Evaluating the efficiency of the tax incentives toward corporate philanthropy

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Abstract

This study aims at evaluating the efficiency of tax incentives toward corporate philanthropy in France. I concentrate on the effects of the 2003 tax reform which permanently increases the incentives to report a gift with the institution of a tax credit and the raise of the deduction limit. The identification of the effects of the reform relies on the variations of the price of giving between groups of firms with different marginal tax rate. The firms that should, in principle, benefit the most from the reform are the firms with the greatest price variation around the tax reform. The elasticity of contributions with respect to tax subsidy is found very small, raising doubt about the efficiency of the reform for the smallest firms. In a second step, I use the before-after estimation to identify the effects of the reform on different group of firms. I find that the responses to tax incentives tend to vary with revenue level. Overall, my evidence is consistent with the hypothesis that corporate giving is not motivated by a pure altruistic vision but rather respond to a larger theme of Corporate Social Responsibility. This suggest that the motives behind corporate philanthropy need to be better understood.

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I want to express my sincere gratitude to Gabrielle Fack and Thomas Piketty who accepted to supervise this Master's thesis and provided useful insightful comments and suggestions during this work. I am indebted to Laurent Bach who answered numerous questions about the corporate fiscal system and the data sample I use in this study.

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Contents

1 Introduction

Corporate giving is a particular form of modern philanthropy which has recently occupied a rising part in charitable contributions. Private French enterprises donated approximately €2 billion to charities in 2011 (DGFiP, Dépenses fiscales 2013, [12]). Out of the three and half million firms in France, around 25 000 reported a donation in their income tax return, which is four times higher than in 2004. This increase has been even more important with respect to its neighbor, individual contributions. While corporate donations represented in 2004 less than 18 per cent of the total amount of individual contribution, corporate giving witnessed a very rapid progress and reached, in 2011 approximately 87% of individual charitable contributions. This trend is common in most advanced countries, where corporate philanthropy and the larger theme of Corporate Social Responsibility (CSR) play a growing influence in corporate decisions. Among the various explanations that account for this phenomenon, the change in the fiscal regime toward higher incentives for giving firms may have a significant role. The 2003 tax reform consisted of a tax credit equal to 60% of the donation and paved the way for the most generous system in the world in favor of corporate giving. These deductions are thought to cost the state budget about €570 millions in foregone tax revenues. Assessing the effectiveness of this reform is fundamental as it is still not clear what part of the increase in corporate contributions account for the tax reform. Indeed, this last decade also witnessed a growing demand from the public and the institutions for integrating social and environmental issues in the corporate decision. More particularly, the biggest firms generating large profits are now requested to be socially responsible and some major environmental or social incidents generated by corporate decisions triggered a stronger public pressure on firms to be more responsible. In 2012, the oil company BP donated $500,000 through the BP foundation to the American Red Cross in support of Hurricane Sandy relief efforts, two years after having provoked a major incident in the same area. Likewise, Total oil group frequently reports having the highest net profit

in France and is also the most generous donor through its foundation. One can estimate such generosity as a way to enhance the public image of the firm: in this case, contributions would correspond to a strategic decision aiming at promoting the firm, regardless of any tax deductions. Hence, fiscal incentives linked to charitable giving may have had a positive impact on corporate philanthropy but it is probably not the sole factor determining the level of contributions in France. This study of the effects of the 2003 tax reform follows the article of Fack and Landais (2010, [9]) who estimated the effects of this reform on the individuals' contributions. They show that incentives for charitable giving are rather low but tend to increase with the level of gifts. However, in sharp contrast to the extensive body of literature on individual giving, few studies have analyzed the effects of tax incentives on corporate philanthropy. If a company maximizes its profits and uses charitable contributions to enhance its public image in a similar way as it does with advertising, then allocation public resources for subsidies to corporate giving might not be optimal. However, if firm's generosity responds to an altruistic approach where managers and shareholders increase their utility through "warm glow" of giving, incentives toward charitable giving are likely to be determinant. Hence, identifying the effects of these tax incentives has interesting implications as it determines how corporate giving is controlled by firm's decisions as well as informing us about the effectiveness of this fiscal scheme. The analysis of the effects of the 2003 tax reform leads to important implications. Some corporations may give the same amount irrespective of tax credit. Some might only respond mildly to the deduction. Thus, the amount of additional donations purchased with each dollar of lost government revenue, also known as the "price-elasticity of giving," is an important data point in assessing the efficacy of the deduction. Hence, there are important subsets of issues that revolve around the design of this incentive as it would be more powerful if concentrated where responsiveness is expected to be higher. Another important issue lies in disentangling long-run responses to persistent changes in price and income from short-run reaction. Companies may

decide to smooth their total expenditures and adapt their contributions to fluctuations in financial performance. Moreover business cycles may create variations in taxable income which could ultimately affect the amount of gift reported by the firm. Indeed, suppose a giving firm is taxed at the standard rate, then its price of giving is equal to 0.66. If during a low economic activity the firm's marginal tax rate is reduced to 15%, then its price of giving increases to 0.85. For this reason, the adaption of firms to these transitory changes in taxation can substantially affect the contributions. However the institution in 2003 of the tax credit for charitable giving modifies this phenomenon as the price of giving does not rely on the marginal income tax rate. Hence, the decision of reporting contributions is disconnected to the price variation and may be influenced by other factors that I need to examine.

The objective of this work is to evaluate the impact of the 2003 tax reform on corporate philanthropy and try to specify the source of response. This is of particular interest as the impact of the French tax reform on corporate giving has never been evaluated. More generally, it also contributes to the literature on the responsiveness of corporate contributions as the tax reform consisted, among other things, of a shift from a deduction of the gift from taxable income to a tax credit. This shift is instructive since a tax credit is theoretically supposed to provide equal incentives to firms. I address two research questions: does the dynamics and patterns of corporate giving change after the 2003 tax reform and are some particular firms more responsive to the increase in tax incentives toward charitable giving? To answer these questions, I examine the heterogeneity in corporate giving and analyze the intensive and extensive marginal effects of the reform. These research questions are of particular interest since corporate philanthropy has received little attention in the literature and has mostly focused on the particular case in the United States. However, it is very likely that these dynamics of corporate philanthropy are different in France and the 2003 tax reform set up a natural framework to examine its pattern.

I make use of panel data to address the relative tax sensitivity of charitable giving among the normal taxed firms and reduced taxed firms. My first hypothesis uses the variations in the price of giving for these two groups of firms to predict that reduced taxed firms should have higher incentives to engage in corporate philanthropy after tax reform. Yet I find no evidence of the impact of the reform on the contributions of reduced taxed firms. The contribution level of small firms remained mostly stable over the whole period, raising the question of the efficiency of the reform for those firms. In a second hypothesis, I assume that corporate philanthropy is similar to a luxury good that the richest firms decide to carry out in order to respond to public demand for Corporate Social Responsibility (CSR). I find evidence for this last hypothesis, where richest firms tend to engage more in corporate philanthropy than the lowest firms after 2003 but there is no evidence that the increase in gift is persistent. Moreover, contrary to many observations, I find that only a minority of the small firms are constrained by the deduction limit of the contribution (approximately 15%). However, this last hypothesis raises concerns regarding the rationale behind the tax incentives for corporate giving if corporate philanthropy is not guided by a pure altruistic vision. Hence there is a need to examine the motives of enterprises for corporate giving. I leave this last question open for further research.

Figure 1: Evolution of Government expenses on corporate giving tax credit and number of firms asking for the tax credit
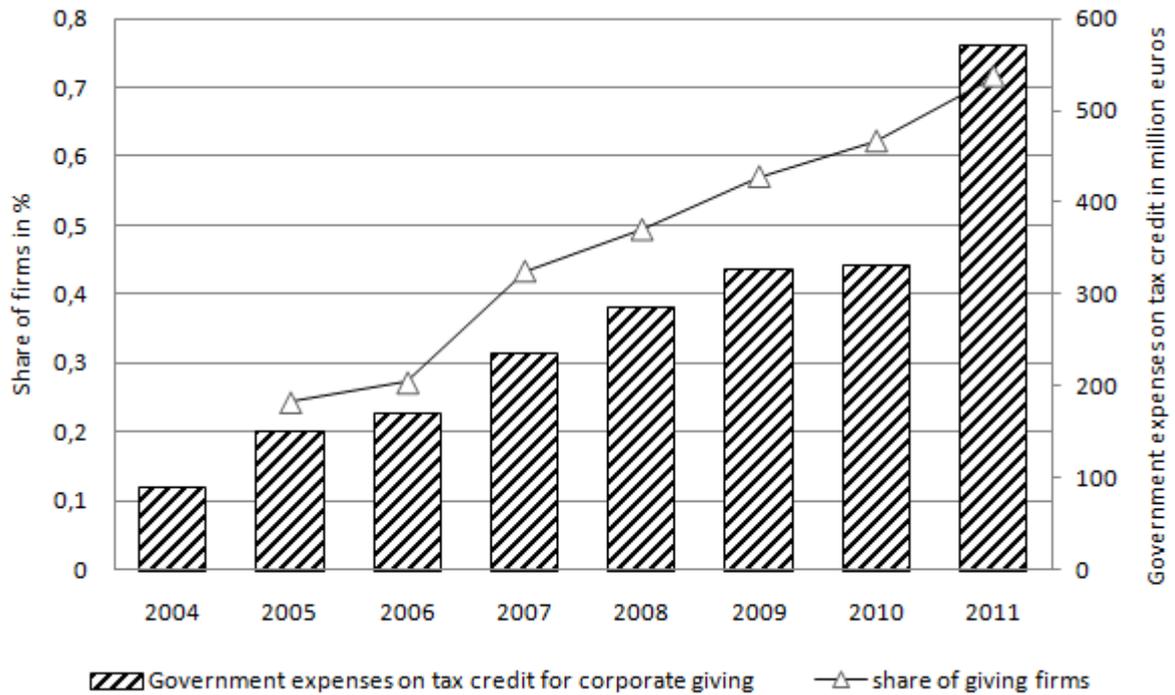
Note: The figure reads as follows. In 2008, 0.5% of firms report a gift in their tax return leading to government expenses equal to EUR 380 million.
Source: DGFiP, Dépenses fiscales 2013.

The remainder of the report is organized as follows. After reviewing the literature , I briefly introduce the French corporate tax system and I present the 2003 tax reform. The analytical framework is presented in section 5, followed by an examination of the effects of the reform in section 6. Section 7 contains a discussion and presentation of the data and section 8 deals with the multivariate analysis. Results are presented in section 9 and I draw some conclusion in the last section.

2   Literature review

Concerns about CSR and corporate giving have produced a literature with debated issues (see Benabou and Tirole, 2010, [12]). Several theories have been developed trying to explain why corporations engage in this form of philanthropy with respect of profit maximization motives and altruistic concerns. The price of charitable contributions is the proportion of the gift not returned in the form of a tax credit. When charitable contributions are deductible from taxable income, the price of an additional euro in contribution is (1-T) where T is the marginal income tax rate. With a tax credit, the price of charitable giving is simply (1- t) where t is the tax credit linked to donations. A tax incentive policy with an increase in the tax credit is said to be efficient at increasing donation to charity if the net impact of a 1 euro tax credit will result in charitable contribution greater than 1 euro. The price elasticity is interpreted as the percentage change in donations that results from a 1% change in the price of giving, all else being equal. On a theoretical ground, it is expected to be negative as an increase in price of giving should lower the level of gift, but whether it is closer to 0 or 1 is decisive to assess the efficiency of the tax policy. Hence many studies have tried to determine the price elasticity of charitable giving based on a different data and period. The results are rather mixed and econometric issues have for a long time spurred the estimated results. Using cross-section data, the first studies generally lead to price elasticity equal or greater than 1, but it has been shown that results also involved a combination of permanent and transitory effects. Recent studies (Bakija & Heim, 2008, Randolph, 1995) use panel data and found smaller permanent price elasticity. However, the majority of researches focus on US data, where the nonprofit sector is particularly large. Fack and Landais (2010, [9]) analyze the effects of the 2003 tax reform in France and find rather low price elasticity comprised between -0.2 and -0.6. On the other hand, empirical studies of corporate giving received less attention and reveal a different pattern of giving. Underlying the estimation of price elasticity is the motivation of corporate philanthropy. In the

previous literature, corporate philanthropy has been modeled in two different ways, either by profit maximization or by utility maximization. However, a recent theory has emerged and has become the dominant theoretical framework in modeling corporate philanthropy: the stakeholder theory.

In one of the first available studies, Schwartz (1968, [18]) employs several tests to determine the price elasticity of corporate donations. Using data from 1931 to 1961 he finds that corporate donations are responsive to price changes, with price elasticities ranging from -1.06 to -2.0. In a similar study, Nelson (1970, [14]) reports elastic prices of -1.03 to -1.18. Differencing permanent and transitory price elasticities, Clotfelter (1985, [7]) finds lower values ranging from -0.16 to -0.4. However these studies are based on time series and may suffer from measurement problems. Navarro (1988, [13]) overcomes these problems by using firm-level survey data and finds no evidence of relation between tax incentives and charitable giving. He finds that contributions "are moderately income elastic and so moderately sensitive to economic phenomenon". This result is in sharp with contrast with the study of Boastman and Gupta (1996, [4]) who use a panel data of 212 firms covering a period ranging from 1984 to 1988. They report that corporate contributions are relatively inelastic with respect to income, which implies that it does not fluctuate much with business cycles. Moreover, they show that tax tends to discourage donations as they find a negative correlation between giving and tax rate. In a more recent research Carroll and Joulfaian (2005, [6]) report a price elasticity of -1.8, revealing that profit-maximization is not the sole motive of corporate philanthropy.

This model involves the existence of limits to governance and bad managers' decisions which lead to a loss of profits for the shareholders and externality on stakeholders. In this framework, managers maximize their own utility by engaging

their firm in corporate philanthropy, and in doing so, they increase their "warm glow of giving", enhance their personal reputations or provide personal benefits (free ticket, gala invitation, etc.). Porter and Kramer (2002, [15]) argue that "the contributions often reflect the personal beliefs and values of executives or employees". The utility maximization model has negative consequences on profits as it arises conflicting goals and information asymmetry between managers and shareholders. Boatsman and Gupta (1996, [4]) argue that excessive corporate giving may be the result of prohibitive cost of monitoring of managers.

To account for the various changes in the environments of firms, another theory aims at integrating the change in social pressure toward corporations with respect to CSR. Stakeholder theory (Freeman, 1984, [10]) suggests that companies engage in CSR activities as a strategic decision answering to the demand from consumer, investors and employees. In this view, a company is organized for the benefit of society at large. Post et al. (2002, [16]) argue that firms "cannot survive if they do not take responsibility for the welfare of all its constituents and for the well-being of the larger society with which it operates". Hence, corporate decisions should not only consider its shareholders in the decision making process, but also anyone affected by business decisions.

These three main theories provide very different explanations for corporate philanthropy. Whether corporate giving is the fruit of an altruistic decision or whether it enters in a strategic process aiming at maximizing firm's profit is decisive when assessing the tax policy. For this reason, modeling corporate giving should encompasses these different views.

3 The French corporate tax system

The structure of the regular corporate income tax ("Impôt sur les Sociétés") in France has been in effect since 1948 and has a progressive rate structure. In 2011, the net revenue of corporate income tax elevates to approximately €39.1 billion (about 17% of total budget) and represents the third most important resource after the Value Added Tax (VAT) and individual income tax. Several fiscal incentives already exist aiming at enhancing French companies competitively: R&D tax credit (€0.4 billion), zero rate tax credit (€0.2 billion).

Companies are subject to French corporate tax on profits, an annual tax that affects all profits made in France by companies and which concerns about one third of French companies. The tax liability is limited to companies with positive profits. The taxable income is equal to the difference between gross profit and costs and deductible expenses. The corporate tax rate is $33^{1/3}$% since 1993. However, there exists a special lower rate of 15% for Small and Medium Enterprises (PME). To be subject to this special rate, the company is required to have revenue under €7,630,000. Additionally individuals hold at least 75 percent of the share capital. In this case, a corporate tax rate of 15% is applied on the taxable income if the profit is lower than 38,120 Euros. The fraction of profit above this limit is taxed at the standard rate, $33^{1/3}$%. Note that this reduced tax rate is in effect since January 1st, 2002. In 2000 and 2001, the special rate was equal to 25%.

Corporate taxpayers are also liable to a social contribution equal to 3.3% of the tax assessed on their taxable income if they are taxed at the standard rate (33.33%). Moreover, companies liable to corporate tax are also subject to an annual tax (imposition forfaitaire annuelle, IFA) assessed on a progressive scale according to revenue excluding VAT plus financial income. However, this tax will be abolished in 2014. Finally, one should also note that an additional surcharge (Contribution Additionnelle sur les Bénéfices) was applied to the standard corporate income tax between 1995 and 2005, as documented in Table 1.

Table 1: Evolution of the Corporate tax rate

Année	2000	2001	2002	2003	2004	2005	2006	2007
taux théorique	37.76	36.43	35.43	35.43	35.43	34.95	34.4	34.43
dont contribution sur bénéfices	10	6	3	3	3	1.5	-	-
dont contribution sociale	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3

Source: OECD database on Corporate Income tax rate

Figure 2 illustrates the level of marginal tax rate with respect to net income, with the blue line corresponding to companies with a revenue lower than €7,630,000 and the yellow line those with a higher revenue.

Figure 2: Low and standard tax rate for taxable enterprises
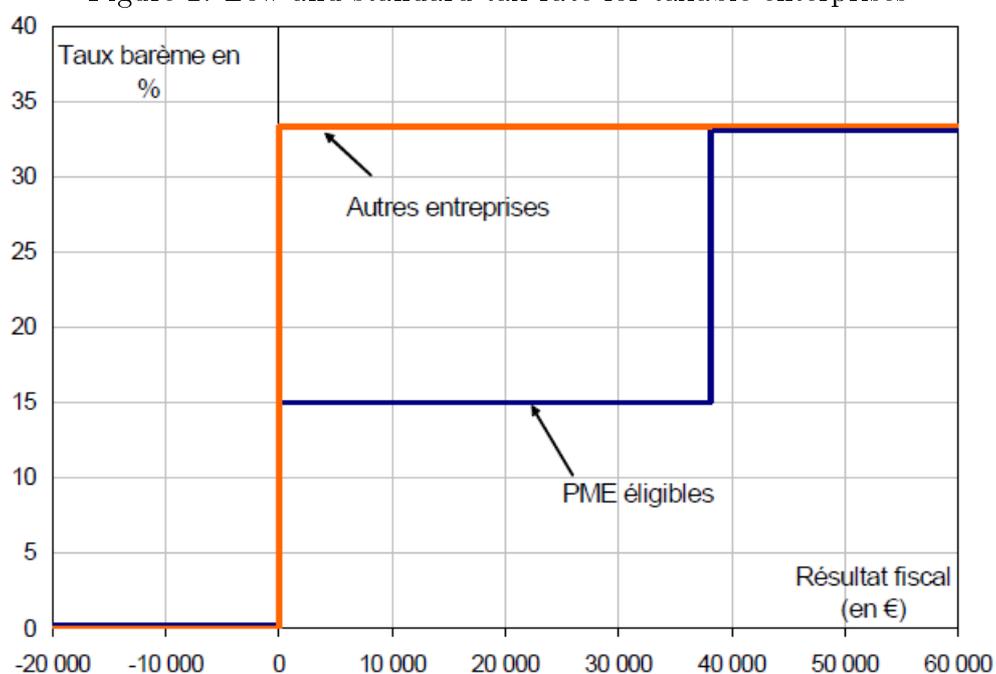
Source: DGTPE, Direction Générale du Trésor et de la Politque Economique

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4 The 2003 tax reform: presentation of the Law on corporate philanthropy

Before the 2003 tax reform, incentives for corporate giving were coming from the 1987 Fiscal Law. Corporate could benefit a tax deduction on their income with a ceiling deduction equal to 0.2% of taxable income. Note that if donations exceeded the ceiling, the firm had the opportunity to report its tax deduction over the next 5 years. The 2003 tax reform established a tax credit equal to 60% of the donation with a ceiling deduction equal to 0.5% of firm's revenue.

Most countries decided to apply tax incentives which aims at reducing the price of giving in order to spur charitable contributions. There are two types of tax incentives that reduce the price of giving: tax deductions and tax credits. Deductions reduce the amount of income taxed while credits reduce the tax due. Deduction of the gift from the taxable income is the most widely used fiscal tool and depends upon the corporate marginal tax rate of the firm. For example, assume a firm taxpayer has a marginal tax rate equal to 30 percent. If the firm makes a €100 gift, its taxable income will decline by €100. It will reduce its tax by 30 per cent of €100, or €30. By comparison with deductions, tax credits allow the separation of the value of the tax benefit from the donor's marginal tax rate and instead reduce taxes by a set percentage of total donations for each donor. In this sense, tax credits aim at providing equal charitable incentives among donors regardless of the taxpayer's tax rate. However tax credits do not remove all unequal incentives as the nontaxable donors cannot benefit from it. Table 2 depicts the comparisons of fiscal incentives toward corporate giving among eleven advanced countries. With a price of giving equal to 0.4, France presents the most generous

fiscal system toward corporate philanthropy. [1]

Note that in practice, sufficiently high revenue companies benefit fully from the tax credit on charitable giving while the smallest firms are more frequently capped which reduce their level of contributions.

Table 2: International comparisons of tax incentives for charitable giving

Country	Level of incentives	Deduction limit
Germany	Deduction from taxable income	20 % of profits or 0.4% of revenue
Belgium	Deduction from taxable income	5% of net income
Spain	Tax credit ranging from 35% to 40%	10% of the tax base
United States	Deduction from taxable income	10% of taxable income
France	Tax credit equal to 60% of total gift	0.5% of revenue
Italy	Deduction from taxable income	Limit fixed at national level
Luxembourg	Deduction from taxable income	10% of net income
United Kingdom	Deduction from taxable income	No ceiling
Sweden	No deduction	-
Switzerland	Deduction from taxable income	10% of taxable income

Note: The donation deduction for Belgium and Luxembourg cannot exceed EUR 500,000
Source: Ministère de la Culture et de la Communication

5   Theoretical framework

In modeling corporate giving, the attention generally focuses on the profit maximization model and the utility maximization problem. Following the theoretical framework of Joulfaian and Carroll (2005), I consider a firm production function

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[1] The price of giving equals one minus the marginal tax rate when deduction from taxable income is applied. No country listed below has its highest marginal tax rate equal to 60%, so France has the lowest price of giving.

$Q(K, L, G)$ where K, L and G are respectively the capital input, labor input and the contributions level. The profit Π of the firm is given by :

$$\Pi = [pQ(K, L, G) - rK - wL - G](1 - \tau)$$

where p is the output price, r is the marginal product of capital , w is the marginal product of labor and τ is the income tax rate.

Solving for the profit maximization leads to the first-order condition determining the demand for contributions in a competitive market:

$$p\frac{\partial Q(K, L, G)}{\partial G} - 1 = 0$$

$$p\frac{\partial Q(K, L, G)}{\partial G} = 1$$

The value of the marginal product is equal to the price of giving before tax. The optimal contribution does not depend on the income tax when donations are fully tax deductible and corporate giving is considered as an input similar to advertising expenditures. In the case of France, this situation correspond to the period before the 2003 tax reform. After 2003, the assumption of full deducibility is relaxed as giving firms benefit of a tax credit.

The profit of the firm is then equal to:

$$\Pi = [pQ(K, L, G) - rK - wL](1 - \tau) + G(\tau - 0.4)$$

where the tax credit equal 60% of G.

Solving for the profit maximization with respect to G:

$$(1 - \tau)\left(1 - p\frac{\partial Q(K, L, G)}{\partial G}\right) = 0.6$$

Hence,

$$1 - p\frac{\partial Q(K, L, G)}{\partial G} = \frac{0.6}{1 - \tau}$$

- For firms subject to the standard tax rate ($\tau = 0.33$):

$$p\frac{\partial Q(K, L, G)}{\partial G} \simeq 0$$

- For firms subject to the reduced tax rate ($\tau = 0.15$):

$$p\frac{\partial Q(K, L, G)}{\partial G} > 0$$

After the tax reform, the marginal product of the reduced tax firms becomes higher than the one of the standard taxed firms, while it was similar for these two groups before 2003. This shows that firms subject to the reduced tax rate should have higher incentives to report a donation after the tax reform than the firms subject to the standard tax rate. So when tax incentives are materialized by a tax credit, it may impact the level of corporate giving with respect to the firm's marginal income tax rate. This is in stark contrast with the previous literature which only focuses on tax deduction whence profit maximization leads to optimal contributions independent of income tax.

A similar analysis is made with the utility maximization problem. Carroll and Joulfaian show that if the shareholders maximize their utility given by:

$$U = U(\Pi, G)$$

then the first-order condition leads to:

$$\frac{\partial U}{\partial G} = \frac{\partial U}{\partial \Pi}\frac{\partial \Pi}{\partial G} + \frac{\partial U}{\partial G}$$

$$0 = U_\Pi \left(p\frac{\partial Q(K, L, G)}{\partial G} - 1\right)(1 - \tau) + U_G$$

$$(1 - \tau) = \frac{U_G}{U_\Pi} + \left(p \frac{\partial Q(K, L, G)}{\partial G} \right) (1 - \tau)$$

This last equation states that the price of contribution must equal the marginal utility of donation discounted by the marginal utility of income plus the net of tax marginal revenue. In a utility maximization model, tax income plays a significant role for determining the level of corporate contributions.

Besides, it is instructive to compare the optimal tax incentives for corporate philanthropy with charitable contributions reported by individuals, as this last sector received much more attention from economists. In this sense, Saez (2004, [17]) shows the optimal level of subsidies depends on several factors. First, the optimal subsidy should rise with the price elasticity of the contribution. An elasticity higher than unity in absolute value is a sign to an efficient subsidy. Moreover, the subsidies should take into account the consequences of a crowding out effect. They should be greater for goods for which private donations are crowded out by public contributions. Another decisive factor in the optimal level of subsidies concerns the redistribution of subsidy: the contributions at the bottom of the income distribution should benefit from higher subsidies.

With respect to this theoretical framework, I assess in the following sections the effects of the tax reform on corporate giving.

6   Identifying the effect of the tax reform on corporate giving

In order to characterize the evolution of gift among firms, I classify firms with respect to their revenue by creating 5 groups of revenue: 1) below EUR 5 million, 2) ranging from EUR 5 million and EUR 10 million, 3) between EUR 10 million and EUR 50 million, 4) between EUR 50 million and EUR 100 million and 5) and above EUR 100 million . This decomposition enables to highlight an instructive aspect of

giving firms: although small firms (with the lowest revenue) represent half of the giving firms, their contributions account for less than 10 per cent per year. On the other hand, the largest corporates represent only 10 per cent of the giving firms and yet they contribute for more than 60 per cent of the total corporate giving per year. The evolution of share of bracket revenue among giving firms shows that the smallest firms represent the majority of the giving firms. Enterprises with revenue lower than EUR 5 million represent approximately 70 per cent of the giving firms in the pre-reform period, while their share declines to roughly 55 per cent after 2003. I attribute this decline to the abnormal participation rate of these firms during 2001 and 2002 due to the large decrease of giving firms among the highest revenue bracket. Furthermore, large firms seem to have increased their participation rate after the tax reform, but this effect is not clear in comparison to the pre-reform period. It would have been more instructive to know the evolution of contributions and the share of giving firms before 2000 to distinguish the possible effects of the tax reform. One would also temper this result with the analysis of the share of revenue bracket among all firms (see Figure 16 in the Appendix). Around 87 per cent of the total firms are defined with revenue lower than EUR 5 million: this share reduces by 30 per cent when only giving firms are considered. This means that even though the smallest firms are predominant among the giving firms, they are less likely to give to charity than the largest corporates which represent less than 1% in the whole sample including non giving firms.

Moreover, analyzing the share of revenue bracket among total contribution reveals that between 60% to 70% of the total gift are imputable to firms with revenue larger than EUR 100 million. The graph shows that these firms tend to give more to charities in the years following the reform than in 2000, before the economic crisis. Again, these facts exclude 2001 and 2002 where corporate giving seems deeply impacted by the effects of the economic crisis and the limited data does not give us information on the repartition of corporate giving among the different revenue bracket. I therefore assume that the contribution levels observed

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in 2000 are a good representation of what should be observed at the end of the 1990s. One should also note that the total contribution of the smallest firms which are the most present among giving firms represent less than 10% of the total corporate giving every year.

Figure 3: Share of revenue bracket among giving firms
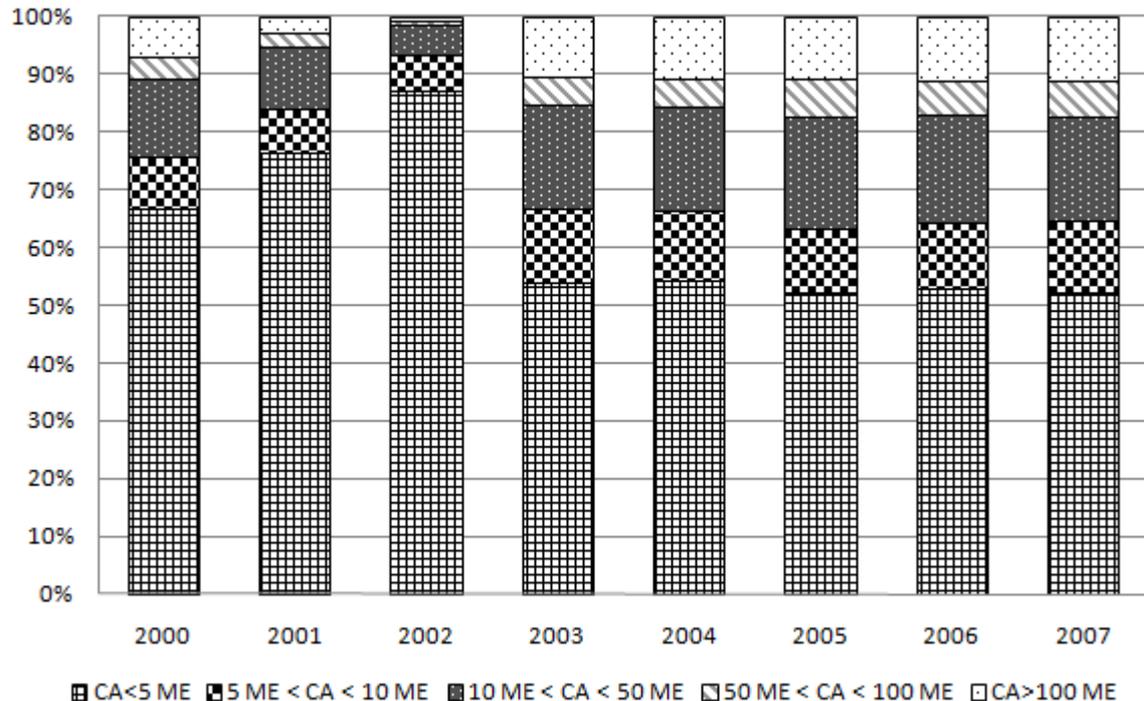
Note: CA stands for revenue and ME indicates for million euros.
Source: Author's computations using BRN files.

To identify the effect of the tax reform I start with analyzing two groups of firms that received different incentives to give after 2003. As the reform consists in instituting a tax credit equal to 60% of the gift for every firm, I examine the variations in the price of giving before and after the reform for firms with different marginal income tax rate.

Figure 5 documents the evolution of the price of giving on the period of interest. Before the 2003 tax reform, corporate giving was deductible from taxable income, so the price of giving was linked with the marginal income tax rate of the firm. Hence, whether a firm is taxed at the reduced rate or at the standard rate is of critical importance in the price determination. Indeed, the tax reform

Figure 4: Share of revenue bracket among total contribution
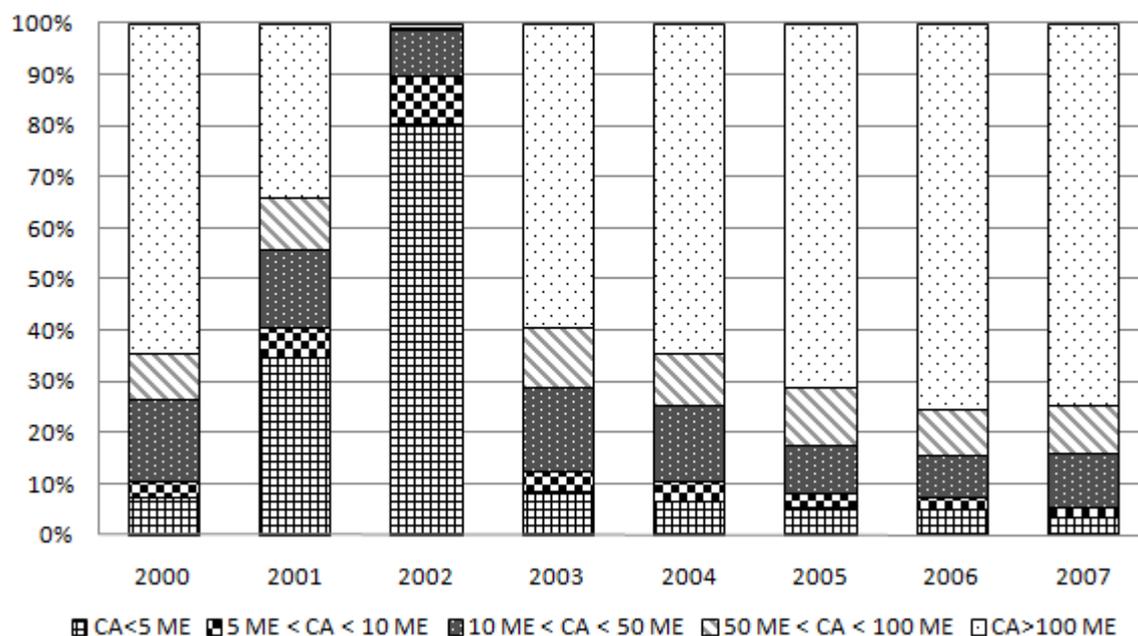
implies a reduction in the price of giving by 53% for reduced tax firms and 39% for standard taxed firms. Note that a change in the reduced tax rate from 25% to 15% was instituted after 2001 which already modified the price of giving for the firms concerned by this reduction. Since 2003, every firm can benefit from a reduction of 60% of the gift: the price becomes independent of the marginal income tax rate and is equal to EUR 0.4 for all.

In the first hypothesis, I use the variation of the price of giving to identify the effect of the tax reform.

Hypothesis (H-1): All firms are willing to give to charities but they are constrained by the price of giving.

Firms consider corporate giving as an altruistic approach that may be facilitated by a reduction in the price of the gift. In this scenario, reduced taxed firms witness the most important price reduction with a 53% decrease while standard taxed firms have their price reduced by 39%. As a consequence, the hypothesis implies that the incentives for charitable giving following the 2003 tax reform should be higher for firms with the lowest marginal taxed rate.

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Figure 5: Evolution of the price of giving between reduced taxed firms and standard taxed firms
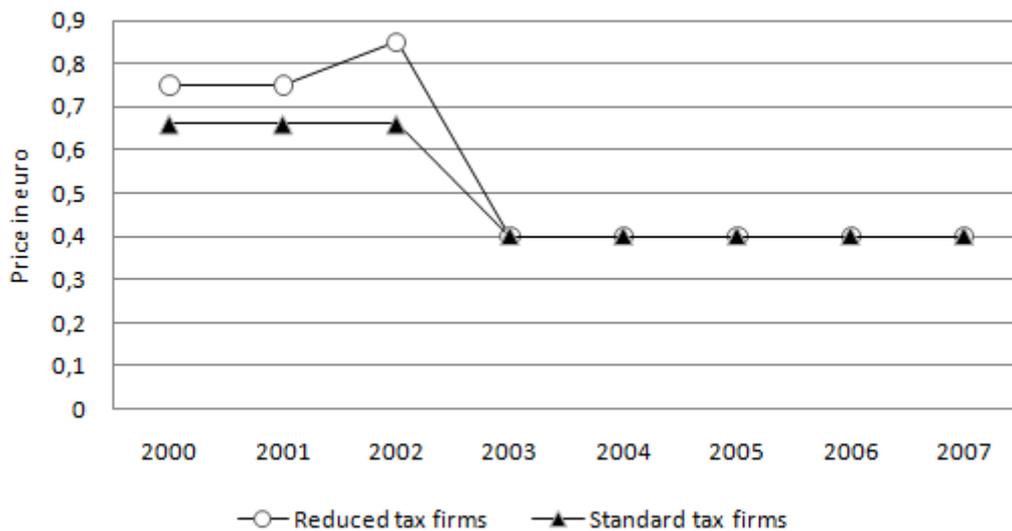

Source: Author's computations using BRN files.

The evolution of the average gift when including non giving firms indicate an apparent nonlinear effect of the tax reform (see Figure 6). While firms subject to the standard tax rate significantly increase their average donation, the contributions of firms with reduced tax rate remain relatively stable. However, comparison between these two groups makes more sense when one considers only the smallest firms taxed at the standard rate: for this reason, I examine the evolution of the firms with revenue lower than EUR 15 million. Note that a lower revenue would be even more relevant to compare standard taxed firms and reduced taxed firms but this particular revenue allows to account for approximately the same number of firms in the two groups. Indeed, reduced taxed firms being defined with a revenue lower than EUR 7.6 million, one can argue that those two groups may not be close enough.

Figures 7 and 8 document respectively the evolution of the level of contributions and the generosity ratio defined as the corporate contributions divided by the revenue. The increase in contributions and generosity ratio of the firms taxed at the standard rate starting from 2003 shows the positive effect of the reform. However, an apparent paradox lies in the evolution of the generosity ratio of the

Figure 6: Evolution of the average gift for reduced tax firms and standard taxed firms
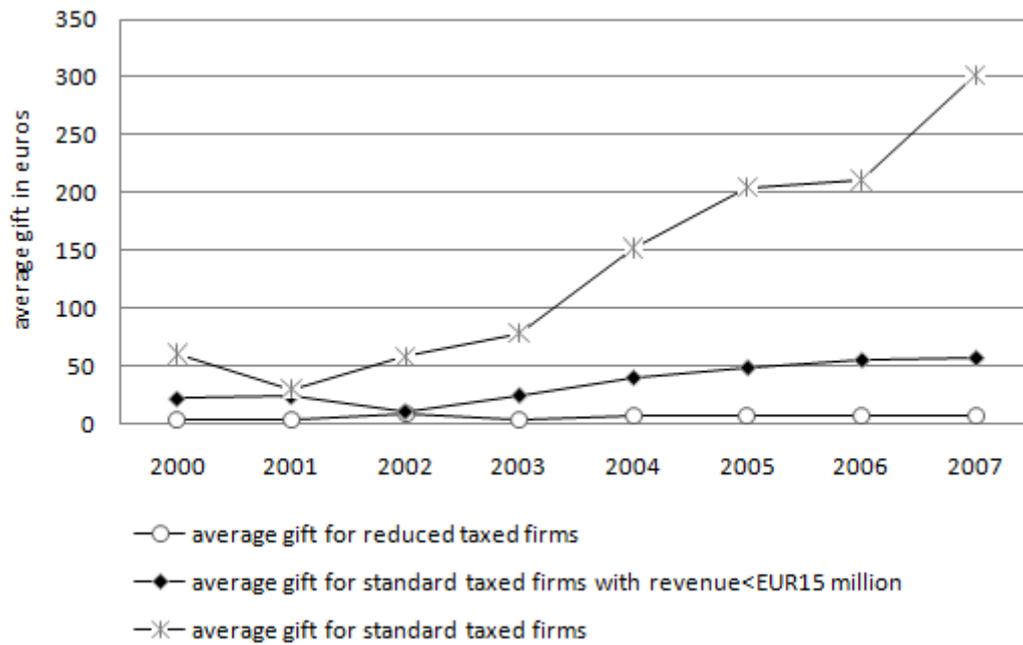
Note: the average gift includes non giving firms. CA indicates revenue and ME millions euros.
Source: Author's computations using BRN files.

Figure 7: Evolution of the average gift for reduced tax firms and standard taxed firms whose revenue is lower than EUR 15 million
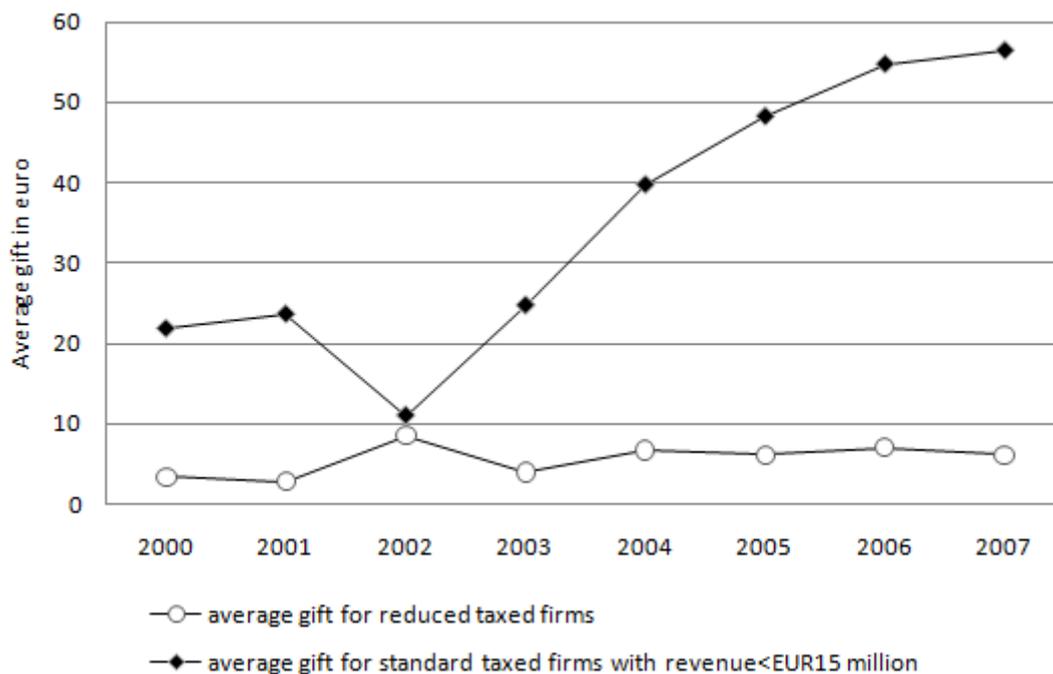
Note: ME indicates unity in million euros.
Source: Author's computations using BRN files.

Figure 8: Evolution of the generosity ratio for reduced tax firms and standard taxed firms whose revenue is lower than EUR 15 million
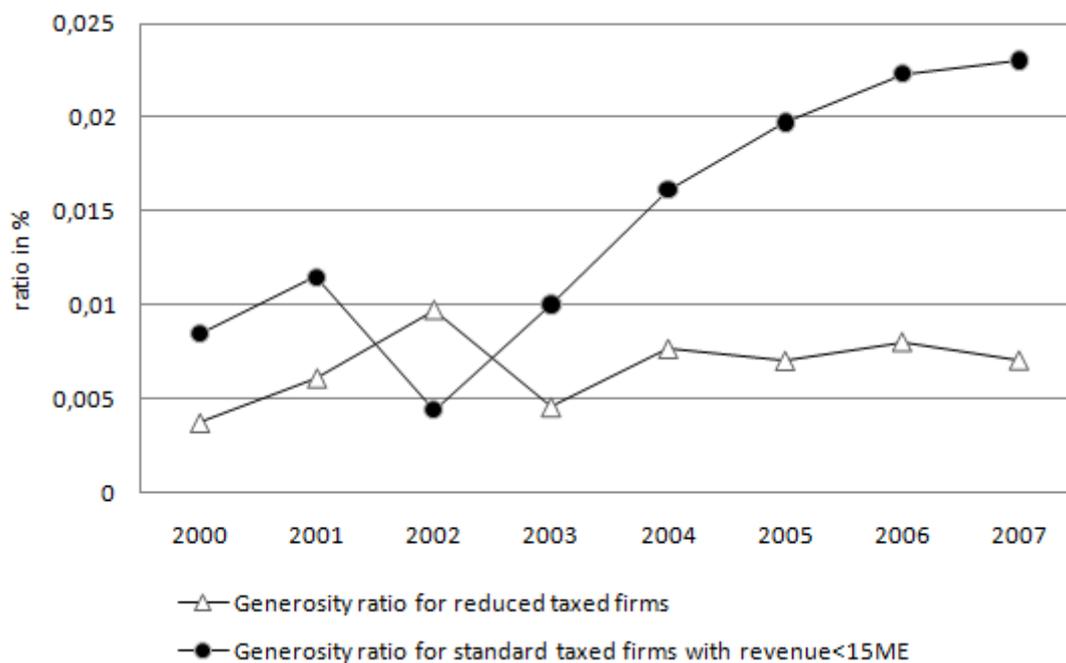
Note: ME indicates unity in million euros.
Source: Author's computations using BRN files.

enterprises taxed at the reduced rate: if the incentives are high for firms taxed at the standard level, the increase in contributions should be higher for reduced taxed firms. Yet the evolutions of contributions and generosity for reduced taxed firms remain remarkably stable. Taking the average of contributions in the pre-treatment and in the post- treatment period, donations to charities increased by approximately 35 per cent after the reform for the reduced taxed firms. On the other hand, firms taxed at the standard rate present a net reaction following the tax reform as their average contribution raises by 355 per cent (see Table3).

Table 3: Average gift before and after the reform

	Before 2003	After 2003	Evolution
Average contributions for reduced taxed firms	0.0046	0.0062	+35%
Average contributions for standard taxed firms	0.128	0.583	+355%

Note: the average gift includes firms that did not make a contribution, and is expressed in euro.

Hence, my investigation focuses on the reason of these specific evolutions in corporate giving. Recall that the introduction of the higher incentives for reduced

taxed firms was made on the ground that they faced a larger variation in the price of giving. Behind this statement lies the fact that firms are willing to donate to charities but are constrained by the price of giving. I introduce a new assumption:

Hypothesis (H-2): firms are not necessarily constrained by the price of the gift, but are rather influenced by the Corporate Social Responsibility (CSR)

which imposes the promoting of firms' social behavior. In this hypothesis, corporations are using the benefits of the tax reform to enhance their image while adopting a fiscal optimization behavior. Yet, the reduced taxed firms react differently to the tax reform on corporate giving as they are already characterized with low taxation and poor financial performances. So the probability of a profitable social investment is far weaker and those firms may prefer to avoid the benefits of enhancing their public image and postpone it for a time when their financial conditions will be more stable. Indeed when analyzing the characteristics of giving firms, I find that enterprises reporting a gift are on average characterized with better financial characteristics. This statement supports the fact that corporate philanthropy may be an action rather reserved to firms with higher performances. In some sense, corporate giving is seen in this hypothesis as a luxury good that is not essential for the weakest firms and preferred by those with higher profitability. Moreover, the richest firms, namely those indexed in the CAC40, have also a different approach of CSR strategy. Their strong position in the market and their reputation already force them to engage in social investment in a deeper manner to control their public image. In this context, the 2001 NRE (Nouvelles Regulations Economiques) law (and applied in 2003) increase the pressure on the CAC40 firms to report activities related to CSR. As a consequence, the 2003 reform on tax incentives for corporate giving may have increased the opportunity for the largest firms to engage in philanthropy. All in all, the specific context of the reduced taxed firms may have deterred them to increase their generosity and take the full benefits of the 2003 reform. To check this last hypothesis, I present the evolution

of the generosity ratio (defined as donations divided by revenue) decomposed into 9 revenue brackets ranging from lower than EUR 500,000 to a revenue higher than EUR 500 million.

Figure 9: Evolution of the generosity ratio with respect to revenue bracket
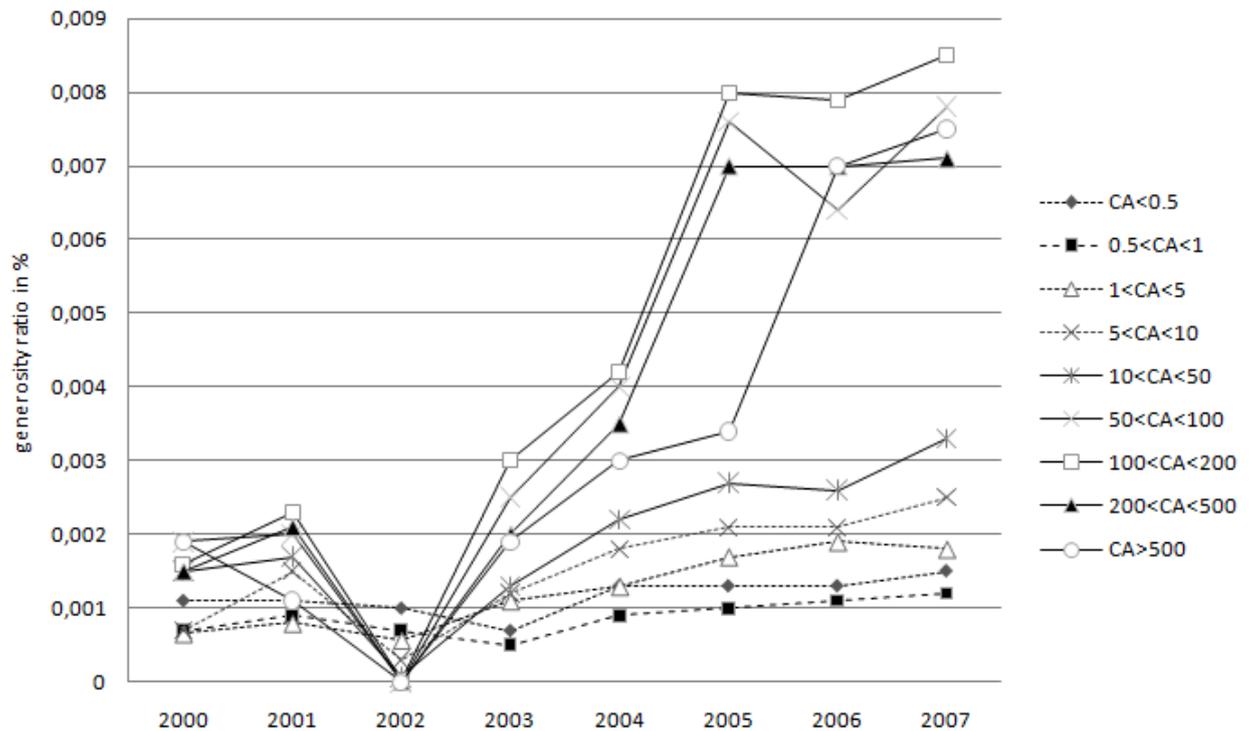
Note: CA (Chiffre d'affaires) indicates revenue in EUR million.
Source: Author's computations using BRN files.

Figure 9 seems to confirm the last hypothesis as it clearly distinguishes two different patterns. For the firms with revenue lower than EUR10 million, the generosity ratio increases very slightly over the period and the 2003 reform seems to have a rather light impact on corporate giving. Recall that reduced taxed rate is applied for firms with revenue lower than EUR 7.63 million. The evolutions of the generosity of firms in this three revenue brackets confirm that enterprises with reduced tax rate do not seem to change substantially their charitable contributions after 2003. However the tax reform may have ignited a structural change in the generosity of the largest firms which are clearly more responsives. Indeed, corporations with revenue higher than EUR 10 million present a similar pattern and have seen their generosity ratio increasing by a factor of 4 between 2000 and 2007.

Stable in 2000 and 2001, the generosity of these firms dropped in 2002 following the economic crisis, recovered in 2003 and considerably increased in 2004-2005 before remaining relatively stable at the end of the period. The drop in 2002 of their generosity ratio is particularly intriguing, especially when compared to the generosity of firms subject to reduced tax rate. In fact, firms with revenue higher than EUR 10 million significantly cut off their giving in 2002 and this phenomenon is even stronger for firms in the top revenue bracket (see also figures 3 and 4). This statement is to be related to the possible relationship between corporate giving and financial performance and contradicts the pure altruistic hypothesis of the corporate philanthropy. Indeed if the amount of contributions of the largest firms declines with the economic slowdown one can infer that corporate philanthropy is not driven by the simple act of generosity, an hypothesis in line with Navarro (1988, [13]). Yet to make sure of the existence of the relationship between corporate giving and financial performance, it would have been better to have access to the data after 2007 so as to analyze the impact of the economic crisis on corporate philanthropy.

Figure 10 illustrates the evolution of French GDP in value and volume. Analyzing the period of interest, the economic slowdown is confirmed between 2001 and 2003. Moreover, the net rebound of the French GDP in 2003 coincides with the catching up of the generosity ratio to its level before the crisis.

Another instructive aspect concerns the post reform period where the generosity of the richest firms substantially increased during 2004-2005. This particular evolution suggest that richest firms may have been very responsive to the new tax incentives introduced by the reform but these effects do not seem persistent. Note also that a clear distinction appears in the generosity pattern between firms with revenue ranging from EUR10 million to EUR 50 million and firms with higher revenue. This could be due to a more constraining deduction limit as well as a

Figure 10: Evolution of the French GDP in value and volume between 1999 and 2010
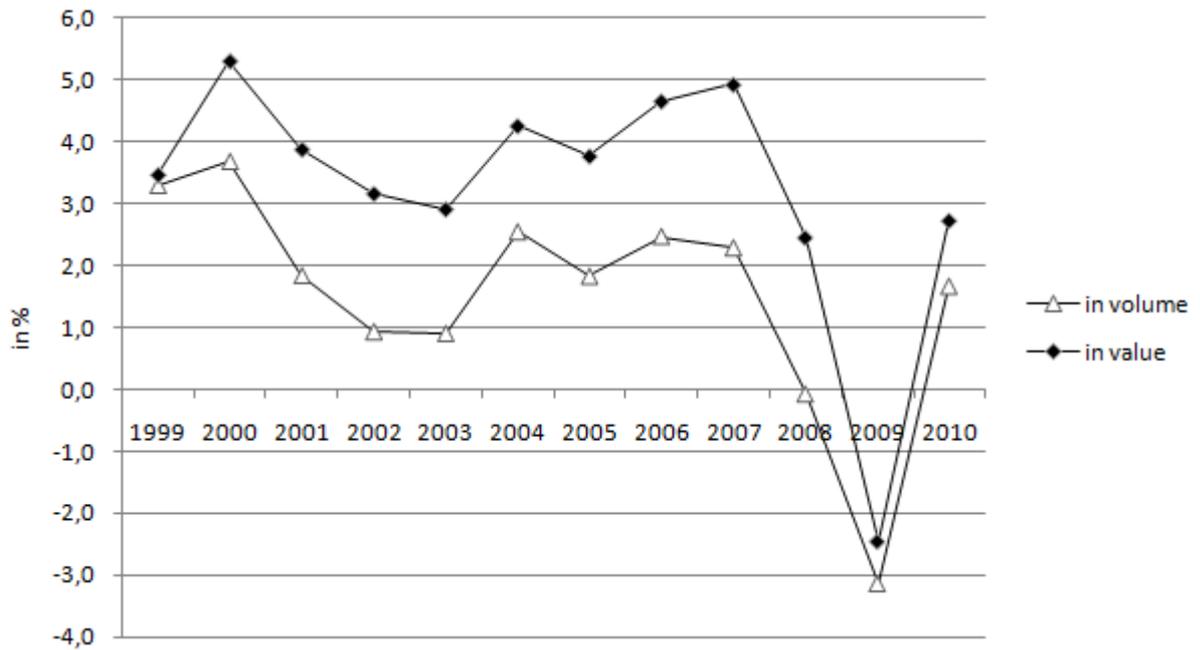
Source: Insee, comptes nationaux, base 2005.

sign that those firms do not present sufficiently high performance to fully engage in social investment.

Figure 11 depicts the evolution of the generosity ratio for the specific case of firms reporting a gift, the other firms being excluded from the analysis. Two things are important to notice: first, figure 11 reveals a net contrast with the evolution of the generosity ratio for all firms (including those that do not give). While figure 9 shows that firms with higher revenue tend to be more generous after the tax reform, the analysis restriction to the giving firms reveals that the generosity ratio follows a similar trend for firms subject to reduced and standard tax rate. Besides, the generosity of the giving firms seems to have increased after the tax reform, and the deduction limit may have played a significant role in this process: firms in every group report a gift close to the deduction limit from 2000 to 2002 and the increase of the ceiling after the tax reform seems to give to the giving firms the opportunity to increase their average gift. Following the comparison of these two figures, the high generosity ratio found for firms with the highest revenue is essentially explained by a raise in participation of those firms while reduced tax

Figure 11: Evolution of the generosity ratio among giving firms
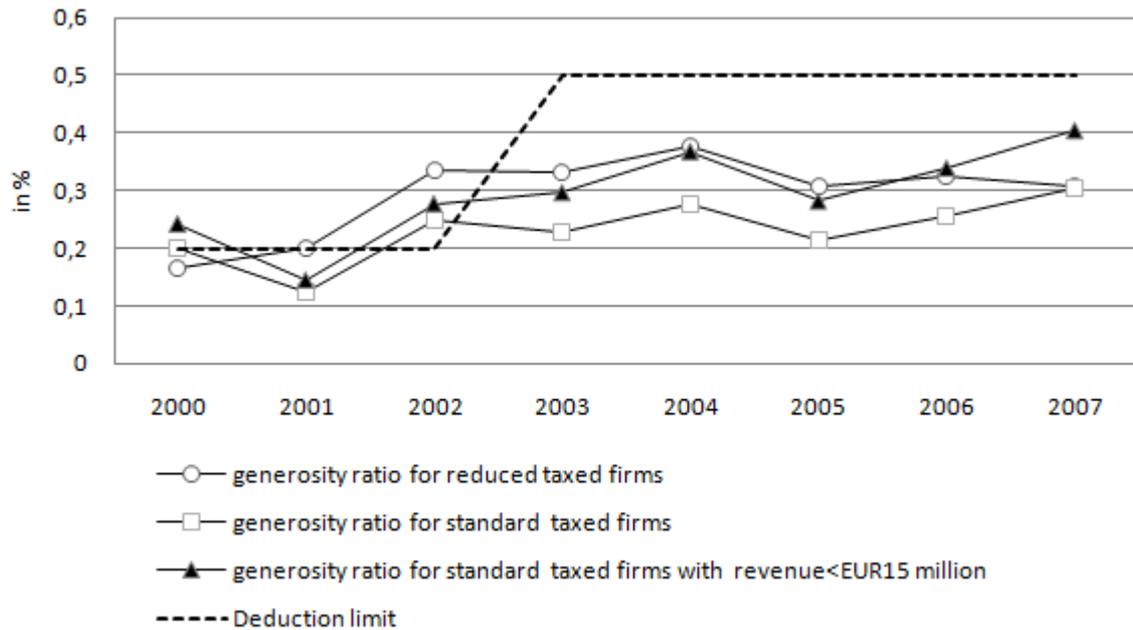
firms do not witness an increase in their participation in charities after the tax reform.

To cast further light on the effect of the reform, I seek to determine if more enterprises decide to engage in corporate philanthropy in the post-reform period. As indicated in figure 12, the share of giving firms among those subject to reduced tax rate remains stable over the period while the share of giving firms among those subject to standard tax rate and low revenue increases significantly between 2003 and 2005 after witnessing a substantial decrease in 2001 and 2002. The participation of standard taxed firms in corporate philanthropy seems then more responsive to the economic crisis and the new tax incentives set up by the reform than the reduced taxed firms, a result that corroborates with the previous analysis. Besides, the increase of the participation rate in corporate giving after 2003 for the standard taxed firms indicates that these firms did not necessarily give more individually after the reform. The overall increase in contribution might be due to the fact that more standard taxed firms decided to engage in corporate giving after the reform. I examine this point by distinguishing the intensive and extensive marginal effect of the reform.

Figure 12: Share of giving firms among reduced taxed firms and standard taxed firms with revenue lower than EUR 15 million
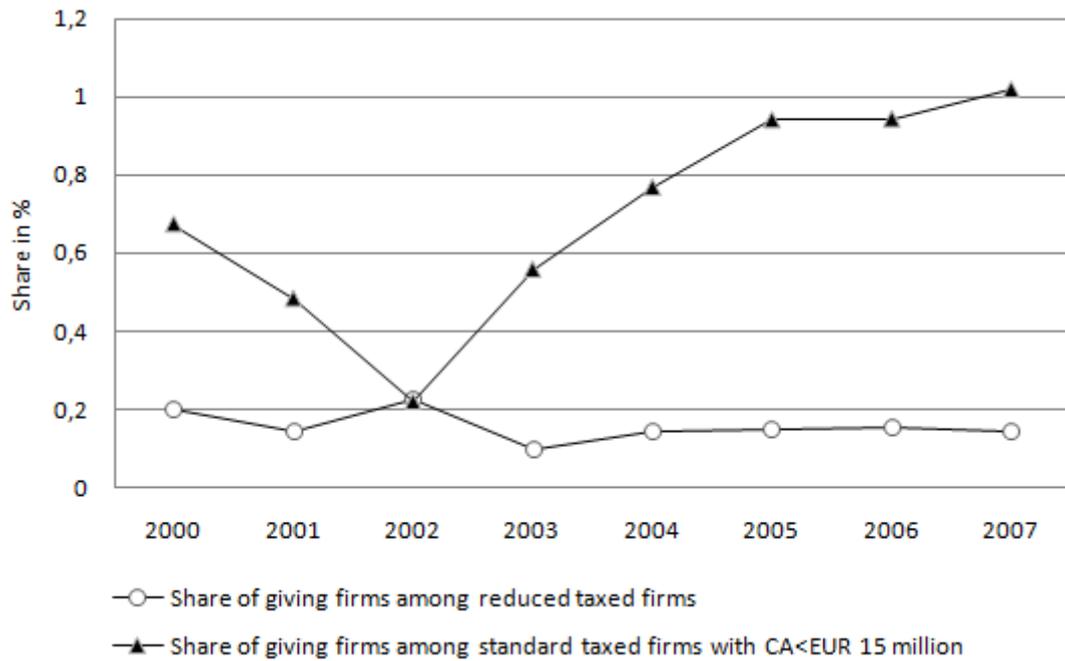
Source: Author's computations using BRN files.

Intensive marginal effect

To distinguish the extensive and intensive marginal effects of the 2003 reform, I select a sub-sample where firms report a gift at least once before and after 2003. This sub-sample will indicate the level of the intensive margin as it will inform about enterprises that were already giving to charities. Before the reform, 3,190 firms make a contribution, which constitutes about 40% of the previous sub-sample. Among those 3,190 firms, 815 reported a gift after the reform.

Figure 13 reveals that the 2001 crisis had a critical impact on corporate giving as firms decided to cut off their contributions by more than 75%. The following year, almost no firm reported a gift which indicates that the decision of giving for that enterprises involved in corporate philanthropy on a long term basis may be sensitive to their financial performance. From 2003 to 2007, the number of giving firms is almost stable but a distinct increase in the level of giving is observed

Figure 13: Evolution of gift among firms that contributed at least once before and after the 2003 reform.
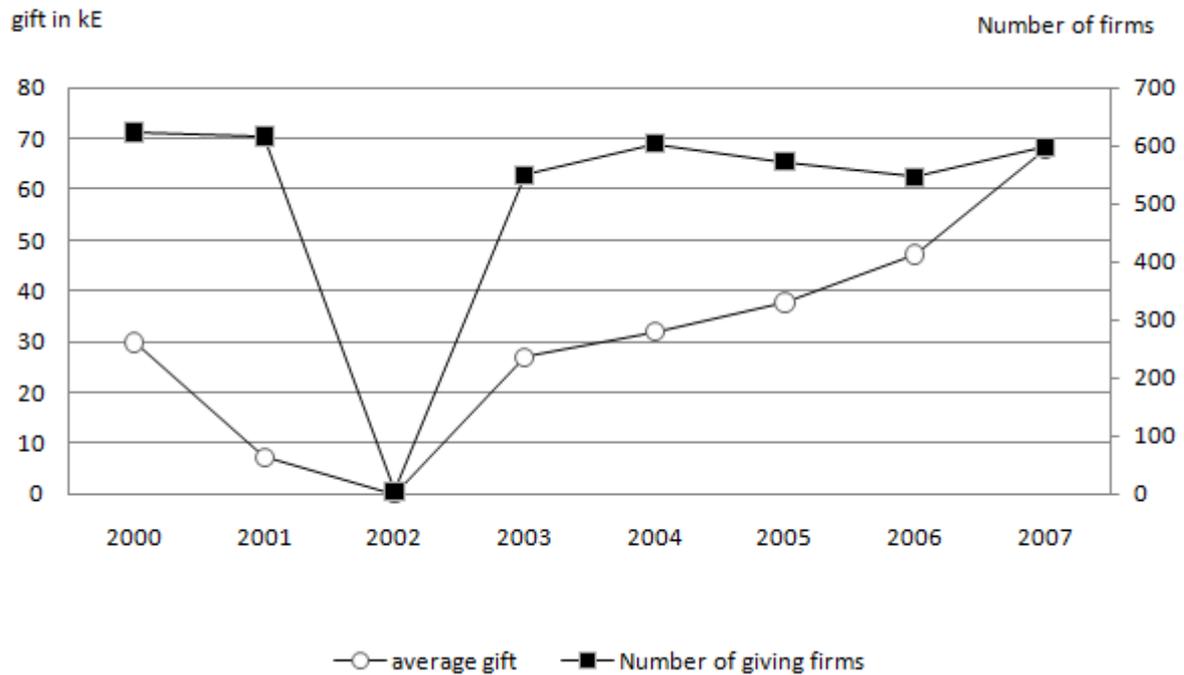
Source: Author's computations using BRN files.

starting from 2004. This trend provides support to the positive effects the reform might have had on the level of gift of these firms. Moreover, the examination of this sub-sample of firms shows an instructive aspect: firms reporting a contribution both before and after the tax reform are characterized with average revenue approximately equal to EUR 100 million. On average, these firms have 380 employees and their average profit is EUR 11 million. The analysis also reveals that 86% of these enterprises are taxed at the standard rate. Hence, it clearly demonstrates that the major part of the firms that report a gift before and after the reform are the richest and largest firms. There is certainly a double explanation that accounts for this fact: these large corporations may not only be motivated by the price of giving but they may also integrate corporate philanthropy into their strategic decision to enhance their public image. In this case, their commitment to corporate philanthropy on a long term basis might reflect the relative strategic importance given to generosity actions. Another explanation infers that these rich firms have higher potential to report a gift on a long term basis than other firms

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subject to larger income fluctuations or fewer resources.

Extensive marginal effect

Figure 14: Evolution of gift among firms that contributed at least once after the 2003 reform.
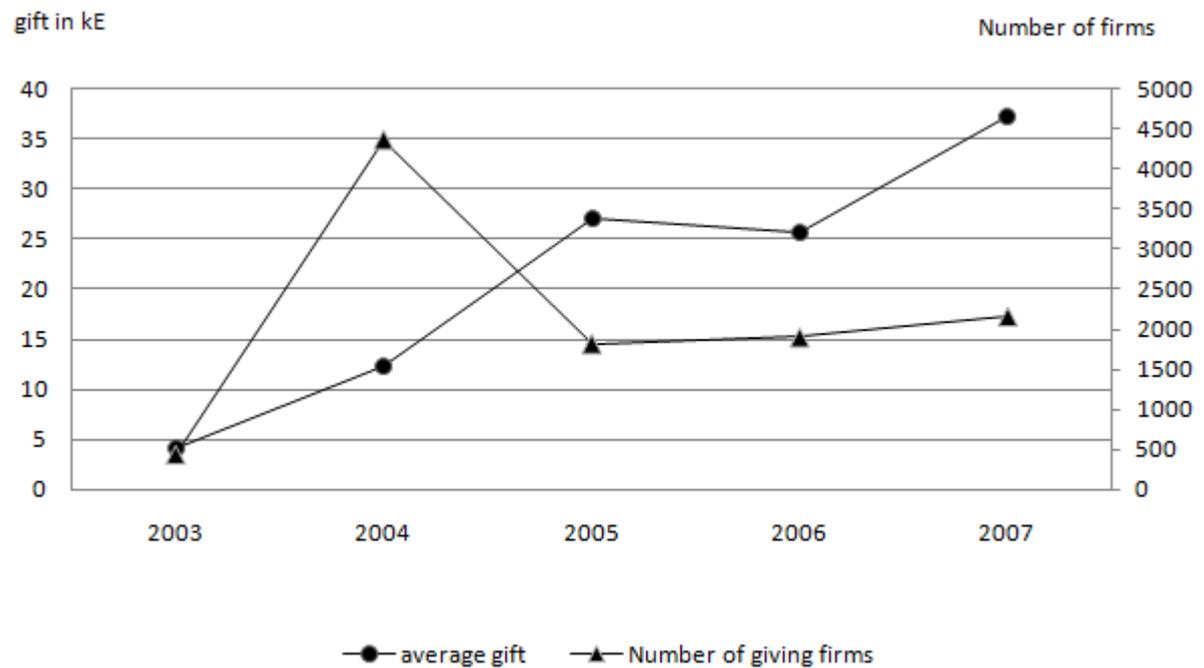
Source: Author's computations using BRN files.

Figure 14 depicts the evolution of the average gift and the number of giving firms after the tax reform. These evolutions reflect the extensive marginal effects insofar as those firms never performed a contributions between 2000 and 2003 (because of the limited data, I can only assume they never gave to charities before 2000). Interestingly, this sub-sample is constituted of firms with revenue around EUR 135 million and income equal to EUR 6.7 million. On average, these firms have 280 employees and 88% are taxed at the standard rate. Hence, those companies are also characterized with high financial performances and the extensive marginal effect of the reform concerns rather large firms. Moreover, it appears that the reform triggered a large participation of firms in corporate philanthropy in the year following the reform. Yet this effect has been brief and in 2005 three times

fewer enterprises reported a contribution. Looking at the average of gift, it increases steadily over the post treatment period. Even though the participation in corporate giving has been brief and intense in 2004, firms tend to report higher contributions in the following years.

Analysis of corporate philanthropy by sector of activity

Table 4: Relative contributions between industrial sectors

Sector	before 2003	after 2003	before 2003	after 2003
	Participation rate		**Average gift by sector in k€**	
Agriculture	0.6	0.7	0.004	0.01
Industries alimentaires	2.9	3.3	0.09	0.45
Industrie biens de consommation	5.5	4.9	0.40	1.64
Industrie automobile	0.3	0.3	0.04	0.06
Industries biens d'équipement	4.9	3.3	0.04	0.31
Industries biens intermédiaires	7.5	6.6	0.04	0.16
Energie	0.3	0.6	0.30	**39.6**
Construction	8.4	7.7	0.01	0.05
Commerce	**33.5**	**28.8**	0.03	0.30
Transports	3.4	2.6	0.19	0.36
Activités financières	5.3	4.0	0.17	**2.77**
Activités immobilières	3.0	2.5	0.007	0.05
Services aux entreprises	**15.2**	**17.7**	0.05	0.35
Services aux particuliers	**7.5**	**15.1**	0.04	0.21
Education	1.5	1.6	0.01	0.03

Table 4 documents the relative percentage of gift among the various French industrial sectors. Retail is the most represented sector in corporate philanthropy. The

2003 reform did not change this fact as about one third of giving firms comes from this sector. Business services sector follows with 15% of giving firms coming from this sector before the reform; after 2003, their relative number increases by 1.5% so as to reach 17.7%. On the other hand, consumer services is the sector that has been the most influenced by the change in tax incentives toward charitable giving as it doubled its rate of giving firms in corporate philanthropy. All other sectors remained rather stable over the period. Yet in analyzing the average gift of firm by sector (including non giving firms) I find that the energy sector is by far the most generous with an average contribution approximately equal to EUR40,000 after 2003 while its average gift was only EUR 300 prior to the reform. To a lesser extent, the sector of financial activities has also significantly increased its average gift after the reform reaching the second most generous sector. These different results are consistent with the fact that all firms do not present the same probability to engage in corporate philanthropy (see Brammer and Millington, 2006, [5]). Large firm size or operating in a sensitive industry can increase the corporates' propensity to donate. Finally, an interesting feature of table 4 is that the two least generous sectors, education and agriculture, are also the two least affected sectors by their public image with respect to their business activities. Overall, these statistics tend to confirm that the reform had heterogeneous effects on firms. Those effects seem to differ with respect to firms' financial characteristics and industrial sector.

7   Data analysis

The data used in this study comes from the BRN (Real Normal Profits) declarations from 2000 to 2007. These declarations are completed annually by firms liable to income tax with revenue higher than EUR 763,000. In the tax files, French firms are required to fill in a detailed balance sheet and profit statement which makes the BRN an interesting information source: more than 150 variables

describe the firms' characteristics, including the amount of corporate giving. Moreover, a unique identifier (SIREN number) allows tracking the individual firms over time in the data. I take advantage of this identifier to construct a panel data set. Several cuts were made to create the estimation sample. All corporate taxpayers with missing data were dropped. Besides, firms with zero employees were also left out. To improve the data interpretation, I exclude firms with negative income (and a zero marginal tax rate) as they financially unstable and difficult to follow from year to year. The panel data created accounts for 417,040 firms. Among those firms 7,919 report at least one gift during the period. Analyzing the panel data, I find that about half of firms are present during the whole period, and if I consider only this sub-sample, I find that approximately 80 to 90% of the total contributions remain each year in the panel. It indicates that firms reporting contributions appear more stable. Indeed, regarding the main variables, a comparison between the panel and the original sample indicate that firms in the panel have higher performances. On the other hand, firms getting out of the sample are as expected characterized with very low performances. However, I do not restrain the sample to firms that are present during the whole period, since I also want to capture the possible effects of new firms entering into the market after 2000 and with high financial performances and/or high generosity ratio.

One should note that there is no legal requirement for firms to disclose their charitable contributions. Information on charitable contributions comes from the amount reported in the tax files and corresponds to the total tax credit: it does not report the total amount of charitable contributions made by the firm. However, the existence of incentives for charitable giving should be sufficient information to assume that the total amount of donations not disclosed by firms is not significant. This assumption aims mostly at non taxable firms which cannot benefit from tax reduction. Given their financial situation, this assumption is reasonable even if it cannot be verified. Nonetheless, it constitutes a motive to exclude nontaxable firms from the sample estimation. Moreover, I also assume that firms report the

totality of the amount given to charity, which is not verifiable with the data. The evolution of the contributions reported by the firms is shown on the graph below, controlling for the revenue.

Descriptive statistics

Descriptive statistics organized by giving firms and non giving firms are reported in table 14. The table compares average statistics for giving firms, non giving firms and the total sample over the period 2000 to 2007. It shows that there exists marked differences between the two groups as giving firms present better financial performance than non giving firms for each of the variables kept in the analysis. Besides, I find that the sample is composed by roughly 15 per cent firms subject to reduced tax rate, even though this share fluctuates over the period (see Figure 15 in the Appendix).

Table 12 shows the analysis of contributions per year with respect to the number of firms, the average gift and the evolution of the French GDP. For every aspect of the examination, the post treatment analysis significantly differs from the pre- treatment. These patterns are suggestive of the reform having an effect on corporate giving, but of course they do not prove the existence of a causal effect of the reform. It is plausible that exogenous shocks such as the 2004 tsunami in Asia modified the charitable behavior of the firms so that this effect produces an association between taking advantage of the reform and natural disaster events. The causal relationship needs to be determined through a thorough analysis which I attempt to demonstrate in the following sections.

Determinants

Following the literature and the previous analysis, I include in the model revenue, profit, total asset, corporate tax rate, total debt and the number of employees. Income and marginal tax rate are expected to be correlated so the presence of the two variables can avoid a potential omitted variable bias. As indicated in the theoretical framework section, I include corporate tax rate as it is found to impact donations in both profit maximization and utility maximization problems.

Furthermore all the selected parameters of interest are found to be significant when anaylising the Pearson correlation coefficients (see table 16).

8   Estimating the causal effect of the reform

The law resulting from the 2003 tax reform was passed in August and was applicable to income earned in the same year. Following Fack and Landais (2009), I do not include this year in the baseline estimation as taxpayers had the opportunity to change their giving behavior for the 4 months remaining. I also assume that corporations were aware of the tax change, a reasonable assumption at least for the large firms particularly concerned with their optimal taxation behavior.

Testing for H1: All firms are willing to give to charities, but they are constrained by the price of giving.

A tax incentive policy with an increased in tax credit is said efficient at increasing donation to charity if the net impact of a 1 euro tax credit will result in charitable contribution greater than 1 euro. The price elasticity is interpreted as the percentage change in donations that results from a 1% change in the price of giving, all else being equal. On a theoretical ground, it is expected to be negative as an increase in price of giving should lower the level of gift, but whether it is closer to 0 or 1 is decisive to assess the efficiency of the tax policy. As my objective is to test the influence of tax incentives on donations, I evaluate the price elasticity of corporate giving based on French corporate data covering the period from 2000 to 2007.

As it was shown in the first section, the total amount of contributions increased steadily after the tax reform. However, I cannot attribute the rise in corporate giving solely to the 2003 reform since other events may have occurred at the same

time. Hence, I need to distinguish the policy effect from a secular change that would affect the evolution of corporate giving. For example, the 2004 tsunami in Asia may have triggered an impulse in generosity which should be considered as an exogenous shock, not related to the reform. Likewise, the time of reform can also coincide with a shift in the corporate social responsibility strategy of the firms which could have affected the long run trend of corporate philanthropy.

The changes in the tax incentives for corporate philanthropy lead by the 2003 tax reform produce a natural experimental source of variation in the price of giving. Indeed, low taxed firms experienced a 53% reduction in the price of giving while standard taxed firms (33.33%) witnessed a 39% decrease[2]. Even though these two groups of firms have been impacted, I start with this difference in the variation of the price to construct a control group and a treatment group characterized by various incentives. The rationale behind this strategy is that since the 2003 reform involved different changes in the price of contribution depending on the marginal income tax rate, I claim that reduced taxed firms benefited from higher incentives for corporate giving than standard taxed firms. As a consequence, while the two groups have been impacted by the reform, the reduced tax firms should engage more in corporate philanthropy after 2003 if the tax reform to be efficient.

However, this strategy may also suffer from its unverified hypothesis. The natural experiment does not give the opportunity to know how corporate giving would have evolved without the 2003 tax reform. This implies that I need to make strong assumptions about the evolutions of the gifts in this unverified event. As a consequence, the obtained results will rely heavily on these assumptions.

Panel data and fixed effect model

With cross sectional time series, OLS estimator is not consistent if unobserved firm specific characteristics have a constant impact on giving. In that case, the

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[2]The price of giving for reduced taxed firms goes from 0.85 to 0.4 after the reform, while standard taxed firms had a price of giving equal to 0.66 in the pre-reform period

model is affected by an omitted variable bias but several solutions can overcome this problem. As a consequence, I make use of panel data since it accounts for individual heterogeneity. Two techniques are used to analyze panel data, fixed effects and random effects. Fixed effects are suited when the interest lies in analyzing the impact of variables that vary over time. In that case, I assume that something within the individual firm may impact its decision to report a gift and therefore I seek to control for it. Another assumption is that time-invariant characteristics are unique to individual firm and should not be correlated with other firm characteristics.

Difference-in-difference strategy

I make the comparison between the outcomes before and after the 2003 tax reform for the control group taxed at standard rate and the treatment group, taxed at reduced rate. The difference-in-difference estimate is unbiased if in the case of absent reform, the average change inside each group would have been the same for the two groups, treatment and control. However the difference-in-difference strategy rests upon the unverifiable assumption that absent tax reform, the evolution of gifts for the control group would have been the same as for the treatment group. For this reason, this strategy has to be applied very carefully, choosing a treatment group and a control group that are very similar to each other and identifying a clear break in the trend of the treatment group at the time of the reform. Another concern with the difference-in-difference strategy is that it uses several years of potentially serially-correlated data leading to autocorrelation of standard errors across time (Bertrand, Duflo and Mullainathan, 2004, [3]).

The evolution of the contributions depicted in figure 6 suggest the presence of a response and could be converted into the effect of a change in the price of giving, using a difference-in-difference approach with groups defined by firm's position in the revenue distribution and the marginal income tax rate. In spite of this, the

estimation approach is subject to potential criticism lying in the basic assumptions. One can argue that the treatment and the control group are not sufficiently close. Indeed, the identification relies on the difference in the tax treatment of the two groups but it might suffer from a heterogeneity problem. Inasmuch as the difference in firms' taxation rests upon their characteristics (income and revenue), it is likely that these two groups will show strong differences. To tackle this issue, I select only firms with revenue lower than €15 million which reduces the sample size in half. The evolution of the generosity before the tax change in 2003 shows a more similar pattern for the low tax group and the standard tax group with revenue lower than €15 million, than it was with the original standard tax group, as documented in figure 7. Note that I do not take into account the contributions level in 2002 as this year shows unusually low participation in corporate philanthropy. The difference-in-difference strategy may be more robust in this case as the control and treatment groups are closer to each other before the tax reform. Moreover, the strategy consists of comparing charitable contributions with different marginal tax rate groups and therefore, it assumes that no group permanently shift in the revenue distribution following the reform. In order to use the difference-in-difference strategy, I assume that all other things being equal, the treatment group and the control group would have followed the same trend if there was no reform.

I think of 2004-07 as post-treatment years whereas 2003 is a transition year during which the increase in tax incentives was only partially in effect. I use only 2000 as the pre-treatment years since 2001 and 2002 were specific years for corporate philanthropy, characterized almost solely by the gift of the smallest firms. Moreover year 2000 is interesting as it does not capture possible anticipation in the tax reform[3].

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[3] Difference-in-difference between year 2004 and year 2000 consists in estimating:

$$\triangle_{2004,2000} = \left[E\left(Y^T_{2004}\right) - E\left(Y^T_{2000}\right) \right] - \left[E\left(Y^C_{2004}\right) - E\left(Y^C_{2000}\right) \right] \tag{1}$$

with Y^T_t and Y^C_t corresponding respectively to the level of contributions for the treatment group and the control group.

I start with a naive estimation of the level of contribution, in which I neglect important sources of bias such as endogeneity and censoring. The baseline specification is defined as:

$$ln\left(donations_{it}\right) = \alpha_i + \gamma_t + \beta_1 ln(price_{it}) + \beta_2 X_{it} + \epsilon_{it} \qquad (2)$$

- i indexes firm individual and t reflects time.

- $ln\left(donations_{it}\right)$ is the logarithm of the gift plus one euro (method which accounts for firms with no contributions)

- α_i captures time invariant effects or firm fixed effect

- γ_t represents the year fixed effect

- $ln(price)$ refers to the natural logarithm of the price of giving. The price of giving equals one minus the marginal income tax rate before 2003, and one minus the tax credit after 2003.

- $X_{i,t}$ corresponds to a set of observable characteristics for firm i at date t. The determinants are the revenue, corporate income tax, number of employees, total assets, after-tax income and total debt.

- $\epsilon_{i,t}$ is the error term.

The elasticity of the price of giving is captured by the estimate of β_1. However this naive estimator is likely to be biased and I start with solving the endogeneity issue.

Computing Instrumental Variables estimates

The zero-conditional-mean assumption is likely to be violated because of endogeneity problems. In this case the OLS estimate is inconsistent because the regressor is correlated with the error term. To correct for endogeneity, I experiment with two-stage least-squares (2SLS) estimation of equation (2), treating the price of giving as endogenous. If differences in the price of giving across firms vary

primarily because of their financial characteristics in the pre-treatment period, then a causal link between price of giving and the level of gift is not necessary. I introduce a dummy variable $Time$ taking the value 1 in the post-treatment period (corresponding to year 2003 of the tax reform) and 0 in the pre-treatment period, as well as $Treatment_{it}$, a dummy equal to 1 if firm i belongs to the treatment group at period t. I instrument for price of giving using interactions between post-treatment year dummies $Time*Treatment$, as well as the set of observable firm's characteristics, the firm's fixed effect and the year fixed effect. I use the following auxiliary regression to check that the instruments are well correlated with the variable to instrument, the price of giving $ln\,(price)$:

$$ln\,(price)_{i,t} = a_i + b_1 X_{i,t} + \gamma_t' Time + \theta' Treatment_i + b_2 Time*Treatment_i + u_{i,t} \quad (3)$$

Then I generate the instrument as the predicted value of the price of giving. The second stage equation is defined as:

$$ln\,(donations_{it}) = \alpha_i + \gamma Time + \beta_1 \widehat{ln\,(price)}_{it} + \beta_2 X_{it} + v_{it} \quad\quad (4)$$

where $\widehat{ln\,(price)}_{it}$ is the predicted price of giving for firm i at period t and v_{it} are the residuals.

I also present the reduced form estimation where the dependent variable is directly given by the instrument defined above. This specification which compares the effects of the reform on the level of donations in a difference-in-difference framework, is defined as followed:

$$ln\,(donations_{it}) = \alpha_i' + \beta_1' X_{i,t} + \gamma_t Time_i + \theta Treatment_t + \beta_2' Time_i * Treatment_t + \epsilon_{i,t}'$$

$$(5)$$

where i indexes firm individual and t reflects time. The difference-in difference

estimator is the OLS estimate of β_2, the coefficient of interaction between $Time_i$ and $Treatment_t$. Note that this last specification allows us to verify that the coefficient of the difference-in-difference estimator obtained with the reduced form estimation corresponds to the one obtained when taking the difference in average gifts.

9 Results

Table 5 indicates the different coefficients found with the difference-in-difference strategy when taking the mean values of corporate giving with 2000 taken as a reference. These coefficients reveal that the reform had a low and negative impact on the corporate giving of the reduced tax firms. In addition, from 2004 to 2007, the effects seem to be very similar.

Table 5: Difference-in-difference in means

Year 2004	before tax reform	After tax reform	Difference (over time)
Treatment	0.04958	0.06136	0.01177248
Control	0.01763	0.01638	-0.00125649
Difference	0.03195	0.04498	**-0.01303**

Year 2005	before tax reform	After tax reform	Difference (over time)
Treatment	0.04958348	0.07436041	-0.02478
Control	0.01763227	0.01618093	-0.00145
Difference	0.03195	0.05818	**-0.02623**

Year 2006	before tax reform	After tax reform	Difference (over time)
Treatment	0.04958348	0.07764891	0.02807
Control	0.01763227	0.01661125	-0.00102
Difference	0.03195	0.06104	**-0.02909**

Year 2007	before tax reform	After tax reform	Difference (over time)
Treatment	0.04958348	0.08238621	0.03280
Control	0.01763227	0.01634322	-0.00129
Difference	0.03195	0.06604	**-0.03409**

Likewise, the elasticity of the price of giving is found positive but very low, confirming the previous results (see Table 6). However, I need to take into account the different characteristics of firms to improve the estimation of the tax reform.

Table 6: Means in the Difference-in-difference for the price of giving

	before tax reform	After tax reform	Difference (over time)
Treatment	-0.1625	-0.9163	0.7538
Control	-0.4054	-0.9163	0.5109
Difference	0.2429	0	**0.2429**

Note: the means of the price of giving are taken in natural logarithm.

The after tax average of the price is gathering year 2004 to 2007.

Estimations are realized with the sub control group of firms having revenue lower than €15 million. The first estimations are done without any control variable, so as to verify that the estimations results meet the gift averages measured for the two groups. The OLS estimation is valid under the assumption that the constant terms are equal across units. If this assumption is rejected, this so-called "pooled OLS" would produce inconsistent estimates. I use the Fisher test to test the existence of an individual specific effect: under the null hypothesis the constant terms are equal across units. The F-test following the regression indicates that there are significant individual effects, implying the OLS is inappropriate. The choice of model between fixed (FE) and random effect (RE) is based on the Hausman test in which the null hypothesis corresponds to a consistent RE estimator. The test rejects strongly the null hypothesis so firm individual effects seem to be correlated with the explanatory variables.

Table 7: Results for fixed effects estimation

Dependent Variable	Contribution level			
	All firms		*Just givers*	
Specification	No Control	Control	No Control	Control
Time_treat	-0.0326***	-0.0287***	0.767***	-0.00929
	(0.00200)	(0.00219)	(0.0631)	(0.0544)
Treat	0.0107***	0.0275***	-1.132***	0.0162
	(0.00161)	(0.00353)	(0.0466)	(0.0452)
Year 2004	0.0352***	0.0256***	0.423***	0.224***
	(0.00157)	(0.00163)	(0.0327)	(0.0269)
Year 2005	0.0447***	0.0334***	0.434***	0.167***
	(0.00157)	(0.00164)	(0.0326)	(0.0273)
Year 2006	0.0494***	0.0361***	0.510***	0.190***
	(0.00157)	(0.00165)	(0.0328)	(0.0278)
Year 2007	0.0570***	0.0410***	0.450***	0.0506
	(0.00158)	(0.00519)	(0.0335)	(0.0291)
Revenue	-	0.00387*	-	0.414***
	-	(0.00174)	-	(0.0445)
After tax income	-	0.00978***	-	0.0458*
	-	(0.00112)	-	(0.0196)
Total asset	-	0.0177***	-	0.616***
	-	(0.000955)	-	(0.0509)
Total debt	-	-0.00620***	-	-0.109***
	-	(0.00144)	-	(0.0327)
Number of employees	-	0.00577***	-	-0.0634
	-	(0.00159)	-	(0.0335)
Corporate tax rate	-	0.00416***	-	0.0643***
	-	(0.000662)	-	(0.0137)
Intercept	0.0261***	-0.303***	7.549***	-6.094***
	(0.00146)	(0.0186)	(0.0217)	(0.291)
N	1685409	1674117	11479	11147
R^2	0.001	0.002	0.216	0.497

Standard errors are in parentheses.

OLS estimators are calculated from clustered robust standard errors.

All variables are in logarithm and the base period is 2000.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 7 reports ordinary least squares (OLS) with fixed effect model of equation (5). The estimations are given with and without control variables. The first two

columns provide the estimation results when I take into account the whole sample, including non giving firms. Then I report the results with only the giving firms in the two last columns. All of the variables (except the dummies) are expressed as natural logarithms (ln), which means that partial derivatives can be interpreted as elasticities, and also helps eliminate heteroskedasticity in disturbances. The difference-in-difference estimator is the OLS estimate of "time_treat". The role of *treat* is to control for the usual difference between the two groups of interest, the tax reduced firms on one hand and the standard taxed firms on the other. The variable *time* captures the trend in corporate giving among the control group, which is also assumed to be similar to the treatment group in the pre-treatment period. Note that the estimates verify the numbers found with the difference-in-difference method used on the average gift.

The results in table 7 suggest a weak effect of the tax reform. When considering the estimation results for all firms, the coefficient of interest is low and negative revealing that corporate giving slightly decrease after the reform. However, I need to control for several factors that should enter in the determination of the corporate giving. As can be seen in the previous graphs, I include the revenue as it clearly seems to influence the contribution level. Following the literature, I also include the number of employees, the total asset, the number of employees, the corporate tax rate and the total debt. Every variable is found significant except the number of employees in the regression with just giving firms. Besides, total asset, total debt and the level of revenue are the most influential variables. Quite surprisingly, revenue has little impact on the donations when all firms are included. Overall, the results show that the evolution of charitable contributions for the firms which had the larger decrease in a price of giving after the reform is not significantly different from the evolution of contribution of other firms. However, there remains econometric issues such as censoring and endogeneity that have been ignore so far in the specification.

Table 8 and 9 report the estimates of the 2SLS regression. The elasticity of

the price of giving is found positive and equal to 0.106 which is very weak. This means that a decrease in the price of giving by one per cent would have entailed a reduction of contributions by 0.106 per cent. This result is surprising as one would have expected an opposite effect of the reform. Yet this pattern of response is consistent with the evolution of corporate giving depicted in figures 6 to 8. However, given the presence of censored data, the estimation still suffers from econometric issues which one needs to take into account.

Table 8: Instrumentation of the price of giving

	price of giving	
	Coefficient	Std
Time	-0.133***	0.000474
Time x Treatment	-0.040***	0.000673
Treatment	0.228***	0.000647
Total asset	-0.004***	0.000273
Total debt	0.006***	0.000339
Number of employees	0.006***	0.000331
Corporate tax rate	0.002***	0.000222
Revenue	-0.007***	0.000350
After-tax income	0.003***	0.000195
Intercept	-0.243***	0.004
N		1674117

Regression includes fixed effect model.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 9: Linear model with instrumental variables

	Contributions	
	Coefficient	Std
price of giving	0.106***	0.00805
Time	0.0321***	0.00333
Revenue	0.009***	(0.00114)
After-tax income	0.0231***	(0.000506)
Total asset	0.0243***	(0.000813)
Total debt	-0.0135***	(0.000918)
Number of employees	0.0114***	(0.00109)
Corporate tax rate	-0.0011	(0.000624)
Intercept	-0.403***	(0.00972)
N		1674117

Regression includes fixed effect model.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Censoring and Tobit Model:

Data in the sample is censored: the dependent variable, the level of contribution, is not observed on the whole sample while the explicative variables are observed for every individual firm. In the presence of a censored regression model, the OLS estimator is biased. To overcome this issue, one could decide to estimate contributions only on the selected observations which contains positive gifts. With this sub-sample, the data is truncated. The OLS estimator will be again biased because of omitted variable problem, unless I assume that the error terms are independent. But this constitutes a strong assumption since the sample selection of contributions is likely to be based on unobserved factors which are contained in the error term, the selection is likely to be correlated with it. To take into account all information on the panel data including the censored data, I fit the model with

the Tobit estimation method, which uses maximum likelihood to combine the probit and regression components of the log-likelihood function. The coefficients in the Tobit regression indicate the marginal effects on the conditional mean of the dependent variable of changes in the covariates.

The model of censoring consists of a separate discrete mechanism, also known as selection bias model:

$$y_i^* = x_i'\beta + u_i$$

$$y_i = max\left\{0, y_i^*\right\}$$

with

$$y_i = \begin{cases} y_i^* & \text{if } y_i^* > 0 \\ 0 & otherwise \end{cases}$$

where y^* is a latent variable observed for values greater than 0 and censored otherwise. Under the Tobit model, errors u_i are assume to be normally distributed.

However, a strong limit of the Tobit model lies in its underlying assumption. In fact, normality and homoscedasticity are important parts of the Tobit model. Testing for normality with the Jarque Bera test leads to reject the null hypothesis of the normal distribution which will limit considerably the interpretation of the results.

Table 10: Results from Tobit regression

	Tobit model	Marginal effect after Tobit
*Time***price of giving**	2.138***	0.201***
	(0.490)	(0.046)
Year 2007	3.547***	0.338***
	(0.202)	(0.019)
Year 2006	2.433***	0.231***
	(0.190)	(0.018)
Year 2005	2.192***	0.208***
	(0.190)	(0.018)
Year 2004	1.203***	0.114***
	(0.196)	(0.018)
Revenue	0.047	0.004
	(0.151)	(0.014)
After-tax income	0.615**	0.058***
	(0.100)	(0.0094)
Total asset	2.536***	0.239***
	(0.1038)	(0.010)
Total debt	-1.333***	-0.125***
	(0.136)	(0.012)
Number of employees	1.636***	0.154***
	(0.126)	(0.012)
Corporate tax rate	-0.096	-0.009
	(0.072)	(0.007)
Intercept	-137.75***	-
	(1.5482)	-
N	1674117	

Standard errors in parentheses. Censoring set a zero.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 10 presents the results of the Tobit estimation. Note that few observations are near the deduction limit of 5% of revenue, so I use the lower limit Tobit

estimates, or left censoring. The coefficient on the price of giving is 0.201 which is slightly higher than the one obtained with the 2SLS regression. Hence, under the H1 hypothesis, it appears that the overall effect of the reform is small and negative. Indeed the elasticity of the price of giving is found to be low and positive which is at odds with what could be expected.

The results of H1 hypothesis seem partially implausible and I cannot conclude on the efficiency of the tax reform. However, it clearly appears that the reform has almost no impact on the reduced taxed firms. At first, this result is surprising as the reform raised the deduction limit of the tax deduction and those small firms should have been less constrained to make charitable contributions. The 53% reduction in their price of giving should also have contributed to trigger a larger participation of this group of firms. Hence, it appears that the interest of firms for corporate philanthropy is not only guided by the price of giving but might also be a combination of several elements that enter in the strategic decision of the company.

Testing for H2: firms are not necessarily constrained by the price of the gift, but are rather influenced by Corporate Social Responsibility (CSR)

The results obtained with the first hypothesis indicate the reform did not generate the expected positive effect on reduced tax firms. Yet the evolution of the contributions observed after 2003 have significantly increased. This suggests that some firms may have changed their behavior toward corporate giving that I did not account for so far. Indeed, when decomposing the evolution of corporate giving into several revenue brackets, I observe that the richest firms may have been more positively impacted by the reform. Hence I investigate the possibility that the 2003 tax reform had positive impact on the contributions of some specific groups of firms that I did not take into account so far.

The Before-After estimator

The most efficient method to identify the causal effect of the reform on firm's behavior is to compare the contribution of the firm impacted by the reform with the same firm not impacted. However, this counterfactual is not observable in the present case of this study. Every firm taxed at the standard rate has been similarly impacted by the reform, so the only possible counterfactual is to compare the evolution of a firm's contributions with what it should have been if no reform. Then I attribute the change in reported contributions to the changes in the deduction system. However, there exists two potential defect with this estimator. First, it attributes to the reform any trend in corporate giving due to lifecycle factors. Second, the before – after estimator relies on the assumption that the mean outcome in the no-treatment state in the same before and after the reform. To overcome this problem, I forecast the pattern of the contributions in the event where no tax reform was instituted. Then I calculate the difference in average contributions after 2003 between the observed treatment group and the non observed group not affected by the reform. I assume no anticipation effect and I treat 2003 as being part of the pre-treatment period. Indeed, the previous figures documenting the evolution of the corporate giving showed an apparent structural break starting from 2004. As few observations are available before the reform and since 2002 was a specific year characterized by unusually low participation in corporate giving, this hypothesis allows to construct the virtual group not affected by the reform. The limit of this strategy lies in the assumption that the expected outcome in the no-intervention state is the same in the post and the pre-intervention period.

To examine the effect of the reform based on the before-after strategy, I distinguish 3 groups of revenue: 1) firms with revenue lower than EUR 5 million, 2) firms with revenue between EUR 5 million and EUR 50 million and 3) firms with revenue higher than EUR 50 million.

The OLS estimation with the *Post* dummy indicating the after tax period, is

given by:

$$ln(donations)_{it} = a + b * Post * Group + c * Group + dX_{it} + \delta_t + \mu_{it} + \varepsilon_{it} \quad (6)$$

where *Group* refers to the revenue group of the firm, *Post* is a dummy equal 1 in the post treatment period, and X_{it} is a set of controls including year dummies, revenue, after-tax income, number of employees, corporate tax rate, total debt and total assets. The coefficient of interest is b which indicates the treatment effect. δ_t and μ capture respectively the fixed effects by year and firm.

As indicated above, the treatment and control groups are assumed to have similar covariate distributions.

Table 11: Before-after estimation results

Effect of the reform on the group revenue:	Contributions	
	OLS	Tobit - Marginal effect
Group revenue:	-0.135***	-0.315***
lower than EUR 5 million	(0.00307)	(0.021)
Group revenue:	0.060***	0.186***
between EUR 5 million and EUR 50 million	(0.00321)	(0.024)
Group revenue:	0.600***	0.421***
higher than EUR 50 million	(0.00854)	(0.040)
Controls		
revenue, after-tax income, corporate tax rate, number of employees, debt		
Type of group (3 types of revenue group)		
Year dummy (from 2004 to 2007)		
N	1769708	1769708

Standard errors are in parentheses.
Regression includes firm and year fixed effect.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Turning to the OLS estimates in Table 11, one can see that they present rather distinctive effects of the tax reform depending on the group of firms considered.

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Consistent with the estimation results found with the H1 hypothesis, the impact of the tax reform on the smallest firms was negative. Those firms with revenue lower than EUR 5 million correspond to reduced tax firms. Enterprises with revenue ranging from EUR 5 million to EUR 50 million correspond on average to firms taxed at the standard rate with the lowest revenue. Interestingly, the effect of the reform becomes positive even though its impact on corporate giving is very low. On the other hand, the largest firms whose revenue is higher than EUR 50 million have substantially and positively reacted to the 2003 reform. The most important effect of the tax reform is attributed to this group of firms.

However, the OLS estimates are biased due to heavy censoring. The marginal effects for the conditional mean of the observed gift obtained with Tobit regression show lower coefficient, except for the middle group. The impact of the reform on charitable contributions for firms with revenue between EUR 5 million and EUR 50 million is higher with the Tobit model. Likewise, the coefficient on the smallest group of firm is found to be more negative than with OLS estimation, confirming the decreasing generosity after 2003 for this group.

Robustness check

As stated above, the use of Tobit model might not be optimal as it rests upon the assumption that errors are normally distributed. Testing for the normality of the distribution, the Jarque Bera test reject this hypothesis and I should find a better way to estimate the model. Censored Quantile regressions provide this solution as they offer a censored data treatment that is not based on strong parametric assumptions regarding the error term. The conditional quantiles are not affected by censoring insofar those quantiles are greater than the censored point. So it is not necessary to make assumptions on the censored part of the distribution to estimate the conditional quantiles. However, in the present case the high censoring in the data implies heavy programme calculations that limit its empirical applica-

tion. I therefore assume that the new estimates obtained with quantile regression would not have substantially changed the results. Indeed, the examinations of the evolution of gift among the various group of firms that I underwent in the previous sections provide support to the conclusion obtained with the Tobit regression.

10   Conclusions

The 2003 reform on tax incentives toward charitable giving has often been heralded as a success story and has been credited with large increases in corporate giving. The recent propositions of the Government to reduce the rate of the tax credit for giving firms have been attributed to alarmist consequences by most of the actors in the non profit sector. In this report, I analyze the efficiency of these tax incentives by focusing on the effects of the reform on corporate giving and participation rate. I find that the effects of the tax reform on corporate philanthropy are nonlinear (varying with revenue level). The generosity of the largest firms increase the most after the reform, as well as their overall participation. These positive effects tend to diminish for firms with lower revenue but remain globally positive and significant for all firms taxed at the standard rate. More surprisingly, the tax reform had no impact on reduced taxed firms as they did not change their generosity nor they participation in corporate giving after 2003, even though they witnessed the largest reduction in the price of giving. A further analysis of the smallest firms shows that only a small fraction of them are constrained by the deduction limit. I assume that one explanation comes from the fact that charitable giving is not the best financial decision for these unstable firms that are struggling to improve their business conditions. However, when similar firms are taxed at the standard rate, their decision to engage in corporate philanthropy changes as corporate giving becomes a way to reduce their tax while doing good. This effect does not play such an important role for reduced taxed firms whose taxes are already too low to provide incentives for a new tax reduction with corporate giving. The

largest firms are the most concerned with corporate philanthropy as it answers to public demand for Corporate Social Responsibility, it promotes a better public image and the tax incentives give the opportunity to reduce their tax base.

Overall, the incentives of the French system remain abnormally high and there is some evidence that a lower credit allocated to the corporate contributions would not significantly affect the total level of corporate philanthropy. However, the increase in the tax deduction limit defined as 0.5% of the revenue seems to have played a substantial role on the level of giving, particularly for the small firms willing to engage in corporate philanthropy.

A major concern related to the tax reform concerns the redistribution of subsidy: the contributions at the bottom of the revenue distribution should benefit from higher subsidies. This work also raises the question of the rationale behind tax incentives for corporate giving if corporate philanthropy is not guided by a pure altruistic vision. The examination of the motives of enterprises for corporate giving should focus on governance issues or the correlation between performance and corporate giving to solve this issue. I leave this last question open for further research.

References

[1] Atkinson, L., & Galaskiewicz, J. 1988. Stock ownership and company contributions to charity. Administrative Science Quarterly, 33(1), 82-100.

[2] Benabou, R., and J. Tirole, 2010, "Individual and Corporate Social Responsibility," Economica, 77, 1-19.

[3] Bertrand M., Duflo E., Mullainhatan S. "Should we trust Differences-in-differences estimates? ", Quarterly Journal of Economics, 2003

[4] Boatsman, J. R., & Gupta, S. 1996. Taxes and corporate charity: Empirical evidence from micro-level panel data. National Tax Journal, 49(2), 193-213.

[5] Brammer, S. J., Millington, A. I. and Pavelin, S., 2006. Is philanthropy strategic? An analysis of the management of charitable giving in large UK companies, Business Ethics: A European Review, Volume 15 Number 3 July 2006.

[6] Carroll, R. and D. Joulfaian 2005. "Taxes and Corporate Giving to Charity." Public Finance Review 33(3): 300-317.

[7] Clotfelter, C. 1985. Federal Tax Policy and Charitable Giving. Chicago, University Press.

[8] Duflo E., "Empirical Methods", mimeo MIT, 2002

[9] Fack, G., Landais, C. 2010. "Are Tax Incentives For Charitable Giving Efficient? Evidence from France", American Economic Journal: Economic Policy.

[10] Freeman, R. E. 1984. Strategic Management: A Stakeholder Approach. Marshfield, MA. Pitman Publishing, Inc.

[11] Friedman, Milton. 1970. "The Social Responsibility of Business is to Increase its Profits". The New York Times Magazine. September 13.

[12] Ministère de l'Economie et des Finances. 2013. "Evaluation des voies et moyens (tome II)".

[13] Navarro, P. 1988. Why do corporations give to charity? Journal of Business, 61, 65-93.

[14] Nelson, R. L. 1970. Economic Factors in the Growth of Corporation Giving. National Bureau of Economic Research Occasional Paper 111, New York,, National Bureau of Economic Research and Russell Sage Foundation.

[15] Porter, M. E., & Kramer, M. R. 2002. The competitive advantage of corporate philanthropy. Harvard Business Review, 80 (12), 56-68.

[16] Post, J. E., & Waddock, S. A. 1995. Strategic philanthropy and partnerships for economic progress, philanthropy and economic development. In America,

R. F. (ed.), Philanthropy and Economic Development, 167-191. Westport, CT: Greenwood.

[17] Saez, Emmanuel, 2004. "The Optimal Treatment of Tax Expenditures." Journal of Public Economics 88, 2657–268

[18] Schwartz, R. A. 1968. Corporate philanthropic contributions. The Journal of Finance, 23 (3) 479-497.

Appendices

A Analysis of firms with respect to the marginal income tax rate

Figure 15: Share of reduced taxed firms and standard taxed firms in the sample
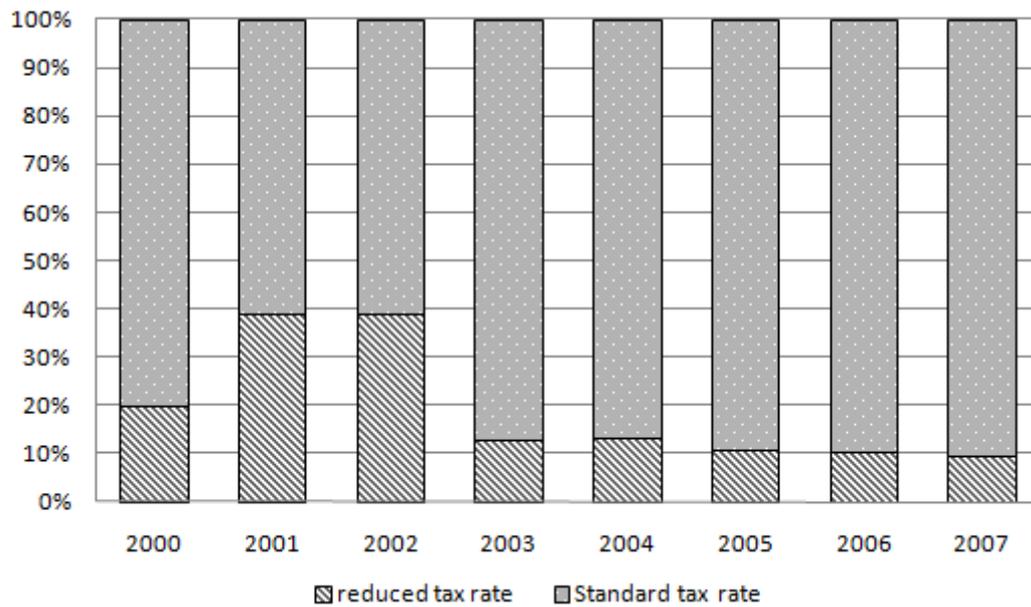
Source: Author's computations using BRN files.

B Distribution of revenue bracket

Figure 16: Share of revenue group among all firms
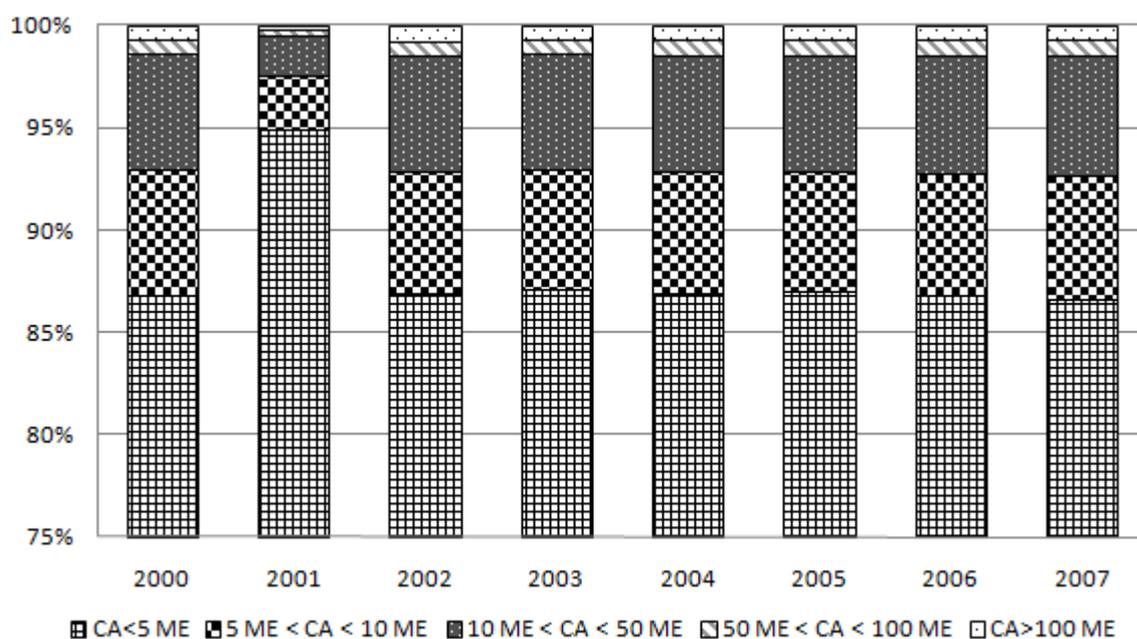
CA<5 ME ☑5 ME < CA < 10 ME ☒10 ME < CA < 50 ME ☒50 ME < CA < 100 ME ☐CA>100 ME

Note: CA stands for revenue and ME indicates for million euros.
Source: Author's computations using BRN files.

C Descriptive statistics (II): contributions analysis

Table 12: Contributions analysis

Year	2000	2001	2002	2003	2004	2005	2006	2007
Number of firms reporting giving	1,687	933	672	1,429	2,155	2,685	2,825	3,216
Mean of gift for giving firms	18.7	7.0	6.4	27.4	31.8	43.2	49.2	66.2
Mean of gift for all firms	0.103	0.049	0.013	0.121	0.203	0.335	0.389	0.566
Number of firms reporting a gift larger than the deduction limit	310	202	405	152	259	301	333	368
Total contributions (€ '000,000)	42.7	20.6	45	58	116	160	171	248
ratio Contributions/GDP (%)	3	1.4	3	3.6	7	9.3	9.5	13

Note: I assume that firm report a gift larger than the deduction limit when it exceeds 85% of this limit.

D Descriptive statistics (I): giving firms vs non giving firms

E Correlation coefficients: 2000- 2007

Table 14: Descriptive statistics

Giving firm		Corporate giving (€ '000)	Revenue (€ '000)	After tax income (€ '000)	Total asset (€ '000)	Total debt (€ '000)	Number of employees	Corporate tax rate (%)	Value added (€ '000)
Yes	mean	39.6	155,000	11,840	699,779	485,174	321.4	0.47	91,237
	std	386.8	5,688,925	153,618	17,330,000	16,000,000	2,957.6	0.75	6,285,754
	N	15,602	15,602	15,602	15,602	15,602	15,602	15,602	15,602
No	mean	-	8,380	505.6	19869	13,334	29.9	0.33	3,923
	std	-	961,592	19,930	1,526,292	1,415,571	736	2.76	852,506
	N	-	2,481,897	2,481,897	2,481,897	2,481,897	2,481,897	2,481,897	2,481,897
Total	mean	0.25	9,298	576.4	24,116	16,282	31.7	0.33	4433
	std	30.7	1,058,859	23,301	2,046,093	1,895,772	770	2.73	976,321
	N	2,497,499	2,497,499	2,497,499	2,497,499	2,497,499	2,497,499	2,497,499	2,497,499

Table 16: Correlation coefficients: 2000 - 2007

variables	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Corporate giving	1										
2. Revenue	0.1087*	1									
3. After tax income	0.1205*	0.6378*	1								
4. Total asset	0.1172*	0.7235*	0.6917*	1							
5. Taxes	0.1102*	0.5927*	0.7603*	0.6922*	1						
6. Corporate tax rate	0.0064*	0.1163*	-0.0510*	0.2250*	0.6118*	1					
7. Price of giving	-0.0293*	-0.1981*	-0.3245*	-0.2060*	-0.2505*	0.0155*	1				
8. Total debt	0.1060*	0.8244*	0.6709*	0.8320*	0.5586*	0.0482*	-0.1935*	1			
9. Number of employees	0.0994*	0.7631*	0.4835*	0.5933*	0.4561*	0.1004*	-0.1004*	0.6696*	1		
10. Value added	0.1044*	0.8882*	0.7074*	0.7248*	0.6151*	0.0720*	-0.4846*	0.8039*	0.8273*	1	
11. Cash flow	0.1110*	0.7039*	0.8992*	0.7233*	0.6936*	-0.0253*	-0.6207*	0.7316*	0.5484*	0.7773*	1