion and "money laundering".

Nevertheless, the current research is not exempt of limitations. The most prominent is the way companies are classified as fraudster by invoiceless sales. Although the economic intuition is strong and there is anecdotal evidence on the issue, we recognize there is space for using new and more elaborated proxies to do such classification. This is left as a path for future research.

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