Corporate performance and diversification from a resource-based view: A comparison between small and medium-sized Austrian firms

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A B S T R A C T

The effect of diversification on corporate performance has shown controversial results in prior research, ranging from the potential to improve performance to the risk of performance reduction. The aim of this study is to explain separately the effect of diversification and some selected variables on the profitability of small- and medium-sized Austrian firms and to test some research hypotheses based on prior research. For this study 1,095 observations were analyzed for small- and medium-sized firms over a three-year period. The resource-based-view (RBV) has been chosen as the theoretical framework of this study. The results provide no clear evidence as to whether related or unrelated diversification leads to higher profitability, because it depends on how profitability is measured. This result holds for small- and medium-sized firms (SMEs). Additionally, there is no significant reduction in risk for diversified companies. Only related diversification exhibited a significantly lower risk when compared to non-diversified medium-sized firms. Finally, the RBV can only partially explain and predict diversification strategy and its outcome on profitability and risk.

Introduction

Diversification is a potential measure that can be used to reduce risk, which is also of relevance for small companies (Carter & Ram, 2003). It is defined as the process whereby different assets are distributed among different investment classes (Northcott, 2011). Therefore, it is understandable that MSEs attempt to diversify their business in order to decrease unrewarded risk (Everett & Watson, 1998). Based on the portfolio theory, diversification can be achieved when diverse and uncorrelated investments reduce the risk of the whole portfolio (Solnik & McLeavey, 2009). Chang and Thomas (1989) pointed out that the diversification strategy of a firm may be explained by four components, each of which contributes to risk reduction. The four components are: the inherent risk of the industry in which the firm is competing, the number of industries in which the firm competes, the size of the firm, and the generic diversification strategy which is chosen. SMEs also face these risks and according to Hamelin (2013), small firms displayed greater wealth under-diversification, meaning

that they have a higher exposure to firm-specific risk.

Petrakis (2004) and Weinzimmer, Fry and Nystrom (1996) explained that some risk should remain, because a business without risk has no association with entrepreneurship. They went a step further and postulated that the risk taken by a business agent could be an appropriate proxy to determine the level of entrepreneurship in an economy. That being said, Amit and Wernerfelt (1990) outlined three motives for reducing business risk: a.) conflicts between shareholder and agents, b.) uncertainty about operational cash flows and c.) transaction costs. Finally, risk (systematic which describes the extent to which the cash flows of the company are affected by economy-wide or non-company specific factors, whereas unsystematic risk describes the risk specific to an individual company (Lumby & Jones, 2011) affects the overall performance of the firm (Aaker & Jacobson, 1987). Therefore, a strategy of diversification may be undertaken to reduce risk, but it is not a measure aimed at avoiding risk. This means that diversification will not guarantee a firm's survival, as empirically confirmed by Sheppard (1994), but it can contribute to the reduction of firm-specific (unsystematic) risk (Aaker & Jacobson, 1987; Manrai, Rameshwar & Nangia, 2014; Rumelt, 1982) and can be an important basis to protect against different threats

(Morris, Schindehutte, Richardson, & Allen, 2006). The results of prior studies concerning the relationship between diversification, corporate success and risk have provided different results, meaning that from a scientific viewpoint, the impact of diversification strategy on profitability, enterprise value and risk cannot be reliably explained. Additionally, Murphy and Tocher (2017) emphasized that small firm diversification is a topic of critical importance despite being poorly understood. In their study observing three decades of research, Palich, Cardinal, and Miller (2000) concluded that the nature of how diversification relates to performance is the most important and unresolved question in this regard.

This was the main motivation for this study. The aim was not just to reconsider prior research, but also to analyze some additional variables, which were not considered in earlier studies. Additionally, the aim was to test how well the resource-based view could be used as a theoretical framework to explain the diversification attempts of small- and medium-sized companies. Based on the results obtained in the study, specific recommendations for managers shall be provided relating to how diversification should be integrated into corporate strategy and which variables should be considered for this decision.

This paper is structured as follows. First, a literature review is provided concerning diversification and corporate success, highlighting the effects of diversification on profitability, risk reduction and firm value. Here, the theoretical foundation (resource-based view) is also discussed and linked with certain aspects of diversification. Second, the development of hypotheses is presented. Third, methods relating to the research methodology, variables of the study, model specification and sample description are highlighted. Fourth, the results and findings are displayed and discussed including the results of hypotheses testing. Finally, the paper concludes with a summary of the main results, its implications for practice, contributions for research, the most relevant limitations and propositions for future research.

Empirical and Theoretical Background: Diversification under Resource-Based-View

Differentiation can be made between related and unrelated diversification. Related diversification is said to occur when a company extends its existing portfolio with similar services or products, whereas unrelated diversification refers instead to the inclusion of new services or products, which are not related to the existing portfolio (Fitzroy, Hulbert, & Ghobadian, 2012). Generally, diversification may be seen as a positioning strategy to reduce cashflow variances (Pearce & Michael, 2006). This leads to the conclusion that corporate performance could be increased, with a decrease

in accompanying risk (Bilginsoy, 2015).

The resource-based view (RBV) was used as a potential theoretical framework to explain the interrelations between diversification, profitability and risk because it is suitable for predicting and explaining certain relationships between the decision for diversification and corporate success. In their extensive literature review, Hauschild and zu Knyphausen-Aufseß (2013) emphasized that the resource-based view is a promising paradigm to explain the successful diversification attempts of companies. In an earlier study, Chatterjee and Wernerfelt (1991) concluded that RBV could adequately explain their results concerning the link between resources and the type of diversification.

Generally, under the RBV the differences between the performances of companies can be explained by differences in efficiency, the individual firm´s resources and its capabilities (Foss, Knudsen & Montgomery, 1995; Lenox, Rockart & Lewin, 2011). The first things to be secured by managers are therefore resources and capabilities, which can be accumulated over time and result from prior strategic choices. This is the basic method of determining future performance over time and of developing competitive advantage for profit generation (Esteve-Pérez & Manez-Castillejo, 2008; Lumpkin, McKelvie, Gras, & Nason, 2010; Pfeffer & Salancik, 1978; Shapiro, 1989).

This competitive advantage can only be achieved when the company is in the position to exploit the resources optimally and/or differently to the competitors on the market (Castaldo, 2007; Maruso & Weinzimmer, 1999; McIvor, 2005). The theoretical framework of RBV therefore provides a good explanation of the boundaries that prevent a firm from reaching specific performance goals (Lockett & Thompson, 2001). Additionally, the basic is given to create core competencies, which are defined as the sum of certain capabilities bundled into a new integrated and difficult to imitate capability (Armstrong & Shimizu, 2007; Becker & Meise, 2008).

The resources and the capabilities of the firm may enable diversification. Companies, which are in the position to exploit these resources and capabilities for diversification, can generate additional income (Alesón & Escuer, 2002). This is supported by the findings of Wernerfelt (1984), who also emphasized that diversified firms can be seen as a portfolio of resources and taking this view, the potential growth perspective can be much more accurately identified. Based on these pre-conditions, the key for operational efficiency is the creation of competitive advantage (Grant, 1996) and this can lead to superior returns (Deb, 2009).

The availability of resources and capabilities is the precursor to the possibility of diversification and the effect of diversification on profitability provided mixed results in pri-

or research. These differences may be explained by the different measures applied in the studies, the different samples and time periods which were observed, the different types of companies studied, as well as the different countries in which the analyses took place. Datta, Rajagopalan, and Rasheed (1991) also concluded that different theoretical and methodological reasons resulted in a diversity in findings.

Dubofsky and Varadarajan (1987) went a step further and concluded from their causality analysis that diversification does not affect performance. According to their results, it seems instead that the opposite may be true, namely, that company performance affects how companies choose to diversify, a result also reported by Grant, Jammine, and Thomas (1986).

Holder and Zhao (2015) expanded on prior results and explained in their empirical results that the traditional view of diversification leading to inefficiencies in asset allocation and management capabilities is not well founded. Instead, they concluded that companies performing below average can increase their value and companies performing above average can decrease their value through diversification. The published results are an explanation of collective outcomes, which do not necessarily explain the relationship between diversification and the development of a firm's value.

Everett and Watson (1998) emphasized that the purpose of diversification is not to increase returns. Rather, it is a strategic decision which is taken to minimize fluctuations in returns and to reduce risk, which is the concept already described in the introduction to this paper. Following from this statement, it is not necessarily the case that higher returns can be observed for diversified firms when compared to non-diversified firms. According to these aspects, the firm can guarantee a long-term oriented and sustainable development (Brahma & Chakraborty, 2011; Chisholm & Nielsen, 2009). This seems to be more difficult for smaller SMEs, because they face larger constraints on their resources when compared to bigger SMEs (Shields & Shelleman, 2015).

Rangone (1999) extended this view by valuing strategic options within two dimensions, named strategic consistency (defined as the ability of resource strategy to contribute to the achievement of strategic intent) and strategic value. In his opinion, only high strategic consistency and strategic value contribute towards strategic intent. In all other cases (combinations), the resource utilization cannot lead to a long-term competitive advantage. What is relevant is how well the resources are managed and aligned with strategic intent. Montgomery (1985) reported that highly diversified firms do not possess strong market positions and that such companies tend to compete in less attractive markets when compared to firms with relatively low levels of diversification. This result is refuted entirely by Wilson (1992), who

concluded that diversification might augment market power and provide a strategic and tactical advantage to the firm.

Berger and Ofek (1995) computed that the enterprise value of diversified companies is about 13% to 15% lower than non-diversified firms. Campa and Kedia (2002) were not able to provide a clear answer on this topic. Based on their results, diversified firms displayed higher values than existing firms in their industry, but lower values than other firms in the industry that did not diversify. According to Hyland (2008), the size of the firm plays an important role in that context. Small-diversified firms tend to destroy firm value in the long run, whereas large firms can improve their value through diversification. Ferris, Sen, and Thu (2010) and Shyu and Chen (2009) reported in their studies that diversified firms exhibited reduced values, which is a similar observation by Berger and Ofek (1995). However, Colak (2010) found no evidence that diversification leads to changes in a firm's value. In his opinion, other factors such as poor performance, lack of innovation, an unfavorable industry or economic conditions are more suitable for explaining a firm's attempt to diversify.

Erdorf, Hartmann-Wendels, Heinrichs, and Matz (2013) reached the same conclusion in their review as was reached in this study. The critical comment was that there appears to be no clear answer regarding the benefits of diversification on a firm's value and that the discussions lead to controversial results. According to the highlighted results and the different outcomes of the selected studies, it can be concluded that the association between diversification, profitability, enterprise value and risk is not reliably founded, justifying further research attempts in order to increase the practical and scientific knowledge base in this area.

Markides and Williamson (1996) emphasized that exploitation is only possible when strategic assets are used which are valuable, rarely available, imperfectly tradable and difficult to imitate. Superior performance can therefore be generated by related diversification (Amit & Livnat, 1989; Schommer, Richter, & Karna, 2019; Turner, 2005; Wan, Hoskisson, Short, & Yiu, 2011) as it is a precursor for economies of scope (Hoskisson, 1987; Markides & Williamson, 1994). In the case of unrelated diversification, the transfer is much more difficult or almost impossible to bring about, because in many cases the relevant resource and capabilities are not available, meaning that they have to first be established before this type of diversification can be initiated. Dawley, Hoffman and Brockman (2003) and Ben-Zion and Shalit (1975) put forward the argument that it is not known which type of diversification (whether related or unrelated) should be used in order to best reduce business risk.

Hypotheses Development

The size of the firm appears to be a very significant variable in explaining the performance and the risk level of a company. Size can be seen as a measure of a company's past performance and as an indicator of its future performance and its risk level (Ben-Zion & Shalit, 1975). Based on Hamelin (2013), the firm-specific risk for small companies is higher when compared to bigger companies. This also explains why the probability of bankruptcy is relatively lower for bigger companies (Chava & Jarrow 2004; Lennox, 1999; Theodossiou, Kahya, Saidi, & Philippatos, 1996). Therefore, small companies require higher internal rates of return for investments in order to be compensated for this risk, which are rarely available in practice. This is why they tend to prefer withdrawing investments, taking into account that they generally obtain lower profitability. The reason for the differences in profitability can also be explained by the fact that bigger firms have the ability to adapt to new innovations as well as being able to create new innovations due to an excess of resources and capabilities (Jovanovic & MacDonald, 1994). They can also differentiate themselves from their competitors and this differentiation can itself reduce rivalry in an industry (Madrid-Guijarro, Garcia-Perez-de-Lema, & van Auken, 2011).

Profitability is a measure of management efficiency (Dambolena & Khoury, 1980) and managers may only work profitably when they can utilize company assets efficiently (Castaldo, 2007; Maruso & Weinzimmer, 1999; McIvor, 2005). Madrid-Guijarro et al. (2011) showed empirically that a significant positive correlation exists between resource-generating capacity and profitability. Pervan and Visic (2012) showed in their study that bigger companies exhibited higher profitability when compared to smaller ones. All of these results support the RBV view that increased resources and capacities (proxied by company size) lead to higher profitability. Based on this evidence, the following hypothesis was defined, which shall be tested for an Austrian case.

Hypothesis 1. Small firms have a significantly lower profitability when compared to medium-sized firms.

The discussion about diversification displayed controversial results concerning whether related or unrelated diversification may provide higher benefits for risk reduction and/or increases in profitability. Following the resource-based view, it is much more straightforward for a company to engage in related diversification, as this requires the use of resources and capabilities that have already been developed and obtained (Chen, Jiang, Wang, & Hsu, 2014).

This in turn means that without additional efforts, profits can be generated with higher efficiency, which in turn should be beneficial for profitability (Iacobucci & Rosa, 2005; Turner, 2005; Wan et al., 2011). Additionally, it must be considered that unique capabilities and resources can only be developed over time and according to the association between time (measured as a company's age) and the size of the firm (Jovanovic, 1982; Thornhill & Amit, 2003), diversification may only be valuable for medium-sized firms.

Hypothesis 2. For medium-sized firms, related diversification makes a significantly higher contribution to corporate performance when compared to unrelated diversification.

In accordance with the second hypothesis, a more general view was taken for the third hypothesis, which was split into two sub-hypotheses. Alesón and Escuer (2002) described that companies that are able to exploit their resources are in a position to generate additional income. Such exploitation is only then possible if a certain level of unique resources is available (Holder & Zhao, 2015). More specifically, diversification is only then possible if the firm possesses an excess capacity of resources (Peteraf, 1993). This does not appear to hold true for small firms. Murphy and Tocher (2017) pointed out that small firms are willing to diversify, but are unable to do so due to their small size. Under RBV, this small size may be associated with less resources and capabilities in order to pursue diversification attempts (Shields & Shelleman, 2015). Small companies trying to diversify despite a lack of resources and capabilities cannot do so efficiently, which negatively affects their profitability.

According to Madrid-Guijarro et al. (2011), profitability can be viewed as a measure of resource-generating capacity. Due to their size, medium-sized firms are more capable of exploiting resources and capabilities compared to small firms, meaning that they should be able to achieve higher profitability as a result (Lumpkin et al., 2010). Such a conclusion does not undermine the results of other studies (Doring & Gooderham 2008; Sandvig & Coakley 1998), where it was found that small firms could maneuver resources equally effectively compared to bigger firms. However, these results must not be seen as a divergence to RBV, because first, the size of small companies differs in practice, and second small firms will only diversify after they have first established a strong foundation in their primary line of business, so that they can effectively concentrate their efforts on diversification attempts (Robson, Gallagher, & Daly, 1993). If these findings are connected to the theoretical framework of the resource-based view, then only firms

with a certain size can increase profitability through the use of diversification.

Hypothesis 3a. Diversification has a significant positive effect on profitability for medium-sized firms.

Hypothesis 3b. Diversification has no significant effect on profitability for small firms.

Generally, a positive linear relation between company size, age and profitability can be assumed (Karadag, 2017; Serrasqueiro & Nunes, 2008). However, studies have found a non-linear relationship between profitability and certain control variables (Nunes, Serrasqueiro, & Leitao, 2010; Qian, Li, Li, & Qian, 2008; Vannoni, 2000). This means that to a certain extent, the relationship between the control variables and profitability is linear and turns into a non-linear relationship, meaning that profitability decreases with the increase of the control variables. McKee and Lensberg (2002) also confirmed the complex interrelation between liquidity, size and profitability. This complexity means that a simple linear relationship may not be assumed between company size, age and profitability.

A potential reason for a (negative) non-linear relationship between size and profitability may be explained by the fast growth of the company, which cannot be controlled by the manager accordingly. This therefore leads to a reduction in profitability (Glancey, 1998). There seem to be an optimal balance between growth and management capabilities. If these conditions are not present according to the previous statement, companies will experience diminished performance (Serrasqueiro & Nunes, 2008). The potential of utilizing economies of scale seems to be limited, meaning that there is an optimal level of diversification (Benito-Osorio, Colina, & Zuniga-Vicente, 2015). A similar problem can occur between age and profitability. Older firms can have established processes and procedures, which may not function efficiently anymore or have become obsolete, leading to them experiencing lower profitability (Glancey, 1998).

Based on these prior results, the following hypotheses were developed and shall be particularly tested for Austrian companies. Especially interesting in this context is that the hypotheses are tested for small and medium-sized firms separately and that the results can therefore be compared.

Hypothesis 4. There is a non-linear relationship between company size and profitability.

Hypothesis 5. There is a non-linear relationship between company age and profitability.

Method

Sample Selection and Variables

This study focused on small- and medium-sized companies in Austria as defined by the classification framework of the European Union (2003/361/EC). Over the three-year period in question, 619 observations were obtained for small companies and 476 observations for medium-sized companies. The distribution of the companies across industries and years can be found in Table 1. The data for the companies was derived from the Creditreform database and a firm was deemed to have entered the sample when all selected variables were available for the various years of observation (2013, 2014 and 2015).

The selected variables for the study are shown in Table 2. The variable INT_ASS measures the relationship between intangible assets and total assets and is based on the resource-based view that companies with a higher level of unique resources tend to benefit more from diversification than firms with less unique resources (Holder & Zhao, 2015; Serrasqueiro & Nunes, 2008). This appears to be a suitable variable, because strategy can be defined as the distribution of a firm´s resources and the distribution of its output, which is the case for diversification (Lecraw, 1984). The different tests for non-linearity were based on the findings in previous papers.

Method and Model Specification

Linear regressions were computed for hypotheses testing, where the variable ROA (EBITDA to total assets) was used as the dependent variable. Regression analysis was beneficial in the context of this research as it can deliver constant changes for the dependent variable, when the independent variables change (Allen, 1997; Greene, 2003). Additionally, it is possible to integrate non-linear independent variables, thereby allowing for an increasing or decreasing effect by the independent variables on the dependent variable (Kahane, 2008), which seems necessary within this study due to the assumption of the non-linear behavior of age and size in relation to performance. The aim was to detect which independent variables are significant for explaining corporate profitability and the role played by diversification in this context. In total, twelve models were computed in three separate versions: for all firms together, for small firms only and finally for medium-sized firms only. The results were tested for robustness and for this purpose, the regressions were repeated using EBIT to total assets as the dependent variable.

As a second method, tests for differences based on the

Table 1
Sample description

Industry	2013			2014			2015		
	Small Firms	**Medium-Sized Firms**	**IND-RISK**	**Small Firms**	**Medium-Sized Firms**	**IND-RISK**	**Small Firms**	**Medium-Sized Firms**	**IND-RISK**
A	3	1	-	2	1	+	1	1	+
B, C	55	55	+	16	18	+	17	19	+
D, E	7	7	+	5	4	-	3	5	+
F	36	21	-	27	11	-	21	12	-
G	92	73	-	34	39	+	26	30	+
H	29	12	-	9	8	+	9	6	+
I	5	17	+	5	4	+	4	6	+
J	17	9	+	10	7	+	10	6	+
L	13	5	+	7	3	+	10	2	+
M, N	66	28	+	32	18	+	24	19	+
P, Q	7	8	+	3	4	+	2	5	+
R, S	7	6	-	1	3	+	4	3	-
Total	**337**	**242**		**151**	**120**		**131**	**114**	

The industry classes were based on the Austrian ÖNACE 2008 codes: A = Agriculture, Forestry & Fishing, B = Mining & Quarrying, C = Manufacturing, D = Electricity, Gas, Steam & Air Condition Supply, E = Water Supply, Sewerage, Waste Management & Remediation Activities, F = Construction, G = Wholesale & Retail Trade & Repair of Motor Vehicles & Motorcycles , H = Transporting & Storage, I = Accommodation & Food Service Activities , J = Information & Communication, L = Real Estate Activities, M = Professional, Scientific & Technical Activities, N = Administrative & Support Service Activities, P = Education, Q = Human Health & Social Work Activities, R = Arts, Entertainment & Recreation, S = Other Services Activities. The figures show the numbers of companies that were taken into the sample per observation year. For the variable IND_RISK a "+" or ("-") denotes that the respective industry contributed to an increase (decrease) in GDP for the respective year and therefore displays a lower (or higher) risk (Altman, Brady, Resti, & Sironi, 2008).

U-test were computed in order to detect statistically significant differences for the selected variables between the two types of firms. This was applied in order to determine the differences between firms engaging in different types of diversification. The U-test is a non-parametric approach, which should be applied when non-normally distributed data are present (Ho, 2006). Finally, correlation analyses were computed in order to prove multi-collinearity and to recognize associations and detect significant relationships between the selected variables.

The following equation displays the basic model of linear regression for this study and is then extended by the different variables presented in Table 2. The variables for each relevant year (2013, 2014 and 2015) had been modelled as dummy variables, in order to control for year-specific effects (Kahane, 2008).

$$\text{Model I} = \alpha_1 + \beta_1 \cdot AGE + \beta_2 \cdot SIZE + \beta_3 \cdot LEV + \beta_4 \cdot INT\_TA + \beta_5 \cdot IND\_RISK + \beta_6 \cdot UNREL\_DIV + \beta_7 \cdot REL\_DIV + \beta_8 \cdot DIV + \beta_9 \cdot YEAR = 2013 + \beta_{10} \cdot YEAR = 2014 + \beta_{11} \cdot YEAR = 2015$$

(1)

Based on Everett and Watson (1998), there are three types of risk a company may face in its business activities. Each of these three risks are captured by the respective variables within this study. The first risk is the economy-based risk, which describes the risk associated with the economy in which the company is located. The second risk is the industry-based risk, which refers to the riskiness of the industry in which the company operates. Finally, firm-based risk describes the risk that the individual business itself will fail. The variable IND_RISK is a proxy for the insolvency rate of the industry as proposed by Altman et al. (2008) and can therefore be seen as an indicator of both industry-based risk as well as economy-based risk (Everett & Watson, 1998). Chang and Thomas (1989) used a similar variable in order to describe the riskiness of the industry in which the firm is operating. LEV may be seen as a measure of individual risk according to the concepts of financial theory and explicitly here in the trade-off theory of finance. It is a variable, which can be used to determine the default risk of a firm (Almeida & Philippon, 2007; Hopwood & Schaefer, 1988; Ro, Zavgren, & Hsieh, 1992).

Table 1a
Results of regression analyses – Robustness check

Variables	Model I			Model II			Model III			Model IV
	All	**Small**	**Medium**	**All**	**Small**	**Medium**	**All**	**Small**	**Medium**	**All**
AGE	0.000	-0.009	0.000	0.032	0.033	0.026	0.032	0.038	0.029	0.034
	(0.031)	(-0.602)	(0.054)	(1.503)	(0.990)	(1.677)	(1.306)	(1.054)	(1.388)	(1.398)
SIZE	0.031***	0.059***	-0.008	0.555***	0.871***	1.150	0.546***	0.893***	0.613	0.617***
	(6.043)	(6.171)	(-0.680)	(9.850)	(7.850)	(1.104)	(9.259)	(7.606)	(0.594)	(8.479)
LEV	-0.237***	-0.345***	-0.057***	-0.265***	-0.355***	-0.057***	-0.274***	-0.371***	-0.054***	-0.269***
	(-9.723)	(-9.228)	(-3.190)	(-11.198)	(-9.873)	(-3.232)	(-11.317)	(-10.076)	(-3.095)	(-11.028)
INT_TA	0.054	0.220	-0.124*	0.010	-0.010	-0.125**	0.010	-0.030	-0.116*	0.001
	(0.466)	(1.033)	(-1.991)	(0.091)	(-0.047)	(-1.996)	(0.090)	(-0.145)	(-1.875)	(0.007)
IND_RISK	-0.028	-0.033	-0.010	-0.017	-0.021	-0.012	-0.016	-0.021	-0.009	-0.017
	(-1.458)	(-1.043)	(-0.855)	(-0.925)	(-0.704)	(-1.020)	(-0.846)	(-0.680)	(-0.751)	(-0.870)
UNREL_DIV	-0.010	-0.025	-0.003	-0.001	0.011	0.014	0.031	0.125	0.078	0.043
	(-0.448)	(-0.656)	(-0.223)	(-0.058)	(0.296)	(1.085)	(0.373)	(0.920)	(1.210)	(0.514)
REL_DIV	-0.014	-0.032	-0.019	-0.021	-0.006	0.000	0.011	0.105	0.070	0.024
	(-0.697)	(-0.942)	(-1.523)	(-1.062)	(-0.170)	(.)	(0.125)	(0.742)	(1.060)	(0.279)
DIV	0.000	0.000	0.000	0.000	0.000	-0.018	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)	(-1.470)	(.)	(.)	(.)	(.)
YEAR=2013	0.000	0.000	0.000	0.000	0.000	0.000	0.007	0.000	0.009	0.000
	(.)	(.)	(.)	(.)	(.)	(.)	(0.318)	(.)	(0.633)	(.)
YEAR=2014	0.000	0.024	-0.013	0.000	-0.004	-0.014	0.000	-0.011	0.000	-0.008
	(0.001)	(0.666)	(-1.033)	(0.005)	(-0.123)	(-1.059)	(.)	(-0.295)	(.)	(-0.361)
YEAR=2015	0.019	0.054	-0.009	0.019	0.025	-0.008	0.019	0.019	0.006	0.011
	(0.848)	(1.447)	(-0.654)	(0.873)	(0.693)	(-0.629)	(0.819)	(0.514)	(0.471)	(0.486)
AGE²				-0.007*	-0.006	-0.005*	-0.005	-0.003	-0.004	-0.004*
				(-1.784)	(-0.873)	(-1.796)	(-0.980)	(-0.418)	(-0.906)	(-0.938)
SIZE²				-0.019***	-0.031***	-0.034	-0.018***	-0.032***	-0.018	-0.021***
				(-9.354)	(-7.352)	(-1.111)	(-8.844)	(-7.195)	(-0.601)	-(7.878)
DIV_AGE							-0.027	-0.034	-0.018	-0.029*
							(-1.596)	(-1.294)	(-1.416)	(-1.693)
DIV_SIZE							0.003	-0.001	-0.002	0.003
							(0.622)	(-0.133)	(-0.573)	(0.550)
COMP_CLASS										0.049*
										(1.663)
Constant	-0.260***	-0.538***	0.254	-3.874***	-5.809***	-9.503	-3.802***	-5.948***	-5.040	-4.235***
	(-3.456)	(-4.354)	(1.243)	(-9.935)	(-8.031)	(-1.086)	(-9.327)	(-7.722)	(-0.583)	(-8.723)
*R*²	0.116	0.166	0.044	0.186	0.236	0.053	0.180	0.236	0.052	0.182
adj. *R*²	0.109	0.154	0.026	0.178	0.222	0.030	0.170	0.219	0.025	0.172
F-statistic	15.816***	13.467***	2.390**	22.486***	17.056***	2.356***	17.746***	13.867***	1.917**	16.704***
Durbin-Watson-Statistic	2.038	1.988	1.979	2.037	2.037	1.970	2.030	2.043	1.949	2.039
Number of obs.	1,095	619	476	1,095	619	476	1,063	599	464	1,063

The table shows the regression results for the different models. As dependent variable EBIT_TA (profitability based on EBIT) was used. The F-statistics were used to test the null-hypothesis that there is no linear relationship between the predictors and the dependent variable (Ho, 2006, p. 258). As in all cases, the F-statistics showed statistical significance, the null-hypotheses could be rejected. The values in brackets denote the values from t-statistics. The values of Durbin-Watson-statistics are all close to the value of two, so that no serial correlation and independence of error terms is given (Ho, 2006, p. 248). In model IV the variable COMP_CLASS was added, which is a dummy variable containing the value of zero for small firms and one for medium sized firms. Significance level: *$p < .10$ **$p < .05$ ***$p < .01$

Table 2
Variables of the study

Variable Type	Variable Code	Variable Name	Computation
Dependent Variables	ROA	Return on Assets	EBITDA/Total Assets
Control Variables	AGE	Age of the firm	ln(age of the firm)
	SIZE	Size of the firm	ln(total assets)
Independent Variables	LEV	Leverage	Total Debt/Total Assets
	INT_ASS	Intangible Assets	Intangible Assets/Total Assets
	REL_DIV	Related Diversification	0 = If the company is not displaying related diversification; 1 = otherwise
	UNREL_DIV	Unrelated Diversification	0 = If the company is not displaying unrelated diversification; 1 = otherwise
	DIV	Diversification Type	0 = If the company is not diversified; 1 = if the company is diversified
Interaction Variables	DIV_TYPE x AGE	Interaction Between Diversification & Age	Variable DIV multiplied by the age of the firm
	DIV_TYPE x SIZE	Interaction Between Diversification & Size	Variable DIV multiplied by the size of the firm
Non-Linear Variables	AGE²	Square of AGE	$(\ln(\text{age of the firm}))^2$
	SIZE²	Square of SIZE	$(\ln(\text{total assets}))^2$
Macroeconomic Variables	IND_RISK	Industry Risk	0 = If the industry of the firm provided a negative contribution to the gross value added of the economy; 1 = otherwise

Results and Findings

Preliminary Analyses

The first analysis displays the descriptive statistics for the observations, differentiated into small companies and medium-sized companies as well as in total. The results are visible in Table 3. None of the variables indicated normal distribution (all p-values below 0.01; not reported here in detail). A first test was carried out to ascertain whether there are differences in the variables of the study between small- and medium-sized firms. The results can be seen in Table 4.

The data does not support the assumption that medium-sized companies have significantly higher profitability. Instead, the median-values provide evidence that small firms will have higher profitability, regardless of whether it is measured with EBIT or EBITDA. Therefore, the first research hypothesis of this study must be rejected. Statistically significant differences between the two types of companies can be found for the variables age (AGE), leverage (TD_TA) and intangible assets (INT_TA). Medium-sized firms are generally older in age, have a lower leverage and use more intangible assets. Concerning risk, (LEV) the results

provide evidence that specific risk is higher for small firms when compared to medium-sized firms, which is in congruence with the reported results of Hamelin (2013) and Herranz, Krasa, and Villamil (2015). Regarding the variables measuring diversification, UNREL_DIV and DIV were statistically significant. In both cases, the mean rank sums (not reported here in detail) are higher for medium-sized firms, providing evidence that this type of firm tends to diversify their businesses when compared to small firms (Robson et al., 1993). This would arguably support the RBV, because such companies tend to possess the required resources and capabilities to allow them to engage in diversification.

The correlation analysis (Table 5) indicated some statistically significant correlations, which are mostly on a low level. Based on the data, no evidence of multi-collinearity can be found as the correlations are below 0.8 (Hill, Griffiths, & Judge, 2001), meaning that a proper application of linear regression can be assumed (Ho, 2006). There is a positively significant relationship between a firm's size and its age. This aspect is in congruence with Jovanovic (1982), who stated that firms could only grow over time and this satisfactorily explains why medium-sized firms tend to be older than smaller ones. Ben-Zion and Shalit (1975) pointed out that company size is a measure not only for past but also

Table 3
Descriptive statistics

Variable	All firms (n = 1,095)			Small firms (n = 619)			Medium-sized firms (n = 476)		
	Mean	Median	Std.-Dev.	Mean	Median	Std.-Dev.	Mean	Median	Std-Dev.
EBITDA_TA	0.085	0.083	0.295	0.073	0.091	0.379	0.102	0.079	0.115
EBIT_TA	0.036	0.042	0.292	0.021	0.044	0.375	0.056	0.038	0.109
AGE	2.848	2.906	1.062	2.706	2.786	1.137	3.032	3.111	0.927
SIZE	15.390	15.892	1.798	14.354	15.149	1.766	16.737	16.698	0.409
LEV	0.673	0.683	0.345	0.710	0.714	0.379	0.624	0.652	0.287
INT_TA	0.021	0.001	0.072	0.019	0.000	0.066	0.024	0.002	0.080
UNREL_DIV	0.223	0.000	0.416	0.192	0.000	0.394	0.263	0.000	0.441
REL_DIV	0.314	0.000	0.464	0.315	0.000	0.465	0.313	0.000	0.464
DIV	0.537	1.000	0.499	0.507	1.000	0.500	0.576	1.000	0.495

Table 4
Test for differences

Variable	Small firms (n = 619)		Medium-sized firms (n = 476)		Results from U-test	
	Mean	Median	Mean	Median	Z	p-value
EBITDA_TA	0.073	0.091	0.102	0.079	-0.546	0.585
EBIT_TA	0.021	0.044	0.056	0.038	-0.468	0.640
AGE	2.706	2.786	3.032	3.111	-4.681	0.000**
LEV	0.710	0.714	0.624	0.652	-3.696	0.000**
INT_TA	0.019	0.000	0.024	0.002	-5.432	0.000**
UNREL_DIV	0.192	0.000	0.263	0.000	-2.772	0.006**
REL_DIV	0.315	0.000	0.313	0.000	-0.071	0.944
DIV	0.507	1.000	0.576	1.000	-2.248	0.025*

Due to non-normally distributed data, the differences in values were computed based on the U-test as recommended by Ho (2006). Significance level: *$p < .05$ **$p < .01$

for future performance. As time progresses, they should therefore exhibit higher profitability, which was shown to be the case in Pervan and Visic (2012).

However, this result is not supported by this study due to the insignificant differences in the profitability ratios between the two types of firms based on Table 4. The correlations between age and leverage (used as a proxy for firm-specific risk based on (Almeida & Philippon, 2007; Hopwood & Schaefer, 1988; Ro, Zavgren, & Hsieh, 1992) for medium-sized firms is negative and significant, indicating that older firms carry less risk. This finding is in congruence with Jovanovic (1982), Jovanovic and MacDonald (1984) and Bates (1990). The effect of diversification on leverage was not found to be significant. A closer inspection

Table 5
Correlation analyses

	EBITDA_TA	AGE	SIZE	LEV	INT_TA	UNREL_DIV	REL_DIV	DIV
All firms (n = 1,095)								
EBITDA_TA	1							
AGE	,126**	1						
SIZE	,174**	,393**	1					
LEV	-,267**	-,127**	-0,009	1				
INT_TA	0,058	-0,043	0,012	0,025	1			
UNREL_DIV	0,039	0,016	,104**	0,013	,067*	1		
REL_DIV	0,026	,213**	,152**	-0,044	-,069*	-,362**	1	
DIV	0,057	,211**	,228**	-0,030	-0,008	,497**	,628**	1
Small firms (n = 619)								
EBITDA_TA	1							
AGE	,147**	1						
SIZE	,204**	,479**	1					
LEV	-,300**	-0,073	,105**	1				
INT_TA	0,064	-0,009	-0,021	-0,018	1			
UNREL_DIV	0,028	-0,021	,084*	0,022	,094*	1		
REL_DIV	0,054	,199**	,279**	-0,020	-0,057	-,331**	1	
DIV	0,072	,168**	,325**	-0,001	0,021	,481**	,668**	1
Medium-sized firms (n = 476)								
EBITDA_TA	1							
AGE	0,028	1						
SIZE	-0,072	,096*	1					
LEV	-,150**	-,189**	,097*	1				
INT_TA	0,075	-,102*	0,010	,099*	1			
UNREL_DIV	,090*	0,038	0,043	0,027	0,038	1		
REL_DIV	-0,073	,245**	-0,018	-0,087	-0,082	-,403**	1	
DIV	0,012	,264**	0,021	-0,058	-0,044	,512**	,580**	1

The correlations were computed firstly for all firms together, then for small firms and finally for medium-sized firms. Significance level: $*p < .05$ $**p < .01$

of firms, which are differentiated between different types of diversifiers (Table 6), provides a more profound conclusion. Related diversified medium size companies exhibited a significantly lower leverage when compared to non-diversified companies (La Rocca, La Rocca, Gerace, & Smark, 2009), indicating that diversification can lead to a decrease in company-specific risk. However, non-diversified companies are not riskier than unrelated diversifiers. Therefore, it can be concluded that the type of diversification does indeed matter when considering the extent to which firm-specific risk can be reduced, which is a result that differs with the findings of Bettis and Hall (1982) and Chang and Thomas (1989). However, the comparison to the first named study

must be made with caution, because they used the standard deviation of ROA as a proxy for risk instead of leverage.

Regression Results

The regression results can be found in Table 7. Leverage (TD_TA) is the most important variable to explain a company´s profitability throughout all computations. In all cases, a negative sign was obtained for this variable, indicating that companies with lower leverage are more likely to achieve higher profitability. This result is in congruence with several other studies such as Frank and Goyal (2009), Myers (2001), Myers (1993) and Psillaki and Daskalakis

(2009). Therefore, for the purposes of this study, its relevance as an aspect which does not support the validity of static-trade off theory in finance (companies with higher profitability exhibit lower leverage ratios) is confirmed (similarly to Cai & Ghosh, 2003; Drobetz & Wanzenried, 2006; Titman & Wessels, 1988).

The selected variables of this study are more relevant for explaining the profitability of small firms, which is visible in the higher R^2-values. For medium-sized firms, it seems that there are other variables which are of interest in order for the regression models to achieve a higher explanatory power. The size of the firm is only seen as being a significant variable to explain profitability for small firms and here, a positive sign can be observed. This indicates that higher profitability can be reached through an increased firm size. This behavior cannot be detected for medium-sized firms. Additionally, the squared size exhibited a negative and statistically significant value, thus indicating that the relationship between size and profitability is non-linear in nature. The negative sign provides evidence that at a certain threshold of size for small firms, profitability decreases again. Such a finding is not observable for medium-sized firms at all (the sign of SIZE^2 is negative, but the value is statistically insignificant). This result is very similar to the empirical evidence reported by Serrasqueiro and Nunes (2008). They argue that as the size of a small company increases, the performance increases, however the increase occurs at a decreasing rate.

For medium-sized firms, age (model II) is a statistically significant variable to explain profitability. Profitability generally increases with company age, but the squared age variable showed a negative sign, thus indicating that the relationship is non-linear in nature. There is also a certain point in the age of a medium-sized firm where profitability decreases again (Glancey, 1998). The variable INT/TA is statistically significant and shows a positive sign for the base model. The availability of intangible resources seems beneficial for increasing profitability, which is in congruence to the assumptions of the RBV (Serrasqueiro & Nunes, 2008)

However, when the variables of diversification were entered into the regression functions (models II and III) the view then changed. In these cases, the variable INT/TA only displayed statistically significant values for medium-sized firms and remained without importance for small firms. This result is in congruence with the expectations of RBV, namely that for companies with a certain size, the ability to use capabilities and resources from profit-generation is higher and therefore the relation between profitability, intangible assets and diversification (measured in different terms) is a given (Degryse, de Goeij, & Kappert, 2012; Holder & Zhao,

2015). The results provide evidence that a higher proportion of intangible assets is a trigger or pre-condition for diversification (Chatterjee & Wernerfelt, 1991; Miller, 2006).

The variable IND_RISK was not significant in any of the computed models, meaning that there is no evidence that the performance of the industry in which the firm operates or the respective risk of that industry has an impact on the profitability of a single firm. Therefore, the assumption of industry-dependence of companies on profitability cannot be supported by this study. The findings are broadly in congruence with Spanos, Zaralis, and Lioukas (2004), who concluded that success is more dependent on firm-level conditions than on industry conditions.

The variables taken as proxies for diversification were only relevant for explaining the profitability of medium-sized firms. Here, the variable UNREL_DIV had explanatory power (model II), whereas the variables DIV and REL_DIV can be totally ignored in this context and seems unsuitable for modelling purposes. Generally, diversification is not a relevant variable to explain profitability of small and medium-sized firm, which is also visible in the robustness test exhibited in Table 1a. When profitability was defined as EBIT_TA none of the variables measuring diversification was significant in any of the computed models. This result is in congruence with the findings of Dubofsky and Varadarajan (1987) and Everett and Watson (1998). A reflection on the resource-based view indicates that this result is in contrast to the expectations, because it is normally assumed that under this view, related diversification should lead to higher profitability, as companies can make use of their pre-developed and available capabilities and resources (Chen et al., 2014).

Finally, the interaction terms were all insignificant. The decision to diversify is therefore not coupled with a firm´s size or age. Further investigations concerning this aspect are visible in Table 6. Here, the medium-sized firms were divided into related diversifiers, unrelated diversifiers and non-diversified. The results support the findings from regression analysis, namely that unrelated diversifiers can achieve higher profitability (measured in terms of EBITDA) when compared to related diversifiers as well as to non-diversified, which is in contrast to the findings of Bettis and Hall (1982).

There is no evidence that there is a significant difference in profitability between the three types of firms, when profitability is measured in terms of EBIT. In this case, none of the variables measuring diversification showed statistical significance (see Table 1a), meaning that similar results to those of Bettis and Hall (1982) were found.

This check for robustness (Table 1a) of the previous analysis reveals that the definition of profitability as a de-

pendent variable substantially affects the estimation results. Independently of the chosen profitability measure, both the non-linear behavior in size for small firms and the non-linear behavior in age for medium-sized firms remain. The final behavior may be explained by the findings of Table 6,

as there are statistically significant differences in age for all three types of diversifiers. Non-diversified firms are younger than unrelated diversified firms, whereas related diversified firms tend to be the oldest firms. The same is valid for the variable IND_RISK, which is also not significant

Table 6
Analyses for different types of diversification

	Medium-sized firms (n = 476)								
	Descriptive Statistics						**Tests for Differences**		
	Non-Diversified (n = 202)		**Unrelated Diversifiers (n = 149)**		**Related Diversifiers (n = 125)**		**Non-Diversified vs. Unrelated**	**Non-Diversified vs. Related**	**Related vs. Unrelated**
Variable	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**	**p-value**	**p-value**	**p-value**
EBITDA_TA	0.100	0.077	0.119	0.104	0.089	0.072	0.043*	0.565	0.006**
EBIT_TA	0.060	0.043	0.059	0.038	0.049	0.036	0.823	0.478	0.851
AGE	2.747	2.743	3.090	3.147	3.368	3.421	0.000**	0.000**	0.006**
SIZE	16.727	16.682	16.767	16.753	16.726	16.685	0.289	0.969	0.311
LEV	0.643	0.697	0.637	0.648	0.587	0.628	0.435	0.021*	0.269
INT_TA	0.028	0.002	0.029	0.002	0.014	0.002	0.333	0.609	0.146
	Small Firms (n = 619)								
	Descriptive Statistics						**Tests for Differences**		
	Non-Diversified (n = 305)		**Unrelated Diversifiers (n = 119)**		**Related Diversifiers (n = 195)**		**Non-Diversified vs. Unrelated**	**Non-Diversified vs. Related**	**Related vs. Unrelated**
Variable	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**	**p-value**	**p-value**	**p-value**
EBITDA_TA	0,045	0,071	0,095	0,116	0,103	0,104	0,007**	0,005**	0,545
EBIT_TA	0,002	0,039	0,023	0,052	0,049	0,051	0,158	0,069	0,963
AGE	2,512	2,665	2,657	2,541	3,038	3,129	0,284	0,000**	0,007**
SIZE	13,771	14,315	14,657	15,410	15,081	15,500	0,000**	0,000**	0,150
LEV	0,710	0,724	0,727	0,715	0,699	0,705	0,814	0,456	0,334
INT_TA	0,018	0,000	0,032	0,001	0,014	0,002	0,006**	0,000**	0,039*

The firms were categorized into related and unrelated diversifiers as well as non-diversified. This was one in order to detect potential statically significant differences between the three types of diversifiers.
A U-test was applied due to non-normally distributed data.
Significance level: *$p < .05$ **$p < .01$

Table 7
Results of regression analyses

Variables	Model I			Model II			Model III			Model IV
	All	**Small**	**Medium**	**All**	**Small**	**Medium**	**All**	**Small**	**Medium**	**All**
AGE	0.009	0.005	0.003	0.047**	0.048	0.038**	0.045*	0.053	0.033	0.047*
	(1.039)	(0.339)	(0.486)	(2.157)	(1.436)	(2.327)	(1.820)	(1.438)	(1.528)	(1.905)
SIZE	0.026***	0.051***	-0.017	0.545***	0.851***	1.148	0.531***	0.866***	0.730	0.598***
	(4.962)	(5.327)	(-1.303)	(9.480)	(7.513)	(1.055)	(8.844)	(7.229)	(0.675)	(8.075)
LEV	-0.227***	-0.328***	-0.062***	-0.254***	-0.338***	-0.063***	-0.264***	-0.355***	-0.061***	-0.259***
	(-9.140)	(-8.623)	(-3.314)	(-10.537)	(-9.202)	(-3.384)	(-10.738)	(-9.467)	(-3.337)	(-10.466)
INT_TA	0.265**	0.387*	0.122*	0.221*	0.159	0.123*	0.217*	0.133	0.133**	0.209*
	(2.247)	(1.781)	(1.866)	(1.945)	(0.754)	(1.885)	(1.896)	(0.625)	(2.058)	(1.817)
IND_RISK	-0.024	-0.032	-0.001	-0.014	-0.020	-0.003	-0.013	-0.020	0.000	-0.013
	(-1.240)	(-0.987)	(-0.059)	(-0.7189)	(-0.658)	(-0.240)	(-0.656)	(-0.633)	(0.013)	(-0.677)
UNREL_DIV	0.014	0.005	0.017	0.023	0.041	0.031**	0.042	0.137	0.059	0.054
	(0.626)	(0.124)	(1.315)	(1.072)	(1.075)	(2.212)	(0.498)	(0.986)	(0.867)	(0.629)
REL_DIV	-0.006	-0.019	-0.015	-0.012	0.008	0.000	0.005	0.099	0.033	0.018
	(-0.314)	(-0.540)	(-1.187)	(-0.623)	(0.230)	(.)	(0.058)	(0.683)	(0.470)	(0.202)
DIV	0.000	0.000	0.000	0.000	0.000	-0.014	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)	(-1.111)	(.)	(.)	(.)	(.)
YEAR=2013	0.000	0.000	0.000	0.000	0.000	0.000	0.007	0.000	0.009	0.000
	(.)	(.)	(.)	(.)	(.)	(.)	(0.295)	(.)	(0.626)	(.)
YEAR=2014	0.003	0.026	-0.010	0.003	-0.002	-0.011	0.000	-0.012	0.000	-0.007
	(0.133)	(0.717)	(-0.730)	(0.131)	(-0.047)	(-0.779)	(.)	(-0.322)	(.)	(-0.335)
YEAR=2015	0.024	0.058	-0.005	0.023	0.030	-0.004	0.021	0.020	0.006	0.013
	(1.047)	(1.539)	(-0.351)	(1.072)	(0.810)	(-0.327)	(0.886)	(0.527)	(0.443)	(0.581)
AGE²				-0.008**	-0.006	-0.007**	-0.005	-0.003	-0.004	-0.005
				(-2.040)	(-0.935)	(-2.322)	(-1.167)	(-0.454)	(-0.997)	(-1.128)
SIZE²				-0.018***	-0.030***	-0.035	-0.018***	-0.031***	-0.022	-0.021***
				(-9.083)	(-7.088)	(-1.070)	(-8.537)	(-6.896)	(-0.691)	(-7.568)
DIV_AGE							-0.027	-0.034	-0.018	-0.028
							(-1.543)	(-1.288)	(-1.327)	(-1.633)
DIV_SIZE							0.004	0.000	0.001	0.004
							(0.776)	(0.024)	(0.225)	(0.708)
COMP_CLASS										0.047
										(1.550)
Constant	-0.182**	-0.448***	0.415*	-3.762***	-5.637***	-9.412	-3.647***	-5.713***	-5.917	-4.057***
	(-2.373)	(-3.557)	(1.942)	(-9.468)	(-7.634)	(-1.030)	(-8.787)	(-7.273)	(-0.652)	(-8.208)
R²	0.108	0.155	0.047	0.176	0.221	0.060	0.170	0.220	0.059	0.172
adj. R²	0.101	0.142	0.029	0.168	0.207	0.037	0.159	0.203	0.032	0.160
F-statistic	14.590***	12.376***	2.551***	21.011***	15.688***	2.682***	16.482***	12.691***	2.176**	15.497***
Durbin-Watson Statistic	2.018	1.964	2.018	2.020	2.014	2.010	2.026	2.033	2.025	2.034
Number of obs.	1,095	619	476	1,095	619	476	1,063	599	464	1,063

Dependent variable EBITDA_TA (profitability based on EBITDA) was used.
The F-statistics was used to test the null-hypothesis that there is no linear relationship between the predictors and the dependent variable (Ho, 2006). As in all cases the F-statistics showed statistical significance, the null-hypotheses could be rejected.
Values in brackets denote the values from t-statistics.
The values of Durbin-Watson Statistics are all close to the value of two, so that no serial correlation and independence of error terms is given (Ho, 2006).
In model IV, the variable COMP_CLASS was added, which is a dummy variable containing the value of zero for small firms and one for medium sized firms.
Significance level: $*p < .10$ $**p < .05$ $***p < .01$

when using EBIT_TA as a dependent variable. Leverage (TD_TA) was also detected as the most important variable for explaining profitability (measured in terms of EBIT).

Discussion and Implications

The results of the study indicate that growth in size is not always beneficial for profitability. Even managers of small firms can obtain higher profitability compared to medium-sized companies. Potential explanations could include the possession of a certain uniqueness of product or service, the quality of a product or service, location, know-how and pricing (Ibrahim, 1993). If they exceed a certain size (indicated by the negative sign of the statistically significant variable SIZE^2), then they decrease their profitability again. This could be explained by the fact they are on the verge to be classified as medium-sized firms and this step seems to demand for additional investments, which is affecting profitability. It could also be associated with growth attempts not being realized efficiently (Denis, Denis, & Yost, 2002).

In that stage, diversification (related or unrelated) may not be a potential measure to improve profitability, which is congruence with the studies of El Mehdi and Seboui (2011), Everett and Watson (1998), Goll and Sambharya (1995) and Paul (1986). It is therefore from a managerial perspective not to diversify to increase profitability and to reach an optimal risk-return level (Bausch & Pils, 2009; Bettis & Mahajan, 1985).

This occurrence may be explained by the assumptions of Amit and Livnat (1989), McDougall and Round (1984), and Porter (1987), who emphasized that diversification adds costs and constraints to business units. However, one should keep in mind that diversification strategy might be helpful to reduce firm-specific risk. Grounded on Table 6 it is observable that LEV in median is lower for diversified companies compared to non-diversified ones, but not at a significant level, (only for medium-sized firms related diversification leads to lower risk compared to non-diversified ones). Aaker and Jacobson (1987) postulated that companies with higher risk should provide higher returns. It was not able to prove that assumption in this study.

Concerning the hypotheses of this study H1, H2 and H3a must be rejected based on the given results, which are not in congruence with the expectations of RBV. Smaller firms do not exhibit lower profitability when compared to medium-sized firms, indicating that operational efficiency in resource utilization is a key factor in explaining this result (Deb, 2009; Grant, 1996). According to Doring and Gooderham (2008) and Sandvig and Coakley (1998), small firms can exploit their resources equally effectively when compared to bigger firms. Using EBITDA, unrelated medium-size diversifiers exhibited higher profitability when compared to related diversifiers, which is an observation that is not in congruence with the theoretical expectations (Chen et al., 2014). In the case of EBIT, no significant differences in profitability were visible among the different types of diversification.

Hypotheses H3b, H4 and H5 could not be rejected. Diversification was not observed to significantly influence the profitability of small firms, which is a result in contrast with some studies, which indicated that small companies could not optimally exploit the effects of diversification, leading to a negative impact on profitability (Lumpkin et al. 2010; Murphy & Tocher, 2017; Shields & Shelleman, 2015). A non-linear behavior was found to exist between size^2 and profitability (for small firms) and age^2 and profitability (for medium-sized firms), supporting prior results that there is an optimal balance between performance, managerial skills in exploiting resources and corporate growth (Glancey, 1998; Serrasqueiro & Nunes, 2008).

Therefore, even if RBV may be a promising paradigm to explain diversification strategies of companies (Hauschild & zu Knyphausen-Aufseß, 2013), there are only some results in congruence with the predictions. The critique of Montgomery (1994) that RBV does not provide an optimal amount of diversification, where its net present value is zero seems to be true. The results also support the statement of Wan et al. (2011) that RBV should be combined with other theoretical perspectives in order to achieve a reliable explanatory framework.

This is the first known study conducted for Austrian companies in this field using the research design of a comparison between small and medium-sized firms. For company managers and owners in Austria, the results indicate some relevant practical implications. Generally, for small companies, achieving a growth in size (i.e. to be classified as medium-sized) is not a strategy to pursue in order to achieve higher profitability, but it can lead to lower risk. If this is the aim, then they will experience a decrease in profitability during their growth period due to the non-linear behavior between size and profitability. This means that reaching the next level in size is costly and may result in a non-optimal usage of existing resources and capabilities. For small firms, engaging in diversification, independently of the type, leads to higher profitability (in mean and median – even if only partially significant based on the calculations), which is not generally true for medium-sized firms. According to the results, managers and owners can estimate how strategic decisions may be affected regarding growth and diversification.

Limitations

Without doubt, the results of this study are not without their limitations. Even allowing for the fact that 1,095 observations have been used for a three-year period, the selection of samples is always a problem in statistics. The sample size is high when compared to other studies, but there is the general view that with a higher sample size, the quality of the results improves and may be much more accurate in replicating the behavior of the whole population. The measured R^2 are quite low for the regression functions, indicating that a high proportion of variances remain unexplained. On the one side, this may be reasoned by the non-inclusion of other potential independent variables, which are able to explain the performance of companies. On the other side, it must be considered that the chosen variables were all non-normally distributed, which may affect the estimation procedure for the regression functions. Nevertheless, the results of the study revealed some interesting aspects, which are of value for practical application, when considering the implementation of a diversification strategy in small and medium-sized firms in Austria.

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