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Enjoy today, because nothing is sure about tomorrow. Unintended effects of temporal debt suspension

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Abstract

During the recent financial crisis, temporal debt suspension programs have been designed to postpone payments on existing debt of the firms more subject to the credit crunch. We argue that these programs ? and their temporal effects in term of short-term positive benefits ? may induce a short-term orientation, and so may negatively impact eligible firms. We test our hypotheses by exploiting a quasi-natural experiment provided by a financial debt suspension program implemented in Italy after 2009 and applying a difference-in-differences design with coarsened exact matching to a unique database with 382,690 firm-year observations between 2006-2015. Our results show that temporal debt suspension programs, which provide firms with short-term benefits, produce some unintended effects, like an increase of financial leverage and maturity, without increasing R&D intensity. Moreover, we find that the provision of short-term benefits reduces firms' performance and increases their bankruptcy risk. Overall, our findings suggest that temporal debt suspension programs, whereas designed to help eligible firms to overcome temporary financial constrains, could actually have unintended negative consequences by inducing firms' short-term orientation.

ENJOY TODAY BECAUSE NOTHING IS SURE ABOUT TOMORROW. THE UNINTENDED CONSEQUENCES OF TEMPORAL DEBT SUSPENSION

ABSTRACT

During the recent financial crisis, temporal debt suspension programs have been designed to postpone payments on existing debt of the firms more subject to the credit crunch. We argue that these programs – and their temporal effects in term of short-term positive benefits – may induce a short-term orientation, and so may negatively impact eligible firms. We test our hypotheses by exploiting a quasi-natural experiment provided by a financial debt suspension program implemented in Italy after 2009 and applying a difference-in-differences design with coarsened exact matching to a unique database with 382,690 firm-year observations between 2006-2015. Our results show that temporal debt suspension programs, which provide firms with short-term benefits, produce some unintended effects, like an increase of financial leverage and maturity, without increasing R&D intensity. Moreover, we find that the provision of short-term benefits reduces firms' performance and increases their bankruptcy risk. Overall, our findings suggest that temporal debt suspension programs, whereas designed to help eligible firms to overcome temporary financial constrains, could actually have unintended negative consequences by inducing firms' short-term orientation.

Keywords: short-term orientation; short-term benefits; resource allocation; firm behavior; debt suspension; difference-in-differences

"Who'd be happy, let him be so:
Nothing's sure about tomorrow".
Lorenzo de' Medici, 1490

INTRODUCTION

The recent financial crisis is considered to be one of the worst crises since the Great Depression of the 1930s. The crisis developed into an international banking crisis and caused an important credit crunch (i.e., a sudden shortage of financial funds) in the vast majority of national economies. Consistently, the years after the crisis reported significant declines in lending liquidity (Cornett, McNutt, Strahan, & Tehranian, 2011) and an emphasis on credit rationing (Campello, Graham, & Harvey, 2010). To attenuate the negative consequences of the credit crunch, some countries implemented debt suspension programs. These programs provide a temporal financial relief to eligible firms, temporarily suspending financial debt repayments, reducing cash outflows and therefore increasing the resources available in the short-term. The costs of these programs are incurred by the financial institutions, which accept to postpone debt payments without increasing debt or interests' levels.

Whereas debt suspension programs are designed to support eligible firms, they could also impact their temporal orientation. Temporal orientation - i.e., a future time perspective that captures variations across firms "in terms of the relative cognitive dominance of the near versus distant future" (Das, 1987: 203) - is a central concept of a firm's strategic orientation (Mosakowski & Earley, 2000; Souder & Bromiley, 2012), since it influences some strategic decisions such as capital investments (Nadkarni, Chen, & Chen, 2016). Temporal orientation may be, for example, characterized by "temporal myopia" (Levinthal & March, 1993) as firms may myopically overstate either the long-term or the short-term. On this regard, previous studies have underlined that firms are more inclined to short-termism, i.e. to emphasize near results at the expense of more distant ones (Laverty, 1996; Marginson & McAulay, 2008). Short-termism may imply negative consequences, as it may compromise

projects with high potential returns (Laverty, 1996), and so reduce firm performance in the long-term (Flammer & Bansal, 2017).

Strategy literature has explored the determinants of short-term myopia at three different levels: (a) individual-level, analysing usually managers' characteristics (Bertrand & Mullainathan, 2003; Das, 1987; Flammer & Bansal, 2017); (b) firm-level, investigating the methods to evaluate the net present value of investments (Cornell, 1999) or to measure performance (Hayes & Abernathy, 1980); (c) macro-level (Kacperczyk, 2009), examining the culture of a country (Hofstede, 1993) or the industry (Nadkarni & Chen, 2014). In this paper, we focus on one macro-level determinant of temporal orientation, and specifically we study the impact of debt suspension programs aimed at temporarily providing benefits to eligible firms.

Consistently with the literature underlining the role of regulation as "the key driver for resource allocation in various environmental management domains" (Buysse & Verbeke, 2003: 460), we study the effects of debt suspension programs that temporarily reduce cash outflows, and so provide short-term benefits to eligible firms. Our core prediction is that these programs, whereas designed to improve the financial conditions of the eligible firms, may actually induce an underinvestment in the long-term horizon (Bebchuk & Stole, 1993). This happens because of moral hazard problems that lead beneficiaries to exploit third parties resources and to form the expectation that similar concessions will be repeated in the future (Kanz, 2016). As a result, firms will "enjoy the quite life" (Bertrand & Mullainathan, 2003), and so do not increase their commitment to high rewarding long-term investments.

We address this empirical challenge by exploiting a quasi-natural experiment provided by a specific financial debt suspension program promoted in Italy from 2009 (so called *moratoria*). To this purpose, we collected data on a large sample of Italian firms and we built a yearly panel of 38,269 non-financial firms during a 10-year period (2006-2015). To test our

hypotheses, we use a difference-in-differences (DiD) design with a coarsened exact matching – with the treatment group composed of eligible firms for the debt suspension program and the control group composed of non-eligible firms. Our results support the hypothesized effects, indicating that the debt suspension program changes firms' temporal orientation. In the period following the debt suspension, we observe that eligible firms maintain R&D intensity unchanged, though they increase financial leverage and therefore the amount of resources available. In addition to increasing financial leverage, firms increase debt maturity, which allows them to have higher resources in the short-term while postponing to the future the repayment of the debt. These behaviors increases financial risk and reduce firms performance. In sum, our findings suggest that regulatory changes providing firms with temporarily benefits may lead to an unintended short-termism orientation and harm not only lenders granting these benefits at their expenses (Musumeci & Sinkey, 1990; Philippatos & Viswanathan, 1991) but, surprisingly, also the beneficiaries.

Our study provides three major contributions to temporal orientation and strategy literature. First, we answer the recent call advanced by Reilly et al. (2016: 1187) to "make valuable contributions in this multi-temporal approach to strategy" (Le Breton-Miller & Miller, 2011) by exploring the consequences of an external regulatory change (i.e., debt suspension programs) on firms' temporal orientation. In particular, our study contributes to this literature by showing that external regulatory changes providing temporal benefits may affect firm temporal orientation and induce a short-term resource allocation. Second, we answer the call to provide "theory-driven predictions about the consequences of differing horizons" (Reilly et al. 2016: 1186) and to further explore the unexpected temporal effects in management studies (Souder et al., 2012). By underlining that temporal orientation may affect firms' behaviors and outcomes, our results contribute to the literature exploring the factors that influence performance and bankruptcy risk (Becchetti & Sierra, 2003; Jindal &

McAlister, 2015; Klingebiel & Rammer, 2014; Powell, Lovallo, & Fox, 2011). Third, we contribute to debt renegotiation literature, which is generally focused on aspects related to the lender side (Isagawa, Yamaguchi, & Yamashita, 2010; Musumeci & Sinkey, 1990; Philippatos & Viswanathan, 1991). By exploring the effects of debt renegotiation on the beneficiaries' behaviours and outcomes, our results underline their unintended consequences and provide insights to better design future debt renegotiation programs.

THEORETICAL BACKGROUND AND HYPOTHESES

Temporal orientation and resource allocation

Resource allocation is a key strategic decision (Bardolet, Fox, & Lovallo, 2011) as it determines firm distinctive outcomes (Bower & Gilbert, 2005) and, therefore, its performance (Bardolet et al., 2011; Klingebiel & Rammer, 2014; Powell et al., 2011). Among all the drivers affecting resources allocation, temporal orientation is of great importance (Reilly, Souder, & Ranucci, 2016). For this reason, building on the work of Nelson et al. (1982), scholars have devoted large attention to analyze several drivers, like the differences among managers (Das, 1987), the reasons and outcomes of short-termism (Laverty, 1996), and the firm propensity to be more or less risk taker (Souder & Shaver, 2010).

The role of "time" and how it shapes firms decisions has stimulated several studies in organization theory and strategy (Gavetti & Levinthal, 2000; Mosakowski & Earley, 2000). Literature argues that firms may have different temporal orientations as while some are inclined to design strategy for a distant future, others do it for a near future (Flammer & Bansal, 2017). Previous studies underline also that short-termism is more common than long-term temporal orientation (Flammer & Bansal, 2017). For example, they show that individuals prefer lower short-term rewards to higher long-term ones (Das, 1987; Frederick, Loewenstein, & O'Donoghue, 2002). Moreover, they suggest that firms tend to become short-

term oriented in presence of several circumstances (Flammer & Bansal, 2017; Reilly et al., 2016; Souder & Bromiley, 2012), like when they face cash constraints (Souder & Shaver, 2010) or invest in new ventures (Wang & Bansal, 2012).

As firms with a short-term orientation may experience several potential negative consequences, like higher risks and lower performance (Chen & Hsu, 2010), in this study we investigate if a new program that provides short-term benefits may induce eligible firms to become short-term oriented, and so may negatively affect their resource allocation and results.

The impact of environmental change on resources allocation

The external environment is the "time giver of an organization" (Nadkarni et al. 2016: 1137) and, as such, influences firms resource allocation (Rumelt, 1995). The relevance of the environment - and particularly of its changes - on the resource allocation has been supported by several studies (Cheng & Kesner, 1997; Meyer, 1982). For instance, Meyer (1982) underlines that significant negative environmental changes (e.g., crises, disasters, threats) influence organizational behavior, as they stimulate firm responses. On a different note, Cheng et al. (1997) underline that, during a period of deregulation, resource allocation configuration influences the relationship between slack resources and the firm reaction to an environmental shock.

Several types of environmental changes – e.g., government laws, taxation, regulation, business policies, country economic growth, credit crunch, financial instability – may affect firms' resources allocation. Firms respond to external environmental changes when they notice the variation and interpret it either as a threat or as an opportunity (Nadkarni & Barr, 2008). In other words, firms try first to understand what the event signifies, and then develop a specific response (Nadkarni & Barr, 2008). In short, changes in the external environment

generate stimuli that guide the focus of firms' attention (Ocasio, 1997), bringing them to change their behavior and eventually develop a different strategy.

Previous studies have mostly analyzed the consequences of a transitory negative environmental event on firms' reaction (Meyer, 1982), showing that such episodes induce different and not easily foreseeable firm responses. Until now, the literature has developed a limited understanding of how a transitory positive environmental event affects firm's behavior. In this respect, the debt suspension programs recently promoted by some countries represent an important short-term positive environmental change that may potentially affect firms' resources and their temporal orientation.

Debt renegotiation and temporal orientation of resources allocation

Debt renegotiations are a type of "debt moratorium" usually used by debt issuers to reduce the negative consequences of financial or economic crises (Calomiris, Klingebiel, & Laeven, 2012). These mechanisms can involve one or both of the following options: (i) write-off the entire or part of the debt; (ii) postpone payments on existing debt (typically referred to as debt rescheduling or debt suspension). As such, these programs provide temporal short-term benefits to firms, by reducing the financial cash-outflows previously scheduled with their lenders.

The phenomenon of debt renegotiation has been explored, but from the lender perspective. Previous studies show that it is not easy for borrowers to renegotiate their debt (James, 1995). Consistently, Asquith et al. (1994) found that financial institutions infrequently make concessions to firms with public debt outstanding. This happens because the lenders assume that debt renegotiations may cause moral hazard problems, i.e., may push the borrowers to exploit them. From its perspective, the expectation of future debt relief may, in fact, induce the borrowers to perceive a weak execution of the financial contract (Kanz, 2016) and can, therefore, push them to act opportunistically.

Several scholars analyzed the announcement effects of debt renegotiations on the lender. Results show that debt renegotiation announcements penalize the lender - by reducing financial institutions' share price (Musumeci & Sinkey, 1990; Philippatos & Viswanathan, 1991) or the bad loan ratio used to define their unhealthiness (Isagawa et al., 2010). However, while the effect of debt renegotiations on the lenders has been largely analyzed, scholars have not devoted the same attention to the effects of debt renegotiation announcements on the borrower and in particular on its temporal orientation. One exception is the theoretical work by Cho et al. (1997) showing that, due to moral hazard problems and false bankruptcy claims, debt renegotiations may induce the borrower to allocate resources in a riskier way, with negative implications for the lenders.

Building on this insight, we analyze one type of debt renegotiation – the so called "debt suspension" – and explore its implications on the borrowers' resource allocation and performance. In particular, we argue that debt suspensions, whereas designed to reduce the likelihood that firms become financially distressed, can actually increase the likelihood of financial distress because of the unintended and undesirable negative behavioral reactions of the beneficiaries. Building on Cho et al. (1997), we claim that the temporal provision of resources due to a debt suspension program, whose cost is (partially) supported by third parties, will change firms' resource allocation. In particular, they will impact some key variables expressing firms' resource allocation – i.e., R&D intensity, financial debt leverage and maturity (Reilly et al., 2016) - and outcomes like financial performance and bankruptcy risk.

Hypotheses development

Debt suspension programs and R&D intensity

Innovation may produce long-run benefits (Chrisman & Patel, 2012) though with short-term costs (Reilly et al., 2016). So, a long-term orientation is essential for the promotion and success of innovation activities like R&D investments (Azoulay, Graff Zivin, & Manso, 2011).

Consistent with this view, previous studies support the idea that a long-term temporal orientation favor firms' commitment to innovative investments. For example, they show that firms with a higher proportion of shareholders with a long-time perspective are more prone to invest in innovation activities (Aghion, Van Reenen, & Zingales, 2013), or that firms providing long-term compensation to R&D managers have higher R&D intensity (Lerner et al. 2007).

Despite the well-known positive effects of a long-term orientation, firms tend to overemphasize positive returns in the near future with the risk of compromising long-term outcomes (Holmström, 1999; Laverty, 1996 and 2004). More specifically, a short temporal orientation will push firms to reduce the resources allocated to innovations (Chrisman & Patel, 2012), whose outcomes take a long time to materialize (Flammer & Bansal, 2017; Laverty, 1996). This behavior represents a form of myopia (Holmström, 1999; Levinthal & March, 1993), as it brings firms to underinvest in opportunities that show results in a long-term.

The problems of temporal myopia will likely be exacerbated when firms can access short-term resources provided at the expense of third parties. These extra resources are short-term benefits, since they provide a temporal positive effect on debt burdens, reducing the pressure on debt repayments. We argue that the alleviation of the debt burdens may induce firms to change their behavior (Sachs, 1990), since they have more freedom to decide their resource allocation and to "enjoy the quite life" (Bertrand & Mullainathan, 2003). In other words, resources provided with a short-term perspective might induce firms to exploit the aid

of temporal lower outflows and push them to adopt more short-term oriented behaviors. Consistent with this view, Chrisman et al. (2012) show that short-termist firms do not allocate the extra resources on innovation projects, which outcomes take a long time to emerge. The provision of short-term benefits may, instead, induce the beneficiary to use the extra resources with a short-term perspective.

In sum, firms eligible to obtain short-term benefits will be more short-termist than firms that are not eligible and so they will decrease R&D investments more than non-eligible firms. Stated formally:

> ***Hypothesis 1:*** *Firms eligible for debt-suspension programs decrease R&D intensity more than non-eligible firms.*

Debt suspension programs and financial debt

Strategy formulation, and resource allocation, are strictly related to financial management (Covin & Slevin, 1989). Jensen et al. (1976) – who recognized that financing and investing choices are strongly intertwined one another – paved the way for research investigating the relationship between strategy and capital structure.

Prior studies suggest that there is a strong relationship between decisions affecting resource allocation and capital structure (e.g., debt and equity financing) (Jensen & Meckling, 1976). Specifically, studies exploring the relationship between resource allocation preferences and temporal orientation (O'Brien, 2003) show that firm's temporal orientation is likely to impact financial leverage and its maturity structure (Scherr & Hulburt, 2001). In particular, firm short-termism may induce firms to increase leverage (Berg & Gottschalg, 2005). This happens as short-term oriented firms are less concerned about risks connected to higher debts and so tend to increase financial debt assuming risks that they would have not taken without the additional resources provided by third parties (Dowd, 2009).

Moreover, short-term oriented firms are likely to postpone obligations to the future, i.e., to increase long-term debts at the expense of short-term debts. By doing this, firms postpone the cash outflows and reduce their financial constrains in the short-term. So managers who are short term and like to "enjoy the quite life" (Bertrand & Mullainathan, 2003) will focus on the present at the expense of the future (Bebchuk & Stole, 1993). As a result, short-termism will induce firms to increase their debt maturity, postponing the repayment of debts to a future period.

It is important to notice that we expect short-term oriented firms to increase both financial leverage and maturity. Ceteris paribus, an increase of debt (instead of equity) would reduce firm discretion as financial debt forces managers to channel financial resources to debt repayment (Berg & Gottschalg, 2005). However, if the higher debt is associated with higher debt maturity, firms will have more resources in the short-term (because of higher debt level) and will repay the financial debt over a long-time period (because of longer debt maturity). By doing this, firms will have in the short-term both higher resources, and higher discretion over the use of the resources (Bertrand & Mullainathan, 2003).

In sum, the tendency of short-term oriented firms to increase financial leverage and debt maturity at the same time is likely to be exacerbated when firms receive short-term benefits due to a debt suspension program. By generating short-term benefits, the debt suspension program will induce firms to be more short-term oriented and to exploit the short-term aid, in comparison to firms that do not benefit from debt suspension programs. Therefore, these extra and unexpected resources will reduce the pressure on firms to operate in an efficient way and further increase the tendency to focus on the short-term to the detriment of the long-term. Overall, the short-term benefits of a debt suspension program will determine firms' temporal myopia and will produce the unintended effects of increasing

financial leverage and debt maturity, in comparison to firms that do not benefit from debt suspension programs. State formally:

> ***Hypothesis 2:*** *Firms eligible for debt-suspension programs increase (a) financial leverage and (b) debt maturity (i.e., decrease short-term financial leverage and increase long-term financial leverage) more than non-eligible firms.*

Debt suspension programs and firm performance.

A short-term perspective is likely to affect also firms' performance. The introduction of short-term benefits induces firms to become short-term oriented, since firms "foster a long-term orientation by providing long-term incentives" (Flammer et al. 2017: 1830). Therefore, firms eligible to short-term benefits will focus more on the short-term than firms non-eligible to these programs. The literature suggests that firms are myopic and operate with a short-term view in order to obtain short-term performance goals (Holmström, 1999; Porter, 1992). As noticed by Flammer et al. (2017), firms are generally myopic and make short-term operations with the aim to over perform short-term performance targets (Holmström, 1999), and so "such short-termist behavior translates in lower firm value" (Flammer et al., 2017: 1830).

To understand the impact of short-termism on investments, reflect on an investment with a positive return that implies short-term expenses but high-expected long-term outcomes (e.g., R&D investment for the development of a new drug). Firms with a short-term orientation will highly discount the long-term profits and probably estimate a negative net present value, not proceeding with the investment. On the contrary, firms with a long-term orientation will not discount so much the more distant returns and estimate a positive net present value, pursuing the investment opportunity. In sum, short-termist firms are reluctant to allocate resources undertaking long-term investments crucial for the future (Flammer & Bansal, 2017; Laverty, 1996).

Firms with a short-term orientation will prefer short-term investments with a low return to long-term investments with high returns (Flammer & Bansal, 2017). In terms of performance, Van der Stede (2000) explained that a short-term orientation positively affects firm performance only within the short period, while Chen & Hsu (2010) show that it negatively affects firm performance over the long period. Therefore, the overall effect of a short-term orientation on performance will be negative.

The effect of short-term and long-term orientation is confirmed by the fact that resource allocation considerably impacts the future performance of firms (Souder & Bromiley, 2012). As a consequence of resource allocation with a short-term perspective, we would expect that firms eligible to debt suspension programs increase performance less than firms not eligible to debt suspension programs. Stated formally:

> ***Hypothesis 3:*** *Debt-suspension programs decrease the overall performance of eligible firms more than non-eligible firms.*

Debt suspension program and bankruptcy risk

Temporal orientation influences firms' resources allocation, and so also their economic and financial outcomes (Souder & Bromiley, 2012). As a result, temporal orientation also influences firms' bankruptcy risk, which is the risk that they will not generate enough cash to reimburse their financial and operating obligations (Nakano & Nguyen, 2012). As indicated by previous literature, greater financial leverage (Ruland & Zhou, 2005) and lower performance (Altman, 1968) will increase the bankruptcy risk.

The influence of short-term orientation on bankruptcy risk is exacerbated when firms become aware of their eligibility for a debt suspension program. This happens because these programs reduce the amount of resources necessary to serve the debt in the short run, and so will increase the resources available to the firm. Short-term oriented firms will use these

resources to reach near term objectives, since firms accentuate short-run response to short-run reaction, at the expense of long-run outcomes (Cyert & March, 1963).

The inefficient way through which resources are allocated can be influenced by "moral hazard" problem, generally defined as "any misallocation of resources which results when risks are insured with normal insurance contracts and only with such contracts" (Marshall, 1976: 880). As stated by prior scholars, the explanation for the resource allocation inefficiency can be expressed by bankruptcy (Legros & Mitchell, 1995). When firms become eligible for a debt-suspension program, firms have the opportunity to postpone obligations, which means firms obtain a kind of "temporal protection" from the bankruptcy risk, since they reduce their cash outflows for a limited time. Therefore, firms have fewer incentives to take actions that may reduce their bankruptcy risk when they obtain short-term benefits by third parties; a moral hazard drawback consequently occurs when a benefit mechanism is expectable (Cho, Linn, & Nakibullah, 1997). If the likelihood of short-term benefits provision is predictable and the cost of these resources is (partially) supported by third parties, firms will likely misallocate resources and take higher risks, increasing the chance of bankruptcy.

As a consequence, we would expect that firms eligible to debt suspension programs misallocate resources in a way that increase (decrease) chances of bankruptcy more (less) than firms that are not eligible to debt suspension programs. State formally:

> ***Hypothesis 4:*** *Debt-suspension programs increase the bankruptcy risk of eligible firms more than non-eligible firms.*

RESEARCH METHOD

Empirical setting

The study of short-term benefits on firm behaviours is difficult to address empirically since their amount is likely to be endogenous with respect to our dependent variables. For instance, finding a negative relationship between short-term benefits and performance may be spurious

if such relationship is driven by unobserved time variant firm characteristics that enhance a firm's propensity to receive short-term benefits and, at the same time, have a negative performance. Moreover, the relationship between short-term benefits and performance is subject to reverse causality concerns. For example, a negative correlation between short-term benefits and performance may not indicate a causal relationship, but that low performing firms are more likely to receive short-term benefits. In short, while empirically challenging, leveraging a research design that provides a clean causal estimate is central to understanding the impact of short-term benefits on firms' behaviours. Therefore, to rule out these and other potential confounders, it is necessary to leverage a research design that provides exogenous shifts in short-term benefits that allow estimating the causal effect of short-term benefits on firm behaviour in terms of temporal orientation.

The specific source of such exogenous variation in the level of short-term benefits in our study is a debt moratoria implemented in Italy after 2009. In that year, the Italian Banking Association (ABI) and the Association of Italian Corporations (Confindustria) signed an agreement introducing a particular *moratoria* program, contemplating the suspension for 12 months of the principal of mortgage and leasing payments for Micro, Small and Medium Enterprises (MSMEs). The eligible firms for the moratoria were MSMEs, defined by the EU recommendation 2003/361 (Title 1, Article 2) as "enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million". The *moratoria* represents a kind of debt suspension that provides short-term benefits to the eligible firms in terms of minor cash outflows at the expenses of financial institutions, which accepte a payments' postponement without increasing the interest rates. According to ABI (updating at 10 April 2018), the moratoria has been granted by almost all Italian banks. Moreover, from 2009 to 2018, more than 450,000 firms benefited from the debt suspension program promoted with the 2009

agreement (ABI press release of 5 May 2018). These statistics indicates that the moratoria has a significant impact on the eligible firms, that probably consider likely the access to the moratoria in case of financial problems.

There are several factors that make the setting of the Italian debt moratoria suitable for the present study. First, the moratoria occurred every year between 2009 and 2015, therefore allowing us to identify a sufficiently long period to observe the impact of the debt moratoria on the eligible firms. Second, the Italian moratoria maintained the same characteristics over 2009-15 period. Contrary to this, other countries have offered various instances of amnesties with dissimilar characteristics between the different programs (Shevlin et al. 2017). Third, focusing the study on one country allows us to reduce the omitted-variable problem characterizing multi-country studies that cannot account for all the time variant country characteristics affecting firms leverage (De Jong, Kabir, & Nguyen, 2008). Fourth, Italian firms generally make a significant use of financial debt. In more detail, the Italian firms leverage is about 10% higher than the leverage of firms in other European countries. Moreover, in the run-up to the financial crisis, Italian firms considerably enlarged their debt in relation to equity and in absolute terms (De Socio, 2010).

Sample

We collected data on all Italian firms through AIDA, a database owned by Bureau van Dijk. The database collected contains accounting information on all 64,009 non-financial limited companies with revenues higher than euro 5 million for at least one year during the 10-year period 2006-2015. Our sample allows us to have 3 years of observations before (i.e., 2006-2008) and 6 years after the introduction of the moratoria (i.e., 2010-2015). The firm panel contains detailed accounting data for the period under analysis.

Variables description

Independent variable

Debt suspension. The *debt suspension* program, which occurred every year since 2009, identified MSMEs as the eligible firms. Our independent variable identifies the effects of the program on two different kinds of firms: *eligible* and *non-eligible*. *Debt suspension* takes a value of 1 for firms that are eligible to access the benefits of the *moratoria*, and of 0 otherwise.

Dependent variables

To capture the company's change in temporal orientation for resource allocation, and its consequences, we use firm-year data for R&D intensity, financial leverage, financial debt maturity, performance and bankruptcy risk. In order to reduce the impact of outliers, we drop all the observations with a dependent variable at the 2^{nd} and 98^{th} percentiles of their distribution. Results are robust to the inclusion of outliers (as shown in the robustness checks).

R&D intensity. To measure R&D intensity, we use R&D expenditures, which has been used by Flammer et al. (2017) as the most important indicator of a long-term orientation. R&D expenditures is computed as the ratio of R&D capitalized expenditures divided by sales (R&D/sales). R&D/sales is the "most commonly used measure in studies of R&D intensity" (Baysinger & Hoskisson, 1989; 319) since it controls for the size effect and better reproduces a company's commitment to innovation (Bromiley, Rau, & Zhang, 2017).

Financial leverage. To measure financial leverage, we use the debt-equity ratio (Ma & Khanna, 2016), calculated as the ratio between net financial position and equity. This measure has been widely used to control for the financial riskiness of a firm (Waddock & Graves, 1997).

Debt Maturity. As a measure of firms' financial debt maturity, we used two different indicators: short-term financial debt ratio and long-term financial debt ratio, which are expressed as the ratio of total financial debts. Those measures are commonly used by academics to account for debt maturity choices (Barclay & Smith Jr, 1995).

Firm performance. As a measure of firm's performance, we consider Return On Investments (ROI), which is the most common measure of performance used in strategy (Arend, Sarooghi, & Burkemper, 2015).

Bankruptcy risk. To capture firm's bankruptcy risk, we use the Altman score, a proxy generally used by scholars to measure the distance to bankruptcy (Altman, 1968; Laeven & Levine, 2009). A higher value of the Altman score indicates a higher distance to bankruptcy, while a lower value a closer distance to bankruptcy.

Control variables

One of the most important advantages of the difference-in-differences (DiD) method is that fixed variances in the treatment and control observations do not influence the treatment valuation (Blackwell, Iacus, King, & Porro, 2009). As fixed, pre-established differences among eligible and non-eligible groups are removed by the treatment evaluation. Moreover, we estimate our models including firms' fixed effects, which control for any firm time-invariant characteristics, including the industry where the company operates and the ownership (e.g., private, public or foreign owned). We also include year fixed effects, which control for yearly aggregate shock. However, the inclusion of firm and year fixed effects in the difference-in-differences model does not account for time-variant differences at a firm level (e.g., revenues, assets, employees, etc.). To capture these differences, we include a set of time-variant control variables that are likely to simultaneously influence the eligibility to the program and our dependent variables; their omission would represent an omitted variable problem and cause endogeneity problem.

First, to account for size, we control for the log of (i) value of *total assets* (Palmrose, 1986; Waddock & Graves, 1997), (ii) *revenues*, and (iii) number of *employees*. We control for firm size since it can "be considered as a proxy for the amount of slack resources available to a firm" (Fuentelsaz, Gomez, & Polo, 2002: 249). Moreover, we include this control because smaller firms might have access to a lower quantity of resources and might underperform bigger firms (Waddock & Graves, 1997). We control for firm *EBITDA* (i.e., earnings before interest, taxes, depreciation, and amortization), which capture the quality of firms operations. Finally, when the dependent variable is different from debt-equity ratio, we control for financial leverage, which captures the amount of resources available to the firm, using the *debt/Equity ratio* and the *debt/Ebitda ratio*.

Summary statistics

The whole database contains accounting information on 64,009 non-financial firms during the 10-year period 2006-2015. In order to clearly identify eligible and non-eligible firms, we drop observations of firms that did not maintain continuously the same characteristics to benefit from the moratoria during the post-treatment period. (As shown in the robustness checks, results are robust to the inclusion of these observations). Moreover, we drop observations with missing values. As a result, the final sample consists of a yearly panel of 38,269 non-financial firms from 2006 to 2015. Descriptive statistics of the variables and their pair-wise correlations are reported, respectively, in Table 1 and Table 2. All data are computed at the end of each fiscal year.

Insert Table 1 and 2 about here

Analytical method

To estimate the impact of the debt suspension program on firm behaviour – in terms of resource allocation – we use a difference-in-differences (DiD) design model. Adopting this

model, we can estimate the effects of the program by comparing the variations in results over time among eligible firms (firms eligible to the debt suspension program) and non-eligible firms (firms non-eligible to the debt suspension program). The method evaluates the differential effect of the variation caused by the program through two different groups (Cerqueiro, Ongena, & Roszbach, 2016). Through this approach, we want to alleviate concerns that confounding factors during the analysis period drives the results (Altamuro & Beatty, 2010). The approach is generally used to observe the consequences of an identified regulation on two different groups: a "eligible" group composed by firms affected by the treatment, and a "non-eligible" group composed by firms not affected by the treatment. Through this method, eligible firms are matched to non-eligible firms in a control sample to reduce the influence of unobserved effects (Shevlin, Thornock, & Williams, 2017). The DiD model eliminates fixed differences among eligible and non-eligible groups, and considers post-treatment variations for the non-eligible firms as a counterfactual for what would have occurred if eligible firms had not been eligible with the *moratoria* (Gubler, Larkin, & Pierce, 2017).

The unit of analysis is the firm. Our methodology follows very closely that one of Cuñat et al. (2012) who study the effect of governance proposals on firm value. Precisely, we estimate the following regression:

$$Y_{it} = \alpha + \beta * Debt\_Suspension_{it} + \delta X_{it} + \gamma_i + c_i + \varepsilon_{it} \qquad (1)$$

where Y it is our dependent variable; *Debt_Suspension* is the "treatment dummy" – i.e., a dummy variable equals to 1 if the firm *i* is eligible to exploit the program implementation in year *t*. X_{it} is the vector of control variables, which includes total assets, revenues, number of employees and EBITDA. γ_i represents year fixed effects, c_i represents firm fixed effects, and ε_{it} is the error term. The coefficient of interest is β, which measures the differential effect of the program implementation for eligible vs. non-eligible firms. For example, H2 predicts that

β should be positive (negative) and significant when Y_{it} is financial leverage (firm performance), meaning that the program implementation increases (decreases) the financial leverage (firm performance) of firm eligible for the *moratoria*, in comparison to firms that are non-eligible to the debt suspension program.

Our identification strategy can be showed by an example. Suppose that our aim is to size the consequence of the program implementation of 2009 on firm performance. Additional events might have occurred around 2009, exercising a possible impact on firm performance. To consider such contemporaneous impacts, we use a control group (also called "non-eligible group") that has been subject to the same contemporaneous shocks that impacted the treatment group. In this case, we will include in the control group firms non-eligible to the program implementation, and calculate the difference in performance before and after 2009 for the eligible firms compared to the average change before and after 2009 for the control group. By calculating the delta between these two differences, we can then estimate the impact of the debt suspension program of 2009 on performance, accounting for concomitant changes in performance that are common to both groups.

In order to compare firms in the eligible and control groups that are not significantly different one another, we complement the use of the difference-in-differences model with a Coarsened Exact Matching (CEM) that improves "the estimation of causal effects by reducing imbalance in covariates between eligible and control groups" (Blackwell et al., 2009: 524). because of the robust assumption of "selection on observables"). However, in association with DiD method, matching estimators "… improve(s) the quality of non-experimental evaluation results" (Blundell & Costa Dias, 2000: 438). Therefore, the use of a matching strategy in conjunction with a DiD has the benefit of removing unobserved differences between comparable (due to matching) eligible and non-eligible firms (due to difference-in-differences). Moreover, the inclusion of firm-fixed effects and of the robust clustering of

errors at the firm level allows us to account for heteroscedasticity, clustering of errors and time-invariant firms differences that may simultaneously impact our independent and dependent variables.

The use of a DiD method with CEM has several advantages. A way to account for the chance that eligible and non-eligible firms can be different regarding unobservable elements is to implement a matching approach and include in the sample only non-eligible firms that are comparable to the eligible firms (Flammer & Kacperczyk, 2015; Iacus, King, & Porro, 2011a). Since CEM works in sample and requires no assumptions about the data generation process, the analysis is also not influenced by any subjective choices (Iacus et al., 2011a). Beyond this, CEM is to be preferred to other commonly used matching methods since it decreases imbalance, variance, bias, mean square errors, estimation errors and model dependence (Iacus, King, & Porro, 2009, 2011b). In a robustness check, we also adopt a more restrictive form of matching – called "exact matching" – finding similar results.

RESULTS

The effect of the debt suspension program on firm behaviour

We want to analyse the impact of the debt suspension program on resource allocation, and its consequences on firm performance and bankruptcy risk. Our aim is to show that the debt suspension program determined a substantial variation in firm behaviour in terms of firm temporal orientation, in comparison to firms that do not benefit from the debt suspension program. In order to do so, we first represent the differences in means between eligible firms (that is, eligible firms for the debt moratoria) and non-eligible firms (that is, non-eligible firms for the debt moratoria). Table 3 provides a first explorative support for the proposed hypotheses.

Insert Table 3 about here

In Table 3, we examine the magnitude of the pre-existing differences before the program implementation. In column (1), we report the means and the difference-in-means among eligible firms (A) and non-eligible firms (B) in the pre-treatment period, while in column (2) we report the means and the difference-in-means among eligible firms (A) and non-eligible firms (B) in the post-treatment period. As shown in column (1), eligible firms differ from non-eligible firms in terms of R&D intensity, financial leverage, financial debt maturity, firm performance and bankruptcy risk. More importantly, we see in column (2) that these differences vary after the program implementation.

Regression analysis

Table 4 shows the regression estimates of the impact of the debt suspension program on eligible firms, with respect to non-eligible firms using a coarsened exact matching (CEM) based on revenues, employees and total assets level.

Insert Table 4 about here

Results show that the debt suspension program has an insignificant effect on R&D intensity (Column 1 of Table 4). Whereas this result does not support H1, this result is consistent with a short-term orientation, given that, the provision of short-term benefits and extra-resources to eligible firms does not change their resources allocation in terms of R&D investments. Therefore, the extra resources obtained through the debt suspension program are used for other activities, but not for R&D, which is an important sign of long-term orientation.

As predicted by H2, we find that the debt suspension program increases the financial leverage among eligible firms in comparison to non-eligible firms. As shown by column (2) of Table 4, the effect is positive and statistically significant, with an increase of financial leverage equal to around 5 per cent in relative terms. Consistent with H2, the short-term

benefits provision changed the firms' allocation resources, bringing eligible firms to increase the use of financial debt.

Table 4 (columns 3 and 4) reports the results of a firm year level regression where the dependent variables are short-term and long-term debt respectively. The results indicate that firms that benefited from the short-term benefits increase debt maturity (increasing long-term debt index and decreasing short-term debt index). This result suggests that, by increasing debt maturity, eligible firms are likely to postpone obligations to the future, reducing their financial constrains in the short-term but increasing their obligations in the long-term. This finding is consistent with a short-term orientation.

Finally, Table 4 (columns 5 and 6) reports the impact the debt suspension program on firm performance and bankruptcy risk. As shown by column 5, the results are consistent with H3, since the program decreases performance among eligible firms in comparison to non-eligible firms. The effect is not only statistically significant but also economically important, with a decrease in firm performance equal to 17 per cent in relative terms.

Column (6) shows that the debt suspension program increases bankruptcy risk among eligible firms in comparison to non-eligible firms, as Altman score has a decrease equal to 4 per cent in relative terms. Consistent with H4, the provision of short-term benefits changed firms' behaviour, which translates into higher bankruptcy risk.

To analyse the robustness of our results, we rerun our analyses using a coarsened exact matching (CEM) based not only on revenues, employees and total assets (as done in Table 4) but also on performance and financial leverage level (see Table 5). This more conservative matching allows us to remove unobserved pre-treatment differences between eligible and non-eligible firms due to performance and leverage, making eligible and non-eligible firms even more similar. Results are robust to this different specification of the matching method.

Robustness checks

In this section, we present different robustness checks and extensions of our baseline analysis. Overall, these additional checks provide evidence that our findings are robust to different specifications.

Pre-trend in the difference-in-differences. The results produced by the difference-in-differences models can be biased if there is a pre-trend. To this end, we graphically inspect if there is any evidence of pre-trend in the data. Figures 1, 2, 3, 4, 5 and 6 plot the differences in means of the principal dependent variable between the eligible and the non-eligible firms. The horizontal axis indicates the time distance (in years) from the treatment, where 0 is the treatment year. The vertical axis indicates the difference in means of the dependent variable.

Figure A1 of the appendix plots the differences in means of the R&D intensity between the eligible and the non-eligible firms. The difference in means of the R&D intensity are substantially flat before and after the program, showing that firms did not use the extra-resources to invest with a long-term horizon. This suggests that there is no pre-trend problem and that the short-term benefits provision did not have an effect on R&D intensity difference from the pre-treatment to the post-treatment period.

Figure A2, A3 and A4 of the appendix plots the differences in means of the financial leverage (short-term, long-term and overall) between the eligible and the non-eligible firms. The difference in means of the financial leverage and of the long-term financial debt ratio increases slowly before the program and increase much more after the program. This suggests that short-term benefits provided by the debt suspension program leads eligible firms to increase financial leverage in the post-treatment period. Moreover, as we move away from year 0, the difference in means of the financial leverage continuously increases, suggesting that firms of the two groups continue to amplify their differences in behaviour from the pre-treatment period. With an opposite trend, short-term financial debt ratio decreases slowly

before the program and decreases much more after the program, suggesting that firms of the two groups continue to amplify their differences in behaviour from the pre-treatment period.

Figure A5 of the appendix plots the differences in means of firm performance between the eligible and the non-eligible firms. As exposed, the difference in means of firm performance is substantially flat before the program – suggesting that there is no pre-trend in the difference-in-differences – while it decreases after the program. This suggests that short-term benefits provision negatively influences firm performance from the pre-treatment to the post-treatment period.

Finally, Figure A6 of the appendix plots the differences in means of the bankruptcy risk between the eligible and the non-eligible firms. The difference in means of the bankruptcy risk increases before the program, while it decreases after the program, suggesting that the program brings to an inversion of the trend. This suggests that short-term benefits provision influences the resource allocation variation from the pre-treatment to the post-treatment period in an inefficient way, bringing eligible firms to become more subject to bankruptcy risks. These patterns suggest that the program implementation changes the resources allocation of firms, with significant implications for performance and bankruptcy risk.

Robustness checks. As robustness check, we restricted the sample considering different percentage of censoring. Table A1, Table A2, Table A3 and Table A4 of the online appendix[1] show the estimated effect of the program implementation considering a sample reduction due to different censoring. As further robustness check (Table A5 of the online appendix), we use a more restrictive matching strategy performing the analysis adopting a *k-to-k* match (Blackwell et al., 2009). Therefore, we evaluate the impact of the debt suspension program by using different operationalisations for financial leverage, R&D intensity and

[1] Available upon request

performance (Table A6 of the online appendix). Finally, we implemented the regression discontinuity design as applied in Bronzini et al. (2014). The model lets the dependent variable to be a function of the threshold; the average treatment effect of the debt suspension program is calculated through the estimated value of the discontinuity at the threshold (Bronzini & Iachini, 2014); we use a second-order polynomial model (Table A7a and A7b of the online appendix) and a third-order polynomial (available under request). All the results of the robustness checks remain statistically significant.

DISCUSSION

This work explores the impact of debt suspension programs on beneficiaries' outcomes. These programs provide temporarily short-term benefits to firms - at the expenses of third parties (e.g., financial institutions) - with the aim of improving beneficiaries' economic outcomes and help them avoiding financial distress. We argue that debt suspension programs could actually have unintended negative consequences by inducing firms' short-term orientation, with associated negative economic outcomes. Our results support this view, by showing that firms take profit of the benefits associated with these programs at the expense of third parties, however allocating resources in an inefficient way. Eligible firms do not use the extra-resources for R&D investments and increase financial leverage and debt maturity, with negative consequences on their performance and on bankruptcy risks.

As such, our study shows that temporal benefits provided by third parties may induce eligible firms to be more short-term oriented than non-eligible firms, and may therefore negatively impact their behavior and outcomes. This presumably happens because beneficiaries perceive the terms of the financial contracts as poorly enforced, and so exploit the third parties resources and form the expectation that similar positive concessions will be repeated in the future (Cho et al., 1997). Therefore, such program, whereas designed to

benefit firms, might unintendedly harm them, since beneficiaries become short-term oriented. The focus on short-term represents a form of myopia (Holmström, 1999; Levinthal & March, 1993) because it will bring firms to underinvest in long-term projects that are generally more valuable. In fact, firms with a "short sighted vision" of the positive long-term opportunities are more prone to be focused on maximizing short-term results (Laverty, 2004).

Our study contributes to the temporal orientation literature in several ways. First, it extends the existing literature on firm short-termism, analyzing the effects of temporal benefits provided by third parties on firm's temporal orientation. In this way, this study responds to the call of research of Reilly et al. (2016), which points out the lack of empirical findings explaining the determinants of firms' temporal orientation and the consequent resource allocation choices. We contribute to this literature analyzing how firms react to short-term benefits provided by third parties, and showing that firms alter their resource allocation choices reducing their time horizon.

Second, we contribute to prior research that analyzed macro-level determinants of short-term orientation focusing on cross-cultural differences (Hofstede, 1993), capital markets pressures (Lees & Malone, 2011), takeover protection schemes (Kacperczyk, 2009), market dynamism (Nadkarni & Chen, 2014). In this study, we extend this literature by examining the effect of temporal benefits provided to firms by third parties. In particular, we show that among the causes that bring firms to modify their (short-term or long-term) temporal orientation, there are external regulatory changes. In our specific case, we show that firms become more short-term oriented when external interventions provide short-term benefits. This suggests that firms tend to adapt their resource allocation horizon to the external interventions horizon.

Third, our study contributes to research on debt renegotiation, and the consequent effects on firm behavior. In fact, "despite rich theoretical predictions, empirical evidence

regarding debt renegotiation is still at an early stage" (Godlewski, 2015: 19). The call for further research in this area is based on the fact that most of previous studies are focused on the effects of debt renegotiation on debt lenders and so ignore the impact of these programs on the beneficiaries (Isagawa et al., 2010; Musumeci & Sinkey, 1990; Philippatos & Viswanathan, 1991). Moreover, existing studies focused on the beneficiaries analyzed the effect at the country-level (Isagawa et al., 2010) and not at the firm level.

Finally, by interlacing different research fields, we extend the multi-disciplinary talk in organizational works that studies the function of "time" and how it influences firm behavior. Temporal orientation is of great relevance in business decisions (Mosakowski & Earley, 2000; Souder & Bromiley, 2012) and therefore the comprehension of its determinants is of crucial importance for strategy literature. In this context, the finding that short-term benefits are detrimental to firms may have relevant implications.

Practical implications

These findings could be of interest for managers in a variety of ways. The principal implication is that schemes aimed at decreasing temporarily firms financial cash outflows may actually have unplanned negative effects on firms behaviors, provoking an exploitation – and even a misuse – of the benefit provided by third parties. More broadly, our findings show that programs designed for "good" reasons could paradoxically have negative consequences, worsening the conditions of the beneficiaries. Therefore, future debt suspension programs should be designed to maximize the long-term benefits and to minimize the negative short-term consequences.

For instance, debt suspension programs may be designed to force beneficiaries to use the short-term benefits in a determined way. Since debt suspension programs are concessions provided by third parties, the latter may limit how firms can use the short-term benefits, bringing them to allocate resources in an efficient way. In fact, programs issuers have access

to beneficiaries' financial information, and therefore can monitor how firms allocate the financial resources provided by the short-term benefits. If the resources obtained through the short-term benefits are misallocated, programs issuers can impede beneficiaries to obtain new debt suspension programs or suspend the benefits for beneficiaries.

Limitations and future research

Like any empirical work, our study presents limitations that stimulate future research. First, our analysis fosters interrogations regarding the temporal orientation of firm behavior and the preferred scheme in specific contexts. While our conclusions suggest that short-term benefits can harm firms favoring a short-term perspective, they do not imply that there are not any value-enhancing consequences of debt suspension programs. Scholars show, in fact, that even short-term benefits are important (Cuñat, Gine, & Guadalupe, 2012; Flammer & Bansal, 2017). Without such short-term benefits, firms could not have survived in the short-term horizon during the financial crisis. Evaluating whether the benefits of such mechanisms – in terms of capacity to help firms to survive to a financial crisis – compensate their costs – in terms of a higher short-term orientation – is a relevant topic.

Second, we were unable to directly observe firm behavior, mainly because of the large amount of firms under analysis. We inferred firm behavior from changes in accounting measures, as we were not able to explore directly firms' decision making. Therefore, future studies may explore more deeply the micro-mechanisms that determine the short-term behavior at the firm level.

Third, this study is focused on a single country setting (i.e., Italy). Whereas the focus on a single country reduces several empirical problems (e.g., omitted variable at the country level, unobserved firms differences across countries, etc.), it is unclear whether firms in other countries or regions would react similarly, for instance due to different cultural elements and

social capital. Future studies may explore if differences across regions or countries could influence firms behavior to see if they are less or more inclined to moral hazards (Shao, Kwok, & Zhang, 2013).

Forth, we perform the analysis during the recent financial crisis, when there has been the diffusion of temporal debt suspension programs. Whereas this represents an important contribution - given the amount of resources that institutions like banks have allocated to these programs - our study cannot be easily generalized to periods of financial stability, during which firms might have a different reaction to these programs. Comparing the effect of these programs during periods of financial instability and stability is a significant question that deserves further attention by scholars and managers.

Fifth, we measure the announcement effect of debt suspension program on eligible firm behaviors, but we lack data on firms that effectively benefited from the debt suspension program. Therefore, to substantiate the implications drawn from our research, future works may collect data on the effects of this program on firms that concretely benefited from it.

Lastly, in this study we focused on the consequences of debt renegotiation on resource allocation and outputs. Future studies may also examine the impact of the debt suspension program on other outcome variables like stakeholder orientation, organizational change, geographical expansions, etc… Moreover, firms' reaction to the announcement of debt suspension programs might vary depending on a number of other moderating firm and environmental factors, such as corporate governance characteristics, investment decision processes, institutional or cultural context.

CONCLUSIONS

Despite the previous limitations, our study offers important and somehow unexpected evidence regarding the impact of debt renegotiation on the beneficiaries' behaviours and

outcomes. Our findings provide evidence that debt suspension program could actually nurture firms' short-termism. A deeper and crisper understanding of the impact of debt suspensions program on firms' short-termism could help to better design these programs that – whereas designed to help eligible firms to overcome temporary financial problems – can actually exacerbate their financial problems.

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TABLES

TABLE 1
Descriptive statistics

	Count	Mean	SD	Min	Max
1. Revenues	326,707	19.494	30.094	0.221	239.212
2. N. Employees	310,243	60.840	96.404	1.000	720.000
3. Total assets	326,792	20.373	34.042	0.759	276.264
4. Short-term financial debt ratio	340,124	0.849	0.203	0.000	1.000
5. Long-term financial debt ratio	340,082	0.150	0.203	0.000	1.000
6. Financial leverage	313,198	1.591	2.607	0.000	19.040
7. Bankruptcy risk	326,640	1.795	0.967	0.028	5.484
8. Firm performance (ROI)	262,638	7.442	7.827	-15.560	27.320
9. R&D intensity	251,398	0.002	0.007	0.000	0.060

Note: "Revenues" and "Total assets" amounts are in million of euro. "Revenues", "Total assets" and "N.Employees" data are winsorized at 2%.

TABLE 2
Correlations

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Revenues	1.00								
2. N. Employees	0.67	1.00							
3. Total assets	0.60	0.48	1.00						
4. Short-term financial debt ratio	0.01	-0.01	-0.08	1.00					
5. Long-term financial debt ratio	-0.01	0.01	0.08	-1.00	1.00				
6. Financial leverage	-0.01	-0.01	-0.01	-0.04	0.04	1.00			
7. Bankruptcy risk	0.04	-0.03	-0.06	0.20	-0.20	-0.02	1.00		
8. Firm performance (ROI)	0.01	-0.01	-0.03	0.16	-0.16	-0.03	0.22	1.00	
9. R&D intensity	-0.00	0.0	0.01	-0.00	0.00	-0.00	-0.01	-0.01	1.00

TABLE 3
Pre-program and post-program differences as a function of the short-term benefits

	Before program	After program
	Means (1)	Means (2)
R&D intensity (A)	0.0054	0.0065
R&D intensity (B)	0.0089	0.0048
Diff-in-means	*-0.0035*	*0.0017*
Financial leverage (A)	0.7413	0.7005
Financial leverage (B)	0.8311	0.6509
Diff-in-means	*- 0.0898*	*0.0496*
Short-term financial debts (A)	0.8677	0.8479
Short-term financial debts (B)	0.8716	0.8745
Diff-in-means	*- 0.0039*	*-0.0266*
Long-term financial debts ratio (A)	0.1323	0.1520
Long-term financial debts ratio (B)	0.1283	0.1254
Diff-in-means	*0.0040*	*0.0266*
Firm performance (A)	9.2785	7.0284
Firm performance (B)	8.2350	6.6278
Diff-in-means	*1.0435*	*0.4006*
Bankruptcy risk (A)	1.9738	1.8657
Bankruptcy risk (B)	1.5940	1.7200
Diff-in-means	*0.3798*	*0.1457*

We represent the differences in means between eligible firms (group A, eligible firms for the debt moratoria) and non-eligible firms (group B, non-eligible firms for the debt moratoria).
Note: Column (1) reports the means and the difference-in-means among eligible firms (A) and non-eligible firms (B) in the pre-treatment period; column (2) reports the means and the difference-in-means among eligible firms (A) and non-eligible firms (B) in the post-treatment period.

TABLE 4: Impact of debt suspension matching for employees, revenues and total assets

VARIABLES	(1) R&D intensity	(2) Financial leverage	(3) Short-term financial debt ratio	(4) Long-term financial debt ratio	(5) Firm performance	(6) Bankruptcy risk
Debt suspension	0.000141	0.0783***	-0.0197***	0.0198***	-1.289***	-0.0702***
	[0.000150]	[0.0163]	[0.00319]	[0.00319]	[0.174]	[0.0145]
Total assets	0.000031***	0.0100***	-0.00256***	0.00259***	-0.180***	-0.0416***
	[3.81e-06]	[0.000444]	[0.000110]	[0.000111]	[0.00531]	[0.000789]
EBITDA	-0.000117***	-0.0568***	0.000951**	-0.000979**	4.798***	0.166***
	[0.0000225]	[0.00193]	[0.000475]	[0.000483]	[0.0482]	[0.00240]
Revenues	-0.0000349***	0.000849***	0.00147***	-0.00148***	0.0270***	0.0307***
	[2.30e-06]	[0.000288]	[0.0000651]	[0.0000691]	[0.00323]	[0.000531]
Employees	3.44e-06***	0.000309***	0.0000368*	-0.0000427**	-0.0162***	-0.000140*
	[1.08e-06]	[0.0000996]	[0.0000207]	[0.0000208]	[0.00110]	[0.0000824]
Debt EBITDA	0.000031***				-0.330***	-0.0103***
	[4.83e-06]				[0.00607]	[0.000355]
Financial leverage	0.000127***				-0.242***	-0.0416***
	[0.0000155]				[0,0111]	[0.000973]
Observations	198,838	220,836	287,607	287,958	213,182	250,404
R-squared	0.621	0.751	0.697	0.698	0.688	0.871
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
Firm FEs	Yes	Yes	Yes	Yes	Yes	Yes
Censoring	98%	98%	98%	98%	98%	98%

The regressions are estimated using the DID specification of Iacus *et al.* (2011). Standard errors are reported in parentheses. We restricted the sample considering a percentage of censoring for the dependent variables at 2%, and considering a percentage of censoring for the independent variables at 2%. Coarsened Exact Matching (CEM) performed at revenues, employees and total assets level.

*** p<0.001, ** p<0.01, * p<0.05, + p<0.1

TABLE 5: Impact of debt suspension matching for employees, revenues and total assets, performance and financial leverage

VARIABLES	(1) R&D intensity	(2) Financial leverage	(3) Short-term financial debt ratio	(4) Long-term financial debt ratio	(5) Firm performance	(6) Bankruptcy risk
Debt suspension	0.000183	0.0853***	-0.0204***	0.0202***	-0.806***	-0.0897***
	[0.000131]	[0.0140]	[0.00297]	[0.00299]	[0.145]	[0.0118]
Total assets	2.20e-05***	0.00816***	-0.00212***	0.00214***	-0.113***	-0.0318***
	[3.58e-06]	[0.000431]	[0.000110]	[0.000111]	[0.00495]	[0.000701]
EBITDA	-6.81e-05***	-0.0436***	0.000168	-0.000201	3.225***	0.120***
	[2.17e-05]	[0.00182]	[0.000462]	[0.000466]	[0.0434]	[0.00228]
Revenues	-2.79e-05***	0.000799***	0.00118***	-0.00120***	0.0199***	0.0233***
	[2.19e-06]	[0.000287]	[6.21e-05]	[6.28e-05]	[0.00326]	[0.000518]
Employees	3.07e-06***	0.000114	5.34e-05***	-5.46e-05***	-0.0122***	-0.000131
	[9.73e-07]	[9.61e-05]	[2.07e-05]	[2.08e-05]	[0.00104]	[7.97e-05]
Debt EBITDA	4.16e-05***				-0.442***	-0.0136***
	[6.00e-06]				[0.00663]	[0.000452]
Financial leverage	0.000182***				-0.223***	-0.0563***
	[2.31e-05]				[0.0167]	[0.00156]
Observations	153,183	164,233	202,717	287,958	150,639	178,747
R-squared	0.623	0.768	0.703	0.698	0.712	0.875
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
Firm FEs	Yes	Yes	Yes	Yes	Yes	Yes
Censoring	98%	98%	98%	98%	98%	98%

The regressions are estimated using the DID specification of Iacus *et al.* (2011). Standard errors are reported in parentheses. We restricted the sample considering a percentage of censoring for the dependent variables at 2%, and considering a percentage of censoring for the independent variables at 2%. Coarsened Exact Matching (CEM) performed at revenues, employees, total assets, performance and financial leverage level.

*** p<0.001, ** p<0.01, * p<0.05, + p<0.1

APPENDIX

Figure A1. Effect of short-term benefits on R&D intensity

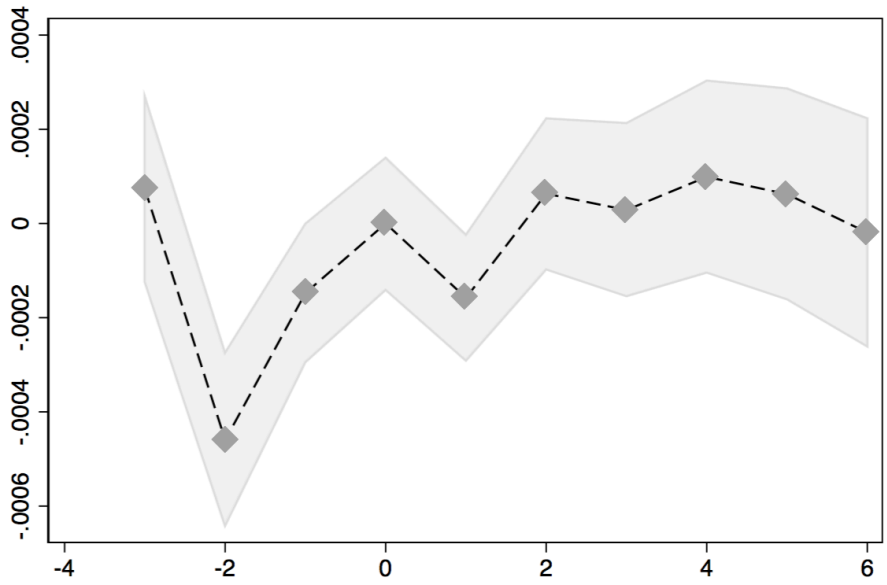

Figure A2. Effect of short-term benefits on short-term financial debt ratio

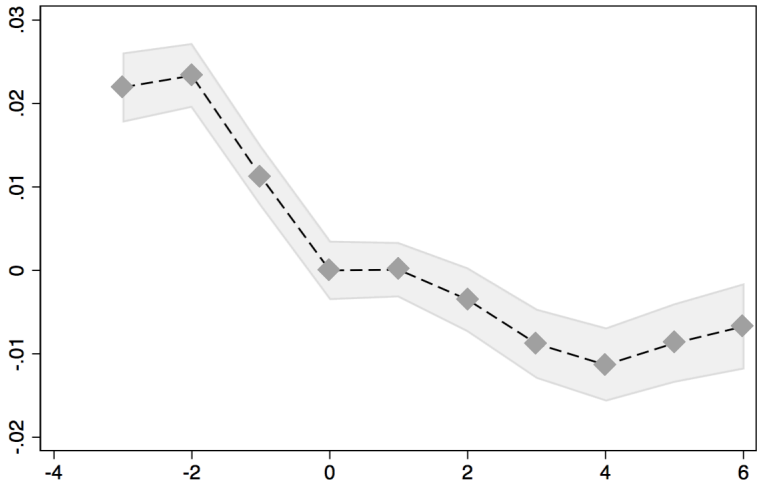

Figure A3. Effect of short-term benefits on long-term financial debt ratio

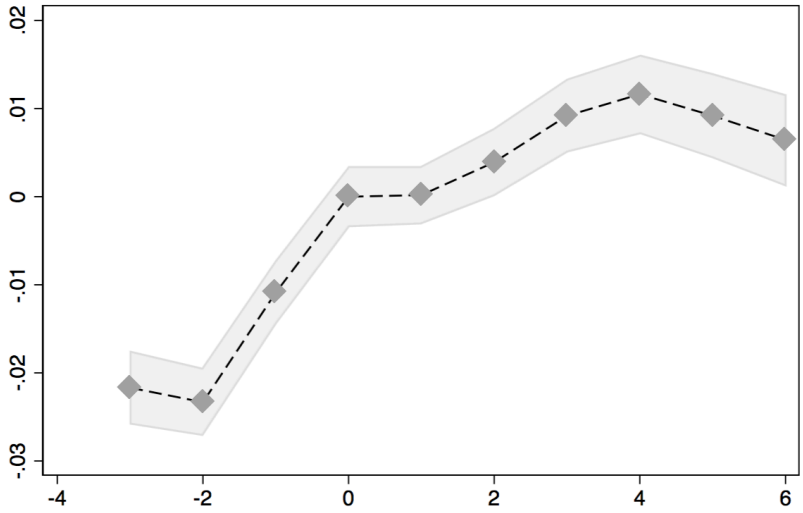

Figure A4. Effect of the short-term benefits on financial leverage

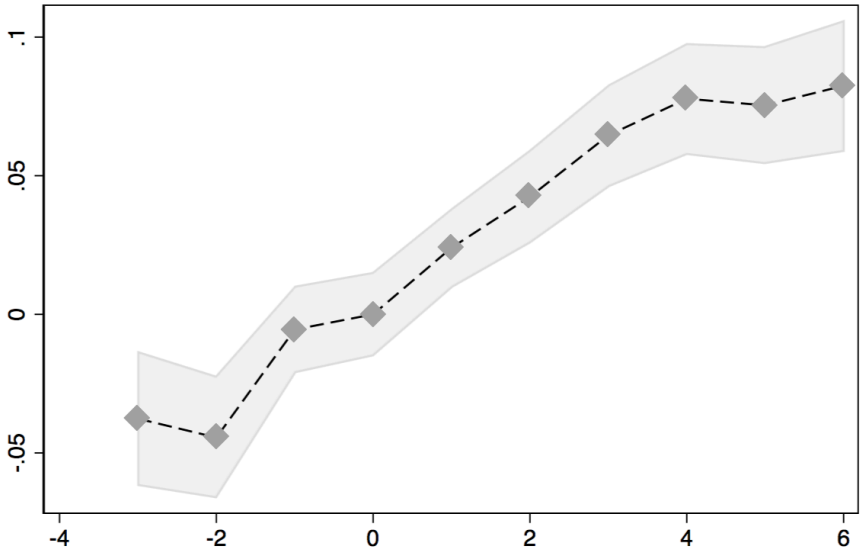

Figure A5. Effect of the short-term benefits on firm performance

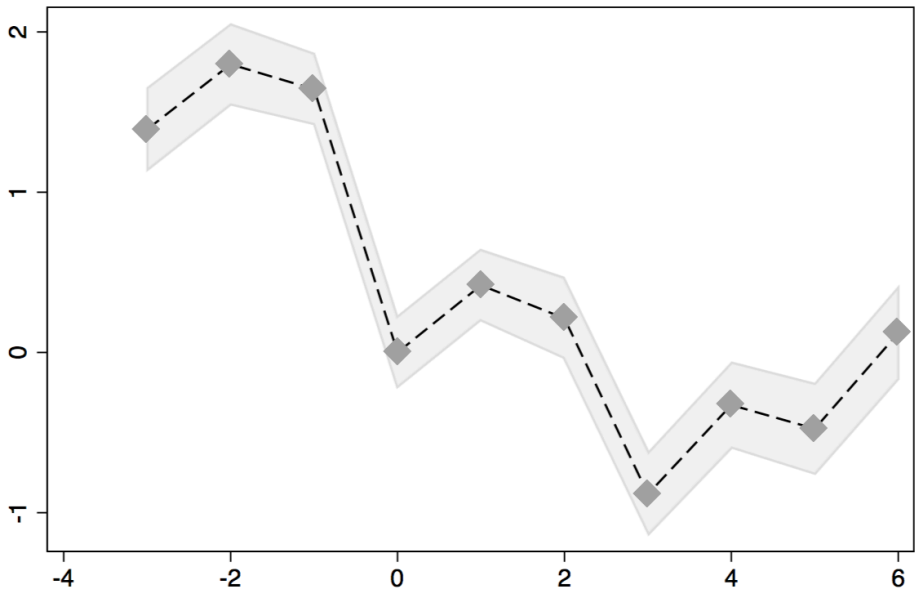

Figure A6. Effect of the short-term benefits on bankruptcy risk