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THE EFFECT OF DISCRETIONARY ACCRUALS ON FIRM GROWTH. EMPIRICAL EVIDENCE FOR SMES FROM EMERGING EUROPE

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Abstract. The aim of the paper is to assess the effect of discretionary accruals on firm growth while controlling for firm characteristics and macroeconomic environment. Employing a large sample of 1.105 young and high-growth firms (gazelles) from 15 emerging European countries over the period 2006–2014, it has been found that the discretionary accruals negatively influence firm growth. The empirical results suggest that discretionary accruals are used as earnings management tools and this practice is more used over the high-growth period (2006–2009), with negative effects on future performance. Furthermore, the results of the quantile regression employed in the whole period suggest that the earnings management practices have a negative effect on firm growth. The results prove to be robust for different estimation approaches and different sub-samples of gazelles. The findings provide empirical evidence for the need for more detailed information provided by firms on the origin of the accruals, as well as for the use in the performance analysis of some indicators that eliminate the influence of accruals, such as cash flow based ratios.

Keywords: firm growth, discretionary accruals, gazelles, emerging Europe, quantile regression, earnings management, private firms, macroeconomic environment.

JEL Classifications: L25, L26, M41.

Introduction

The quality of financial information reported by firms and their influence on the decisions of different users are widely discussed in the literature. Identified as accounting adjustments that explain the differences between the accrual accounting principles and cash accounting principles (Walker, 2013), accruals represent a benchmark in assessing the earnings quality. These are generated both by the application of strict accounting rules and by the use of professional judgment (options in choosing accounting treatments). Starting from these sources of occur-

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rence, the separation of accruals into discretionary (DAC) and non-discretionary accruals (NDAC) is often a difficult task (Dechow et al., 2012), but necessary in assessing managers' behavior in using these elements which do not involve repayment (do not change cash flows) but influence the level of financial results (Tsipouridou & Spathis, 2012). The DAC dimension, as a result of the application of the accounting choice, is predominantly associated with the opportunistic and manipulator behavior of managers (Kuo et al., 2014) with the purpose of sizing the results according to their own objectives (Abernathy et al., 2014). However, DAC is a tool that, ethically used, can help increase the value of the firm (Omar et al., 2014), managers choosing the most favorable accounting treatments and reporting methods, thereby influencing how economic events are reflected in the performance indicators (Walker, 2013).

A small number of studies identify the positive role of DAC in signaling future performance (Robin & Wu, 2015; Dechow et al., 2019; Darmawan et al., 2019; Chen & Gong, 2019). These studies focus in particular on the impact of DAC on investor decisions, by reference to the stock market. Thus, the segment of non-listed companies, respectively the perspective of other users of financial information (banks, business partners), who can influence by their own perception the firm growth, is neglected. This paper focuses on this segment of unlisted companies with significant growth, covering *a gap in the research into the relationship between the magnitude of DAC and firm growth*. Furthermore, the paper analyzes a sample of young high-growth firms from a region characterized by a poor investor protection.

The aim of the paper is to study the effect of discretional accruals on firm growth on a sample of highly desired SMEs, namely young and high-growth firms (so-called "gazelles") from emerging Europe for the period 2006–2014[1]. The special focus on gazelles is motivated by the important role these firms play in the transition economies for job creation, innovation, and economic development (Anton, 2019). Secondly, as the problems of information asymmetry and agency costs are more pronounced in the case of young and high-growth firms, managers are more likely to use indirect mechanisms (such as accruals) rather than direct mechanisms (press releases and conference calls) in signaling future favorable performance (Robin & Wu, 2015). Thirdly, these samples of firms allow us to study the impact of discretionary accruals over the period of high-growth and also after the high-growth period. Fourthly, young and high-growth firms are interesting to study as they are more likely to commit fraud (Vladu et al., 2017) due to the poor investor protection. Thus, these results are of interest for managers, entrepreneurs, investors, and policymakers.

The empirical findings show that discretionary accruals have a negative influence on firm growth, which reflects their use as a tool for earnings management through accounting choice. The negative relationship is more pronounced over the high-growth period (2006–2009) and it hampers future growth. The effects are also confirmed by the results of the quantile regression employed for the whole period (2006–2014), the magnitude of the relationship being higher in the case of low-growth firms. The paper contributes to the extant literature in several ways. Firstly, it provides empirical evidence on the effect of discretionary accru-

[1] In this paper we use the definitions provided by Eurostat-OECD for high-growth firms and gazelles. HGFs represent "all enterprises with average annualized growth greater than 20% per annum, over a three year period…. Growth can be measure by the number of employees or by turnover" (Eurostat-OECD, 2007, p. 61), while gazelles are "the subset of high-growth enterprises which are up to five years old" (Eurostat-OECD, 2007, p. 63).

als on firm growth using a sample of private firms located in emerging market economies. Secondly, unlike previous studies which have focused mainly on samples located in one country or one industry, it is the first study that deals with a cross-country sample. Thirdly, to the best of authors' knowledge, this is the first study employing a sample of gazelles. Fourthly, the current analysis comprises a long and recent period of time, comprising both economic growth and downturn captured by the macroeconomic variables in the econometric estimations. Fifthly, the paper extends previous studies in terms of the methodology employed for testing the linkage between discretionary accruals and firm growth by using the quantile regression.

The remainder of this paper is organized as follows. Section 1 provides a concise literature review of the effect of accruals on firm growth and summarizes the research hypothesis. Section 2 describes the data, the variables, and the methodology employed in the paper. Section 3 presents the main empirical results and robustness checks. The last section concludes.

1. Literature review

Accruals and their components represent a highly discussed topic in the literature, due to their impact on the indicators computed on the basis of the financial information reported by the firms, respectively on the corresponding decisions adopted by the investors. According to signal theory, managers can use accruals as private communication tools related to the entity's future performance (Koerniadi & Tourani-Rad, 2011).

If non-discretionary accruals are identified as items resulting from the application of fundamental accounting rules that cannot be changed by managers, discretionary accruals derive from accounting choices, managerial decisions, and various estimates (Francis et al., 2005). Although the role of discretionary accruals in the elaboration and publication of financial information is still widely debated, two different interpretations emerged in the extant literature.

Treated in a limited way in the literature, the presence of DAC can be interpreted as a positive action tool that reflects the ability of managers to identify the most efficient ways to use resources employed in the operational activity, concurrent with using of the optimal accounting treatments to reflect the financial performance. In this regard, Francis et al. (2005) identify the possibility of interpreting DAC as performance indicators, reflecting the managers' option to publish credible and timely results in order to reduce information risk. Accruals and firm growth are fundamentally correlated (Collins et al., 2016) and discretionary accruals can exert a positive signal effect (Pham et al., 2017) to reduce information asymmetries.

In the second interpretation, the DAC dimension is predominantly associated with the level of opportunistic behavior of managers, conducted in order to manipulate the results and which leads to the reduction of the quality of financial information (Jones, 1991; Teoh et al., 1998; Zéghal et al., 2011; Pelucio-Grecco et al., 2014; Arun et al., 2015; Lo et al., 2017; Rodrigues et al., 2019). Defined as earnings management, these practices can alter the information published by companies by changing accounting treatments or valuation methods (Zang, 2012) or by using specific transaction-handling actions to mislead stakeholders about the level of performance achieved, with consequences on the contractual benefits dependent on the published accounting data (Healy & Wahlen, 1999). The manipulation of discretionary

accruals has as main aim "borrowing" some results from future periods or "postponing" current ones for a future moment (Abernathy et al., 2014), all with the purpose of opportunistic control of the level of performance (Perotti & Wagenhofer, 2014). In order to meet these self-imposed objectives, managers can intervene by manipulating sales (offering short-term discounts to increase sales, relaxing sales credit conditions), or generating overproduction (to reduce production costs) (Ge & Kim, 2014).

The bi-directional relationship between accruals and firm performance has been extensively studied in the literature. However, this relationship is treated predominantly unilateral in the empirical literature, from the perspective of the contribution of firm performance – measured by various indicators such as sales growth (Doukakis, 2014; Collins et al., 2016; Lehmann, 2016), book-to-market ratio (Filip & Raffournier, 2014) or profitability (Karampinis & Hevas 2013; Filip et al., 2015; Owens et al., 2016)[2] – on the level of accruals.

A less explored dimension of this relationship is represented by the effect of accruals on firm performance. This relationship has the potential to reflect the role of managerial decisions on firm performance. Discretionary accruals may transmit a negative signal to the market, and investors may penalize the firm because they perceive larger accruals as opportunistic behaviors. Momente, Reggiani, and Richardson (2015) analyze the relationship between accruals and future performance of U.S. – listed companies dividing accruals into firm-related components, respectively generated by external factors. They find a negative association between the two types of accruals and performance, largely due to internal factors. However, the size of the DAC, which could more specifically identify the effect of the managerial decisions which generates accruals, is not involved in their analysis. Kuo et al. (2014) identify a positive relationship between discretionary accruals and sales growth for Chinese listed companies and interpret the phenomenon as a swift in the earnings activities from accrual-based earnings management to real-based earnings management after the split share structure reform. However, the relevance of their conclusions is limited due to the use of information from a single economy and in the light of the specific economic reforms. Other studies employed accruals, along with a series of firm growth indicators, in the market price formation analysis and their recognition as factors of influence (Jenkins & Velury, 2012; Robin & Wu, 2015). Pham et al. (2017) study the role of discretionary accruals as performance signals or earnings management tool and show the positive effect of DAC growth on stock return, especially for fast-growing firms. Testing the robustness of the models developed on this subject involved a number of control variables, predominantly specific to the firm, such as the size (Habib, 2013), leverage (Datta et al., 2013), the reputation of the auditor (Gavious et al., 2012) or the quality of corporate governance (Sun et al., 2010; Pham et al., 2017), but without including the role of macroeconomic factors whose presence is absolutely necessary.

Studies on the effect of discretionary accruals on the entity's performance focus mainly on listed companies in different stock markets and on the investors' reaction. Relatively neglected

[2] Sales growth is one of the most used proxies for firm growth (Collins et al., 2016), as it is a relatively robust indicator that is not significantly affected by the influence of alternative accounting treatments. From the perspective of the efficiency of the activity, the firm performance is reflected by the evolution of indicators such as ROA (return on assets), the book-to-market ratio (Momente et al., 2015), return on equity or market value.

is the segment of non-listed companies, where financial information generally addresses other categories of users (banks, business partners) that can influence the firm growth by their own behavior. In the case of listed companies, users of published financial information benefit from different protection mechanisms, including listing requirements or financial statement auditing services, which ensure a high-quality level of published results (Haga et al., 2018). In the case of unlisted companies, the lack of such quality assurance mechanisms makes financial reporting play a lesser role in communicating with external users (Beuselinck et al., 2009), thus lowering the quality of the results (Chen et al., 2011). Under these circumstances, managers can use more easily earnings management techniques. Thus, it is necessary to study the influence of the DAC on sales growth, which complements the individual analyzes of users (business partners, banks, potential investors) of financial information published by relatively opaque entities.

Also, a few studies focused on the quality of information published by SMEs (Szczesny & Valentincic, 2013; Gao et al., 2015), respectively on SMEs from emerging Europe (Vafeas et al., 1998). The need to study the role of the DAC on SMEs' growth derives from the specificities of actions they need to take to penetrate a market dominated by large firms. They can use innovative marketing strategies or measures to improve the efficiency of their activity, as well as earnings management actions, precisely to overcome this stage of their own evolution, or to show increased performance, respectively, a better image that will facilitate their access to finance (Chen et al., 2011; Campa, 2015) or even increasing market share. In the emerging markets economies, there are additional motivations for reducing the quality of results (through earnings management), due to poor investor protection, bank-oriented financial systems, and the tight link between tax and accounting treatments (Chen et al., 2011). The use of earnings management reduces the usefulness of reported financial information (Perotti & Wagenhofer, 2014), causing unfavorable effects on the future performance of companies (Fischer & Rosenzweig, 1995). A particular set of SMEs is represented by young and fast-growing firms (so-called gazelles) which have a significant contribution to economic development despite their low number. These firms have the highest motivation to use earnings management in order to signal fast growth.

In order to identify whether and how these firms use the DAC as part of the financial information communication strategies and the effect on the company's growth, the study analyzes the aforementioned relationship both during and after the high-growth period.

Starting from the elements identified in the literature, the paper proposes to test the following research hypothesis:

H1: There is a negative relationship between discretionary accruals and firm growth.

2. Data and methodology

2.1. Sample

The sample of firms is selected according the Eurostat-OECD' definitions proposed in the Manual on Business Demography Statistics (Eurostat-OECD, 2007). Thus, the following criteria have been employed: (1) firms should have 10 or more employees in the starting year (2006) and an average annualized growth rate higher than 20% in a 3-year period (2006–2009); (2) at the end of the 3-year time period, the age of the firms should be less than five years (Eurostat-OECD, 2007). The initial sample consists of 1,163 gazelles over the

period 2006–2014. In the second step, usually cleaning procedures have been applied and, as a result, the final sample consists of 1,105 gazelles and 9,804 firm-year observations[3] over a 9-year period (2006–2014) from 15 Central, Eastern, and South-Eastern European (CESEE) countries[4]. This longer period of time (comprising both crisis and recovery period) allow us to draw lessons usefull nowadays when International Monetary Fund (IMF) identified increased uncertainty in emerging economies (International Monetary Fund, 2020).To control for the potential influence of outliers, all firm-level data are winsorized at the 1% level.

All firm-level data have been retrieved from Amadeus, while cross-country data on economic growth and economic development have been downloaded from World Development Indicators (World Bank, 2016).

Sales growth, the dependent variable, is measured as the logarithmic difference in sales in two consecutive years in line with prior studies (e.g., Miroshnychenko et al., 2018). This indicator is considered a proxy for product/service acceptance in the market (Anton, 2019) and also the most suitable measure of growth as it captures both short- and long-term performance (Davidsson & Wiklund, 2006).

Table 1. Variables description

Variable	Abbreviation	Description
Sales growth	SALESGR	Log ($sales_{i,t}$) – log ($sales_{i,t-1}$)
Discretionary accruals	DAC	Residual variables (error term) from Jones (1991) model
Non-discretionary accruals	NDAC	Total accruals – discretionary accruals
Firm size	SIZE	Log of total assets
Firm age	AGE	Log of firm age
Labor productivity	LP	Log of total sales/number of employees
Debt ratio	DR	(Non-current liabilities + Loans)/Total assets
Economic growth	ECGR	GDP growth (annual %)
Economic development	ECDEV	Log of GDP per capita (current US$)

The size of the accruals can be estimated by the means of two methods. In this respect, starting from the effects of applying accrual accounting, respectively those specific of cash accounting, total accruals represent the difference between net income (NI) and operating cash flow (OCF). The second way of estimation used in this paper identifies total accruals (TA) by involving some structures in the financial statements (Pelucio-Grecco et al., 2014), according to Eq. (1):

$$TA_t = [(\Delta CA_t - \Delta Cash_t) - (\Delta CL_t - \Delta STD_t)] - DEP_t , \quad (1)$$

[3] However, given the high number of missing values for some variables employed in the calculation of total accruals, the number of the observations for the growth and post-growth period for our unbalanced data panel is much lower.

[4] Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia, Poland, Romania, Serbia, Slovak Republic, Slovenia, and Ukraine.

where: TA_t – total accruals in year t; ΔCA_t – change in the current assets in year t from year t – 1; $\Delta Cash_t$ – change in cash & short-term investments in year t from year t – 1; ΔCL_t – change in the current liabilities in year t from year t – 1; ΔSTD_t – change in the short term debts in year t from year t – 1; DEP_t – depreciation and amortization in year t.

To separate the two components of accruals (discretionary and non-discretionary), the econometric model proposed by Jones (1991) was employed (Eq. (2)). This approach has been extensively employed in the extant literature (Kuo et al., 2014; Heese, 2018). DAC is the residual component of the equation, i.e. the unexplained part of TA variation through independent variables.

$$\frac{TA_t}{AT_{t-1}} = \beta_0 \frac{1}{AT_{t-1}} + \beta_1 \frac{\Delta REV_t}{AT_{t-1}} + \beta_2 \frac{PPE_t}{AT_{T-1}} + \varepsilon, \tag{2}$$

where: TA_t – total accruals in year t; AT_{t-1} – total assets in year t – 1; ΔREV_t – change in revenues in year t from year t – 1; PPE_t – gross property, plant, and equipment in year t; ε – error term, the discretionary accruals (DAC).

According to the model developed by Jones (1991), NDAC is the difference between total accruals and discretionary accruals as expressed by the relationship no. 3.

$$NDAC = TA - DA\,. \tag{3}$$

All three variables TA, NDAC and DAC are deflated to total assets at the beginning of the period.

In line with the relevant literature on firm growth (e.g. Rahaman, 2011), the study employs as control variables the following traditional firm characteristics: firm size, firm age, labor productivity, and debt ratio. A description of these variables is provided in Table 1. All nominal values are deflated by countries' GDP deflators provided by the World Bank.

Several papers (Miroshnychenko et al., 2018) show that the macroeconomic environment affects sales growth. Annual GDP growth and GDP per capita are included to account for cross-country difference in economic growth and development. In addition, year dummies are used as control variables in all regressions to control heterogeneity over time.

2.2. Econometric specifications and methods

The following linear regression model for panel data is considered:

$$SALESGR_{i,j,t} = \alpha_{i,j} + \beta_1 DAC_{i,j,t-1} + \beta_2 NDAC_{i,j,t-1} + \beta_3 FIRM\_LEV_{i,j,t} + \beta_4 MACRO\_LEV_{jt} + \varepsilon_{i,j,t}, \tag{4}$$

where: $SALESGR_{i,j,t}$ denotes growth of firm i, in country j, at time t computed as the logarithmic difference in sales in two consecutive years; $DAC_{i,j,t-1}$, our independent variables of interest, measures the value of discretionary accruals for firm i, in country j, at time t – 1; $NDAC_{i,j,t-1}$ measures the value of non-discretionary accruals for firm i, in country j, at time t – 1; the vector $FIRM\_LEV_{i,j,t}$ includes firm-specific variables, namely firm size, age, degree of indebtedness, and labor productivity; the vector $MACRO\_LEV_{j,t}$ captures macroeconomic variables such as economic growth and economic development for country j at time t; $\alpha_{i,j}$ are firm-specific fixed effects; β_1, …, β_4 are parameters to be estimated; $\varepsilon_{i,j,t}$ is an error term

capturing all factors that influence firm growth, but are not included in the model specification's variables. Following Sial, Zheng, Khuong, Khan, and Usman (2018), DAC and NDAC are lagged 1 year in order to clarify the causality relationship.

Four different methods have been employed in order to estimate the model specification (Eq. (4)). Firstly, the paper employed a pooled ordinary least-squares regression model (OLS) with robust standard errors in order to obtain heteroskedasticity-robust estimators. Secondly, a panel fixed effects model (FE) is employed. As suggested by Hsiao (2003), the Hausman test is used to determine the exogeneity of the unobserved errors and to choose between fixed-effects and random-effects models. The test rejects the random-effects specification to all model specifications, so FE estimations are adopted. The third method, OLS with Panel-corrected Standard Errors (PCSE), controls for firm-level heteroscedasticity and provides more robust results. Fourthly, quantile regression is employed in order to test whether the impact of accruals can be different for various levels of firm growth. Also, this approach mitigates the problem of non-Gaussian error distribution. The quantile regression model originally proposed by Koenker and Bassett (1978) has the following specification:

$$y_{i,t} = x'_{i,t}\,\beta_0 + \varepsilon_{i,t}\,, \tag{5}$$

with

$$Quant_{\theta}(y_{i,t} \mid x_{i,t}) = x'_{i,t}\,\beta_0\,, \tag{6}$$

where y_{it} represent the dependent variable (sales growth), x_{it} represent a vector of regressors, β is the vector of parameters to be estimated, ε is a vector of residuals, *i* denotes firm and *t* denotes time. $Quant_{\theta}\left(y_{it} \mid x_{it}\right)$ denotes the θ^{th} conditional quantile of y_{it} given x_{it}. All the econometric estimates have been carried out using the econometric software STATA 14.

3. Empirical results and discussion

3.1. Descriptive statistics and correlation

Table 2 reports the descriptive statistics for the variables used in the estimations for the high-growth period (2006–2009), for after the high-growth period (2010–2014) and for the whole period (2006–2014), useful both for the knowledge of the economic and financial environment in which the phenomenon is analyzed and for the characterization of the data series distribution.

The high value of the average growth rate of turnover (11.75%) for the analyzed period confirms the features of the entities included in the study, namely HGFs. However, there are significant differences over the three periods. Over the high-growth period, the average sales growth rate is 41.96%, while over the post-high-growth period, the average sales growth is negative (7.46%).

At the level of the entire sample, the NDAC represents, in absolute terms, an average of 3.12% of the total assets of the previous year, with a normal distribution around the average. DAC records absolute average values similar to NDAC (3.31%), but with a significant dispersion around the average, which shows the diversity of solutions used for accounting registration of events and transactions. However, there is a significant difference between DAC values within the two growth intervals analyzed. Over the high-growth period, the level of DAC (–0.05488) is higher than the value recorded for the post-high-growth period

(–0.01747), highlighting the intensive use of accounting choice in case of gazelles with possible influences on the result indicators. The average values of DAC and NDAC are in line with those reported by Jenkins and Velury (2012) and Pham et al. (2017).

Table 2. Summary statistics

Variable	Mean	Std. Dev.	Min	Max
High-growth period (2006–2009)				
SALESGR	0.419691	0.922055	–6.23841	8.893155
DAC	–0.05488	0.946495	–2.84977	2.894756
NDAC	–0.01827	0.504327	–1.48673	1.758118
SIZE	13.561	2.020991	5.342545	20.15283
AGE	0.976431	0.489942	0	1.609438
LP	10.31347	1.531754	2.592976	16.74459
DR	0.231338	0.311605	0	1.662131
ECGR	2.663416	7.20798	–14.8142	11.90219
ECDEV	8.849895	0.667158	7.741976	10.22201
Post high-growth period (2010–2014)				
SALESGR	–0.07467	0.770673	–9.13022	5.360777
DAC	–0.01747	0.506575	–2.84977	2.894756
NDAC	–0.03996	0.295572	–1.48673	1.758118
SIZE	14.16199	2.11932	1.932333	20.78376
AGE	1.963935	0.226268	1.386294	2.302585
LP	10.43292	1.376255	3.599059	16.93404
DR	0.232964	0.316235	0	1.662131
ECGR	1.26162	2.583426	–6.6	7.583125
ECDEV	8.991573	0.61111	7.997662	10.12598
Full period (2006–2014)				
SALESGR	0.117591	0.866944	–9.13022	8.893155
DAC	–0.03318	0.724858	–2.84977	2.894756
NDAC	–0.03121	0.393464	–1.48673	1.758118
SIZE	13.89025	2.096776	1.932333	20.78376
AGE	1.523736	0.613442	0	2.302585
LP	10.37729	1.451887	2.592976	16.93404
DR	0.232236	0.314149	0	1.662131
ECGR	1.899021	5.267592	–14.8142	11.90219
ECDEV	8.927152	0.641068	7.741976	10.22201

Table 3. Correlation matrix

	SALESGR	DAC	NDAC	SIZE	AGE	LP	DR	ECGR	ECDEV
SALESGR	1								
DAC	–0.2175	1							
NDAC	0.0471	–0.1664	1						
SIZE	0.0319	0.1773	0.0635	1					
AGE	–0.3626	0.0886	–0.0438	0.2109	1				
LP	0.1548	–0.1394	0.0654	0.5305	0.066	1			
DR	0.0177	0.1826	0.0877	0.2031	0.003	–0.0053	1		
ECGR	0.1835	–0.0174	0.0376	0.0108	–0.2278	0.1327	–0.0074	1	
ECDEV	–0.0937	0.0597	0.0019	0.0907	0.1763	0.3159	–0.0838	0.1741	1

Table 3 presents correlations among the dependent and independent variables. The results suggest a negative correlation between the level of discretionary accruals and sales growth. On the other hand, the correlation between non-discretionary accruals and sales growth is positive but weak. There are also low correlation coefficients between the independent variables which suggest that multicollinearity is unlikely to be a problem in our panel data analysis.

3.2. Empirical results

The empirical results for the high-growth period (2006–2009) are presented in Table 4. The analysis developed in order to identify the effects of discretionary accruals on firm growth generated a series of information synthesized in Table 4. The results do not reject the research hypothesis and reveal a negative influence of discretionary accruals on firm growth, meaning that managerial decisions generating accruals are interpreted in the case of HGFs as an instrument of erosion of their performance. The regression coefficients attached to the DAC variable are negative for all three models estimated, being statistically significant at the 1% level. Thus, a possible interpretation of the DAC as a tool for earnings management is identified in the case of HGFs, similar to some interpretations of Wilson and Wang (2010), Capalbo, Frino, Mollica, and Palumbo (2014), respectively Ben Amar, Ben Salah, and Jarboui (2018). The results confirm a series of findings of Pham et al. (2017) but opposed to those reported by Jenkins and Velury (2012) and Robin and Wu (2015) on the impact of the DAC on growth measured by the entity's stock market performance. By reference to the growth of the entity measured by fundamental indicators (sales growth, ROA), our results are opposite to those reported by Robin and Wu (2015) (on the growth of ROA) and Koerniadi and Tourani-Rad (2011) (sales growth). Thus, our results confirm the existence of particular influences on the gazelles' operational activity due in particular to the elements of the discretionary accruals (gazelles can choose strategies that determine a high level of working capital and accounting treatments to increase the accounting result).

Table 4. Empirical results for the high-growth period (2006–2009)

	Model 1	Model 2	Model 3
	OLS	FE	PCSE
DAC	–0.2540***	–0.3202***	–0.2670***
	(–0.0441)	(–0.0536)	(–0.0391)
NDAC	–0.0265	0.0075	–0.0169
	(–0.0701)	(–0.0619)	(–0.0567)
SIZE	0.0619***	0.0463	0.0496*
	(–0.0215)	(–0.0859)	(–0.0294)
AGE	–0.6500***	–2.2606***	–0.6967***
	(–0.0981)	(–0.3519)	(–0.0983)
LP	0.0269	0.7194***	0.0649
	(–0.0417)	(–0.1008)	(–0.0488)
DR	0.2529***	0.1534	0.2497**
	(–0.0835)	(–0.1722)	(–0.1113)
ECGR	0.0093*	0.0442***	0.0101
	(–0.0054)	(–0.012)	(–0.0068)
ECDEV	–0.1497***	–1.2510***	–0.1723***
	(–0.0371)	(–0.4269)	(–0.0357)
Constant	1.2668***	4.8091	1.2585***
	(–0.3171)	(–4.035)	(–0.3292)
Time FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	1799	1799	1799
R-squared	0.1823	0.1003	0.1946

Note: Robust standard errors are reported in brackets and account for clustering at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Non-discretionary accruals, an exponent of the application of treatments strictly regulated by the accrual accounting principles, do not have a significant influence on the firm's growth, being interpreted as a compliance with the rules in the field without significant impact on the size of the performance indicators, similar to evidence provided by Koerniadi and Tourani-Rad (2011).

The firm-level control variables have statistically significant individual influences of 1% and 5%, respectively. The exception makes the degree of indebtedness that does not generate a statistically significant influence.

In line with previous findings (Panda, 2015), firm size is positively associated with the evolution of turnover as a result of their stronger market penetration force by effective trade strategies. Firm age negatively influences the growth rate of the entity, thus reflecting a de-

crease in companies' elasticity to changes in the economic environment, at the same time as their maturation, which is in opposition to results reported by Megaravalli and Sampagnaro (2018) in the study realized on HGFs. The growth of labor productivity reflects the increase in employee efficiency, which offers the opportunity to develop commercial strategies that lead to increased sales.

The macroeconomic environment in which firms operate can influence the phenomenon analyzed through the quality of the specific business environment. In this respect, the direct link between economic growth and firm growth reflects the positive dependence relationship between the two variables, the results being similar to the findings of Krasniqi and Desai (2016). On the other hand, economic development negatively influences sales growth. These results can be explained by the equilibrium effect of markets, generated by the increase of

Table 5. Empirical results for the post-high-growth period (2010–2014)

	Model 1	Model 2	Model 3
	OLS	FE	PCSE
DAC	–0.2004***	–0.4110***	–0.2523***
	(–0.044)	(–0.0726)	(–0.0387)
NDAC	–0.1066	–0.1648**	–0.1231**
	(–0.0783)	(–0.0733)	(–0.0606)
SIZE	–0.0006	0.1963***	–0.0162
	(–0.0121)	(–0.0509)	(–0.0123)
AGE	–0.1865	0.1856	–0.1798
	(–0.1266)	(–0.4673)	(–0.1329)
LP	0.1295***	0.5835***	0.1898***
	(–0.0266)	(–0.0535)	(–0.0271)
DR	0.002	0.1991*	0.0247
	(–0.0768)	(–0.1065)	(–0.0687)
ECGR	0.0419***	0.0352***	0.0430***
	(–0.0054)	(–0.0064)	(–0.0054)
ECDEV	–0.0740***	–0.6811***	–0.1007***
	(–0.0257)	(–0.2085)	(–0.0255)
Constant	–0.3988	–3.3356	–0.5995*
	(–0.2871)	(–2.2587)	(–0.318)
Time FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	2668	2668	2668
R-squared	0.1603	0.0901	0.1954

Note: Robust standard errors are reported in brackets and account for clustering at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

national per capita incomes, as well as by the specialization of consumers, which can lead to a decrease in the growth rate of businesses.

The results are consistent in all three models used, the relationships remaining constant, by sign, magnitude, and degree of statistical significance.

The negative relationship between DAC and firm growth is confirmed also for the post-high-growth period (2010–2014) (see Table 5), respectively the whole period (2006–2014) (see Table 6). However, there is an increased influence of DAC on firm growth over the high-growth period compared to the post-high-growth period. Thus, more intense use of accounting choices can be reflected in possible earnings management actions in order to achieve high-growth.

Table 6. Empirical results for the whole period (2006–2014)

	Model 1	Model 2	Model 3
	OLS	FE	PCSE
DAC	–0.2218***	–0.3528***	–0.2689***
	(–0.0336)	(–0.0423)	(–0.0243)
NDAC	–0.0382	–0.0418	–0.0355
	(–0.0545)	(–0.0494)	(–0.0375)
SIZE	0.0236**	0.1072***	0.0026
	(–0.0114)	(–0.0392)	(–0.0135)
AGE	–0.5896***	–1.3977***	–0.6996***
	(–0.0859)	(–0.2144)	(–0.0833)
LP	0.0840***	0.4769***	0.1613***
	(–0.0237)	(–0.0505)	(–0.0242)
DR	0.0905	0.1281	0.0915
	(–0.0603)	(–0.0969)	(–0.0656)
ECGR	0.0196***	0.0261***	0.0195***
	(–0.0037)	(–0.0046)	(–0.0043)
ECDEV	–0.1092***	–0.8185***	–0.1475***
	(–0.0231)	(–0.1997)	(–0.0226)
Constant	0.7400***	2.2392	0.6205***
	(–0.2099)	(–1.8714)	(–0.2312)
Time FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	4467	4467	4467
R-squared	0.212	0.1286	0.2267

Note: Robust standard errors are reported in brackets and account for clustering at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

3.3. Robustness tests

In order to test the validity of the results obtained at the level of the whole sample, two robustness check approaches have been employed. Due to the differences between the countries in the sample in terms of economic growth and development, but also in the EU accession, the initial sample is split into two subsamples, namely gazelles located in the EU member states (EU) and gazelles located in the rest of the countries (Non-EU). The disjunctive element was represented by the number of firm-level observations available and the EU membership.

The results of the robustness checks for both sub-samples are reported in Table 7 and

Table 7. Robustness checks – EU vs Non-EU (2006–2014)

Dependent variable –Sales growth						
	EU			Non-EU		
Independent Variables	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	OLS	FE	PCSE	OLS	FE	PCSE
DAC	–0.2296***	–0.4508***	–0.3112***	–0.2143***	–0.2908***	–0.2379***
	(–0.0489)	(–0.0725)	(–0.036)	(–0.0447)	(–0.0503)	(–0.032)
NDAC	–0.0009	–0.0254	–0.0195	–0.0674	–0.0671	–0.0568
	(–0.0838)	(–0.0751)	(–0.0563)	(–0.0715)	(–0.0658)	(–0.0507)
SIZE	0.0243*	0.2051***	0.0138	0.0215	0.0632	–0.0019
	(–0.0147)	(–0.0374)	(–0.0134)	(–0.0185)	(–0.0618)	(–0.0226)
AGE	–0.4921***	–0.9125***	–0.5397***	–0.6559***	–1.6131***	–0.7738***
	(–0.1015)	(–0.2444)	(–0.0982)	(–0.1286)	(–0.3098)	(–0.1189)
LP	0.1008***	0.4145***	0.1634***	0.0765**	0.5441***	0.1435***
	(–0.0318)	(–0.058)	(–0.0269)	(–0.0349)	(–0.0784)	(–0.0352)
DR	0.1007	0.0579	0.1109	0.1232	0.2487	0.1249
	(–0.0883)	(–0.1186)	(–0.0905)	(–0.0792)	(–0.1593)	(–0.0916)
ECGR	0.0137**	0.0275***	0.0138**	0.0096	0.0065	0.0084
	(–0.0062)	(–0.0071)	(–0.0066)	(–0.0071)	(–0.0105)	(–0.0078)
ECDEV	–0.1007**	–1.7369***	–0.1433***	–0.2519***	–0.7862	–0.2888***
	(–0.0407)	(–0.2821)	(–0.0407)	(–0.0827)	(–0.5841)	(–0.0819)
Constant	0.3411	9.9070***	0.2084	2.2041***	1.9483	2.2346***
	(–0.3978)	(–2.6031)	(–0.4084)	(–0.6635)	(–4.85)	(–0.7001)
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2560	2560	2560	1907	1907	1907
R-squared	0.2093	0.079	0.2349	0.2206	0.1269	0.2286

Note: Robust standard errors are reported in brackets and account for clustering at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 8. Quantile regression (2006–2014)

	OLS	Q10	Q20	Q30	Q40	Q50	Q60	Q70	Q80	Q90
DAC	−0.2163***	−0.357***	−0.270***	−0.232***	−0.209***	−0.197***	−0.183***	−0.182***	−0.177***	−0.191***
	(−0.033)	(−0.03)	(−0.015)	(−0.01)	(−0.01)	(−0.01)	(−0.01)	(−0.012)	(−0.016)	(−0.026)
NDAC	−0.0374	−0.032	−0.023	−0.014	−0.028	−0.013	−0.013	−0.019	0	−0.001
	(−0.0544)	(−0.051)	(−0.025)	(−0.017)	(−0.017)	(−0.017)	(−0.017)	(−0.021)	(−0.028)	(−0.045)
SIZE	0.0272**	0.02	0.035***	0.034***	0.034***	0.038***	0.039***	0.039***	0.034***	0.037***
	(−0.0113)	(−0.013)	(−0.006)	(−0.004)	(−0.004)	(−0.004)	(−0.004)	(−0.005)	(−0.007)	(−0.011)
AGE	−0.5938***	−0.244***	−0.226***	−0.252***	−0.287***	−0.330***	−0.387***	−0.454***	−0.566***	−0.801***
	(−0.085)	(−0.042)	(−0.021	(−0.014)	(−0.014)	(−0.014)	(−0.014)	(−0.017)	(−0.023)	(−0.037)
LP	0.0820***	0.077***	0.023**	0.008	0.003	−0.007	−0.010*	−0.015**	−0.008	0.013
	(−0.0237)	(−0.019)	(−0.009)	(−0.006)	(−0.006)	(−0.006)	(−0.006)	(−0.008)	(−0.01)	(−0.016)
DR	0.0951	0.007	0.054*	0.033	0.077***	0.103***	0.114***	0.121***	0.145***	0.200***
	(−0.0605)	(−0.067)	(−0.033)	(−0.022)	(−0.022)	(−0.022)	(−0.021)	(−0.027)	(−0.036)	(−0.058)
ECGR	0.0197***	0.013***	0.014***	0.014***	0.016***	0.015***	0.013***	0.016***	0.016***	0.020***
	(−0.0038)	(−0.004)	(−0.002)	(−0.001)	(−0.001)	(−0.001)	(−0.001)	(−0.002)	(−0.002)	(−0.003)
ECDEV	−0.1030***	0.041	0.028**	−0.005	−0.024**	−0.033***	−0.041***	−0.066***	−0.099***	−0.148***
	(−0.0233)	(−0.029)	(−0.014)	(−0.01)	(−0.01)	(−0.01)	(−0.009)	(−0.012)	(−0.016)	(−0.026)
Constant	0.6827***	−1.495***	−0.810***	−0.170*	0.191**	0.456***	0.731***	1.197***	1.797***	2.603***
	(−0.2129)	(−0.274)	(−0.134)	(−0.092)	(−0.091)	(−0.09)	(−0.088)	(−0.111)	(−0.148)	(−0.239)
R-squared	0.21									
Pseudo R-squared		0.1129	0.1	0.0999	0.107	0.1211	0.1392	0.1615	0.1904	0.2321
Observations	4467	4467	4467	4467	4467	4467	4467	4467	4467	4467

Note: Robust standard errors are reported in brackets and account for clustering at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

confirm the negative relationship between discretionary accruals and firm growth. It is worth to observe that, although the accounting rules that substantiates the processed financial information present particularities in each country, the magnitude of the DAC is interpreted similarly, respectively as a factor with negative influence on firm growth, which can reflect actions of manipulation of the results.

A second way of testing the robustness of the preliminary results consists in the employment of panel quantile regression. The analysis aimed to identify the causality relationships on the interval of sales growth (from 10% to 90% quantile) as well as dimensional deviations of the partial influences of the explanatory variables according to the growth rate of the firm. Table 8 presents the quantile regression results.

The results confirm once again the robustness of the previous results in all the sequential models tested, the causal relationship maintaining its characteristics and significance. From a quantitative perspective, there is an increased contribution of the DAC to the decrease in firm growth within the first three quantiles, all the regression coefficients attached to the discretionary accruals (–0.232 to –0.357) exceed the value recorded for the whole sample (–0.2163). In the same sense, but with a lower intensity (–0.177 to –0.209) than the one recorded at the level of the total sample, the DAC influences the firm growth in the case of entities whose growth rates are in the last six quantiles q40 to q90. This confirms once again the dependence of the growth rate of sales on the magnitude of the DAC, respectively their role in signaling the future performance of the firm.

Validating the results of the study by using a time horizon that includes two business cycles (economic growth and downturn), respectively confirming the robustness of the analyzes by testing the models at the level of quantiles, offer greater sustainability of the conclusions.

Conclusions

Although the quality of accounting information is a widely discussed subject in the specialized literature, the relationship between this attribute and firm growth is still insufficiently researched. The qualitative level of financial information reported by firms can influence their growth, both directly through the effect on the decisions of different users and indirectly through the interpretation of some indicators developed on inaccurate or less relevant data. For this reason, the paper aims to evaluate the effect of discretionary accruals (as an exponent of managerial decisions on accounting choice) on firm growth. Due to the increased growth rate and to the additional motivations they can have in earnings management (i.e., to maintain the target level of performance), the study was conducted on a sample of young HGFs (so-called gazelles), both over the high-growth (2006–2009) and over the post-high-growth period (2010–2014). Another feature of the sample is that the firms are SMEs from emerging economies from CESEE countries, which have been scarcely researched so far. Futhermore, the period of analysis (2006–2019) allow us to assess the impact of economic growth and financial crisis on firm growth.

The empirical findings show the discretionary accruals are negatively influencing firm growth, which reflects their use as a tool for earnings management through accounting choice. The negative relationship is more pronounced over the high-growth period (2006–

2009) and it hampers future growth. The effects are also confirmed by the results of the quantile regression employed in the whole period, the magnitude of the relationship being higher in the case of low-growth firms. The relationship has been validated through three econometric specifications, its sense and significance remaining constant. The robustness of our findings is tested by employing two sub-samples (gazelles from the EU member states and those from other countries) and by using several estimation techniques. The role of non-discretionary accruals on firm growth is insignificant due to their strict rules of recognition.

The paper contributes to the extant literature by providing evidence of the effect of discretionary accruals on firm growth using a sample of gazelles located in emerging markets economies. The study analyzes the phenomenon on a cross-country sample of gazelles, including the effect of the macroeconomic environment through specific variables (economic growth and economic development). Also, the current paper extends previous studies in terms of the methodology employed for testing the linkage between discretionary accruals and firm growth by using the quantile regression.

The accruals' dimension, as an exponent of the differences between cash accounting principles and accrual accounting, and in particular the magnitude of discretionary accruals, is interpreted predominantly as a tool for earnings management. In terms of practical implications, the current study lends support for the need for more detailed information provided by firms on the origin of the accruals, as well as for the use in the performance analysis of some indicators that eliminate the influence of accruals, such as cash flow based ratios.

This study is not without limitations. The first research limit consists of focusing the study only on gazelles located in emerging countries from CESEE for the period 2006–2014. It is necessary to extend the analysis to other emerging countries, different types of firms (family firms, listed firms or multinational firms) and more recent data. Secondly, it is necessary to complete the set of control variables with some specific corporate governance variables which were not available in our databases, such as the ownership structure or the management and internal control system. Thirdly, the inferences derived from our study are limited by the data on which the results are based. Future research directions may involve the removal of these restrictions and the inclusion as a comparative dimension of the listed firms.

Author contributions

Both authors contributed equally to the paper, namely to review the literature, collect data, apply research methods and interpret the results.

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