Does managerial overconfidence affect capital structure rebalancing for entrepreneurial firms?

António Carvalho and Luís Miguel Pacheco
Departamento de Economia e Gestão, REMIT - Research in Economics, Management and Information Technologies, Universidade Portucalense, Porto, Portugal, and
Filipe Sardo and Zelia Serrasqueiro
Department of Management and Economics, University of Beira Interior, Covilhã, Portugal

Abstract
Purpose – The behavioural theory adds a new paradigm of analysis with the assumptions of the decision maker’s cognitive biases and their repercussions on financing decisions. The aim of the study is to analyse the repercussions of these biases on the adjustment speed of firm’s capital structure toward the optimal level.
Design/methodology/approach – Based on a partial adjustment model, the study uses the Dynamic Panel Fractional estimator to analyse panel data from 4,990 Portuguese entrepreneurial firms.
Findings – The results show that the cognitive overconfidence bias impacts the entrepreneurial firm’s capital structure. In fact, the firms run by overconfident managers adjust more slowly than their counterparts. Furthermore, the findings suggest that entrepreneurial firms make relatively fast adjustments toward the optimal debt level and follow a hierarchical financing order in the funding process.
Practical implications – The results of this paper are not only interesting to the academia, but also contain practical implications for corporate, institutional and business policy and governance. First, the paper introduces a new measure of cognitive bias in optimistic managers, which is useful for current and future academic research. Also, in practical terms, the findings of the paper reveal that when a company is contemplating hiring a manager, it should consider whether they need an optimistic or non-optimistic manager based on the company’s present life cycle or situation.
Originality/value – The current analysis extends the existing literature. The study suggests that financial classical and behavioural paradigms should not be separated, which can provide evidence to help narrow the gap between these two major perspectives.
Keywords Cognitive biases, Speed of adjustment, Overconfidence manager, SMEs, Entrepreneurial firms

1. Introduction
Several studies (Nunes and Serrasqueiro, 2017; McNamara et al., 2017; Trinh et al., 2017; Pacheco, 2016) have concluded that small and medium-sized enterprises (SMEs) or entrepreneurial firms follow a financing behaviour according to the predictions of pecking order theory: firstly, they select retained earnings, which exhaustion implies to rely on debt financing, and lastly, they choose to issue equity. Public capital markets are not accessible for most SMEs or entrepreneurial firms; therefore, they may become strongly dependent on debt, mainly in periods of low retained earnings and/or high levels of investment. In these periods, firms can exhibit high levels of indebtedness, which generates financial distress costs. Thus, firms must rebalance their capital structure to overcome the financing imbalance and...
mitigate the costs of financial distress, namely the creditors’ penalisations. Accordingly, SMEs or entrepreneurial firms’ capital structure choices follow the assumptions of the dynamic theory of trade-off, that is firms exhibit an adjustment behaviour by establishing a debt target and gradually moving back to that target when deviated. Therefore, pecking order and trade-off theories can be accepted as complementary in explaining those firms’ capital structure decisions (López-Gracia and Sogorb-Mira, 2008; Degryse et al., 2012; Aybar-Arias et al., 2012; Pacheco and Tavares, 2017).

Most SMEs or entrepreneurial firms are managed by their owners, whose preferences and risk-taking behaviour will have an effect on the firm capital structure decisions (Ang et al., 2010). Recently, the literature begun to make direct reference to behavioural finance issues in the analysis of firm’s financing decisions, complementing classical capital structure theories. Several authors call for integrating the behavioural aspects in the analysis (e.g. Miglo, 2020; Kumar et al., 2020). Various studies show that managers’ overall overconfidence leads to high investments and debt. The literature indicates that the manager’s cognitive biases, particularly those related to overconfidence, have effects on financing choices and thus direct repercussions on the firm’s capital structure (e.g. Lin et al., 2008; Malmendier and Tate, 2008; Park and Kim, 2009; Oliver, 2010; Oliver and Mefteh, 2010; Malmendier et al., 2011; Adam et al., 2015; Rihab and Lotfi, 2016; Miglo and Brodziak, 2019; Heaton, 2019; Kumar et al., 2020; Miglo, 2020; among others).

However, the speed of adjustment (SOA) toward the optimal debt level in the context of the entrepreneurial firms’ managers’ optimism/overconfidence bias has not yet been analysed. For example, Bukalska (2019) analysed the static trade-off in the context of managers’ overconfidence to analyse the possible differences between firms run by overconfident managers (OCM) and firms run by non-OCM regarding the optimal debt level. Rihab and Lotfi (2016) included the managerial overconfidence variable in the adjustment model but did not directly relate it to the SOA toward optimal capital structure.

The aim of this paper is to analyse the repercussions of the cognitive bias of the manager’s overconfidence on the SOA of the debt level toward the optimal level. The authors’ research motivation lies in the scarcity of studies that include behavioural aspects in understanding the reasons why managers make capital structure decisions under dynamic trade-off assumptions, namely with respect to the SOA of the firm’s capital structure. Seeking to achieve this objective, this study applied a Dynamic Panel Fractional (DPF) estimator to a dynamic adjustment model composed and adapted according to the models used by several authors (e.g. Ozkan, 2001; Flannery and Rangan, 2006; Byoun, 2008; Faulkender et al., 2012; Rihab and Lotfi, 2016; Devos et al., 2017; Sardo and Serrasqueiro, 2017; Sardo et al., 2021), which allows analysing SOA within OCM-managed SMEs for a sample of 4,990 firms belonging to the manufacturing sector for the period 2010–2019.

This study contributes to the literature of entrepreneurial firms’ financing decisions for the following reasons: (1) there is a great scarcity in the analytical literature to relate managers’ cognitive biases and traditional corporate finance theories, so this study parallels these two perspectives; (2) a new measure is proposed, which appears to be more objective than previous measures of the managers’ overconfidence: a firm is run by the OCM if, cumulatively, the total debt of the firm is above the industry average total debt (at least four consecutive years), the investment level is above the industry average investment level (at least four consecutive years) and, the sensitivity of investment to the free cash flow of the firm is above the industry average sensitivity of investment to the industry average free cash flow (at least four consecutive years); (3) it directly relates managers’ overconfidence cognitive bias to dynamic trade-off theory, specifically to SOA, allowing direct comparisons between OCM and non-OCM managed entrepreneurial firms and (4) there is no previous study that directly relates SOA to managers’ overconfidence cognitive bias, as is done in the present study.
The results provide new evidence on SMEs’ or entrepreneurial firms capital structure adjustment speed. Firms adjust to the target debt level, corroborating the predictions of the dynamic trade-off theory. Moreover, during the financing process (to bridge the gap between the current and optimal debt level), firms follow a financing pattern that is in line with the predictions of the pecking order theory. Moreover, OCM-managed entrepreneurial firms are less risk-averse, less concerned about the possibility of going bankrupt and therefore maintain higher debt levels more stably. Therefore, firms run by OCM keep their distance from the optimal debt level by bearing financial distress costs, which implies a slower SOA towards the optimal debt level. These findings are in accordance with the behavioural literature (concerning the manager’s cognitive biases) and also show that the measure adopted in this study to evaluate firms that are managed by OCM seems to be quite adequate, proving to be useful for the purpose that was intended.

The paper is structured as follows. Section 2 gives an overview of the literature and proposes the hypotheses. Section 3 describes the data and the econometric methodology. The results reports and discussion are given in Section 4. Section 6 concludes the study.

2. Literature review and hypotheses development

2.1 Traditional financial theories and the emergence of behavioural issues

According to Myers (1984) and Myers and Majluf (1984), a firm follows the static trade-off approach if the debt level is established by a trade-off between the debt tax shields and the costs of financial distress for a single period; and it follows a dynamic trade-off approach if it has an established a target debt level and if deviations from that target are gradually removed over time, exhibiting an adjustment behaviour.

According to Clark et al. (2009), with the empirical success of partial adjustment models, the literature has begun to examine how quickly firms converge to their optimal capital structures and what are the determinants of the speed at which they adjust toward their target capital structures. According to Ai et al. (2020), several empirical studies (e.g. Fama and French, 2002; Welch, 2004; Leary and Roberts, 2005; Flannery and Rangan, 2006; Kayhan and Titman, 2007; Huang and Ritter, 2009; Faulkender et al., 2012; Frank and Shen, 2019; Yin and Ritter, 2019) have focused on estimating the SOA toward the target debt.

Pecking order theory also pertinently explains managers’ choices about the SME capital structure (Myers and Majluf, 1984). According to this theory, the asymmetric information problem between small firms and borrowers increases the costs of external finance sources. Therefore, firms follow a hierarchical order in selecting funding sources: firstly, firms choose retained earnings, which exhaustion implies relying on debt financing, and lastly, firms issue new equity.

Previous empirical research grounded on the dynamic trade-off and pecking order theories relies on different arguments. Notwithstanding, they have analysed the intrinsic characteristics of firms, like profitability, age, size, asset structure and growth opportunities, as determinants of the capital structure decisions of SMEs (e.g. López-Gracia and Sogorb-Mira, 2008; Adair and Adáskou, 2015; Pacheco and Tavares, 2017; Sardo et al., 2020).

Jaworski and Czerwonka (2023) provide a comprehensive literature review, offering a meticulous examination of research related to a company’s capital structure over the years, highlighting the most notable publications and authors in the field. The authors of this paper have divided empirical studies into four distinct groups based on their outcomes: those that support the pecking order theory, those that endorse the trade-off theory, those that consider both theories to be complementary and those that remain inconclusive.

Only recently, the aforementioned literature on dynamic trade-off and pecking order theories (or explicitly) have introduced behavioural aspects (or the managers’ cognitive biases) in the analysis of the decisions of firms’ capital structure. Previous studies evidenced the relationships between personal characteristics of firm manager and capital structure
decisions under the theoretical framework of pecking order theory. For example, Heaton (2002) developed a model with the assumption that OCM overestimate the firm’s future performance as well as they assume that the firm stocks and bonds are undervalued by the market. Accordingly, OCM prefer to finance the firm with internal funds, which exhaustion implies relying on debt financing first and, lastly, issuing new equity. This financing behaviour corresponds to the assumptions of the pecking order theory.

Hackbarth (2008) based on a trade-off capital structure model, assuming that firm manager pursues the goal of firm value maximisation, showed that an overconfident manager relies more on debt. Therefore, firms run by OCM issue more debt, which is less subject to the undervaluation problem than equity issues. Additionally, OCM underestimate the firm probability of bankruptcy as well as bankruptcy costs associated with high indebtedness levels. Also, Fairchild (2007) and Barros and Silveira (2008) concluded that OCM rely more on debt. In the same line, Ben-David et al. (2007) concluded that OCM rely more on debt, invest more and follow a restrictive pay-out dividends policy.

Exceptionally, few studies grounded on the traditional financial theories have considered the firm managers’ characteristics when analysing the decisions of SME capital structure. For example, Chua et al. (2020) related the manager’s education level to the SOA (under the perspective of the upper echelons theory of Hambrick and Mason, 1984), arguing that highly qualified managers are less risk-averse compared to managers with a low education level because they can better afford the ambiguity generated by risky activities. Ang et al. (2010) considered the personal characteristics of SME owners/managers in the analysis of SME capital structure decisions. The authors concluded that characteristics like age and business experience of the owners/managers of SMEs are positively related to debt levels. The results of the model by Atiase et al. (2023) also indicate that training accessibility and training content are statistically significant in explaining managerial effectiveness. A more recent and eclectic article, by Sardo et al. (2021), analysed the role of gender and succession on the SOA of the Portuguese family SMEs, shedding light on family firms financing behaviour. These authors, in the framework of the dynamic trade-off theory, considered that the characteristics of the family firm owner/managers, such as risk aversion, may also affect the adjustment speed toward the target debt level.

The attitude of managers to risk associated with the firms’ financing decisions is a fundamental aspect in the definition of an overconfident manager. Malmendier (2018) stated that one of the advantages of overconfidence is the probability of neutralising risk aversion and that overconfidence can induce managers to take on risky value-creation projects, which a rational manager would reject due to risk aversion. Rihab and Lotfi (2016) emphasised the importance of considering the inclusion of management bias when analysing a firm’s financial policy. Kumar et al. (2020) called for the use of behavioural assumptions in the analysis through a study that identified the main contributions to the subject of the capital structure of SMEs.

Miglo (2020) found a closed solution to explain capital structure by including in the analysis the decision-makers’ bias of overconfidence, along with the assumptions established by classical financial theories. Heaton (2019) referred to the information asymmetry in the context of cognitive “biases” in the scope of financing hierarchy about the overconfident manager. Bukalska (2019) analysed the static trade-off and the way that firms finance themselves within the scope of the overconfident manager. This author specifically analysed the strategy of using fixed assets to investigate how the target leverage ratios differ among firms run by OCM and their counterparts. Bukalska (2019) concluded that no matter how overconfidence is identified and measured, it is perceived as one of the most important biases strongly affecting capital structure decisions.

In this context, this study exploits a gap in the analysis of the adjustment speed towards the optimal capital structure. The SOA within an overconfident manager (i.e. its direct relationship with overconfidence) has not yet been explicitly analysed. Therefore, the authors’ analysis
aims to mitigate this gap by including the managers’ cognitive overconfidence bias in the dynamic trade-off analysis, specifically with respect to its impact on the SOA.

2.2 Overconfident manager

According to Tomak (2013, p. 513), the bias of overconfidence is defined as “the tendency of people to over-estimating the likelihood of positive events and under-estimating the likelihood of negative events”, and overconfidence bias is defined as “overestimating the accuracy of one’s estimates or forecasts”. Therefore, these biases may be present when decision-makers determine the firm’s capital structure. Several authors reported that firms run by OCM become over-levered over time. For example, Barros and Silveira (2008) stated that as OCM run firms, the leverage levels increase over time. Results of Rihab and Lotfi (2016) confirm the premise that the manager overconfidence variable is related to debt level, showing that they underestimate the risk level (the firm’s probability of entering into a financial default) by choosing higher debt levels than they would if they were “rational”. These findings on the way managers face underlying risk are also shared by other authors (e.g. Ben-David et al., 2007; Hackbarth, 2008; Park and Kim, 2009; Oliver, 2010; Oliver and Mefteh, 2010; Ben-David et al., 2013; Ellina et al., 2020; Salehi et al., 2021). Hackbarth (2008) presented a broader set of effects of managers’ overconfidence on the capital structure. This author documented the preference for higher debt levels by OCM and that they issue new debt more frequently. According to Malmendier et al. (2011), OCM issue higher debt levels when compared with firms run by “unbiased” managers.

The literature also shows an evident tendency for the excessive investment in firms run by OCM, as they underestimate the risk and overestimate the returns of their projects. Based on the arguments of Roll (1986), Heaton (2002) and Malmendier and Tate (2005b) stated that one of the most important relationships between investment levels and cash flow is settled by the manager’s beliefs and markets about the firm value. Accordingly, OCM systematically overestimate the return on their projects, thus investing excessively in the presence of internal funds (since they are not disciplined by stock markets or constrained by corporate governance mechanisms (e.g. Salehi et al., 2023; Bui and Krajcsák, 2023). This argument is consistent with Miglo and Brodziak (2019), in the sense that they analysed different scenarios regarding the efficiency of entrepreneurs’ decisions. These authors found that when entrepreneurs are impartial (i.e. they do not decide in a biased way), decision-making is socially ideal, that is projects with positive net present value (NPV) are carried out, unlike those with negative NPV. However, Miglo and Brodziak (2019) concluded that when this environment includes overconfident entrepreneurs, it results in overinvestment, and therefore, on average, many poor-quality projects are carried out. These authors only pointed out negative aspects relative to the managerial overconfident bias. However, other authors highlighted positive aspects, specifically regarding corporate investment, such as neutralizing risk aversion by triggering value creation through investment projects and spurring R&D activities (e.g. Campbell et al., 2011; Gervais et al., 2011; Hirshleifer et al., 2012; Malmendier, 2018). Nevertheless, the argument that the overconfident manager tends to invest excessively is, therefore, founded on the literature and, so, is also shared by other more recent studies (e.g. Pikulina et al., 2017; Koo and Yang, 2018; He et al., 2019; Ikeda et al., 2021, among others).

Additionally, the literature also reveals that the investment sensitivity to free cash flow by firms is greater when OCM run them. As these managers are averse to external funding (e.g. equity issuance, venture capital), they have a special preference for internally generated resources (e.g. Heaton, 2002; Baker et al., 2005; Malmendier and Tate, 2005b; Maditinos et al., 2016; Malmendier, 2018; Mohamed, 2021, among others). For instance, Malmendier and Tate (2005a) showed that investment of the OCM is more sensitive to free cash flow, mainly in firms with lower debt capacity. Maditinos et al. (2016) concluded that overconfident was proved to be
extremely effective regarding investment, as well as regarding cash flow being a significant predictor of the investment serves as an indicator of a firm’s financial health. These authors further stated that OCM have a greater sensitivity of cash flow to investment since OCM engage in riskier projects than non-OCM. Malmendier (2018) also stated that whenever overconfident CEOs have internal funds at their disposal, they tend to overinvest because they overestimate the value of their projects. These arguments translate, therefore, into an effective firm sensitivity of the investment to cash flow generated internally when OCM run them.

2.3 Research hypotheses
The managers’ decisions obey a targeting behaviour and are materialised within the scope of a dynamic trade-off, in which the adjustment speed of the capital structure is not processed only according to the firms’ exogenous factors. Cognitive biases always underlie firms financing decisions and therefore also impact their capital structure. Corporate governance, therefore, also incorporates the biases of managers’ decisions. The adjustment speed of the capital structure to the optimal level will therefore result not only from the exogenous conditions under which it occurs but may be related to more particular aspects of corporate governance (e.g. under the perspective of the firms’ upper echelons theory) as a result that may also depend on managers’ overconfidence. No studies objectively relate the perspective of the overconfident manager with the adjustment speed, which is, therefore, a research gap. One of the difficult issues in the analysis of cognitive biases focuses on the measure (or representation) of overconfidence, so this study must adapt it to the analysis that is intended.

In line with the above arguments, this study formulates the following hypotheses:

**H1.** The capital structure results from an adjustment behaviour of the current debt level toward the optimal debt level, according to the dynamic trade-off assumptions.

**H2.** The managers’ overconfidence directly impacts on the speed of adjustment toward the optimal debt level.

3. Methodology
3.1 Database
The data were obtained for a panel sample of 4 990 SMEs in the Portuguese manufacturing sector according to NACE Rev. 3 code, for the period 2010 to 2019. This sample was obtained from SABI (Iberian Balance Sheet Analysis System), a financial database powered by Bureau van Dijk. The sample comprises sub-sectors of the manufacturing sector, with the NACE codes between 10 and 33.

The pre-pandemic period was chosen as it offered a stable environment without the significant disruptions caused by COVID-19, mainly in 2020 and 2021. According to Banco de Portugal (2020), the Portuguese economy’s overall positive outlook has taken a significant hit due to the pandemic crisis. That report also highlights the challenges faced by Portuguese firms and families due to the public health crisis caused by COVID-19. Additionally, the rationale behind selecting a sample of SMEs is also consistent with the findings of Martinez et al. (2018) and Jaworski and Czerwonka (2023), which underscore the noteworthy impact that small and medium-sized enterprises (SMEs) have on shaping the economy.

3.2 Measuring managers’ overconfidence
Bukalska (2019) stated that there is no definition and measure of overconfidence and that it is eventually defined as a complex phenomenon. According to Olsson (2014), there is a clear need to conduct more research regarding representations for overconfidence used in the empirical literature. According to Malmendier (2018), in a general way, overconfident
manager measures should be divided into four main approaches: stock options, corporate earnings forecasts, research (surveys) and those related to the press scrutiny (the external perception of the firm). In the literature, one can also find approaches more or less close to those mentioned above and several other alternatives, some adapted from these and others based on different assumptions (e.g. Park and Kim, 2009; Rihab and Lotfi, 2016).

This study proposes a new measure not based on beliefs or expectations or the managers’ behaviour. This measure is less subjective as it is based on the results of cognitive biases on firms’ capital structure. The proposed measure enables the capture of all the overconfidence biases more concretely, being more direct, as it is based on its direct (effects) consequences on the firm’s capital structure. All aspects that model these biases have direct effects on financing decisions; therefore, it is considered their possible and direct repercussions on the speed with which managers adjust to the optimal debt level. The proposed measure is, therefore, composed of three assumptions (or indicators) founded on the literature: (1) the first is based on the argument that firms run by OCM become increasingly levered over time (e.g. Ben-David et al., 2007; Barros and Silveira, 2008; Hackbarth, 2008; Malmendier et al., 2011; Ben-David et al., 2013; Rihab and Lotfi, 2016; Abdeldayan and Sedeek, 2018), (2) the second assumption is based on the fact that, in firms run by OCM, investment levels are higher than in their counterparts run by considered non-OCM (e.g. Heaton, 2002; Malmendier and Tate, 2005b; Hackbarth, 2008; Ben-David et al., 2013; Pikulina et al., 2017; Koo and Yang, 2018; Malmendier, 2018; He et al., 2019; Ikeda et al., 2021), and that the OCM invest even in projects with a negative NPV (e.g. Miglo and Brodziak, 2019), (3) the third assumption reports to the greater investment sensitivity to cash flow in firms run by OCM (e.g. Malmendier and Tate, 2005a; Maditinos et al., 2016; Malmendier, 2018; Mohamed, 2021, among others). Accordingly, it enables meeting the direct results of managers’ overconfidence in the firms’ capital structure, thus removing the greater or lesser level of “subjectivism” that other measures may include. It also enables assessing more specifically which firms are run by OCM in a sample like the one used in this study, composed of manufacturing SMEs. The sample brings together a large heterogeneity of managers with their idiosyncrasies, and therefore, a measure based on the biases on firms’ capital structure is original and more suitable. The proposed measure could constitute an additional contribution to the analysis of the topic, helping to mitigate some gaps in the previous measures or representations and complementing them in the discernment of the difficult task of measuring decision-makers’ overconfidence.

3.3 Variables and measurement
The definition and measurement of the dependent and independent research variables are presented in Table 1.

This study uses a dummy variable OptiMan that assumes the value of 1 if it satisfies three cumulative conditions: if the total firm debt is above the industry’s total debt average (at least four consecutive years); if the firm investment level is above the industry’s average investment level (at least four consecutive years), and the sensitivity of the investment to the firm's free cash flow is above the industry average sensitivity of the investment to the industry average free cash flow (at least four consecutive years). The variable OptiMan allows distinguishing the groups of firms run by OCM (1,059 firms) and those run by managers considered non-overconfident (3,932 firms). This study also uses an interactive variable, OptiMani*TotDebiti−1, that results from the interaction between the variable OptiMani and the variable TotDebiti−1, to analyse and compare the speed of adjustment in firms run by OCM versus firms run by non-OCM.

3.4 Empirical model
This study used a partial adjustment dynamic regression similar to those used by several authors (e.g. Ozkan, 2001; Flannery and Rangan, 2006; Wanzenried, 2006; Byoun, 2008;
Faulkender et al., 2012; Rihab and Lotfi, 2016; Devos et al., 2017; Aybar-Arias et al., 2012; Sardo et al., 2020; Sardo et al., 2021) to analyse the dynamic trade-off theory in the context of OCM-managed SMEs. For the estimates in the regressions, this study used the Dynamic Panel Fractional (DPF) estimator as in Elsas and Florysiak (2015) due to its effectiveness and consistency. Firms adjust their debt levels for their current debt ratio to be close to the optimal debt ratio, which leads to a partial adjustment mechanism given by the following model:

\[ D_{i,t} - D_{i,t-1} = \beta_0 + \lambda \left( D^*_t - D_{i,t-1} \right), 0 < \lambda < 1 \]  

(1)

Where: \( D_{i,t} \) represents the debt of firm \( i \) in year \( t \); \( D_{i,t-1} \) represents the debt of firm \( i \) in the previous period; \( \lambda \) represents the speed of debt adjustment toward the optimal debt level (target debt).

Regrouping the terms of equation (1), current debt is determined in the form of the following model:

\[ D_{i,t} = (1 - \lambda) D_{i,t-1} + \lambda D^*_t \]  

(2)

If firms do not make adjustments to the debt target level the value of \( \lambda \) will be equal to zero, then current debt is equal to the value of debt in the previous period (\( D_{i,t} = D_{i,t-1} \)). If there is a total adjustment of debt toward the optimal level, then \( \lambda = 1 \) and \( D_{i,t} = D^*_t \), thus debt in the current period is equal to the optimal level of debt.

The coefficient \( \lambda \) will have a value that will lie between 0 and 1, as the adjustments are partly due to the transaction costs inherent to the adjustment process, and therefore: \( 0 < \lambda < 1 \). Following several authors (e.g. Shyam-Sunder and Myers, 1999; Byoun, 2008; Devos et al., 2017; Aybar-Arias et al., 2012; Sardo et al., 2020), the optimal debt ratio is considered as a function of specific firm determinants, such as tangibility, size, non-debt tax shields, profitability, effective tax rate and growth opportunities. Consequently:

<table>
<thead>
<tr>
<th>Variables</th>
<th>Designation</th>
<th>Description – measure</th>
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<tbody>
<tr>
<td><strong>Dependent variable</strong></td>
<td></td>
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<tr>
<td>Total-debt ratio</td>
<td>TotDebt(_{i,t})</td>
<td>Total debt divided by total assets</td>
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<tr>
<td><strong>Independent variables</strong></td>
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<tr>
<td>Total debt in the previous period</td>
<td>TotDebt(_{i,t-1})</td>
<td>Total debt in the previous period</td>
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<tr>
<td>Assets tangibility</td>
<td>Tang(_{i,t})</td>
<td>Total fixed assets divided by total assets</td>
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<td>Firm size</td>
<td>SIZE(_{i,t})</td>
<td>Natural logarithm of total assets</td>
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<td>Non-debt tax shields</td>
<td>NTDS(_{i,t})</td>
<td>Depreciation divided by total assets</td>
</tr>
<tr>
<td>Return on assets</td>
<td>ROA(_{i,t})</td>
<td>Earnings before taxes divided by total assets</td>
</tr>
<tr>
<td>Effective income tax rate</td>
<td>EfTax(_{i,t})</td>
<td>Tax paid to income before taxes</td>
</tr>
<tr>
<td>Growth opportunities</td>
<td>Intang(_{i,t})</td>
<td>Intangible assets divided by total assets</td>
</tr>
<tr>
<td>Overconfident manager</td>
<td>OptiMan(_{i,t})</td>
<td>Dichotomous variable: it assumes the value of 1 if the manager is overconfident and zero otherwise*</td>
</tr>
<tr>
<td>Speed of adjustment and overconfident managers</td>
<td>OptiMan(<em>{i,t}) * TotDebt(</em>{i,t-1})</td>
<td>Interaction between the OptiMan variable and Total debt in the previous period</td>
</tr>
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</table>

Note(s): *This variable (OptiMan) takes the value 1 if it satisfies three cumulative conditions: if the firm total debt is above the industry’s total-debt average (at least four consecutive years); if the firm investment level is above the industry’s average investment level (at least four consecutive years), and the investment sensitivity to the firm’s free cash flow is above the industry average investment sensitivity to the industry average free cash flow (at least four consecutive years)

Subscripts \( i \) and \( t \) represent, respectively, firm and year

Table 1. Variables description

Source(s): Author’s own creation
where: $Z_{i,t}$ is the vector of the debt determinants; $d_t$ is a time dummy variable, which intends to capture possible business cycle effects; $\phi_K$ are the coefficients of debt determinants; $\mu_i$ are non-observable individual effects and $e_{i,t}$ is the error term. In addition, the optimal debt ratio also depends on macroeconomic conditions, measured by temporal dummy variables. Equation (3) presents the model that allows estimating the capital structure adjustment speed and the relationships between debt determinants and the debt ratio.

The following partial adjustment final model is obtained by substituting model (3) in (2).

\[
D_{i,t} = \alpha D_{i,t-1} + \sum_{K=1}^{n} \beta_K Z_{K,i,t} + \theta_1 d_t + \theta_2 + \epsilon_{i,t}
\]

where: $\alpha = (1 - \lambda)$; $\beta_K = \lambda \phi_K$; $\theta_1 = \lambda \mu_i$; $\theta_2 = \lambda u_t$ and $\epsilon_{i,t} = \lambda e_{i,t}$.

To estimate the dynamic partial adjustment model relative to equation (4), this study used dynamic panel estimators. The use of these estimators, rather than traditional panel methods, has the following advantages: (1) greater control of endogeneity; (2) greater control of the possible collinearity between explanatory variables and (3) greater efficiency in controlling the effects caused by the omission of explanatory variables (Serrasqueiro et al., 2016). This study, therefore, uses the DPF estimator, as in Elsas and Florysiak (2015), and like other authors who look for results with as little possible bias (e.g. Fitzgerald and Ryan, 2019; Narayan et al., 2021). It is an estimator more suitable for the analysis, given the heterogeneity of Portuguese manufacturing firms and due to the not fully balanced sample. Recent studies point out that commonly used econometric methods have generated biased estimates in the context of the analysis since they do not consider the fractional nature of the dependent variable (e.g. the ratio of corporate debt) (e.g. Elsas and Florysiak, 2015; Dang et al., 2015; Fitzgerald and Ryan, 2019; Narayan et al., 2021). To address the issue of fractional dependent variables in the context of a dynamic panel, Elsas and Florysiak (2015) developed the DPF estimator based on the work of Loudermilk (2007), being quite robust. DPF estimator is a Tobit estimator that uses the maximum likelihood method and is based on the normality assumptions of the error’s terms distribution and the distribution of fixed effects, excluding values below and above the [0,1] interval, accepting intermediate values. Therefore, it allows the use of lagged fractional dependent variable as an extra regressor in the presence of unobserved fixed effects (considering unobserved heterogeneity) of unbalanced panel data (Fitzgerald and Ryan, 2019). DPF estimator is a Tobit estimator that uses the maximum likelihood method and is based on the normality assumptions of the error’s terms distribution and the distribution of fixed effects. It also enables detecting the presence of a debt mechanical reversion, assigning a zero estimate when this occurs (i.e. it is immune to a false identification of the mean reversion as a true adjustment behaviour).

4. Results
4.1 Summary statistics
Table 2 documents the summary statistics for the full research sample.

The subdivision of the total sample into the subsample composed of firms run by non-OCM and the subsample composed of OCM allows to obtain the summary statistics presented in Table 3.

The significant differences found between the explanatory variables in the sample are consistent with the behavioural literature predictions (e.g. Malmendier and Tate, 2005b; Ben-
Firms run by OCM present higher average values of total debt, tangibility assets and non-debt tax shields. Accordingly, as was expected, these firms rely more on debt, probably to fund their needs associated with more frequent investments. Barros and Silveira (2008) and Hackbarth (2008) also test the effects of CEO overconfidence on corporate behaviour, and similarly find that firms with OCM are associated with higher leverage ratios. Moreover, in this study, firms run by OCM present higher average level of tangible assets, suggesting higher levels of investments in fixed assets. Firms run by OCM present lower average of profitability, thus, probably after the exhaustion of retained earnings, these firms rely more on debt to fund their investments. These financing patterns are according to the behaviour approach, given that OCM are more likely to underestimate the risk associated with the firm probability of bankruptcy, relying more on debt financing.

Firms run by non-OCM present higher average regarding size, profitability and intangible assets variables. Therefore, firms run by non-OCM, in average, are larger, more profitable and invest more in intangible assets than their counterparts run by OCM.

Table 4 shows the autocorrelation levels between the explanatory variables for the full sample.

Table 4 shows the absence of problems related to the possible multicollinearity between variables since the independent variables are correlated below 50%, indicating that the collinearity level between explanatory variables is not relevant (Gujarati and Porter, 2010).
<table>
<thead>
<tr>
<th>Variables</th>
<th>TotDebt_{t,1}</th>
<th>TotDebt_{t,1-1}</th>
<th>Tang_{t,1}</th>
<th>SIZE_{t,1}</th>
<th>NTDS_{t,1}</th>
<th>ROA_{t,1}</th>
<th>EfTax_{t,1}</th>
<th>Intang_{t,1}</th>
<th>OptiMan_{t,1} * TotDebt_{t,1-1}</th>
</tr>
</thead>
<tbody>
<tr>
<td>TotDebt_{t,1}</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TotDebt_{t,1-1}</td>
<td>0.8822*</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tang_{t,1}</td>
<td>0.3544*</td>
<td>0.3411*</td>
<td>1.0000</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIZE_{t,1}</td>
<td>0.1842*</td>
<td>0.1825*</td>
<td>0.2467*</td>
<td>1.0000</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>NTDS_{t,1}</td>
<td>0.0312*</td>
<td>0.0359*</td>
<td>0.1810*</td>
<td>-0.0724*</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROA_{t,1}</td>
<td>-0.2265*</td>
<td>-0.2809*</td>
<td>-0.1846*</td>
<td>-0.0474*</td>
<td>0.0212*</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EfTax_{t,1}</td>
<td>-0.0089</td>
<td>-0.0090</td>
<td>-0.0121</td>
<td>-0.0144</td>
<td>-0.0028</td>
<td>-0.0047</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intang_{t,1}</td>
<td>0.0467*</td>
<td>0.0498*</td>
<td>0.1326*</td>
<td>0.0724*</td>
<td>-0.0284*</td>
<td>-0.0530*</td>
<td>-0.0040</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>OptiMan_{t,1} * TotDebt_{t,1-1}</td>
<td>0.5547*</td>
<td>0.5208*</td>
<td>0.1916*</td>
<td>-0.0689*</td>
<td>0.0594*</td>
<td>-0.1651*</td>
<td>0.0436*</td>
<td>-0.0024</td>
<td>1.0000</td>
</tr>
<tr>
<td>Mean VIF</td>
<td>1.23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note(s):** *Significant at the 1% level

**Source(s):** Author's own creation
4.2 SOA: does managers’ overconfidence matter?

Table 5 shows the results of estimates obtained from the DPF estimator relative to equation (4) for the regressions between the total debt (dependent variable) and the explanatory variables.

Table 5 presents the estimates for Eq. (4), in the first column, without the interactive variable, showing a coefficient for the lagged debt variable, \( \text{TotDeb}_{t-1} \), around 0.62 and statistically significant. Therefore, the SOA is about 0.38 for the total research sample, which implies that firms take approximately 1.45 year \([\ln (0.5)/\ln (1-\lambda)]\) to close half the gap between their optimal debt level and the current debt level. The result here obtained is consistent with the predictions of the dynamic trade-off theory, given that Portuguese manufacturing SMEs or entrepreneurial firms adjust toward their optimal capital structure. Therefore, hypothesis H1 cannot be rejected.

The SOA here obtained suggest that firms adjust fast toward the optimal debt level, and it is above the result of Serrasqueiro et al. (2012) that identify a SOA around 0.31 for Portuguese SMEs. López-Gracia and Sogorb-Mira (2008) identify a SOA of 0.35 for Spanish SMEs. However, the study by Mocking and Steegmans (2017) indicates a lower SOA, approximately 0.25 for Dutch SMEs.

Table 5, in the second column, presents the estimates obtained when it is introduced the interactive variable \( \text{OptiMan}_t \times \text{TotDeb}_{t-1} \) that represents the interaction term between the variables of an overconfident manager and the total debt ratio in the previous period. It is worthy to mention that when the interactive variable \( \text{OptiMan}_t \times \text{TotDeb}_{t-1} \) is introduced in equation (4), the whole impact of the lagged debt on the current debt ratio is diluted. According to Table 5, the coefficient of \( \text{TotDeb}_{t-1} \) is positive (0.562) and statistically significant. This result is consistent with the main model presented in equation (2), which estimations were presented before, that is in the first column of Table 5.

The positive parameter of the interactive variable \( \text{OptiMan}_t \times \text{TotDeb}_{t-1} \), suggests an increase of the coefficient of the \( \text{TotDeb}_{t-1} \), which corresponds to a lower SOA toward the optimal debt level. Thus, firms with OCM tend to reduce the gap between the optimal debt

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Dynamic panel fractional (DPF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \text{TotDeb}_{t-1} )</td>
<td>0.620*** (0.00646)</td>
</tr>
<tr>
<td>( \text{Tang}_t )</td>
<td>0.119*** (0.00598)</td>
</tr>
<tr>
<td>( \text{SIZE}_t )</td>
<td>0.0453*** (0.00157)</td>
</tr>
<tr>
<td>( \text{NTDS}_t )</td>
<td>(-0.0322*** (0.0118))</td>
</tr>
<tr>
<td>( \text{ROA}_t )</td>
<td>(-0.313*** (0.00943))</td>
</tr>
<tr>
<td>( \text{EfTax}_t )</td>
<td>0.0126*** (0.00347)</td>
</tr>
<tr>
<td>( \text{Intang}_t )</td>
<td>(-0.161*** (0.0408))</td>
</tr>
<tr>
<td>( \text{OptiMan}<em>t \times \text{TotDeb}</em>{t-1} )</td>
<td>0.211*** (0.00570)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.0766*** (0.0128)</td>
</tr>
</tbody>
</table>

Initial Conditions | YES | YES |
Mundlak means | YES | YES |
Year dummies | YES | YES |
Observations | 28,968 | 28,968 |
Number of firms | 4,310 | 4,310 |
Wald test | 40900.4*** | 47184.5*** |
Uncensored | 26,191 | 26,191 |
Left-censored | 2,777 | 2,777 |
Right-censored | 0 | 0 |

**Table 5.** Capital structure determinants and the SOA

**Note(s):** Standard deviations in parentheses; ***indicates that it is statistically significant at the 1% level

**Source(s):** Author’s own creation
level and the current debt level slower than firms run by non-OCM. This result corroborates the second hypothesis (H2). This result is also consistent with previous studies (e.g. Banerjee et al., 2004; Aybar-Arias et al., 2012; Haron et al., 2013; Sardo et al., 2020), which found that firms adjust toward optimal debt levels.

OCM are less risk-averse, less concerned about the possibility of firm going into bankruptcy, and therefore keep more stable high debt levels. Accordingly, OCM less concerned with the firm probability of bankruptcy and financial distress costs, manage the firm debt levels based on lower speeds of adjustment, maintaining the financing imbalance of the firm for a long time. In the opposite, Dang et al. (2014) conclude that firms in financing imbalance adjust faster than do firms with low indebtedness level. Several authors found that firms more distant from the optimal debt level present lower speeds of adjustment (e.g. Banerjee et al., 2004; Aybar-Arias et al., 2012; Haron et al., 2013; Sardo et al., 2020). The agency and transaction costs (e.g. Banerjee et al., 2004; Haron et al., 2013) faced by SMEs also contribute to lower speed adjustments toward the optimal debt level (Ramalho et al., 2018).

Therefore, firms run by OCM maintain the distance from the optimal debt level for a long time. These firms bear financial distress costs, which probably are lower, at least in the perspective of the OCM, than the adjustment/transaction costs, justifying lower adjustments toward optimal capital structure. The results here obtained suggest that firms run by OCM accomplish small changes in debt ratio, seeking to avoid issuing equity or asymmetric information costs. These small changes can be made by a restrictive dividend pay-out policy or a cash flow policy (Aybar-Arias et al., 2012). Therefore, these firms may follow the predictions of pecking order theory during the long process of adjustment, that is while maintaining their distance from the optimal debt ratio. During this period, firms will create a financial slack in order to use internally generated funds to fund the gap between the current debt level and the optimal debt level. The estimates obtained in this study are in line with what behavioural literature establishes, given that firms run by OCM maintain distance from the optimal debt level, probably underestimating the financial distress costs, namely the penalizations of creditors due to the firm financing imbalance. Moreover, for firms run by OCM, the adjustment/transaction costs are high, and these firms avoid external transactions in the capital market. Accordingly, during the period that firms deviate from the optimal debt ratio, these firms prefer to rely on retained earnings. Thus, the authors can state that the results, in general, effectively confirm all hypotheses raised, in the sense that it was found that Portuguese SMEs or entrepreneurial firms follow a dynamic trade-off and the manager’s overconfidence cognitive biases have a direct impact on financing decisions, and therefore, in the speed of debt adjustments to optimal leverage level.

### 4.3 Entrepreneurial firms’ capital structure determinants

In this subsection, it is analysed the firms’ capital structure determinants, considering the predictions of the pecking and trade-off theories.

The significantly positive estimated parameter for the Tangi variable establishes a direct relationship between the debt ratio and fixed assets level, and it is consistent with the basic assumptions of the trade-off theory (e.g. Myers and Majluf, 1984; Rajan and Zingales, 1995; Hovakimian, 2006; Rihab and Lotfi, 2016). This result also supports the matching principle (e.g. Myers, 1977; Stohs and Mauer, 1996; Booth et al., 2001), according to which fixed assets should be financed by long-term finance sources. These findings can be further reinforced by the argument that firms with more valuable tangible assets have a higher liquidation value and greater debt capacity (e.g. Harris and Raviv, 1991), suggesting that Portuguese SMEs depend on fixed assets to get bank collateral (e.g. Sardo and Serrasqueiro, 2017). This
acquires high importance in Portuguese context, with a bank-based financial system (e.g. Serrasqueiro et al., 2016). Pacheco (2016) also finds a positive relationship between tangible assets and total debt in the Portuguese SMEs context.

The results in Table 5 show a significantly positive relationship between the debt level and the firm SIZE\textsubscript{t} variable, which is consistent with the fundamental assumptions of the trade-off theory (e.g. Booth et al., 2001; Rajan and Zingales, 1995; Ramadan, 2015), namely, the argument that larger firms are more distant from the bankruptcy probability and therefore, can directly increase the debt level and their debt tax shields (e.g. Myers and Majluf, 1984; Titman and Wessels, 1988).

The estimated parameter for the NDTS\textsubscript{t} variable shows a negative impact and statistically significant on debt level (Table 5). This result is consistent with the trade-off theory as its assumptions predict a negative relationship between debt level and the NDTS variable (e.g. DeAngelo and Masulis, 1980; Myers, 1984; Myers and Majluf, 1984; Memon et al., 2015).

Regarding the determinant profitability, measured by the ROA\textsubscript{t}, the estimates show a significantly negative relationship between debt and firm’s profitability, suggesting that firms follow a financing pecking order, that is firms, in general, prefer internally generated resources to fund investment projects. This may also suggest that firms can use internally generated funds to make the adjustments toward the optimal debt level. This result does not subvert the results in favour of the dynamic trade-off behaviour, since it was found that firms, in general, make fast adjustments. These results are consistent with the argument that trade-off and pecking order theories are complementary as the literature has been confirming (e.g. Byoum, 2008; Leary and Roberts, 2010; Degryse et al., 2012; Serrasqueiro and Nunes, 2014; Mangafic and Martinovic, 2015; Pacheco and Tavares, 2017; Matias et al., 2018; Barclay and Smith, 2020).

The relationship between the variable EfTax\textsubscript{t} and total debt is positive and statistically significant. This suggests, therefore, that the effective tax rate paid has a positive impact on debt level of firms. This result corroborates the predictions of the trade-off theory, given that higher levels of effective tax rate imply higher level of debt, which potentially increases the debt tax-shields.

As regards the variable Intangi\textsubscript{t}, Table 5 shows a significantly negative coefficient, which indicates that firms have a behaviour consistent with what the trade-off theory predicts (e.g. Myers, 1977; Rajan and Zingales, 1995; Huang and Ritter, 2009; Adair and Adaskou, 2015; Dufour and Molay, 2010). The agency costs of debt, transaction costs and information asymmetry can also contribute to this negative relationship (Martins and Alves, 2010). The estimates in Table 5 may also suggest that in the presence of growth opportunities, firms may also reduce debt levels, given that future investment projects will increase the firm’s value (Fairchild, 2007).

4.4 Robustness checks
While the criteria for the OptiMan\textsubscript{t} dummy variable have been established in reputable literature, the notion that firms run by optimists tend to have higher-than-average debt levels within their industry may warrant further examination and questioning. So, a robustness test was conducted by creating a new dummy variable to replace the previous one, which had three conditions. The new variable excludes the debt level above the industry average. Thus, the new dummy variable representing the optimistic manager is defined by the remaining conditions: “the investment sensitivity to the cash flows generated by the firm” and the “investment amount above the industry average”. Even after removing the first condition, the robustness tests indicate that the results remained consistently similar, upholding the conclusions drawn from the analysis, as we can see in Table 6.
5. Conclusions
This main purpose of this paper was to analyse the potential repercussions of cognitive biases of the OCM on the speed of debt adjustment of Portuguese manufacturing SMEs or entrepreneurial firms. This study intended to fill a gap in the analysis of this research topic. Using a partial adjustment model, this study used the Dynamic Panel Fractional estimator to analyse data for a sample composed of 4,990 Portuguese SMEs of the manufacturing sector, for the period 2010 to 2019.

The results show that Portuguese manufacturing SMEs make fast adjustments toward optimal debt, according to the dynamic trade-off assumptions. Additionally, in the process of adjustment, SMEs follow a pecking order in selecting the financing sources. This result is consistent with what the literature has evidenced that trade-off and pecking order theories are complementary, in explaining SME and entrepreneurial firms’ capital structure decisions. The results suggest that firms run by OCM adjust slower their capital structures than their counterparts run by non-OCM. The lower SOA in firms run by OCM may be due to their less risk adverse managers, which underestimate the financial distress costs associated with the distance between the optimal debt level and the current debt. These managers seem to rely more on debt, probably to fund the investment projects, thus increasing firm leverage levels and maintaining the firm financing imbalance for a long time.

The results also show that firms run by OCM show, on average, slightly lower profitability levels than their counterparts run by non-OCM. The lower levels of profitability can be a consequence of OCM sometimes make investments even in projects with a negative Net Present Value. Additionally, it was found that despite these firms possible face higher information asymmetry problems, that does not prevent them from making more frequent investments, thus increasing the level of fixed assets. In the process of funding, these managers follow a behaviour according to what the behavioural theory literature also establishes – these managers follow an iterative pecking order of preferences in selecting finance sources, thereby preferring, firstly, the internally generated funds. This study also sets a precedent in the analysis of the direct relationship between the dynamic trade-off

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Dynamic panel fractional (DPF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TotDebt_{t-1}</td>
<td>0.471*** (0.00542)</td>
</tr>
<tr>
<td>Tang_i</td>
<td>0.0733*** (0.00625)</td>
</tr>
<tr>
<td>SIZE_{t-1}</td>
<td>0.0318*** (0.00138)</td>
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<td>NTDS_t</td>
<td>−0.469*** (0.0104)</td>
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<td>ROA_{i,t}</td>
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<td>EffTax_{i,t}</td>
<td>0.0147*** (0.00303)</td>
</tr>
<tr>
<td>Intang_i</td>
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<td>0.344*** (0.00439)</td>
</tr>
<tr>
<td>Constant</td>
<td>−0.0834*** (0.0145)</td>
</tr>
</tbody>
</table>

Initial Conditions: YES
Mundlak means: YES
Year dummies: YES
Observations: 28,968
Number of firms: 4,310
Wald test: 51859.28***
Uncensored: 26,191
Left-censored: 2,777
Right-censored: 0

**Note(s):** Standard deviations in parentheses; *** indicates that it is statistically significant at the 1% level

**Source(s):** Author’s own creation

Table 6. Robustness test
process and the managers’ overconfidence cognitive biases, carried out in the study of Portuguese firms, thus filling a gap in the dynamic trade-off investigation relative to the aspects of theoretical and practical behavioural aspects.

The measure proposed in this study to classify entrepreneurial firms as firms run by OCM, overcomes the existing limitations of the previous ones, as it also allows to serve as a complement in a joint analysis, parallel to the others. The proposed measure is, therefore, more objective and has a wider scope of application than the previous ones as it can be used both in quoted firms listed as well as in the analysis of non-quoted SMEs and entrepreneurial firms. It also proved to be effectively efficient in the selection of firms, in the sense that the obtained results are consistent with the behavioural literature approach, regarding the cognitive biases of managers’ overconfidence, in the analysis of firms run by this kind of managers.

Regarding practical implications, we can also conclude that the results of this paper are not only interesting to the academia, but also contain practical implications for corporate, institutional and business policy and governance. First, the paper introduces a new measure of cognitive bias in optimistic managers, which is useful for current and future academic research. Also, in practical terms, the findings of the paper reveal that when a company is contemplating hiring a manager, it should consider whether it needs an optimistic or non-optimistic manager based on the company’s present life cycle or situation. To make a hiring decision, the firm needs to evaluate the advantages and disadvantages of each type of manager and determine the firm’s specific needs. An optimistic manager, who is more willing to invest and less risk-averse, may be required to help the firm thrive in a market context characterized by innovations that demand greater risk-taking. On the other hand, a non-optimistic manager may be necessary to maintain stability in the company’s governance in a market context where innovation and competitiveness are less crucial.

The main limitation of this paper pertains to the sample size, since the option was to focus on the pre-pandemic period. While it would have been preferable to have a larger sample, the constraints lie in the economical disturbances provoked by the pandemic.

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Corresponding author
Luis Miguel Pacheco can be contacted at: luisp@upt.pt

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