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Corporate Diversification and Interest Rate Shocks

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Abstract

This paper explores how the diversification value varies with the financial constraints originated by interest rate shocks, finding that diversification can be used to hedge against them in the short run. Diversification has become increasingly relevant since the 2000s, as firms' short-term debt increased, exposing themselves to rollover and debt-overhang risks. However, aimlessly engaging in diversification for this purpose is not efficient, as when diversification intensity rises, companies lose the edge provided to combat these shocks. Although this protection is not dependent on the diversification type, related diversification has become more efficient for this aim in the short and medium terms.

Keywords

Corporate Finance, Corporate Diversification, Diversification Discount, Monetary Policy, Interest Rate Shocks

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Section 1: Introduction

Despite the diversification status being a prominent differentiation factor between companies, the literature on corporate diversification has failed to reach a consensus regarding whether it is value-accretive, value-destructive, or if it is dependent on the macroeconomic conjuncture. Nevertheless, it emphasizes diversified firms' potential advantage in managing unexpected shocks through the co-insurance effect of cash flows and internal capital markets (ICM). An overlooked source of financial shocks is interest rate movements that result from Central Banks' attempts to sway the macroeconomic environment. These shocks affect companies, particularly through the impact on their financing policies and capital structures, bringing about uncertainty and unforeseen challenges that require firm adaptability. However, it is the companies that hedge against this risk that face a smaller impact when they occur, for example, on their market valuations, interest coverage ratios, and workforce size (Banerjee et al. 2023).

Consequently, this paper aims to comprehend whether the relative value of diversification is impacted due to interest rate shocks, such that diversification can be used as a hedge against them. Ultimately, the question is if diversified firms are more insulated from interest rate shocks. This matter is central as a company's organizational form is chosen as a way of adapting to its environment, having significant consequences on the enterprise's ability to finance itself. Diversification may constitute an advantage when interest rates rise, as diversified firms have not only access to ICM, but also can co-insure their cash flows, in a way that allows them to decrease or, perhaps, even bypass their dependence on external financing sources. Thus, being less exposed to these monetary policy alterations. This paper's findings demonstrate that, from 1989 to 2022, diversification provided protection against these shocks in the very short term. Even though this result is not conditional on the diversification type, when analysing the intensity of diversification, one finds that the benefits attained from being diversified decrease as the diversification intensity rises. Additionally, diversification as a means to hedge against

interest rate shocks has become more relevant, since the 2000s, particularly in the short term. This occurred as companies increased their amount of short-term leverage, becoming more vulnerable to rollover and debt-overhang risks. In this context, both firms engaged in related diversification and/or those that operate in just two segments have become more efficient at protecting against this risk, especially in the short to medium terms.

Granted that the literature relating to corporate diversification is extensive, there seems to be a gap when accounting for the impact of interest rate changes on the different organizational forms. Yet, this paper is closely related to the increasing body of work on the impact of corporate diversification during the business cycle, including Kuppuswamy and Villalonga (2016), Aivazian, Rahaman, and Zhou (2019) or Mascia and Onali (2022), to those that analyse the existence of a diversification discount, like Custódio (2013), or to those that study the impact of interest rate changes on firms, such as Karpavičius and Yu (2017). Fundamentally, this study differs from those in existence, as it analyses how interest rate shocks affect companies' average excess value, by considering their distinct organizational form and diversification status, through the use of Ordinary Least Squares (OLS) regression models. Crucially, it aims to shed light on the overlooked heterogeneity of the economic agents affected by policy changes, particularly firm heterogeneity, given that their distinct characteristics will shape their reactions to the policies implemented and decisions, influencing the results attained by policymakers.

This thesis is structured in the following manner: Section 2 summarizes the current view of literature on the matter. Section 3 describes the method through which the sample was attained and its characteristics. Section 4 describes the methodology chosen and the empirical results attained. Section 5 concludes, whilst also providing potential limitations and ideas for future research.

Section 2: Literature review

The study of corporate diversification, which can be traced back to the 1950s and 60s, is a field that trespasses areas from Strategic Management and Economics to Finance (Benito-Osorio et al. 2020). However, opinions on this topic have been subject to considerable change throughout time, as its merits and demerits have been explored and debated, leading to the coexistence of contradicting views. While diversification brings both advantages and disadvantages, its mean net effect is still, at large, an empirical question to be solved.

Several advantages can be attributed to diversification. Henceforth, a particular emphasis will be put on financial synergies as these will soften the impact of interest rate shocks. One of them is the co-insurance effect of debt, in which, through the combination of imperfectly correlated cash flow streams, cash flow volatility is mitigated. This allows for an increase in the diversified firms' debt capacity and tax shield, which is not present for focused firms (Lewellen 1971). Also, this co-insurance can reduce the cost of debt, due to, for example, the reduced profitability volatility and bankruptcy costs (Khatua, Mohanty, and Nagarajan 2022). Hann, Ogneva, and Ozbas (2013) also postulate that the co-insurance effect enables enterprises that are diversified to decrease the systematic risk to which they are exposed through the avoidance of countercyclical deadweight costs, reducing their cost of capital compared to focused rivals. This is essential as interest rate shocks are a component reflected in systematic risk, considering that they affect not only a single firm or industry but the overall market, with diversified enterprises having the upper hand. Another vehicle which may aid diversified firms in their response to interest rate shocks and may affect the intrinsic value of corporate diversification is the ICM, which originates from the existence of various cash flow-generating segments, enabling the relaxation of financial constraints. ICM are vital during economic shocks as internally raised capital displays lower costs, by avoiding transaction costs and information asymmetry (Martin and Sayrak 2003). They present an alternative source of financing that is only at the disposal of diversified firms. This may be especially valuable when external financing is more costly and/or

constrained. ICM are comprised of two channels capable of producing relevant positive effects during economic shocks. Firstly, the "more-money" effect, where, because of the debt co-insurance, the company can simultaneously increase its debt capacity and reduce its default risk, having access to larger sums of external funds. Secondly, the "smarter-money" effect, in which, through "winner picking", i.e. the superior project selection due to the possession of greater information and knowledge than the external market agents (Martin and Sayrak 2003), diversified firms are capable of reallocating the necessary funds from one division to another. This enables them to engage in investments that, if they were focused companies, they would not have been capable of pursuing as they would have been financially constrained and as the access to external capital markets became more limited. All in all, avoiding underinvestment.

Yet, these benefits must be weighed down by the costs of diversification, such as the potential exacerbation of agency costs and rent-seeking behaviours. Managers may misallocate the resources generated by ICM by, for example, distributing them to the segments that have the highest cash flow production independent of the investment opportunities at hand (Kuppuswamy and Villalonga 2016) or engaging in inefficient overinvestment (Aivazian, Rahaman, and Zhou 2019). This inefficient overinvestment transpires when executives either invest in projects with a negative Net Present Value (NPV), due to the excess availability of retained funds or when they pursue managerial self-interest to increase their compensation, power, and prestige through "empire-building", resulting in managers entrenching themselves in their positions (Martin and Sayrak 2003). Both these benefits and costs and the effects that they originate can coexist, creating complimentary or opposing forces that alter a firm's value.

One of the most controversial topics in corporate diversification relates to the existence of a "diversification discount", which is comprised of two coexisting ideas. The first is that, on average, the value of the conglomerate is lower than the sum of the value of each of its business units if they were standalone firms, making the sum of the parts greater than the total. The

second focuses on the fact that despite its potential existence, there is still a large percentage of diversified firms, which, under these circumstances, would indicate the existence of mass inefficiency. This factor is of the essence as, if this were not the case, there would be no economic puzzle (Anjos 2010). Nevertheless, recent literature has not reached a consensus as it has either corroborated its existence or disputed it, by pointing towards it either not originating in diversification itself or it being an outcome of improper measurement techniques which do not account for the endogeneity of the diversification decision, as diversified companies tend to trade at a discount prior to diversification and self-selection bias (Martin and Sayrak 2003).

Nowadays, the emphasis has been given not to understanding if the diversification discount exists in a vacuum, but rather to its variance throughout time and the reasons for its changes. Some researchers even started to explore narratives where the discount can be justified, during periods of economic stability, as diversification is particularly valuable during economic downturns and recessions. Kuppuswamy and Villalonga (2016) found that during the 2008 Financial Crisis, diversification was valuable, especially for conglomerates that were more financially constrained as their excess value rose while the excess value of focused companies declined. This was explained by diversified firms' ICM, which were used more efficiently during the crisis and allowed them to offset the heightened capital-market frictions. Also, the debt co-insurance enabled them to gain a competitive advantage over their focused rivals, as lenders gave them an edge regarding the allocation of scarce credit. Using the 2001 dot.com crash as an analysis setting, Aivazian, Rahaman, and Zhou (2019) uncovered that diversification alleviated the impact of unexpected macroeconomic disruptions as diversified firms invested not only more efficiently than single-segment firms but also those investments were of superior quality. Furthermore, diversified companies' ICM allowed them to alleviate underinvestment during periods of financial capital markets' stress, resulting in better performance and a higher value as they were able to raise more debt. These companies also benefited from the co-

insurance effect and a decrease in forecasting problems which led to a higher probability of creditors supplying them with access to scarce funds.

Ultimately, it will be the fine line between both the advantages and disadvantages potentiated by a firm's diversification status that will dictate whether diversification allows companies to be superiorly protected from interest rate shocks.

Section 3: Sample, variables, and univariate analysis

The sample consists of U.S. firms with data reported in Compustat's Segment Annual and Compustat's Fundamentals Quarterly databases for the fiscal years from 1989 to 2022. Given the distinct frequencies, the data was annualised by considering which firm-level variables were stock variables, e.g.: total assets, so that the last quarter of each year was maintained, or flow variables, e.g.: sales, in which the sum of all quarters' observations was performed. Due to this correction and the potential for reporting errors including segment reporting errors (Duchin 2010), if the total assets (total sales[1]) stated deviated by more than 5% from those attained through the sum of all segments in the Segments database, the observations were dropped. Besides, firms operating in financial services (SIC: 6000-6999) or regulated utilities (SIC: 4900-4949) were deleted as these are heavily regulated industries. A company's operations in these industries may distort results, as the former might have their capital structure and cash balances subject to regulatory authority approval and the latter might have financing and capital structure decisions impacted by industry-specific legislation (Karpavičius and Yu 2017). Overall, this panel dataset spans 33 years, with at most 22,751 firms, accounting for 62.42% of all Compustat database's firms and 95.81% of its non-financial and non-utilities ones.

Interest rate shocks modify firms' effective interest rates, expressed by $r_d * (1 - \tau)$, where r_d is the nominal interest rate and τ is the effective tax rate. Following that done by Karpavičius

[1] Utilised for the robustness check presented in Section 4 of the Appendix.

and Yu (2017), the nominal interest rates were the ones analysed, as they are more volatile and have a larger impact on the effective interest rate than tax rates. Also, following their analysis, despite being a better attempt at simulating a firm's real borrowing costs, the average borrowing rate was not utilised due to endogeneity and causality concerns. While firms might be tempted to borrow more funds when interest rates are lower, because of the lower cost of accessing money, as their leverage increases, the rates at which they can access external capital markets also rise. Instead, market interest rates were used, even if, when considering the perspective of Central Banks, they may not be considered exogenous. These entities do not make random decisions regarding target interest rates but rather utilise them as a tool to influence economic activity. Despite the interrelatedness and interconnection between interest rates and macroeconomic conditions, it is not a straightforward process. This is demonstrated by, for example, the opposing forces that tend to be at play during recessions. Traditionally, there is a tendency for interest rates to be lower during economic downturns to stimulate economic activity. However, companies may not be as likely as one may initially think to take advantage of the lower rates. Firms lower their demand for external financing, as investment opportunities with a positive NPV become more limited. Moreover, the borrowing rates they face can be higher because of the enhanced uncertainty and bankruptcy costs (Karpavičius and Yu 2017). Nevertheless, for this analysis, one must adopt a firm-level perspective, in which all interest rate variables are exogenous to enterprises at an individual level, as they are approximately shocks to bond prices with financial markets being assumed to be efficient in Finance. Consequently, eleven annual market interest rate variables[2], for the corresponding analysis period, were attained from the Federal Reserve of St. Louis database. These were the Market Yields on U.S. Treasury Securities at Constant Maturities, ranging from short-term rates, e.g.: 1-month one, to long-term rates, e.g.: 30-year one. Figure A.1 in the Appendix depicts the U.S.

[2] The interest rate maturities analysed were the following: 1-month, 3-month, 6-month, 1-year, 2-year, 3-year, 5-year, 7-year, 10-year, 20-year, and 30-year.

Yield Curve, from 1989 to 2022, and shows an overall decreasing trend, in which interest rates tend to be at a local maximum before economic downturns (Hillenbrand 2023).

To gauge corporate diversification, a dummy variable, *Diversification*, was created. Firms were deemed as diversified (*Diversification* = 1) if they presented two or more business segments for which both the overall Standard Industrial Classification (SIC) code and the primary segment SIC code (SICS1) were known. Thus, as common in the literature that compares diversified enterprises to their non-diversified counterparts, only business diversification was considered. Diversification was further broken down depending on its type, i.e. whether diversified firms engaged in related diversification, such that all their segments operated in the same two-digit SIC code as the main code, or unrelated diversification when at least one segment operated in a different two-digit SIC code. This was done through the creation of a dummy variable, *Unrelated Diversification*, which is equal to one in the latter option, similar to Custódio (2013), Kuppuswamy and Villalonga (2016) and Aivazian, Rahaman, and Zhou (2019). Also, diversification was studied according to its intensity to see if the outcome changed, due to the different number of segments. This was achieved through the creation of dummy variables, by dividing diversified companies into three groups. The three groups were as follows: firms with two segments, i.e. *Low Intensity*, with three or four segments, i.e. *Medium Intensity*, or with five or more segments, i.e. *High Intensity*, like in Aivazian, Rahaman, and Zhou (2019).

Table 1 displays the univariate statistics for key firm-level variables, from 1989 to 2022, for the entire sample and when accounting for firms' diversification status for Balance Sheet, Income Statement and Market variables (Panel A) and control variables (Panel B). Diversified firms are, on average, bigger and older than single-segment firms. Nonetheless, non-diversified enterprises have, on average, larger operating leverage, cash holdings and leverage, demonstrating two antagonistic forces at work. On the one hand, the higher leverage impairs single-segment firms' access to external capital markets as they will be perceived by their

grantors as having a higher risk and, consequently, a higher probability of facing financial distress (Kuppuswamy and Villalonga 2016). This is particularly evident when credit becomes more expensive and/or scarce. On the other hand, this effect is counterbalanced by having a larger amount of cash holdings. This happens because, under Keynes' Precautionary Saving Theory, despite being costly due to firms having to forgo present investment opportunities, they hold cash to insure themselves against adverse shocks that may force them to relinquish future investment opportunities. Therefore, decreasing their need to access external capital markets when it is more expensive (Duchin 2010), acting in line with the Pecking Order Theory and increasing their negative shock absorbance capability (Mascia and Onali 2022). Furthermore, single-segment firms present a higher Tobin's Q than business diversified firms, which is in accordance with papers, like Martin and Sayrak (2003) or Mascia and Onali (2022). Figure A.2 and Figure A.3 show the evolution of the Balance Sheet and Income Statement and winsorised control variables, respectively, dependent on diversification status, from 1989 to 2022.

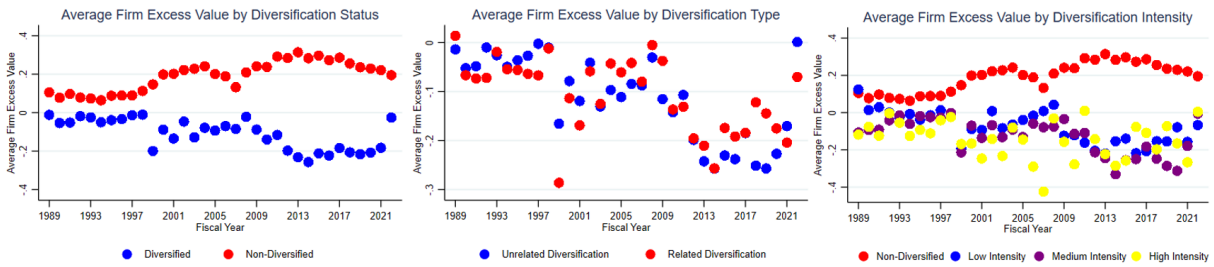
Table 1 – Univariate statistics for key firm-level variables, from 1989 to 2022, for the entire asset-weighted sample and when accounting for firms' diversification status. Balance Sheet, Income Statement and Market Value items are in millions of U.S. dollars and control variables, excluding Size and Age, are winsorised at the top and bottom first percentiles

	(1) Full Sample				(2) Diversified				(3) Non-Diversified			
	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max
Panel A: Balance Sheet, Income Statement and Market Variables												
Total Assets	2063.563	13502.4	0.001	717242	5161.056	25347.35	0.08	717242	1766.764	11713.99	0.001	558933
Common Equity	706.1784	5019.43	-86154	275668	1552.345	7484.523	-25869	275668	625.1677	4708.385	-86154	233236
Cash and Short-term Investments	200.5414	1611.006	-8.03	100580	345.7111	2472.417	-0.004	92722	186.6303	1502.028	-8.03	100580
Debt in Current Liabilities	125.4134	1764.884	-154	173825	487.4121	4827.906	0	173825	90.795	1081.685	-154	98392.86
Long-term Debt	543.1476	3719.493	-0.023	279618	1291.906	6778.256	0	279618	471.3034	3270.308	-0.023	207174
Market Value	2328.623	18299.18	0	2324390	3718.604	15330.13	0.000711	508329.5	2187.58	18568.18	0	2324390
Sales	1572.871	10468.47	-1964.999	611289	3948.605	15620	-0.38	458361	1345.231	9804.072	-1964.999	611289
COGS	1086.179	7805.593	-1707.9	452776	2938.181	12233.68	-366.645	385152	908.722	7215.635	-1707.9	452776
SG&A Expenses	237.0097	1754.125	-283	211641	461.2701	1958.63	0	41313	215.5213	1731.745	-283	211641
Net Income	75.68817	1065.896	-87681.13	104821	169.927	1206.876	-23497.6	40224	66.65831	1050.956	-87681.13	104821
Dividends per Share (mean)	0.0478257	1.825905	0	750	0.139156	6.010195	0	750	0.0387277	0.2587177	0	33.8075
Dividends per Share (median)	0.0373351	1.799106	0	750	0.1198457	5.949164	0	750	0.0291156	0.1816163	0	23.8
Closing Share Price (mean)	18.40456	268.6292	0.0000752	61600	41.82535	758.6286	0.000375	61600	16.0371	145.6817	0.0000752	24200
Closing Share Price (median)	18.23526	269.2216	0.0001	60800	41.69627	761.7911	0.00035	60800	15.86374	145.2165	0.0001	24150
Panel B: Control Variables												
Size	4.331307	2.825903	-6.907755	13.48317	6.011123	2.453837	-2.525729	13.48317	4.170348	2.806725	-6.907755	13.23378
Age	6.672057	8.164971	-31	73	10.02936	9.823786	-9	72	6.376704	7.934978	-31	73
Cash Holdings	0.235679	0.2745497	0	0.9814815	0.1055857	0.1483033	0	0.9814815	0.2481455	0.2805639	0	0.9814815
Tobin's Q	4.979329	14.1189	0.4612332	102.2294	1.871673	3.125603	0.4612332	102.2294	5.294415	14.7474	0.4612332	102.2294
Leverage	0.3759383	0.8058432	0	5.713936	0.3259446	0.3504578	0	5.713936	0.3807192	0.8363478	0	5.713936
Short-term Leverage	0.1593111	0.5610634	0	4.051021	0.084931	0.2281229	0	4.051021	0.1664242	0.5825292	0	4.051021
Long-term Leverage	0.1830123	0.2603359	0	1.329799	0.2381587	0.224311	0	1.329799	0.1777209	0.2629268	0	1.329799
Operating Leverage	1.277113	1.68986	0.0031635	10.96855	1.082999	1.020963	0.0031635	10.96855	1.295713	1.739374	0.0031635	10.96855
Dividend-Price Ratio (mean)	0.0017031	0.0049891	0	0.0342857	0.0027959	0.0053729	0	0.0342857	0.0015926	0.0049352	0	0.0342857
Dividend-Price Ratio (median)	0.0013371	0.0040931	0	0.0289157	0.0023598	0.0046918	0	0.0289157	0.0012337	0.0040132	0	0.0289157
Number of Segments	1.153821	0.5911874	1	10	2.759148	1.083086	2	10	1	0	1	1
Observations	190,644				16,670				173,974			

The measure of firm performance considered as the dependent variable was the *Average Excess Firm Value*. Its estimation closely follows that done by Custódio (2013), where it is calculated as the logarithm of the ratio between the firm's *Tobin's Q* and the imputed *Tobin's Q*. The

variable *Tobin's Q* is attained as the ratio between the assets' market and book values. Given that the assets' market value is unobservable, it is calculated by proxy as the assets' book value plus the equity's market value minus the equity's book value. The imputed *Q* is the asset-weighted (sales-weighted[1]) hypothetical *Q* for the company's business segments, obtained by matching per industry and year the median *Q* of the standalone firms. The industry match starts at the four-digit SIC code level. If there are not a minimum of five focused firms for that specific SIC code, it is done at the highest SIC code level for which this number requisite is fulfilled. In addition, the *Average Excess Firm Value* allows one to understand whether companies trade at a discount or a premium. On average, during these 33 years, diversified firms presented a discount of 10.65%, while specialized firms had a premium of 19.04%. Figure 1 presents the evolution of the firm's excess value during the analysis period, dependent on the diversification status, type, and intensity of diversification when the company is diversified. Looking at the diversification statuses, one can assess that, during the sample period, diversified enterprises have traded mostly at a discount that has been increasing, while non-diversified firms have traded at a premium, which presented an increasing trend. Regarding the diversification type, there is no evidence that either unrelated or related diversification conducted diversified firms to trade at a larger discount. Considering the different diversification intensities, it seems that, on average, the diversification discount faced by diversified firms increases with the number of segments. However, there is no clear pattern for diversified firms with five or more segments.

Figure 1 – Evolution of the asset-weighted average firm excess value, from 1989 to 2022, dependent on the Diversification Status, Diversification Type and Diversification Intensity



There are significant differences between diversified and non-diversified enterprises, namely in *Size* (i.e. logarithm of total assets), *Age* (i.e. number of years since the IPO date), *Cash Holdings* (i.e. cash and short-term investments divided by total assets), *Leverage* (i.e. short- and long-term debt by total assets), *Operating Leverage* (i.e. cost of goods sold and general and administrative expenses by total assets), *Dividend-Price ratio* (i.e. dividends per share price). All these variables, except for *Size* and *Age*, were winsorised at the top and bottom first percentiles to decrease the presence of outliers.

Correlations to better understand the relation between different interest rate measures and the *Average Excess Firm Value* were calculated and are depicted in Table 2. Accounting for the distinct diversification statuses (Panel A), one can conclude that both variables are positively correlated for diversified firms, but negatively so for focused firms, with all the correlations being statistically significant at a 0.1%-level. Regarding the diversification types (Panel B), both unrelated and related diversified firms are positively correlated with interest rates, being significant at a 0.1%-level. So, the direction of the relation does not appear to be dependent on the diversification type. Although for shorter-term interest rates, i.e. 1-month to 3-year, it is higher for related diversification, for the remaining, it is higher for unrelated diversification. Looking at the intensity of diversification (Panel C), it can be said that it maintains the direction seen with the diversification status, for companies up to four segments, with all values being significant at a 0.1%-level. However, for firms with at least five segments, values are negative and statistically insignificant due to the lower statistical power presented, because these firms account for 0.61% of the sample. So, the relation between these two variables varies with the diversification intensity. Overall, these results indicate the potential for diversified firms to be more insulated from negative interest rate shocks, as their excess value varies in the same direction as interest rates, leading the diversification discount to decline when interest rates rise.

Table 2 – Correlations between interest rates and the asset-weighted average excess firm value, from 1989 to 2022, divided by Diversification Status (Panel A), Diversification Type (Panel B) and Diversification Intensity (Panel C) and the difference

between them

	(1) 1-month	(2) 3-month	(3) 6-month	(4) 1-year	(5) 2-year	(6) 3-year	(7) 5-year	(8) 7-year	(9) 10-year	(10) 20-year	(11) 30-year
Panel A: Diversification Status											
Diversified Firms' Average Excess Value *(1)*	0.063***	0.062***	0.065***	0.069***	0.074***	0.077***	0.082***	0.083***	0.083***	0.083***	0.077***
Non-Diversified Firms' Average Excess Value *(2)*	-0.028***	-0.028***	-0.028***	-0.028***	-0.028***	-0.027***	-0.026***	-0.024***	-0.022***	-0.019***	-0.016***
Difference (1)-(2)	0.091***	0.090***	0.093***	0.097***	0.102***	0.104***	0.108***	0.107***	0.105***	0.102***	0.093***
Panel B: Diversification Type											
Unrelated Diversification Firms' Average Excess Value *(1)*	0.061***	0.063***	0.065***	0.068***	0.073***	0.077***	0.083***	0.085***	0.086***	0.087***	0.080***
Related Diversification Firms' Average Excess Value *(2)*	0.065***	0.063***	0.066***	0.071***	0.076***	0.079***	0.082***	0.081***	0.081***	0.077***	0.071***
Difference (1)-(2)	-0.004**	0.000**	-0.001**	-0.003**	-0.003**	-0.002**	0.001**	0.004**	0.005**	0.010**	0.009**
Panel C: Diversification Intensity											
Low Diversification Intensity Firms' Average Excess Value *(1)*	0.074***	0.072***	0.073***	0.076***	0.079***	0.082***	0.085***	0.085***	0.083***	0.080***	0.074***
Medium Diversification Intensity Firms' Average Excess Value *(2)*	0.065***	0.066***	0.070***	0.075***	0.082***	0.087***	0.095***	0.098***	0.100***	0.102***	0.095***
High Diversification Intensity Firms' Average Excess Value *(3)*	-0.067	-0.063	-0.056	-0.049	-0.044	-0.045	-0.046	-0.047	-0.045	-0.035	-0.037
Difference (1)-(2)	0.009***	0.006***	0.003***	0.001***	-0.003***	-0.005***	-0.010***	-0.013***	-0.017***	-0.022***	-0.021***
Difference (1)-(3)	0.141***	0.135***	0.129***	0.125***	0.123***	0.127***	0.131***	0.132***	0.128***	0.115***	0.111***
Difference (2)-(3)	0.132***	0.129***	0.126***	0.124***	0.126***	0.132***	0.141***	0.145***	0.145***	0.137***	0.132***

$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Section 4: Methodology, empirical analysis, and results

OLS regression models were employed as the analysis' main empirical approach. In the baseline regression (Equation 1), the OLS method was used to estimate the impact of interest rate shifts on the *Average Excess Firm Value* for both diversified and focused firms. The coefficient of the interaction term, β_3, is the parameter of interest, as it captures the differential effect of interest rate changes on the *Average Excess Firm Value* for diversified firms when compared to their specialized counterparts. Firm-fixed effects, γ_i, to account for unobserved time-invariant firm heterogeneity were included to deal with the endogeneity of the diversification decision. This endogeneity problem and self-selection bias have their origins in the notion that there is a systematic difference between companies that choose to diversify and those that do not. This ultimately means that the organizational form is a company decision that is resultant of time-invariant firm characteristics, which if not properly accounted for may lead to tinted results (Martin and Sayrak 2003). Also, controls for macroeconomic indicators, namely the *GDP Growth Rate*, *Inflation Rate* and *Unemployment Rate* ($X_t = \beta_6\, GDP\ Growth\ Rate_t + \beta_7\, Inflation\ Rate_t + \beta_8\, Unemployment\ Rate_t$) were added to capture aggregate fluctuations and the general state of the economy. In this way, only the effect of interest rate shocks is captured rather than the impact of macroeconomic conditions at large, enabling the study of a potential causal effect. Moreover, the standard errors were both made robust, to accommodate for heteroskedasticity and clustered at a firm level, to allow for correlation of the error terms between groups. Considering heterogeneity between diversified and non-diversified

companies, two variables were included in the regressions as controls for firm-level variables, namely *Cash Holdings* and *Leverage*. Literature has shown that these elements are dissimilar based on the firm's diversification status, and they will, as previously mentioned, impact how companies can finance themselves and invest and, ultimately, influence how their excess value is affected by regulation alterations to interest rates.

To understand what findings would be expected, regressions based on a hypothetical economy in which only two enterprises, a single-segment and a diversified one, exist were tested. The results presented in Table A.2 point towards diversified firms being more shielded from interest rate shocks from the 1-month to the 30-year rates, as the interaction terms are not only positive but also statistically significant at a 0.1%-level. One may postulate that this originates from the fact that, when interest rate shocks occur, the benefits of diversification outweigh the costs through the existence of mechanisms such as the co-insurance effect which reduces the volatility of cash flows, enabling diversified firms to maintain a higher or even unaltered access to external capital markets, and their ICM, allowing them to access funds at a lower cost of capital. Thus, not reducing their supply of funds to invest in projects as significantly as their focused rivals, permitting better risk management (Froot, Scharfstein, and Stein 1994).

Table 3 shows the results for the baseline regressions dependent on the diversification status of all firms analysed. In this and the following tables, the columns present the regression using a different measure for *Interest Rate* and, for the tables that just present the interaction term coefficients, the complete versions are in Section 3.1 of the Appendix. The existence of a hedge against interest rate shocks due to the firm's diversification status is dependent on the interest rate proxy considered, given that the sign, strength, and statistical significance of the parameter of interest changes. The interaction term is only statistically significant for the 1-month interest rate, for which it is positive. This signals that for the very short-term interest rate, the discount at which diversified firms trade relative to focused ones is reduced, on average, by 1.99 basis

points (b.p.), when accounting for interest rate shocks. Although diversified firms are only, effectively, more insulated from interest rate shocks for the shortest interest rate, these results may be prompted by two rationales. First and foremost, though the U.S. Federal Reserve System's monetary policies that alter the target rates evoke an immediate response in market interest rates (Lee 2006), crucial given that firms cannot borrow funds at the federal funds rate, this response is conditional on the interest rates' maturity. Its impact is larger for short-term rates and smaller for intermediate and long-term ones, such that the influence of the federal funds rate change on interest rates decreases with their maturity (Kuttner 2001). Consequently, shorter-term interest rates will be those that will reflect the impact of these policy changes more accurately. Moreover, at a firm level, there is empirical evidence that a company's investment is more responsive to monetary policy when it has a larger portion of short-term debt, given that it will mature in less than a year. This happens for two reasons. Firstly, corporations that have a larger percentage of maturing debt face a higher rollover risk as they need to renegotiate their debt more frequently, being more exposed to fluctuations in real interest rates. Secondly, they also suffer increasingly from the debt-overhang problem, as these companies have a higher default risk, being more reactive to changes in the outstanding nominal debt (Jungherr et al. 2022). In the sample, single-segment companies have, on average, almost double the short-term debt when taking into consideration their size (0.1664) in comparison to diversified firms (0.0849), causing them to be more exposed to both the increased rollover risk and debt-overhang problem. This implies that focused enterprises will be particularly affected by interest rate shocks because of their larger amount of maturing short-term debt, as they will be forced to raise capital externally when it is becoming more costly. This ensues due to the lack of flexibility that is provided by ICM to roll over their debt or the co-insurance effect that increases their probability of accessing external capital funds. Besides, one may postulate that the 1-month rate is the one that will enable firms to roll over debt providing these economic entities

with the needed flexibility, which is especially critical if there is the belief that the macroeconomic conjecture will become more favourable in the near future. This expectation of future favourable news will lead firms to access funds out of necessity only in the short term, given that they become more expensive. Both these facts attest to the economic significance of conglomerates being more insulated from interest rate shocks for the shortest-term interest rate.

$$Avg.Excess\ Firm\ Value_{i,t} = \beta_0 + \beta_1\ Diversification_{i,t} + \beta_2\ Interest\ Rate_t + \beta_3\ Diversification \times Interest\ Rate_{i,t} + \beta_4\ Leverage_{i,t} + \beta_5\ Cash\ Holdings_{i,t} + \gamma_i + X_t + \varepsilon_{i,t} \quad (1)$$

Table 3 – Regressions of the asset-weighted average excess firm value on the diversification status, interest rate and their interaction term

	(1) 1-month	(2) 3-month	(3) 6-month	(4) 1-year	(5) 2-year	(6) 3-year	(7) 5-year	(8) 7-year	(9) 10-year	(10) 20-year	(11) 30-year
Diversification	-0.125***	-0.114***	-0.115***	-0.114***	-0.109***	-0.106***	-0.0994***	-0.0933***	-0.0913**	-0.0762*	-0.0802*
	(-6.19)	(-6.50)	(-6.45)	(-6.20)	(-5.48)	(-4.97)	(-4.09)	(-3.47)	(-3.10)	(-2.06)	(-2.27)
Interest Rate	0.0180***	0.0358***	0.0362***	0.0384***	0.0420***	0.0453***	0.0507***	0.0536***	0.0571***	0.0635***	0.0636***
	(5.71)	(17.56)	(17.77)	(18.24)	(19.02)	(19.44)	(19.87)	(19.93)	(19.96)	(18.41)	(19.80)
Diversification x Interest Rate	**0.0199*** **	**0.00273**	**0.00305**	**0.00314**	**0.00208**	**0.00151**	**0.000316**	**-0.00107**	**-0.00133**	**-0.00544**	**-0.00332**
	(3.55)	**(0.75)**	**(0.85)**	**(0.85)**	**(0.54)**	**(0.37)**	**(0.07)**	**(-0.22)**	**(-0.25)**	**(-0.80)**	**(-0.54)**
Leverage	0.469***	0.471***	0.472***	0.472***	0.473***	0.474***	0.475***	0.475***	0.476***	0.477***	0.476***
	(42.59)	(48.43)	(48.45)	(48.50)	(48.61)	(48.68)	(48.79)	(48.84)	(48.90)	(48.34)	(48.95)
Cash Holdings	0.880***	0.818***	0.818***	0.817***	0.817***	0.816***	0.816***	0.816***	0.816***	0.829***	0.817***
	(25.87)	(30.01)	(30.00)	(30.00)	(29.97)	(29.94)	(29.90)	(29.91)	(29.91)	(29.08)	(29.94)
GDP Growth	-0.00283*	0.00349**	0.00346**	0.00332**	0.00278**	0.00249*	0.00185+	0.00114	0.000469	-0.000819	-0.00119
	(-2.42)	(3.29)	(3.26)	(3.13)	(2.64)	(2.38)	(1.78)	(1.11)	(0.46)	(-0.74)	(-1.17)
Inflation	0.00170	-0.00456*	-0.00561**	-0.00640***	-0.00686***	-0.00701***	-0.00717***	-0.00634***	-0.00665***	-0.00431*	-0.00408*
	(0.80)	(-2.43)	(-2.97)	(-3.37)	(-3.60)	(-3.68)	(-3.76)	(-3.34)	(-3.48)	(-2.13)	(-2.17)
Unemployment Rate	0.0125***	0.0287***	0.0294***	0.0301***	0.0295***	0.0283***	0.0239***	0.0197***	0.0142***	0.00924***	0.00535**
	(4.56)	(12.67)	(12.88)	(13.20)	(13.32)	(13.08)	(11.66)	(9.94)	(7.41)	(4.66)	(2.85)
Constant	-0.293***	-0.454***	-0.461***	-0.473***	-0.489***	-0.501***	-0.510***	-0.511***	-0.502***	-0.520***	-0.512***
	(-12.83)	(-23.17)	(-23.32)	(-23.72)	(-24.44)	(-24.85)	(-25.23)	(-25.24)	(-25.00)	(-23.02)	(-24.83)
Observations	103,099	160,922	160,922	160,922	160,922	160,922	160,922	160,922	160,922	148,562	160,922
R^2	0.201	0.185	0.185	0.186	0.187	0.187	0.188	0.188	0.189	0.193	0.189

t statistics in parentheses
$^+ p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

The sample was divided into four quartiles based on *Size*. This allows one to compare the effectiveness of diversification as a shield against interest rate shocks among similarly sized enterprises. The findings of these regressions are presented in Table 4. These demonstrate that, when comparing firms of similar size, protection against changes to interest rates provided by diversification seems to decrease as the size of companies compared increases, i.e. as the quartiles increase. The interaction terms, for the corporations in the first quartile, are the ones in which interest rate shocks most positively affect the changes in a firm's excess value for all interest rates except the 1-month interest rate, as they are positive and statistically significant. In the second quartile, the 1-month to the 10-year rates' interaction terms are positive and significant, while for the third quartile, this only happens for the 1-month one. In the fourth quartile, the interaction term is positive and statistically significant for the 1-month interest rate but becomes negative and statistically significant for the longer-term rates from the 5-year one

onwards. This can be justified as bigger firms have facilitated access to external capital markets (Angori, Aristei, and Gallo 2020). For example, they have more bargaining power and more assets that can be utilised as collateral. So, they are not as affected by interest rate shocks.

Table 4 – Interaction terms of the regressions of the asset-weighted average excess firm value on the diversification status, interest rate and their interaction term divided into quartiles depending on size: First Size Quartile (Panel A), Second Size Quartile (Panel B), Third Size Quartile (Panel C) and Fourth Size Quartile (Panel D)

	(1) 1-month	(2) 3-month	(3) 6-month	(4) 1-year	(5) 2-year	(6) 3-year	(7) 5-year	(8) 7-year	(9) 10-year	(10) 20-year	(11) 30-year
Panel A: First Size Quartile											
Diversification x Interest Rate	0.0231	0.0385*	0.0386*	0.0401*	0.0429*	0.0462*	0.0531*	0.0574*	0.0648**	0.0617*	0.0769**
	(0.68)	(2.30)	(2.33)	(2.34)	(2.36)	(2.39)	(2.46)	(2.49)	(2.62)	(1.96)	(2.74)
Observations	24,069	37,601	37,601	37,601	37,601	37,601	37,601	37,601	37,601	34,147	37,601
R^2	0.242	0.235	0.235	0.235	0.235	0.235	0.235	0.235	0.235	0.238	0.235
Panel B: Second Size Quartile											
Diversification x Interest Rate	0.0315*	0.0147*	0.0146*	0.0154*	0.0158*	0.0168*	0.0179+	0.0181+	0.0181+	0.0213	0.0167
	(2.50)	(1.98)	(1.98)	(2.03)	(1.98)	(1.98)	(1.90)	(1.79)	(1.65)	(1.39)	(1.32)
Observations	22,481	40,811	40,811	40,811	40,811	40,811	40,811	40,811	40,811	36,817	40,811
R^2	0.0404	0.0408	0.0412	0.0420	0.0431	0.0440	0.0454	0.0453	0.0461	0.0451	0.0463
Panel C: Third Size Quartile											
Diversification x Interest Rate	0.0183+	-0.00571	-0.00544	-0.00501	-0.00440	-0.00306	0.000201	0.00178	0.00634	0.00333	0.0121
	(1.70)	(-0.91)	(-0.88)	(-0.78)	(-0.64)	(-0.41)	(0.02)	(0.19)	(0.60)	(0.23)	(0.96)
Observations	25,525	41,529	41,529	41,529	41,529	41,529	41,529	41,529	41,529	38,384	41,529
R^2	0.0385	0.0479	0.0482	0.0492	0.0510	0.0522	0.0535	0.0537	0.0538	0.0523	0.0530
Panel D: Fourth Size Quartile											
Diversification x Interest Rate	0.0147*	-0.00474	-0.00412	-0.00427	-0.00604	-0.00747	-0.0104+	-0.0129*	-0.0145*	-0.0150+	-0.0184*
	(2.42)	(-1.11)	(-0.98)	(-0.99)	(-1.33)	(-1.54)	(-1.90)	(-2.17)	(-2.25)	(-1.89)	(-2.49)
Observations	31,024	40,981	40,981	40,981	40,981	40,981	40,981	40,981	40,981	39,214	40,981
R^2	0.0190	0.0248	0.0251	0.0261	0.0283	0.0295	0.0312	0.0322	0.0326	0.0327	0.0331

t statistics in parentheses
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

It is also possible to compare how the different types of diversification, namely unrelated (Equation 2) and related (Equation 3) diversification fair against focused firms. It may be the case that a particular type of diversification is better suited to being utilised as a hedge against interest rate shocks. While, on the one hand, unrelated diversification may be more effective given that they have segments that operate in industries with distinct two-digit SIC codes. So, the impact that the segments will face from these shocks will be varied, such that some may barely be affected whilst others might suffer significantly. On the other hand, related diversification may present an edge over unrelated diversification, as all the company's segments will be affected similarly by the shock. Thus, the management's response to tackle it will be alike for all segments. The findings of the regressions that test these hypotheses are presented in Table 5, Panels A and B, respectively. When analysing the impact of engaging in either unrelated or related diversification compared to not being diversified, when an interest rate shock occurs, one can see there is a positive effect on the average firm excess value in the very short-term as the interaction term is positive and statistically significant for the 1-month interest rate. However, this occurs for both unrelated and related diversification, with related

diversification presenting a higher significance level (1%-level > 5%-level). Moreover, Table A.4 presents the results of the regression that compares the effectiveness of the type of diversification of non-focused firms between themselves (Equation A.1). This aims to gather whether there is a specific type of diversification which is better at coping with these shocks. However, the interaction terms do not present statistically significant results when comparing the effects of the different types of diversified firms on the *Average Excess Firm Value*.

$$Avg.Excess\ Firm\ Value_{i,t} = \beta_0 + \beta_1\ Unrelated\ Diversification_{i,t} + \beta_2\ Interest\ Rate_t + \beta_3\ Unrelated\ Diversification \times Interest\ Rate_{i,t} + \beta_4\ Leverage_{i,t} + \beta_5\ Cash\ Holdings_{i,t} + \gamma_i + X_t + \varepsilon_{i,t} \quad (2)$$

$$Avg.Excess\ Firm\ Value_{i,t} = \beta_0 + \beta_1\ Related\ Diversification_{i,t} + \beta_2\ Interest\ Rate_t + \beta_3\ Related\ Diversification \times Interest\ Rate_{i,t} + \beta_4\ Leverage_{i,t} + \beta_5\ Cash\ Holdings_{i,t} + \gamma_i + X_t + \varepsilon_{i,t} \quad (3)$$

Table 5 – Regressions of the asset-weighted average excess firm value on the diversification type, unrelated (Panel A) and related diversification (Panel B) compared to focused firms, interest rate and their interaction term

	(1) 1-month	(2) 3-month	(3) 6-month	(4) 1-year	(5) 2-year	(6) 3-year	(7) 5-year	(8) 7-year	(9) 10-year	(10) 20-year	(11) 30-year
Panel A: Unrelated diversification compared to focused firms											
Unrelated Diversification	-0.127***	-0.113***	-0.114***	-0.114***	-0.111***	-0.108***	-0.103**	-0.0980**	-0.0961*	-0.0876+	-0.0858+
	(-4.60)	(-4.92)	(-4.92)	(-4.76)	(-4.28)	(-3.91)	(-3.28)	(-2.84)	(-2.57)	(-1.88)	(-1.93)
Interest Rate	0.0176***	0.0359***	0.0363***	0.0385***	0.0422***	0.0455***	0.0510***	0.0538***	0.0573***	0.0635***	0.0638***
	(5.49)	(17.31)	(17.50)	(17.97)	(18.76)	(19.18)	(19.61)	(19.68)	(19.71)	(18.13)	(19.55)
Unrelated Diversification x Interest Rate	**0.0157***	**0.00456**	**0.00495**	**0.00497**	**0.00390**	**0.00322**	**0.00190**	**0.000634**	**0.000267**	**-0.00306**	**-0.00172**
	(2.19)	**(1.03)**	**(1.13)**	**(1.10)**	**(0.82)**	**(0.64)**	**(0.34)**	**(0.10)**	**(0.04)**	**(-0.37)**	**(-0.23)**
Leverage	0.469***	0.472***	0.472***	0.472***	0.473***	0.474***	0.475***	0.475***	0.476***	0.477***	0.476***
	(42.29)	(48.18)	(48.20)	(48.25)	(48.35)	(48.43)	(48.54)	(48.59)	(48.65)	(48.07)	(48.70)
Cash Holdings	0.883***	0.817***	0.817***	0.817***	0.816***	0.816***	0.815***	0.816***	0.816***	0.830***	0.816***
	(25.66)	(29.66)	(29.65)	(29.64)	(29.61)	(29.58)	(29.54)	(29.55)	(29.55)	(28.76)	(29.58)
GDP Growth	-0.00269*	0.00384***	0.00381***	0.00367***	0.00312**	0.00283**	0.00218*	0.00147	0.000784	-0.000424	-0.000888
	(-2.24)	(3.52)	(3.49)	(3.37)	(2.89)	(2.64)	(2.05)	(1.39)	(0.74)	(-0.37)	(-0.85)
Inflation	0.00149	-0.00507**	-0.00612**	-0.00691***	-0.00739***	-0.00755***	-0.00771***	-0.00689***	-0.00719***	-0.00499*	-0.00460*
	(0.68)	(-2.63)	(-3.15)	(-3.54)	(-3.78)	(-3.85)	(-3.93)	(-3.53)	(-3.66)	(-2.39)	(-2.38)
Unemployment Rate	0.0122***	0.0289***	0.0296***	0.0303***	0.0298***	0.0286***	0.0242***	0.0199***	0.0144***	0.00937***	0.00545**
	(4.31)	(12.35)	(12.56)	(12.88)	(13.01)	(12.78)	(11.41)	(9.74)	(7.27)	(4.58)	(2.82)
Constant	-0.288***	-0.454***	-0.461***	-0.474***	-0.490***	-0.502***	-0.511***	-0.512***	-0.503***	-0.519***	-0.512***
	(-12.26)	(-22.59)	(-22.74)	(-23.13)	(-23.85)	(-24.26)	(-24.66)	(-24.68)	(-24.47)	(-22.50)	(-24.36)
Observations	99,622	156,169	156,169	156,169	156,169	156,169	156,169	156,169	156,169	144,027	156,169
R^2	0.203	0.186	0.186	0.187	0.188	0.188	0.189	0.189	0.190	0.194	0.190
Panel B: Related diversification compared to focused firms											
Related Diversification	-0.113***	-0.105***	-0.105***	-0.102***	-0.0939**	-0.0894**	-0.0812*	-0.0721+	-0.0699	-0.0454	-0.0560
	(-4.04)	(-4.09)	(-4.01)	(-3.80)	(-3.23)	(-2.86)	(-2.24)	(-1.78)	(-1.56)	(-0.81)	(-1.02)
Interest Rate	0.0182***	0.0360***	0.0365***	0.0387***	0.0426***	0.0460***	0.0518***	0.0547***	0.0584***	0.0641***	0.0650***
	(5.65)	(17.17)	(17.36)	(17.84)	(18.66)	(19.12)	(19.62)	(19.72)	(19.79)	(18.09)	(19.65)
Related Diversification x Interest Rate	**0.0237****	**-0.00214**	**-0.00183**	**-0.00142**	**-0.00227**	**-0.00248**	**-0.00330**	**-0.00516**	**-0.00510**	**-0.0103**	**-0.00730**
	(2.95)	**(-0.37)**	**(-0.32)**	**(-0.24)**	**(-0.36)**	**(-0.37)**	**(-0.44)**	**(-0.63)**	**(-0.57)**	**(-0.96)**	**(-0.71)**
Leverage	0.468***	0.471***	0.471***	0.472***	0.473***	0.474***	0.475***	0.475***	0.475***	0.476***	0.476***
	(41.90)	(47.82)	(47.84)	(47.89)	(48.00)	(48.07)	(48.19)	(48.24)	(48.29)	(47.67)	(48.34)
Cash Holdings	0.880***	0.816***	0.816***	0.816***	0.815***	0.814***	0.814***	0.814***	0.814***	0.829***	0.815***
	(25.45)	(29.48)	(29.47)	(29.46)	(29.42)	(29.39)	(29.34)	(29.35)	(29.35)	(28.61)	(29.38)
GDP Growth	-0.00223+	0.00364**	0.00363**	0.00352**	0.00302**	0.00274*	0.00210+	0.00136	0.000662	-0.000403	-0.00104
	(-1.83)	(3.29)	(3.28)	(3.19)	(2.76)	(2.51)	(1.94)	(1.27)	(0.62)	(-0.35)	(-0.98)
Inflation	0.000638	-0.00520**	-0.00627**	-0.00710***	-0.00761***	-0.00778***	-0.00796***	-0.00712***	-0.00743***	-0.00558**	-0.00482*
	(0.29)	(-2.64)	(-3.16)	(-3.55)	(-3.80)	(-3.88)	(-3.96)	(-3.56)	(-3.69)	(-2.62)	(-2.44)
Unemployment Rate	0.0128***	0.0286***	0.0293***	0.0301***	0.0297***	0.0287***	0.0244***	0.0201***	0.0145***	0.00935***	0.00552**
	(4.45)	(11.95)	(12.16)	(12.49)	(12.69)	(12.52)	(11.25)	(9.62)	(7.20)	(4.50)	(2.80)
Constant	-0.290***	-0.449***	-0.457***	-0.470***	-0.488***	-0.501***	-0.512***	-0.513***	-0.504***	-0.518***	-0.514***
	(-12.16)	(-21.88)	(-22.03)	(-22.44)	(-23.22)	(-23.69)	(-24.18)	(-24.26)	(-24.12)	(-22.19)	(-24.12)
Observations	97,440	150,980	150,980	150,980	150,980	150,980	150,980	150,980	150,980	139,765	150,980
R^2	0.203	0.187	0.187	0.187	0.188	0.189	0.190	0.190	0.190	0.194	0.191

t statistics in parentheses
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Shown in Table 6 are the interaction terms of the regressions that consider the diversification intensity proxied by the three groups: two segments (*Low Intensity*), three to four segments (*Medium Intensity*) and five or more (*High Intensity*) (Equation 4). This analysis is essential as it may be the case that as companies grow larger, presenting an increasing number of segments, they become more inefficient, demonstrating diseconomies of scale. Here, the interaction terms

demonstrate a decline in the benefits obtained from being diversified as the segment number increases, as for both *Low* and *Medium Intensity* the interaction terms are mostly positive, while for *High Intensity*, it is always negative. So, the interaction terms are decreasing as the number of segments rises. Regarding statistical significance, these terms are significant at 0.1% and a 5%-level, for the 1-month interest rate, for *Low* and *Medium Intensity*, while they are significant for all interest rates, except the 1-month rate, for the *High Intensity*, demonstrating that highly diversified enterprises respond adversely to interest rate shocks when compared to their focused rivals. This may result from agency costs leading the firm's ICM capital allocation to become less efficient as the number of segments rises. Duchin and Sosyura (2012) find that divisional managers with social connections to the CEO receive more capital, which is more likely to be relevant when CEOs and managers have more segments to attend to. Ultimately, it is possible to pose that there is an optimal number of segments, which enables the maximisation of the benefit attained from being diversified when analysing the impact of interest rates on firms, after which there are diminishing returns to scale. This number appears to be two segments, as its interaction terms are not only positive but larger than the rest, excluding the 20-year rate.

$$Avg.\,Excess\,Firm\,Value_{i,t} = \beta_0 + \beta_1\,Low\,Intensity_{i,t} + \beta_2\,Medium\,Intensity_{i,t} + \beta_3\,High\,Intensity_{i,t} + \beta_4\,Interest\,Rate_t + \beta_5\,Low\,Intensity \times Interest\,Rate_{i,t} + \beta_6\,Medium\,Intensity \times Interest\,Rate_{i,t} + \beta_7\,High\,Intensity \times Interest\,Rate_{i,t} + \beta_8\,Leverage_{i,t} + \beta_9\,Cash\,Holdings_{i,t} + \gamma_i + X_t + \varepsilon_{i,t} \quad (4)$$

Table 6 – Interaction terms of the regressions of the asset-weighted average excess firm value on the diversification intensity, interest rate and their interaction term

	(1) 1-month	(2) 3-month	(3) 6-month	(4) 1-year	(5) 2-year	(6) 3-year	(7) 5-year	(8) 7-year	(9) 10-year	(10) 20-year	(11) 30-year
Low Intensity x Interest Rate	0.0284***	0.00504	0.00529	0.00554	0.00477	0.00463	0.00426	0.00318	0.00379	-0.00497	0.00275
	(3.94)	(1.10)	(1.17)	(1.19)	(0.98)	(0.90)	(0.74)	(0.52)	(0.57)	(-0.59)	(0.36)
Medium Intensity x Interest Rate	0.0164*	0.00460	0.00491	0.00488	0.00374	0.00309	0.00168	0.000348	-0.000480	0.000998	-0.00291
	(2.18)	(0.87)	(0.94)	(0.91)	(0.66)	(0.51)	(0.25)	(0.05)	(-0.06)	(0.10)	(-0.33)
High Intensity x Interest Rate	-0.0334	-0.0258**	-0.0250**	-0.0257**	-0.0288**	-0.0323***	-0.0390***	-0.0433***	-0.0473***	-0.0531**	-0.0544***
	(-1.29)	(-2.85)	(-2.80)	(-2.85)	(-3.11)	(-3.32)	(-3.63)	(-3.80)	(-3.87)	(-3.19)	(-3.91)
Observations	103,099	160,922	160,922	160,922	160,922	160,922	160,922	160,922	160,922	148,562	160,922
R^2	0.202	0.185	0.185	0.186	0.187	0.187	0.188	0.189	0.189	0.193	0.189

t statistics in parentheses
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

The previously analysed regressions demonstrate the importance of the 1-month rate in the obtention of statistically significant results. Yet, unlike the remaining interest rate variables which have been collected since before the 2000s, the 1-month interest rate only started being collected by the U.S. Federal Reserve from 2001 onwards. This may indicate that diversification

as a means to hedge against interest rate shocks may have become more valuable to stakeholders with the turn of the century as U.S. firms are utilising debt with a shorter maturity. In fact, Custódio, Ferreira, and Laureano (2013) found a "secular decrease in debt maturity of the typical firm". Also, both focused and diversified firms have experienced an increasing trend in short-term leverage, as verified in Figure A.2. But it is particularly true for focused companies (Figure A.3). Consequently, companies are increasing their exposure to both rollover and debt-overhang risks. The following tables, 7 to 9, present the previously performed analysis, but when dividing the period of analysis into two subperiods, from 1989 to 1999 and 2000 to 2022, with the same cutoff year, i.e. 2000, as was seen in Custódio, Ferreira, and Laureano (2013).

Table 7 presents the results for the baseline regression when dividing the period of analysis into two subperiods from 1989 to 1999 (Panel A – Equation 5) and 2000 to 2022 (Panel B – Equation 6). The results attained show that the interaction terms have improved, by increasing with the turn of the century, for all interest rate maturities except the 10-year and the 30-year rates. In particular, the interaction terms for the short-term rates from the 3-month to the 1-year ones became statistically significant from the 2000s onwards. This proves the posed hypothesis that diversification is becoming increasingly important as a way to combat interest rate shocks, especially in the short term, up until the 1-year interest rate. This occurs as companies that use more short-term debt will have to renegotiate their liabilities more regularly and will likely be more exposed to credit supply shocks, like those originated from alterations to interest rates, and face financial constraints (Custódio, Ferreira, and Laureano 2013). Moreover, it demonstrates that the value of the mechanisms, like the co-insurance effect and the ICM, present for diversified firms to combat these shocks has increased.

$$Avg.Excess\ Firm\ Value_{i,t} = \beta_0 + \beta_1\ Diversification_{i,t} + \beta_2\ Interest\ Rate_t + \beta_3\ Diversification \times Interest\ Rate_{i,t} + \beta_4\ Leverage_{i,t} + \beta_5\ Cash\ Holdings_{i,t} + \gamma_i + X_t + \varepsilon_{i,t}\ \ if\ Fiscal\ Year < 2000 \quad (5)$$

$$Avg.Excess\ Firm\ Value_{i,t} = \beta_0 + \beta_1\ Diversification_{i,t} + \beta_2\ Interest\ Rate_t + \beta_3\ Diversification \times Interest\ Rate_{i,t} + \beta_4\ Leverage_{i,t} + \beta_5\ Cash\ Holdings_{i,t} + \gamma_i + X_t + \varepsilon_{i,t}\ if\ Fiscal\ Year \geq 2000 \quad (6)$$

Table 7 – Interaction terms of the regressions of the asset-weighted average excess firm value on the diversification status,

interest rate and their interaction term divided into two periods of analysis: 1989-1999 (Panel A) and 2000-2022 (Panel B)

	(1) 3-month	(2) 6-month	(3) 1-year	(4) 2-year	(5) 3-year	(6) 5-year	(7) 7-year	(8) 10-year	(9) 20-year	(10) 30-year
Panel A: Period analysed: 1989-1999										
Diversification x Interest Rate	0.000894	0.00114	0.00171	0.000701	0.00106	0.00176	0.000171	0.00289	-0.00203	0.00523
	(0.17)	(0.22)	(0.31)	(0.11)	(0.15)	(0.21)	(0.02)	(0.31)	(-0.12)	(0.49)
Observations	52,055	52,055	52,055	52,055	52,055	52,055	52,055	52,055	39,695	52,055
R^2	0.0694	0.0693	0.0691	0.0683	0.0680	0.0676	0.0672	0.0674	0.0654	0.0674
Panel B: Period analysed: 2000-2022										
Diversification x Interest Rate	0.00787^{+}	0.00831^{+}	0.00886^{+}	0.00815	0.00763	0.00573	0.00354	0.00158	-0.00193	-0.00520
	(1.77)	(1.90)	(1.95)	(1.64)	(1.39)	(0.86)	(0.47)	(0.18)	(-0.21)	(-0.49)
Observations	108,867	108,867	108,867	108,867	108,867	108,867	108,867	108,867	108,867	108,867
R^2	0.201	0.201	0.202	0.202	0.203	0.204	0.205	0.205	0.206	0.206

t statistics in parentheses
$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The secular analysis to compare the different types of diversified firms to specialized ones is presented in Table 8 (Equations 7 and 8). Although the literature has constantly viewed enterprises that engage in unrelated diversification as “more” or even “better” diversified than those that opt for related diversification, as they are more heterogeneous in aspects, such as investment opportunities and cash flows, which increases their debt co-insurance as their segments’ cash flows are less correlated (Kuppuswamy and Villalonga 2016), the interaction terms’ statistical significance has not changed throughout time. It is the related diversification that has improved, presenting the upper hand in the hedge against interest rate shocks, particularly in the short term. This is the case as, since the 2000s, the interaction terms became not only positive but also statistically significant from the 3-month to the 3-year rates. Even though at first glance this result may appear counter-intuitive, two interconnected reasons can support it. First, different industries react distinctly to interest rate shocks such that enterprises that are classified as being engaged in unrelated diversification will have to adopt distinct segment-dependent strategies to adapt to the same shock. Second, both the benefits and costs associated with ICM increase with the diversity of investment opportunities and cash flows (Kuppuswamy and Villalonga 2016). Here, one may ponder if the costs exceed the benefits as interest rate shocks will distinctly impact the different industries in which unrelated diversified firms operate. This makes the response to the shock to be more challenging and complex. Consequently, leading related diversification to be more efficient, as the shock will originate similar consequences across segments and the management can adopt an analogous and cohesive approach to it. Table A.8 exhibits the results of the secular analysis performed to

compare the types of diversified firms to themselves. However, the interaction terms continue not to be statistically significant.

$$Avg.Excess\ Firm\ Value_{i,t} = \beta_0 + \beta_1 Unrelated\ Diversification_{i,t}\ or\ \beta_1\ Related\ Diversification_{i,t} + \beta_2\ Interest\ Rate_t + \beta_3\ Unrelated\ Diversification \times Interest\ Rate_{i,t}\ or\ \beta_3\ Related\ Diversification \times Interest\ Rate_{i,t} + \beta_4\ Leverage_{i,t} + \beta_5\ Cash\ Holdings_{i,t} + \gamma_i + X_t + \varepsilon_{i,t}\ if\ Fiscal\ Year < 2000 \quad (7)$$

$$Avg.Excess\ Firm\ Value_{i,t} = \beta_0 + \beta_1 Unrelated\ Diversification_{i,t}\ or\ \beta_1\ Related\ Diversification_{i,t} + \beta_2\ Interest\ Rate_t + \beta_3\ Unrelated\ Diversification \times Interest\ Rate_{i,t}\ or\ \beta_3\ Related\ Diversification \times Interest\ Rate_{i,t} + \beta_4\ Leverage_{i,t} + \beta_5\ Cash\ Holdings_{i,t} + \gamma_i + X_t + \varepsilon_{i,t}\ if\ Fiscal\ Year \geq 2000 \quad (8)$$

Table 8 – Interaction terms of the regressions of the asset-weighted average excess firm value on the diversification type compared to focused firms, interest rate and their interaction term divided into two periods of analysis: 1989-1999 (Panel A.1 and Panel B.1) and 2000-2022 (Panel A.2 and Panel B.2)

	(1) 3-month	(2) 6-month	(3) 1-year	(4) 2-year	(5) 3-year	(6) 5-year	(7) 7-year	(8) 10-year	(9) 20-year	(10) 30-year
Panel A: Unrelated diversification compared to focused firms										
Panel A.1.: Period analysed: 1989-1999										
Unrelated Diversification x Interest Rate	0.00171	0.00190	0.00224	0.00106	0.000153	-0.00218	-0.00402	-0.00435	-0.00781	-0.00563
	(0.30)	(0.32)	(0.37)	(0.15)	(0.02)	(-0.24)	(-0.42)	(-0.43)	(-0.41)	(-0.47)
Observations	50,993	50,993	50,993	50,993	50,993	50,993	50,993	50,993	38,851	50,993
R^2	0.0682	0.0681	0.0679	0.0672	0.0670	0.0667	0.0664	0.0665	0.0637	0.0665
Panel A.2.: Period analysed: 2000-2022										
Unrelated Diversification x Interest Rate	0.00394	0.00471	0.00510	0.00363	0.00232	-0.00129	-0.00490	-0.00819	-0.0127	-0.0176
	(0.71)	(0.87)	(0.90)	(0.59)	(0.34)	(-0.16)	(-0.54)	(-0.79)	(-1.14)	(-1.41)
Observations	105,176	105,176	105,176	105,176	105,176	105,176	105,176	105,176	105,176	105,176
R^2	0.202	0.202	0.203	0.204	0.204	0.205	0.206	0.207	0.207	0.207
Panel B: Related diversification compared to focused firms										
Panel B.1.: Period analysed: 1989-1999										
Related Diversification x Interest Rate	-0.00549	-0.00502	-0.00378	-0.00689	-0.00267	0.00754	0.00458	0.0193	-0.00278	0.0327
	(-0.53)	(-0.48)	(-0.35)	(-0.57)	(-0.20)	(0.45)	(0.26)	(1.00)	(-0.09)	(1.45)
Observations	48,192	48,192	48,192	48,192	48,192	48,192	48,192	48,192	36,977	48,192
R^2	0.0704	0.0703	0.0700	0.0693	0.0691	0.0687	0.0684	0.0686	0.0664	0.0686
Panel B.2.: Period analysed: 2000-2022										
Related Diversification x Interest Rate	0.0129^{+}	0.0128*	0.0137*	0.0143^{+}	0.0149^{+}	0.0154	0.0151	0.0145	0.0120	0.0105
	(1.93)	(1.96)	(2.00)	(1.91)	(1.80)	(1.54)	(1.31)	(1.10)	(0.84)	(0.66)
Observations	102,788	102,788	102,788	102,788	102,788	102,788	102,788	102,788	102,788	102,788
R^2	0.202	0.202	0.203	0.203	0.204	0.205	0.206	0.206	0.207	0.207

t statistics in parentheses
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

The outcomes of the secular division attained when considering the diversification intensity are presented in Table 9 (Equations 9 and 10). Since the year 2000, for the short-run rates that range between the 3-month and the 2-year one, *Low Intensity*'s interaction terms not only became significant but also increased in value, while longer-term rates, from the 3-year to the 30-year interest rates, decreased, with 5-, 10- and 30-year rates losing their statistical significance. This is evidence of the increased importance of short-term rates in an economy where companies are progressively becoming more dependent on short-term liabilities. Also, the interaction terms for the *High Intensity* became more negative for all interest rate variables, becoming significant or increasing their significance for the rates that range from the 3-year to the 30-year rates. This is a symbol of the increasing inefficiency of further incurring in diversification as a means to oppose interest rate shocks due to its costs, which include agency costs. Although those that are

classified as medium intensity saw their interaction terms increase and become positive, the interaction terms are still not statistically significant. Ultimately, this demonstrates that, since the turn of the century, there is even clearer evidence that the optimal number of segments to have for the goal of being better protected from interest rate shocks is two segments, as it minimises the costs that arise when a company is diversified.

$$Avg.Excess\ Firm\ Value_{i,t} = \beta_0 + \beta_1\ Low\ Intensity_{i,t} + \beta_2\ Medium\ Intensity_{i,t} + \beta_3\ High\ Intensity_{i,t} + \beta_4\ Interest\ Rate_t + \beta_5\ Low\ Intensity \times Interest\ Rate_{i,t} + \beta_6\ Medium\ Intensity \times Interest\ Rate_{i,t} + \beta_7\ High\ Intensity \times Interest\ Rate_{i,t} + \beta_8\ Leverage_{i,t} + \beta_9\ Cash\ Holdings_{i,t} + \gamma_i + X_t + \varepsilon_{i,t}\ if\ Fiscal\ Year < 2000 \quad (9)$$

$$Avg.Excess\ Firm\ Value_{i,t} = \beta_0 + \beta_1\ Low\ Intensity_{i,t} + \beta_2\ Medium\ Intensity_{i,t} + \beta_3\ High\ Intensity_{i,t} + \beta_4\ Interest\ Rate_t + \beta_5\ Low\ Intensity \times Interest\ Rate_{i,t} + \beta_6\ Medium\ Intensity \times Interest\ Rate_{i,t} + \beta_7\ High\ Intensity \times Interest\ Rate_{i,t} + \beta_8\ Leverage_{i,t} + \beta_9\ Cash\ Holdings_{i,t} + \gamma_i + X_t + \varepsilon_{i,t}\ if\ Fiscal\ Year \geq 2000 \quad (10)$$

Table 9 – Interaction terms of the regressions of the asset-weighted average excess firm value on the diversification intensity, interest rate and their interaction term divided into two periods of analysis: 1989-1999 (Panel A) and 2000-2022 (Panel B)

	(1) 3-month	(2) 6-month	(3) 1-year	(4) 2-year	(5) 3-year	(6) 5-year	(7) 7-year	(8) 10-year	(9) 20-year	(10) 30-year
Panel A: Period analysed: 1989-1999										
Low Intensity x Interest Rate	0.00621	0.00693	0.00839	0.0107	0.0139	0.0197^{+}	0.0197	0.0237^{+}	0.0266	0.0287^{+}
	(0.86)	(0.95)	(1.10)	(1.24)	(1.47)	(1.73)	(1.62)	(1.84)	(1.14)	(1.93)
Medium Intensity x Interest Rate	-0.00500	-0.00542	-0.00604	-0.0102	-0.0125	-0.0162	-0.0189	-0.0175	-0.0386	-0.0177
	(-0.65)	(-0.70)	(-0.76)	(-1.15)	(-1.30)	(-1.46)	(-1.62)	(-1.43)	(-1.58)	(-1.26)
High Intensity x Interest Rate	-0.00322	-0.00305	-0.00296	-0.00923	-0.0143	-0.0257	-0.0319	-0.0347	-0.0363	-0.0420^{+}
	(-0.25)	(-0.23)	(-0.22)	(-0.58)	(-0.81)	(-1.23)	(-1.46)	(-1.53)	(-1.02)	(-1.66)
Observations	52,055	52,055	52,055	52,055	52,055	52,055	52,055	52,055	39,695	52,055
R^2	0.0696	0.0695	0.0692	0.0684	0.0682	0.0679	0.0675	0.0677	0.0656	0.0678
Panel B: Period analysed: 2000-2022										
Low Intensity x Interest Rate	0.0122*	0.0124*	0.0129*	0.0120^{+}	0.0115	0.00954	0.00688	0.00488	-0.000311	-0.00375
	(2.11)	(2.20)	(2.19)	(1.87)	(1.63)	(1.13)	(0.71)	(0.44)	(-0.03)	(-0.28)
Medium Intensity x Interest Rate	0.00652	0.00707	0.00784	0.00778	0.00783	0.00702	0.00596	0.00445	0.00267	0.000240
	(1.04)	(1.15)	(1.22)	(1.11)	(1.02)	(0.76)	(0.57)	(0.37)	(0.21)	(0.02)
High Intensity x Interest Rate	-0.0219	-0.0203	-0.0206	-0.0240	-0.0291^{+}	-0.0393*	-0.0464*	-0.0536*	-0.0549*	-0.0636*
	(-1.28)	(-1.22)	(-1.24)	(-1.45)	(-1.66)	(-2.00)	(-2.18)	(-2.30)	(-2.35)	(-2.44)
Observations	108,867	108,867	108,867	108,867	108,867	108,867	108,867	108,867	108,867	108,867
R^2	0.201	0.201	0.202	0.202	0.203	0.204	0.205	0.205	0.206	0.206

t statistics in parentheses
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

The tables in Appendix's Section 3.2 display regressions like those from Equations 1 to 4, differing from them by accounting for *Average Excess Firm Value* and *Interest Rate* changes. But, they do not display any statistically significant interaction terms. Also, robustness checks using the sales-weighted *Average Excess Firm Value* can be found in Section 4 of the Appendix.

Section 5: Conclusion, limitations, and future research

This paper examined if diversification can be utilised as a tool to hedge against interest rate shocks. The findings, attained through the usage of OLS regression methods, demonstrate that, when considering the 33 years analysed, i.e. 1989 until 2022, diversification provides protection against these shocks in the very short term, i.e. for the 1-month interest rate, due to the co-

insurance effect and ICM. This protection is not dependent on the type of diversification, as both related and unrelated diversification only present statistically significant positive results for this rate. Yet, this is not the case when analysing how the intensity of diversification impacts the effectiveness of diversification as a hedge against these shocks. The benefits attained from being diversified decrease as the diversification intensity rises. Low-intensity firms are the ones that present the highest absorbance of interest rate shocks. While high-intensity ones are inefficient at hedging against these shocks as their average excess value decreases when these shocks occur for all tested rates, except for the 1-month one, due to agency costs.

Diversification as a way to hedge against interest rate shocks has become more relevant, since the 2000s, particularly in the short term, i.e. until the 1-year interest rate. This happened because companies increased their short-term leverage. Subsequently, expanding their exposure to both rollover and debt-overhang risks. In this context, related diversification has become more essential to protect against this risk, particularly in the short to medium terms, i.e. for the 3-month to 3-year rates. The secular analysis also demonstrated that low-intensity diversification became more efficient at fighting against these shocks, as diversification became a statistically significant tool for 3-month to 2-year rates, while high intensity became worse, given that the previous negative results became significant from 3-year to 30-year rates.

Yet, this analysis suffers from four different types of limitations. First, a database limitation. According to Martin and Sayrak (2003), Compustat may lack "consistency in firms' segment definitions and reporting practices", considering that the information is self-reported. Despite this, it was still used because it is the main database utilised by researchers studying corporate diversification. Therefore, it allows for better comparability in the results attained. Second, a limitation in the chosen dependent variable, i.e. the *Average Excess Firm Value*, which enables the verification of the existence of a diversification discount. As firms decide if they diversify, making diversification, in itself, endogenous, the dependent variable may capture effects other

than the pure existence of a diversification discount (Martin and Sayrak 2003). However, two explanations justify why it was kept as the dependent variable in this analysis. On the one hand, the *Average Excess Firm Value* is being analysed longitudinally to understand its change throughout time due to interest rate shocks. On the other hand, econometric methods, such as firm-fixed effects, were employed to deal with the endogeneity problem at hand. The third one originates from the unavailability of data regarding the average maturity of the firm's liabilities. So, in the secular analysis, one could not control for the debt maturity, avoiding the results to be driven by the differences in the debt maturity between diversified and specialised enterprises. The last limitation which could be posed to this body of work is the period analysed to study these interest rate shocks. Since 1989, the economy has experienced a declining trend in interest rates. So, during this period, the majority of shocks that originate from changes to interest rates have been favourable to businesses as external financing has become cheaper.

Hence, subsequent empirical research could expand this analysis to include a larger time span. This could include the Federal Reserve's historic monetary tightening measures that started in March 2022, which led to a 22-year high federal funds rate that is only expected to decline in July 2024, according to the Financial Times (2023). Additionally, an analysis could be done to understand which of the mechanisms, the co-insurance effect or the ICM, holds the most power in fighting against interest rate shocks. On a more theoretical basis, researchers could also ponder on the nature of a potential meta-shock at hand, as one does not know where the impact of interest rate shocks on the excess firm value may be coming from. It may be coming directly from the shocks originated by the change in interest rates. Indirectly, when considering that interest rate alterations can originate a domino effect, such that firms are subject to other shocks that may happen because of the interest rate shocks. This is central as different shocks will have varying degrees of importance regarding their impact on firm value. Or it may be a mixture of both the direct and indirect impacts of the interest rate shocks.

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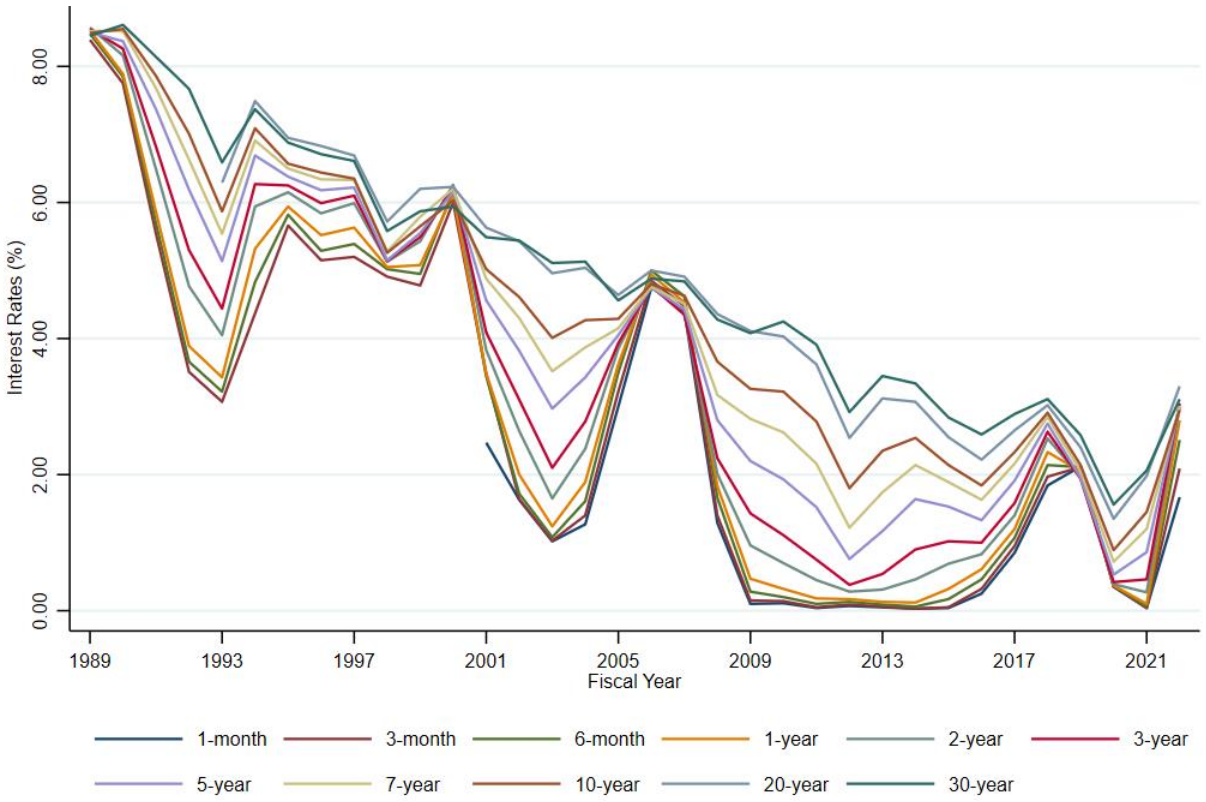
Appendix

Section 1: Interest rate variables

Figure A.1 – U.S. yield curve, from 1989 to 2022, using the 1-month, 3-month, 6-month, 1-year, 2-year, 3-year, 5-year, 7-year, 10-year, 20-year and 30-year Market Yield on U.S. Treasury Securities at Constant Maturities



Section 2: Asset-weighted sample univariate analysis

Table A.1 – Breakdown of the number of observations in the full asset-weighted sample per Diversification Status (Panel A), Diversification Type (Panel B) and Diversification Intensity (Panel C)

	(1) Absolute Frequency	(2) Relative Frequency (%)
Panel A: Diversification Status		
Diversified Firms	16,670	8.744
Non-Diversified Firms	173,974	91.256
Total	190,644	100
Panel B: Diversification Type		
Unrelated Diversification Firms	11,389	5.974
Related Diversification Firms	5,281	2.770
Non-Diversified Firms	173,974	91.256
Total	190,644	100
Panel C: Diversification Intensity		
Low Diversification Intensity Firms	9,063	4.754
Medium Diversification Intensity Firms	6,441	3.379
High Diversification Intensity Firms	1,166	0.612
Non-Diversified Firms	173,974	91.256
Total	190,644	100

Figure A.2 – Evolution of key Balance Sheet, Income Statement and Market Value variables, in millions of U.S. dollars, from 1989 to 2022, for the asset-weighted sample, dependent on the average firm's diversification status

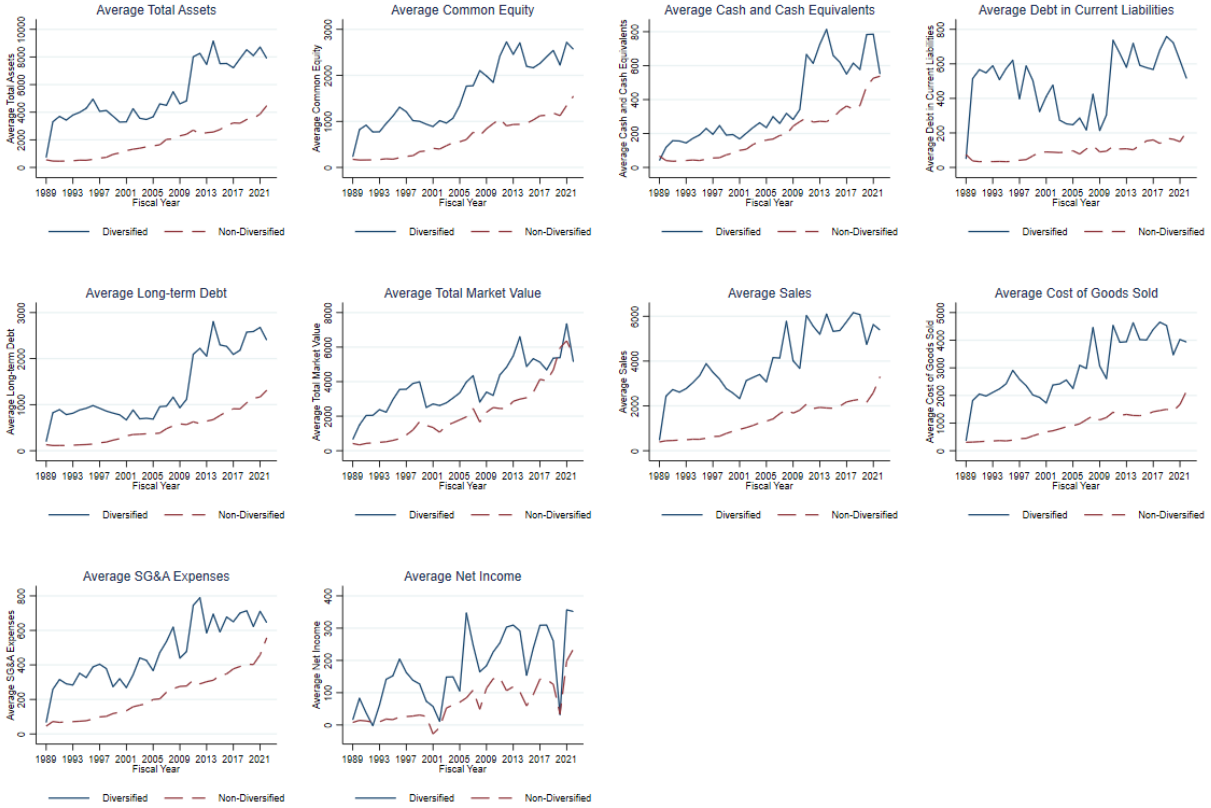
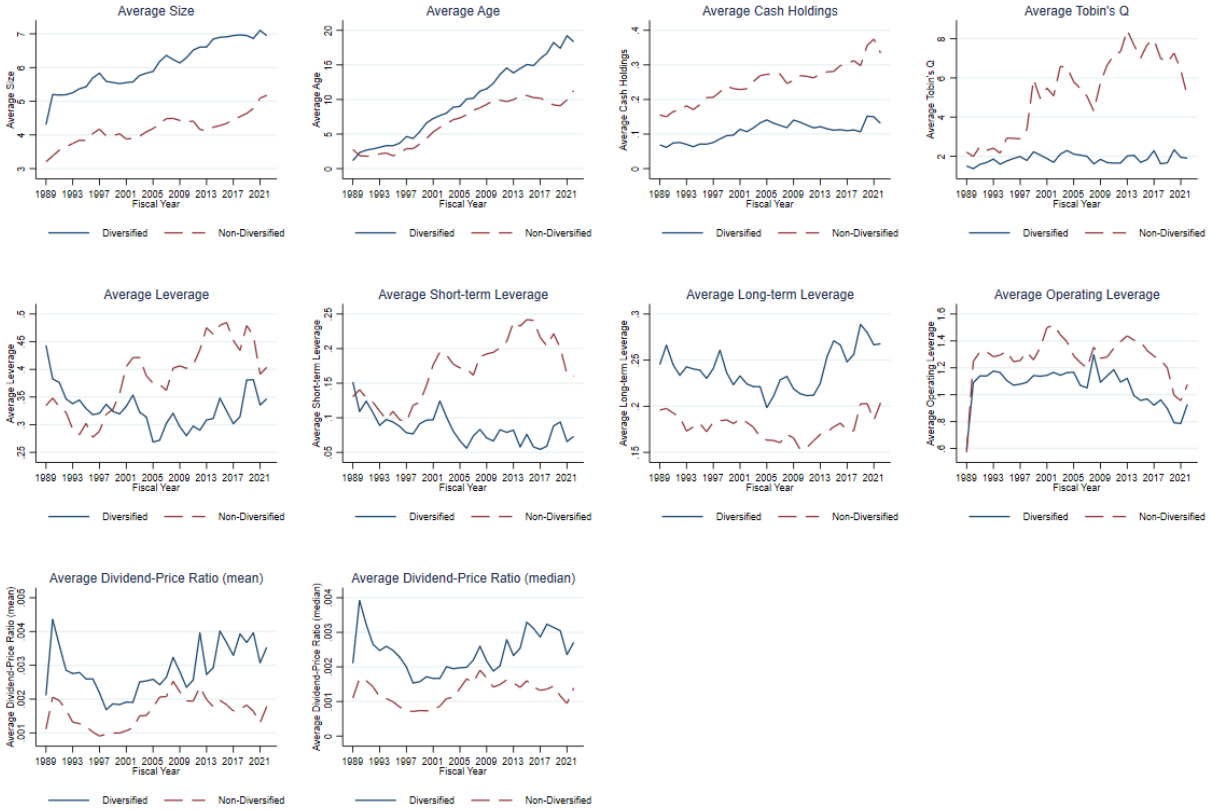


Figure A.3 – Evolution of control variables winsorised at the top and bottom one percentile, excluding Size and Age, from 1989 to 2022, for the asset-weighted sample, dependent on the average firm's diversification status



Section 3: Equations and regressions

Section 3.1: Level regressions and equations

Table A.2 – Regressions of the asset-weighted average excess firm value on the diversification status, interest rate and their interaction term for a hypothetical economy with just two firms, a focused and a diversified one, operating

	(1) 1-month	(2) 3-month	(3) 6-month	(4) 1-year	(5) 2-year	(6) 3-year	(7) 5-year	(8) 7-year	(9) 10-year	(10) 20-year	(11) 30-year
Diversification	-0.428***	-0.395***	-0.402***	-0.414***	-0.436***	-0.457***	-0.497***	-0.523***	-0.552***	-0.618***	-0.604***
	(-270.58)	(-234.86)	(-236.57)	(-244.39)	(-260.33)	(-274.29)	(-302.42)	(-306.83)	(-315.38)	(-311.77)	(-285.22)
Interest Rate	-0.0229***	-0.0253***	-0.0256***	-0.0268***	-0.0278***	-0.0290***	-0.0304***	-0.0307***	-0.0315***	-0.0331***	-0.0324***
	(-313.16)	(-247.67)	(-259.63)	(-281.89)	(-321.23)	(-339.62)	(-329.72)	(-298.50)	(-259.73)	(-218.56)	(-214.46)
Diversification x Interest Rate	**0.0408*** **	**0.0387*** **	**0.0390*** **	**0.0408*** **	**0.0435*** **	**0.0466*** **	**0.0521*** **	**0.0549*** **	**0.0589*** **	**0.0676*** **	**0.0634*** **
	(113.59)	**(121.64)**	**(124.42)**	**(131.05)**	**(142.47)**	**(154.05)**	**(175.39)**	**(177.54)**	**(182.42)**	**(184.63)**	**(172.59)**
Leverage	-0.0000294	0.000823***	0.000716***	0.000504**	0.000196	0.0000256	-0.000124	-0.0000889	-0.0000481	-0.000111	0.000207
	(-0.20)	(4.12)	(3.66)	(2.71)	(1.11)	(0.15)	(-0.68)	(-0.46)	(-0.24)	(-0.50)	(0.93)
Cash Holdings	-0.00481***	-0.00150+	-0.00152*	-0.00166*	-0.00183**	-0.00185**	-0.00185**	-0.00202**	-0.00218**	-0.00273**	-0.00260**
	(-7.83)	(-1.92)	(-2.00)	(-2.31)	(-2.69)	(-2.75)	(-2.67)	(-2.77)	(-2.86)	(-3.22)	(-3.13)
GDP Growth	0.00204***	-0.00396***	-0.00391***	-0.00376***	-0.00333***	-0.00309***	-0.00263***	-0.00224***	-0.00188***	-0.000199***	-0.00115***
	(39.90)	(-61.71)	(-64.25)	(-65.19)	(-59.60)	(-56.18)	(-47.83)	(-39.26)	(-32.50)	(-3.60)	(-19.27)
Inflation	-0.00655***	0.00172***	0.00233***	0.00267***	0.00251***	0.00229***	0.00178***	0.00100***	0.000803***	-0.00239***	-0.000870***
	(-49.28)	(15.71)	(22.41)	(26.70)	(24.22)	(21.01)	(14.64)	(7.80)	(5.81)	(-17.72)	(-5.99)
Unemployment Rate	-0.00256***	-0.00980***	-0.0102***	-0.0104***	-0.00929***	-0.00812***	-0.00501***	-0.00254***	0.000248***	0.00300***	0.00425***
	(-31.81)	(-81.30)	(-85.21)	(-89.91)	(-90.60)	(-87.37)	(-65.93)	(-36.44)	(3.92)	(42.88)	(63.34)
Constant	0.292***	0.328***	0.334***	0.340***	0.344***	0.346***	0.344***	0.339***	0.332***	0.339***	0.331***
	(423.16)	(316.46)	(324.51)	(342.26)	(383.58)	(415.38)	(464.22)	(464.31)	(458.59)	(359.05)	(399.14)
Observations	116,691	188,475	188,475	188,475	188,475	188,475	188,475	188,475	188,475	171,776	188,475
R^2	0.828	0.723	0.732	0.747	0.763	0.770	0.769	0.757	0.749	0.733	0.721

t statistics in parentheses
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table A.3 – Regressions of the asset-weighted average excess firm value on the diversification status, interest rate and their interaction term, divided into quartiles depending on size: First Size Quartile (Panel A), Second Size Quartile (Panel B), Third Size Quartile (Panel C) and Fourth Size Quartile (Panel D)

	(1) 1-month	(2) 3-month	(3) 6-month	(4) 1-year	(5) 2-year	(6) 3-year	(7) 5-year	(8) 7-year	(9) 10-year	(10) 20-year	(11) 30-year
Panel A: First Size Quartile											
Diversification	-0.265**	-0.318***	-0.324***	-0.335***	-0.359***	-0.382***	-0.430***	-0.466***	-0.514***	-0.537**	-0.611***
	(-3.18)	(-4.16)	(-4.16)	(-4.13)	(-4.03)	(-3.96)	(-3.85)	(-3.76)	(-3.79)	(-3.21)	(-3.73)
Interest Rate	-0.00982	-0.00709	-0.00615	-0.00523	-0.00234	-0.000436	0.00347	0.00634	0.00780	0.0192	0.0107
	(-0.90)	(-1.07)	(-0.92)	(-0.75)	(-0.31)	(-0.05)	(0.39)	(0.66)	(0.76)	(1.46)	(0.91)
Diversification x Interest Rate	**0.0231**	**0.0385***	**0.0386***	**0.0401***	**0.0429***	**0.0462***	**0.0531***	**0.0574***	**0.0648*** **	**0.0617***	**0.0769*** **
	(0.68)	**(2.30)**	**(2.33)**	**(2.34)**	**(2.36)**	**(2.39)**	**(2.46)**	**(2.49)**	**(2.62)**	**(1.96)**	**(2.74)**
Leverage	0.443***	0.451***	0.452***	0.452***	0.452***	0.452***	0.453***	0.453***	0.454***	0.454***	0.454***
	(36.95)	(42.09)	(42.10)	(42.12)	(42.17)	(42.21)	(42.30)	(42.36)	(42.42)	(41.88)	(42.47)
Cash Holdings	0.881***	0.828***	0.828***	0.828***	0.828***	0.829***	0.830***	0.830***	0.831***	0.849***	0.831***
	(15.42)	(17.35)	(17.35)	(17.35)	(17.36)	(17.37)	(17.39)	(17.41)	(17.42)	(17.09)	(17.44)
GDP Growth	-0.0110*	-0.00946*	-0.00936*	-0.00926*	-0.00904*	-0.00894*	-0.00881*	-0.00880*	-0.00888*	-0.0121**	-0.00920*
	(-2.40)	(-2.43)	(-2.41)	(-2.39)	(-2.35)	(-2.33)	(-2.30)	(-2.31)	(-2.34)	(-2.85)	(-2.44)
Inflation	0.00770	0.00625	0.00599	0.00558	0.00437	0.00364	0.00239	0.00172	0.00133	0.00688	0.00137
	(0.90)	(0.90)	(0.86)	(0.80)	(0.62)	(0.52)	(0.34)	(0.25)	(0.19)	(0.89)	(0.20)
Unemployment Rate	-0.000275	-0.000668	-0.000153	0.000491	0.00230	0.00330	0.00457	0.00484	0.00416	0.00365	0.00259
	(-0.03)	(-0.09)	(-0.02)	(0.06)	(0.30)	(0.44)	(0.63)	(0.69)	(0.62)	(0.52)	(0.39)
Constant	0.545***	0.399***	0.394***	0.389***	0.372***	0.361***	0.340***	0.327***	0.324***	0.308***	0.315***
	(7.18)	(6.11)	(5.98)	(5.82)	(5.50)	(5.26)	(4.87)	(4.65)	(4.64)	(3.75)	(4.38)
Observations	24,069	37,601	37,601	37,601	37,601	37,601	37,601	37,601	37,601	34,147	37,601
R^2	0.242	0.235	0.235	0.235	0.235	0.235	0.235	0.235	0.235	0.238	0.235
Panel B: Second Size Quartile											
Diversification	-0.168***	-0.139***	-0.140***	-0.143***	-0.149***	-0.155***	-0.165**	-0.172**	-0.174**	-0.202*	-0.175*
	(-3.47)	(-3.72)	(-3.69)	(-3.64)	(-3.47)	(-3.37)	(-3.14)	(-2.95)	(-2.72)	(-2.33)	(-2.24)
Interest Rate	0.0507***	0.0443***	0.0448***	0.0471***	0.0503***	0.0540***	0.0607***	0.0632***	0.0687***	0.0749***	0.0773***
	(9.60)	(13.07)	(13.21)	(13.37)	(13.34)	(13.41)	(13.39)	(13.08)	(13.22)	(11.73)	(12.93)
Diversification x Interest Rate	**0.0315***	**0.0147***	**0.0146***	**0.0154***	**0.0158***	**0.0168***	**0.0179***	**0.0181***	**0.0181***	**0.0213**	**0.0167**
	(2.50)	**(1.98)**	**(1.98)**	**(2.03)**	**(1.98)**	**(1.98)**	**(1.90)**	**(1.79)**	**(1.65)**	**(1.39)**	**(1.32)**
Leverage	0.234***	0.198***	0.198***	0.199***	0.200***	0.201***	0.203***	0.204***	0.206***	0.212***	0.207***
	(8.23)	(8.40)	(8.43)	(8.46)	(8.50)	(8.54)	(8.62)	(8.63)	(8.72)	(8.69)	(8.78)
Cash Holdings	0.520***	0.485***	0.485***	0.485***	0.485***	0.484***	0.483***	0.484***	0.484***	0.500***	0.485***
	(11.67)	(14.72)	(14.73)	(14.73)	(14.69)	(14.66)	(14.60)	(14.61)	(14.59)	(14.41)	(14.60)
GDP Growth	0.0115***	0.0130***	0.0127***	0.0123***	0.0115***	0.0112***	0.0107***	0.0100***	0.00935***	0.00906***	0.00759***
	(5.13)	(6.84)	(6.72)	(6.54)	(6.16)	(6.01)	(5.73)	(5.40)	(5.06)	(4.35)	(4.12)
Inflation	-0.00706+	-0.00680*	-0.00774*	-0.00827*	-0.00833*	-0.00851*	-0.00922**	-0.00835*	-0.00957**	-0.00738*	-0.00712*
	(-1.75)	(-2.05)	(-2.32)	(-2.47)	(-2.49)	(-2.54)	(-2.74)	(-2.48)	(-2.81)	(-2.01)	(-2.12)
Unemployment Rate	0.0379***	0.0473***	0.0480***	0.0485***	0.0465***	0.0447***	0.0390***	0.0335***	0.0270***	0.0217***	0.0158***
	(7.95)	(12.05)	(12.18)	(12.33)	(12.19)	(11.99)	(11.07)	(9.90)	(8.28)	(6.40)	(4.96)
Constant	-0.694***	-0.732***	-0.740***	-0.754***	-0.765***	-0.777***	-0.787***	-0.783***	-0.779***	-0.812***	-0.792***
	(-16.97)	(-21.39)	(-21.46)	(-21.60)	(-21.75)	(-21.86)	(-21.93)	(-21.71)	(-21.73)	(-19.89)	(-21.35)
Observations	22,481	40,811	40,811	40,811	40,811	40,811	40,811	40,811	40,811	36,817	40,811
R^2	0.0404	0.0408	0.0412	0.0420	0.0431	0.0440	0.0454	0.0453	0.0461	0.0451	0.0463

t statistics in parentheses
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table A.3 (continued) – Regressions of the asset-weighted average excess firm value on the diversification status, interest rate and their interaction term, divided into quartiles depending on size: First Size Quartile (Panel A), Second Size Quartile (Panel B), Third Size Quartile (Panel C) and Fourth Size Quartile (Panel D)

	(1) 1-month	(2) 3-month	(3) 6-month	(4) 1-year	(5) 2-year	(6) 3-year	(7) 5-year	(8) 7-year	(9) 10-year	(10) 20-year	(11) 30-year
Panel C: Third Size Quartile											
Diversification	-0.0661+	-0.0623*	-0.0616*	-0.0603+	-0.0584+	-0.0610	-0.0719	-0.0795	-0.100+	-0.101	-0.134+
	(-1.86)	(-2.06)	(-2.01)	(-1.90)	(-1.68)	(-1.61)	(-1.60)	(-1.56)	(-1.76)	(-1.29)	(-1.86)
Interest Rate	0.0192***	0.0372***	0.0376***	0.0399***	0.0439***	0.0475***	0.0532***	0.0556***	0.0587***	0.0630***	0.0634***
	(4.51)	(12.72)	(12.82)	(13.03)	(13.31)	(13.35)	(13.10)	(12.81)	(12.47)	(10.91)	(11.62)
Diversification x Interest Rate	**0.0183+**	**-0.00571**	**-0.00544**	**-0.00501**	**-0.00440**	**-0.00306**	**0.000201**	**0.00178**	**0.00634**	**0.00333**	**0.0121**
	(1.70)	**(-0.91)**	**(-0.88)**	**(-0.78)**	**(-0.64)**	**(-0.41)**	**(0.02)**	**(0.19)**	**(0.60)**	**(0.23)**	**(0.96)**
Leverage	0.139***	0.0768**	0.0777***	0.0789***	0.0801***	0.0815***	0.0839***	0.0845***	0.0867***	0.104***	0.0878***
	(4.89)	(3.29)	(3.32)	(3.37)	(3.42)	(3.48)	(3.57)	(3.60)	(3.69)	(4.31)	(3.74)
Cash Holdings	0.679***	0.676***	0.676***	0.676***	0.674***	0.672***	0.669***	0.668***	0.668***	0.668***	0.669***
	(14.97)	(17.30)	(17.31)	(17.33)	(17.30)	(17.27)	(17.19)	(17.17)	(17.14)	(16.45)	(17.13)
GDP Growth	-0.00228	0.00454**	0.00451**	0.00443**	0.00403**	0.00383**	0.00331*	0.00265+	0.00203	0.00141	0.000509
	(-1.47)	(3.21)	(3.19)	(3.14)	(2.87)	(2.74)	(2.38)	(1.92)	(1.47)	(0.95)	(0.37)
Inflation	0.00522+	-0.00279	-0.00379	-0.00458+	-0.00515+	-0.00540*	-0.00598*	-0.00529*	-0.00600*	-0.00454	-0.00363
	(1.78)	(-1.08)	(-1.46)	(-1.75)	(-1.96)	(-2.05)	(-2.24)	(-1.98)	(-2.21)	(-1.59)	(-1.35)
Unemployment Rate	0.0104**	0.0252***	0.0259***	0.0266***	0.0262***	0.0250***	0.0206***	0.0160***	0.0104***	0.00572*	0.00111
	(2.75)	(7.86)	(8.01)	(8.23)	(8.27)	(8.09)	(7.06)	(5.78)	(3.95)	(2.14)	(0.44)
Constant	-0.429***	-0.506***	-0.514***	-0.529***	-0.548***	-0.561***	-0.571***	-0.569***	-0.558***	-0.581***	-0.557***
	(-12.43)	(-17.34)	(-17.40)	(-17.58)	(-17.90)	(-18.01)	(-17.93)	(-17.76)	(-17.45)	(-15.90)	(-16.76)
Observations	25,525	41,529	41,529	41,529	41,529	41,529	41,529	41,529	41,529	38,384	41,529
R^2	0.0385	0.0479	0.0482	0.0492	0.0510	0.0522	0.0535	0.0537	0.0538	0.0523	0.0530
Panel D: Fourth Size Quartile											
Diversification	-0.0502*	-0.0193	-0.0203	-0.0192	-0.0123	-0.00624	0.00725	0.0203	0.0300	0.0410	0.0564
	(-2.28)	(-0.95)	(-0.99)	(-0.91)	(-0.55)	(-0.26)	(0.27)	(0.67)	(0.90)	(0.99)	(1.39)
Interest Rate	-0.00212	0.0265***	0.0266***	0.0282***	0.0312***	0.0336***	0.0374***	0.0398***	0.0420***	0.0457***	0.0464***
	(-0.56)	(9.04)	(9.10)	(9.32)	(9.78)	(9.97)	(10.18)	(10.36)	(10.36)	(10.41)	(10.38)
Diversification x Interest Rate	**0.0147***	**-0.00474**	**-0.00412**	**-0.00427**	**-0.00604**	**-0.00747**	**-0.0104+**	**-0.0129***	**-0.0145***	**-0.0150+**	**-0.0184***
	(2.42)	**(-1.11)**	**(-0.98)**	**(-0.99)**	**(-1.33)**	**(-1.54)**	**(-1.90)**	**(-2.17)**	**(-2.25)**	**(-1.89)**	**(-2.49)**
Leverage	0.0445	0.0255	0.0267	0.0289	0.0330	0.0362	0.0418	0.0447	0.0483	0.0628+	0.0511
	(1.14)	(0.75)	(0.79)	(0.85)	(0.98)	(1.08)	(1.25)	(1.34)	(1.46)	(1.88)	(1.55)
Cash Holdings	0.580***	0.555***	0.555***	0.557***	0.559***	0.560***	0.561***	0.561***	0.561***	0.570***	0.561***
	(11.86)	(11.94)	(11.95)	(11.99)	(12.05)	(12.07)	(12.08)	(12.09)	(12.08)	(12.09)	(12.07)
GDP Growth	-0.00753***	-0.000249	-0.0000351	0.0000936	-0.000156	-0.000409	-0.00110	-0.00181+	-0.00242*	-0.00344***	-0.00368***
	(-7.34)	(-0.24)	(-0.03)	(0.09)	(-0.15)	(-0.39)	(-1.09)	(-1.82)	(-2.46)	(-3.38)	(-3.79)
Inflation	0.0138***	0.00266	0.00162	0.000820	0.000529	0.000660	0.00119	0.00201	0.00225	0.00341+	0.00424*
	(7.71)	(1.48)	(0.88)	(0.44)	(0.28)	(0.36)	(0.65)	(1.11)	(1.25)	(1.87)	(2.42)
Unemployment Rate	0.00287	0.0146***	0.0152***	0.0159***	0.0159***	0.0153***	0.0124***	0.00953***	0.00588**	0.00260	0.0000428
	(1.17)	(6.25)	(6.39)	(6.61)	(6.74)	(6.61)	(5.80)	(4.77)	(3.13)	(1.44)	(0.02)
Constant	-0.146***	-0.244***	-0.250***	-0.260***	-0.276***	-0.285***	-0.294***	-0.296***	-0.292***	-0.310***	-0.301***
	(-5.70)	(-10.07)	(-10.15)	(-10.37)	(-10.76)	(-10.94)	(-11.10)	(-11.20)	(-11.08)	(-11.35)	(-11.08)
Observations	31,024	40,981	40,981	40,981	40,981	40,981	40,981	40,981	40,981	39,214	40,981
R^2	0.0190	0.0248	0.0251	0.0261	0.0283	0.0295	0.0312	0.0322	0.0326	0.0327	0.0331

t statistics in parentheses
+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

$$Avg.\,Excess\,Firm\,Value_{i,t} = \beta_0 + \beta_1\,Unrelated\,Diversification_{i,t} + \beta_2\,Interest\,Rate_t + \beta_3\,Unrelated\,Diversification \times Interest\,Rate_{i,t} + \beta_4\,Leverage_{i,t} + \beta_5\,Cash\,Holdings_{i,t} + \gamma_i + X_t + \varepsilon_{i,t} \quad \text{(A.1)}$$

Table A.4 – Regressions of the asset-weighted average excess firm value on the diversification type between diversified firms, interest rate and their interaction term

	(1) 1-month	(2) 3-month	(3) 6-month	(4) 1-year	(5) 2-year	(6) 3-year	(7) 5-year	(8) 7-year	(9) 10-year	(10) 20-year	(11) 30-year
Unrelated Diversification	-0.0408	-0.0384	-0.0401	-0.0406	-0.0405	-0.0392	-0.0359	-0.0335	-0.0310	-0.0544	-0.0257
	(-0.78)	(-0.97)	(-1.01)	(-1.00)	(-0.94)	(-0.87)	(-0.71)	(-0.60)	(-0.50)	(-0.71)	(-0.34)
Interest Rate	0.0252**	0.0245***	0.0252***	0.0278***	0.0308***	0.0340***	0.0391***	0.0407***	0.0443***	0.0442***	0.0490***
	(2.70)	(3.98)	(4.13)	(4.36)	(4.54)	(4.67)	(4.73)	(4.56)	(4.54)	(3.58)	(4.34)
Unrelated Diversification x Interest Rate	**-0.000639**	**-0.000536**	**-0.000120**	**-0.000404**	**-0.000959**	**-0.00164**	**-0.00270**	**-0.00304**	**-0.00357**	**0.00265**	**-0.00411**
	(-0.07)	**(-0.08)**	**(-0.02)**	**(-0.06)**	**(-0.14)**	**(-0.21)**	**(-0.31)**	**(-0.31)**	**(-0.33)**	**(0.19)**	**(-0.33)**
Leverage	0.341***	0.307***	0.308***	0.308***	0.309***	0.310***	0.311***	0.311***	0.312***	0.323***	0.313***
	(9.03)	(8.52)	(8.55)	(8.57)	(8.58)	(8.60)	(8.62)	(8.62)	(8.65)	(9.29)	(8.66)
Cash Holdings	0.604***	0.617***	0.618***	0.620***	0.624***	0.626***	0.628***	0.630***	0.631***	0.676***	0.632***
	(4.36)	(5.76)	(5.77)	(5.79)	(5.82)	(5.84)	(5.86)	(5.88)	(5.89)	(5.91)	(5.90)
GDP Growth	-0.00888***	-0.00340	-0.00337	-0.00336	-0.00364	-0.00372	-0.00398	-0.00440+	-0.00473+	-0.00774**	-0.00577*
	(-3.30)	(-1.33)	(-1.32)	(-1.31)	(-1.44)	(-1.48)	(-1.59)	(-1.77)	(-1.91)	(-2.86)	(-2.35)
Inflation	0.0205***	0.0137***	0.0128**	0.0120**	0.0117**	0.0115**	0.0112**	0.0118**	0.0113**	0.0167***	0.0130***
	(4.60)	(3.44)	(3.19)	(2.98)	(2.91)	(2.86)	(2.78)	(2.96)	(2.81)	(3.86)	(3.31)
Unemployment Rate	0.00841	0.0172***	0.0182***	0.0192***	0.0187***	0.0181***	0.0150**	0.0116**	0.00781+	0.00283	0.00118
	(1.39)	(3.36)	(3.51)	(3.69)	(3.71)	(3.66)	(3.24)	(2.64)	(1.86)	(0.65)	(0.29)
Constant	-0.380***	-0.424***	-0.433***	-0.447***	-0.461***	-0.473***	-0.485***	-0.484***	-0.484***	-0.482***	-0.492***
	(-6.79)	(-8.79)	(-8.87)	(-8.98)	(-9.02)	(-9.02)	(-8.84)	(-8.50)	(-8.18)	(-6.85)	(-7.43)
Observations	9,136	14,695	14,695	14,695	14,695	14,695	14,695	14,695	14,695	13,332	14,695
R^2	0.0506	0.0419	0.0425	0.0434	0.0446	0.0455	0.0469	0.0469	0.0476	0.0485	0.0478

t statistics in parentheses
+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.5 – Regressions of the asset-weighted average excess firm value on the diversification intensity, interest rate and their interaction term

	(1) 1-month	(2) 3-month	(3) 6-month	(4) 1-year	(5) 2-year	(6) 3-year	(7) 5-year	(8) 7-year	(9) 10-year	(10) 20-year	(11) 30-year
Low Intensity	-0.128***	-0.111***	-0.112***	-0.112***	-0.108***	-0.107***	-0.106***	-0.102**	-0.105**	-0.0722	-0.101*
	(-5.43)	(-5.31)	(-5.26)	(-5.08)	(-4.55)	(-4.20)	(-3.60)	(-3.13)	(-2.93)	(-1.58)	(-2.33)
Medium Intensity	-0.143***	-0.137***	-0.138***	-0.137***	-0.131***	-0.128***	-0.121***	-0.116**	-0.111*	-0.118*	-0.0984+
	(-5.14)	(-5.21)	(-5.16)	(-4.95)	(-4.41)	(-4.02)	(-3.34)	(-2.90)	(-2.56)	(-2.20)	(-1.90)
High Intensity	-0.0263	-0.0379	-0.0361	-0.0295	-0.00942	0.0101	0.0496	0.0793	0.107	0.146+	0.166*
	(-0.55)	(-0.91)	(-0.86)	(-0.68)	(-0.20)	(0.20)	(0.89)	(1.30)	(1.61)	(1.73)	(2.08)
Interest Rate	0.0180***	0.0358***	0.0362***	0.0384***	0.0420***	0.0453***	0.0508***	0.0536***	0.0571***	0.0635***	0.0636***
	(5.70)	(17.57)	(17.77)	(18.25)	(19.03)	(19.45)	(19.88)	(19.94)	(19.97)	(18.41)	(19.81)
Low Intensity x Interest Rate	**0.0284*** **	**0.00504**	**0.00529**	**0.00554**	**0.00477**	**0.00463**	**0.00426**	**0.00318**	**0.00379**	**-0.00497**	**0.00275**
	(3.94)	**(1.10)**	**(1.17)**	**(1.19)**	**(0.98)**	**(0.90)**	**(0.74)**	**(0.52)**	**(0.57)**	**(-0.59)**	**(0.36)**
Medium Intensity x Interest Rate	**0.0164***	**0.00460**	**0.00491**	**0.00488**	**0.00374**	**0.00309**	**0.00168**	**0.000348**	**-0.000480**	**0.000998**	**-0.00291**
	(2.18)	**(0.87)**	**(0.94)**	**(0.91)**	**(0.66)**	**(0.51)**	**(0.25)**	**(0.05)**	**(-0.06)**	**(0.10)**	**(-0.33)**
High Intensity x Interest Rate	**-0.0334**	**-0.0258** **	**-0.0250** **	**-0.0257** **	**-0.0288** **	**-0.0323*** **	**-0.0390*** **	**-0.0433*** **	**-0.0473*** **	**-0.0531** **	**-0.0544*** **
	(-1.29)	**(-2.85)**	**(-2.80)**	**(-2.85)**	**(-3.11)**	**(-3.32)**	**(-3.63)**	**(-3.80)**	**(-3.87)**	**(-3.19)**	**(-3.91)**
Leverage	0.469***	0.471***	0.472***	0.472***	0.473***	0.474***	0.475***	0.475***	0.476***	0.477***	0.476***
	(42.59)	(48.44)	(48.46)	(48.51)	(48.61)	(48.68)	(48.80)	(48.85)	(48.90)	(48.34)	(48.96)
Cash Holdings	0.880***	0.818***	0.817***	0.817***	0.817***	0.816***	0.816***	0.816***	0.816***	0.829***	0.817***
	(25.87)	(30.01)	(30.01)	(30.00)	(29.97)	(29.94)	(29.90)	(29.92)	(29.91)	(29.08)	(29.94)
GDP Growth	-0.00285*	0.00347**	0.00344**	0.00330**	0.00275**	0.00247*	0.00182+	0.00111	0.000440	-0.000839	-0.00122
	(-2.43)	(3.27)	(3.24)	(3.12)	(2.62)	(2.36)	(1.76)	(1.08)	(0.43)	(-0.75)	(-1.20)
Inflation	0.00172	-0.00452*	-0.00557**	-0.00636***	-0.00682***	-0.00697***	-0.00712***	-0.00629***	-0.00660***	-0.00429*	-0.00403*
	(0.80)	(-2.41)	(-2.95)	(-3.35)	(-3.58)	(-3.66)	(-3.73)	(-3.31)	(-3.46)	(-2.12)	(-2.14)
Unemployment Rate	0.0125***	0.0287***	0.0294***	0.0301***	0.0295***	0.0283***	0.0239***	0.0197***	0.0142***	0.00920***	0.00534**
	(4.56)	(12.66)	(12.88)	(13.20)	(13.32)	(13.08)	(11.66)	(9.94)	(7.41)	(4.65)	(2.84)
Constant	-0.293***	-0.453***	-0.461***	-0.473***	-0.489***	-0.501***	-0.510***	-0.511***	-0.502***	-0.520***	-0.512***
	(-12.81)	(-23.16)	(-23.31)	(-23.71)	(-24.43)	(-24.85)	(-25.23)	(-25.23)	(-25.00)	(-23.00)	(-24.83)
Observations	103,099	160,922	160,922	160,922	160,922	160,922	160,922	160,922	160,922	148,562	160,922
R^2	0.202	0.185	0.185	0.186	0.187	0.187	0.188	0.189	0.189	0.193	0.189

t statistics in parentheses
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table A.6 – Regressions of the asset-weighted average excess firm value on the diversification status, interest rate and their interaction term, divided into two periods of analysis: 1989-1999 (Panel A) and 2000-2022 (Panel B)

	(1) 3-month	(2) 6-month	(3) 1-year	(4) 2-year	(5) 3-year	(6) 5-year	(7) 7-year	(8) 10-year	(9) 20-year	(10) 30-year
Panel A: Period analysed: 1989-1999										
Diversification	-0.0973**	-0.0987**	-0.102**	-0.0980*	-0.101*	-0.106+	-0.0976	-0.115+	-0.0963	-0.131+
	(-2.99)	(-2.93)	(-2.87)	(-2.38)	(-2.19)	(-1.91)	(-1.62)	(-1.78)	(-0.87)	(-1.71)
Interest Rate	0.0515***	0.0485***	0.0438***	0.0381***	0.0353***	0.0326***	0.0283***	0.0326***	0.0483***	0.0419***
	(10.76)	(10.63)	(9.98)	(9.04)	(8.56)	(7.78)	(6.63)	(7.18)	(7.24)	(7.34)
Diversification x Interest Rate	**0.000894**	**0.00114**	**0.00171**	**0.000701**	**0.00106**	**0.00176**	**0.000171**	**0.00289**	**-0.00203**	**0.00523**
	(0.17)	**(0.22)**	**(0.31)**	**(0.11)**	**(0.15)**	**(0.21)**	**(0.02)**	**(0.31)**	**(-0.12)**	**(0.49)**
Leverage	0.334***	0.334***	0.334***	0.333***	0.333***	0.333***	0.332***	0.332***	0.314***	0.332***
	(15.67)	(15.68)	(15.69)	(15.65)	(15.63)	(15.61)	(15.58)	(15.59)	(13.17)	(15.59)
Cash Holdings	0.477***	0.478***	0.478***	0.478***	0.478***	0.478***	0.478***	0.478***	0.477***	0.478***
	(12.50)	(12.52)	(12.52)	(12.52)	(12.51)	(12.51)	(12.49)	(12.50)	(11.17)	(12.50)
GDP Growth	0.00195	-0.000524	-0.00375+	-0.00644**	-0.00753***	-0.00845***	-0.00822***	-0.00933***	-0.0341***	-0.0107***
	(0.89)	(-0.24)	(-1.76)	(-2.98)	(-3.44)	(-3.79)	(-3.65)	(-4.07)	(-6.93)	(-4.52)
Inflation	-0.0310***	-0.0266***	-0.0202***	-0.0127*	-0.00883+	-0.00405	0.000765	-0.00213	-0.0718***	-0.00470
	(-5.33)	(-4.78)	(-3.75)	(-2.49)	(-1.79)	(-0.86)	(0.16)	(-0.45)	(-8.69)	(-0.96)
Unemployment Rate	0.0964***	0.0916***	0.0835***	0.0693***	0.0613***	0.0498***	0.0461***	0.0410***	0.0737***	0.0324***
	(14.97)	(14.86)	(14.50)	(14.32)	(14.21)	(13.52)	(12.95)	(11.74)	(13.92)	(8.82)
Constant	-0.808***	-0.773***	-0.712***	-0.623***	-0.574***	-0.511***	-0.484***	-0.472***	-0.419***	-0.483***
	(-15.42)	(-15.34)	(-15.01)	(-14.76)	(-14.67)	(-14.40)	(-13.98)	(-14.08)	(-10.00)	(-13.98)
Observations	52,055	52,055	52,055	52,055	52,055	52,055	52,055	52,055	39,695	52,055
R^2	0.0694	0.0693	0.0691	0.0683	0.0680	0.0676	0.0672	0.0674	0.0654	0.0674
Panel B: Period analysed: 2000-2022										
Diversification	-0.119***	-0.121***	-0.122***	-0.122***	-0.122***	-0.118***	-0.113***	-0.107**	-0.0931*	-0.0796+
	(-5.98)	(-6.01)	(-5.97)	(-5.65)	(-5.30)	(-4.41)	(-3.66)	(-2.98)	(-2.20)	(-1.69)
Interest Rate	0.0261***	0.0266***	0.0303***	0.0377***	0.0441***	0.0545***	0.0593***	0.0644***	0.0656***	0.0719***
	(10.05)	(10.25)	(10.87)	(12.16)	(12.86)	(13.64)	(13.95)	(13.94)	(14.02)	(13.89)
Diversification x Interest Rate	**0.00787+**	**0.00831+**	**0.00886+**	**0.00815**	**0.00763**	**0.00573**	**0.00354**	**0.00158**	**-0.00193**	**-0.00520**
	(1.77)	**(1.90)**	**(1.95)**	**(1.64)**	**(1.39)**	**(0.86)**	**(0.47)**	**(0.18)**	**(-0.21)**	**(-0.49)**
Leverage	0.470***	0.470***	0.470***	0.471***	0.472***	0.473***	0.474***	0.475***	0.475***	0.475***
	(43.55)	(43.56)	(43.60)	(43.70)	(43.79)	(43.95)	(44.03)	(44.10)	(44.16)	(44.17)
Cash Holdings	0.885***	0.884***	0.884***	0.882***	0.881***	0.880***	0.880***	0.881***	0.882***	0.882***
	(26.46)	(26.44)	(26.42)	(26.37)	(26.33)	(26.28)	(26.30)	(26.30)	(26.33)	(26.37)
GDP Growth	-0.000965	-0.000601	0.0000159	0.000476	0.000646	0.000289	-0.000606	-0.00157	-0.00184	-0.00372**
	(-0.84)	(-0.52)	(0.01)	(0.41)	(0.55)	(0.25)	(-0.53)	(-1.37)	(-1.61)	(-3.26)
Inflation	-0.00151	-0.00284	-0.00438*	-0.00542*	-0.00556*	-0.00496*	-0.00358	-0.00306	-0.00382+	0.000625
	(-0.71)	(-1.31)	(-2.00)	(-2.46)	(-2.52)	(-2.24)	(-1.63)	(-1.39)	(-1.72)	(0.29)
Unemployment Rate	0.0162***	0.0170***	0.0191***	0.0221***	0.0237***	0.0230***	0.0192***	0.0141***	0.00693**	0.00461*
	(6.06)	(6.27)	(6.90)	(7.92)	(8.46)	(8.51)	(7.60)	(5.97)	(3.21)	(2.17)
Constant	-0.333***	-0.339***	-0.360***	-0.399***	-0.431***	-0.473***	-0.483***	-0.484***	-0.479***	-0.498***
	(-14.90)	(-15.03)	(-15.53)	(-16.57)	(-17.21)	(-17.90)	(-18.10)	(-17.97)	(-17.90)	(-17.78)
Observations	108,867	108,867	108,867	108,867	108,867	108,867	108,867	108,867	108,867	108,867
R^2	0.201	0.201	0.202	0.202	0.203	0.204	0.205	0.205	0.206	0.206

t statistics in parentheses
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table A.7 – Regressions of the asset-weighted average excess firm value on the diversification type compared to focused firms, interest rate and their interaction term, divided into two periods of analysis: 1989-1999 (Panel A.1 and Panel B.1) and 2000-2022 (Panel A.2 and Panel B.2)

	(1) 3-month	(2) 6-month	(3) 1-year	(4) 2-year	(5) 3-year	(6) 5-year	(7) 7-year	(8) 10-year	(9) 20-year	(10) 30-year
Panel A: Unrelated diversification compared to focused firms										
Panel A.1.: Period analysed: 1989-1999										
Unrelated Diversification	-0.0756*	-0.0769*	-0.0789*	-0.0737	-0.0688	-0.0549	-0.0432	-0.0405	-0.0276	-0.0304
	(-2.07)	(-2.05)	(-2.00)	(-1.61)	(-1.36)	(-0.89)	(-0.65)	(-0.57)	(-0.22)	(-0.36)
Interest Rate	0.0477***	0.0449***	0.0406***	0.0355***	0.0332***	0.0311***	0.0275***	0.0316***	0.0460***	0.0408***
	(9.83)	(9.72)	(9.14)	(8.35)	(7.96)	(7.38)	(6.39)	(6.91)	(6.87)	(7.09)
Unrelated Diversification x Interest Rate	**0.00171**	**0.00190**	**0.00224**	**0.00106**	**0.000153**	**-0.00218**	**-0.00402**	**-0.00435**	**-0.00781**	**-0.00563**
	(0.30)	**(0.32)**	**(0.37)**	**(0.15)**	**(0.02)**	**(-0.24)**	**(-0.42)**	**(-0.43)**	**(-0.41)**	**(-0.47)**
Leverage	0.336***	0.336***	0.336***	0.336***	0.335***	0.335***	0.334***	0.335***	0.316***	0.335***
	(15.71)	(15.73)	(15.74)	(15.70)	(15.69)	(15.66)	(15.64)	(15.65)	(13.21)	(15.65)
Cash Holdings	0.473***	0.473***	0.474***	0.474***	0.474***	0.474***	0.473***	0.474***	0.473***	0.474***
	(12.28)	(12.29)	(12.29)	(12.29)	(12.29)	(12.28)	(12.27)	(12.28)	(10.97)	(12.27)
GDP Growth	0.00173	-0.000552	-0.00353	-0.00601**	-0.00703**	-0.00791***	-0.00773***	-0.00876***	-0.0313***	-0.0101***
	(0.78)	(-0.25)	(-1.63)	(-2.74)	(-3.17)	(-3.49)	(-3.38)	(-3.76)	(-6.27)	(-4.19)
Inflation	-0.0264***	-0.0223***	-0.0163**	-0.00963+	-0.00605	-0.00175	0.00246	-0.0000558	-0.0646***	-0.00249
	(-4.44)	(-3.93)	(-2.98)	(-1.85)	(-1.20)	(-0.36)	(0.52)	(-0.01)	(-7.70)	(-0.50)
Unemployment Rate	0.0914***	0.0870***	0.0795***	0.0665***	0.0589***	0.0482***	0.0447***	0.0399***	0.0704***	0.0317***
	(13.98)	(13.90)	(13.59)	(13.54)	(13.50)	(12.93)	(12.41)	(11.28)	(13.06)	(8.52)
Constant	-0.773***	-0.742***	-0.686***	-0.605***	-0.560***	-0.503***	-0.479***	-0.469***	-0.421***	-0.482***
	(-14.56)	(-14.52)	(-14.26)	(-14.15)	(-14.15)	(-14.07)	(-13.75)	(-13.91)	(-10.01)	(-13.90)
Observations	50,993	50,993	50,993	50,993	50,993	50,993	50,993	50,993	38,851	50,993
R^2	0.0682	0.0681	0.0679	0.0672	0.0670	0.0667	0.0664	0.0665	0.0637	0.0665
Panel A.2.: Period analysed: 2000-2022										
Unrelated Diversification	-0.125***	-0.127***	-0.128***	-0.126***	-0.124***	-0.115**	-0.103**	-0.0905*	-0.0684	-0.0472
	(-4.57)	(-4.61)	(-4.58)	(-4.31)	(-4.01)	(-3.26)	(-2.60)	(-2.01)	(-1.31)	(-0.82)
Interest Rate	0.0259***	0.0265***	0.0302***	0.0376***	0.0440***	0.0546***	0.0595***	0.0647***	0.0659***	0.0722***
	(9.85)	(10.04)	(10.64)	(11.91)	(12.62)	(13.43)	(13.78)	(13.80)	(13.91)	(13.79)
Unrelated Diversification x Interest Rate	**0.00394**	**0.00471**	**0.00510**	**0.00363**	**0.00232**	**-0.00129**	**-0.00490**	**-0.00819**	**-0.0127**	**-0.0176**
	(0.71)	**(0.87)**	**(0.90)**	**(0.59)**	**(0.34)**	**(-0.16)**	**(-0.54)**	**(-0.79)**	**(-1.14)**	**(-1.41)**
Leverage	0.470***	0.470***	0.470***	0.471***	0.472***	0.473***	0.474***	0.475***	0.475***	0.475***
	(43.28)	(43.29)	(43.33)	(43.43)	(43.52)	(43.68)	(43.76)	(43.83)	(43.89)	(43.90)
Cash Holdings	0.888***	0.887***	0.887***	0.885***	0.884***	0.883***	0.883***	0.883***	0.884***	0.885***
	(26.23)	(26.22)	(26.19)	(26.14)	(26.10)	(26.05)	(26.06)	(26.07)	(26.10)	(26.13)
GDP Growth	-0.000743	-0.000386	0.000221	0.000689	0.000864	0.000515	-0.000375	-0.00134	-0.00162	-0.00349**
	(-0.63)	(-0.33)	(0.19)	(0.58)	(0.72)	(0.43)	(-0.32)	(-1.14)	(-1.37)	(-2.97)
Inflation	-0.00186	-0.00316	-0.00468*	-0.00574*	-0.00591**	-0.00536*	-0.00401+	-0.00350	-0.00426+	0.000160
	(-0.84)	(-1.42)	(-2.07)	(-2.53)	(-2.60)	(-2.35)	(-1.77)	(-1.54)	(-1.86)	(0.07)
Unemployment Rate	0.0161***	0.0169***	0.0190***	0.0220***	0.0236***	0.0230***	0.0193***	0.0142***	0.00713**	0.00483*
	(5.83)	(6.03)	(6.63)	(7.64)	(8.17)	(8.26)	(7.40)	(5.85)	(3.20)	(2.20)
Constant	-0.329***	-0.336***	-0.356***	-0.396***	-0.428***	-0.471***	-0.481***	-0.482***	-0.478***	-0.498***
	(-14.34)	(-14.47)	(-14.94)	(-15.97)	(-16.60)	(-17.32)	(-17.57)	(-17.48)	(-17.49)	(-17.41)
Observations	105,176	105,176	105,176	105,176	105,176	105,176	105,176	105,176	105,176	105,176
R^2	0.202	0.202	0.203	0.204	0.204	0.205	0.206	0.207	0.207	0.207
Panel B: Related diversification compared to focused firms										
Panel B.1.: Period analysed: 1989-1999										
Related Diversification	-0.118+	-0.120+	-0.125+	-0.109	-0.133	-0.194+	-0.180	-0.268*	-0.150	-0.360*
	(-1.86)	(-1.82)	(-1.78)	(-1.33)	(-1.44)	(-1.68)	(-1.43)	(-1.97)	(-0.71)	(-2.22)
Interest Rate	0.0503***	0.0475***	0.0429***	0.0374***	0.0348***	0.0322***	0.0282***	0.0323***	0.0470***	0.0413***
	(10.09)	(10.00)	(9.41)	(8.56)	(8.14)	(7.45)	(6.41)	(6.90)	(6.96)	(7.01)
Related Diversification x Interest Rate	**-0.00549**	**-0.00502**	**-0.00378**	**-0.00689**	**-0.00267**	**0.00754**	**0.00458**	**0.0193**	**-0.00278**	**0.0327**
	(-0.53)	**(-0.48)**	**(-0.35)**	**(-0.57)**	**(-0.20)**	**(0.45)**	**(0.26)**	**(1.00)**	**(-0.09)**	**(1.45)**
Leverage	0.337***	0.337***	0.337***	0.336***	0.336***	0.336***	0.335***	0.335***	0.317***	0.335***
	(15.53)	(15.54)	(15.55)	(15.51)	(15.49)	(15.47)	(15.45)	(15.45)	(13.10)	(15.45)
Cash Holdings	0.470***	0.471***	0.471***	0.471***	0.471***	0.471***	0.471***	0.471***	0.476***	0.472***
	(11.93)	(11.94)	(11.94)	(11.94)	(11.94)	(11.94)	(11.93)	(11.94)	(10.88)	(11.94)
GDP Growth	0.00113	-0.00131	-0.00450*	-0.00718**	-0.00827***	-0.00921***	-0.00902***	-0.0101***	-0.0331***	-0.0114***
	(0.48)	(-0.57)	(-1.97)	(-3.11)	(-3.53)	(-3.85)	(-3.74)	(-4.12)	(-6.42)	(-4.52)
Inflation	-0.0283***	-0.0241***	-0.0178**	-0.0108*	-0.00705	-0.00254	0.00186	-0.000808	-0.0700***	-0.00321
	(-4.60)	(-4.10)	(-3.14)	(-1.99)	(-1.34)	(-0.50)	(0.37)	(-0.16)	(-8.03)	(-0.62)
Unemployment Rate	0.0953***	0.0908***	0.0828***	0.0691***	0.0612***	0.0499***	0.0463***	0.0412***	0.0735***	0.0326***
	(14.02)	(13.94)	(13.60)	(13.45)	(13.36)	(12.73)	(12.21)	(11.08)	(13.14)	(8.38)
Constant	-0.797***	-0.764***	-0.704***	-0.617***	-0.569***	-0.507***	-0.481***	-0.468***	-0.419***	-0.478***
	(-14.48)	(-14.43)	(-14.15)	(-13.97)	(-13.93)	(-13.79)	(-13.45)	(-13.59)	(-9.84)	(-13.60)
Observations	48,192	48,192	48,192	48,192	48,192	48,192	48,192	48,192	36,977	48,192
R^2	0.0704	0.0703	0.0700	0.0693	0.0691	0.0687	0.0684	0.0686	0.0664	0.0686
Panel B.2.: Period analysed: 2000-2022										
Related Diversification	-0.104***	-0.105***	-0.107***	-0.109***	-0.112***	-0.116**	-0.119**	-0.119*	-0.116+	-0.111
	(-3.79)	(-3.80)	(-3.79)	(-3.63)	(-3.46)	(-3.00)	(-2.62)	(-2.24)	(-1.83)	(-1.56)
Interest Rate	0.0262***	0.0268***	0.0306***	0.0380***	0.0445***	0.0551***	0.0599***	0.0650***	0.0661***	0.0722***
	(9.87)	(10.06)	(10.66)	(11.93)	(12.62)	(13.41)	(13.74)	(13.76)	(13.87)	(13.73)
Related Diversification x Interest Rate	**0.0129+**	**0.0128+**	**0.0137***	**0.0143***	**0.0149***	**0.0154**	**0.0151**	**0.0145**	**0.0120**	**0.0105**
	(1.93)	**(1.96)**	**(2.00)**	**(1.91)**	**(1.80)**	**(1.54)**	**(1.31)**	**(1.10)**	**(0.84)**	**(0.66)**
Leverage	0.468***	0.468***	0.469***	0.470***	0.470***	0.472***	0.473***	0.473***	0.474***	0.474***
	(42.81)	(42.82)	(42.86)	(42.96)	(43.05)	(43.20)	(43.28)	(43.35)	(43.40)	(43.41)
Cash Holdings	0.884***	0.883***	0.883***	0.881***	0.880***	0.879***	0.879***	0.879***	0.880***	0.881***
	(25.97)	(25.95)	(25.92)	(25.88)	(25.83)	(25.78)	(25.80)	(25.81)	(25.84)	(25.88)
GDP Growth	-0.000304	0.0000622	0.000684	0.00116	0.00134	0.000968	0.0000509	-0.000941	-0.00123	-0.00313**
	(-0.25)	(0.05)	(0.57)	(0.96)	(1.10)	(0.80)	(0.04)	(-0.79)	(-1.03)	(-2.63)
Inflation	-0.00269	-0.00402+	-0.00557*	-0.00667**	-0.00684**	-0.00627**	-0.00488*	-0.00435+	-0.00512*	-0.000622
	(-1.20)	(-1.78)	(-2.43)	(-2.89)	(-2.96)	(-2.71)	(-2.12)	(-1.88)	(-2.20)	(-0.27)
Unemployment Rate	0.0167***	0.0175***	0.0196***	0.0227***	0.0243***	0.0237***	0.0199***	0.0147***	0.00747***	0.00513*
	(5.94)	(6.14)	(6.73)	(7.74)	(8.27)	(8.35)	(7.50)	(5.96)	(3.30)	(2.31)
Constant	-0.331***	-0.338***	-0.358***	-0.398***	-0.431***	-0.474***	-0.484***	-0.484***	-0.478***	-0.497***
	(-14.21)	(-14.34)	(-14.82)	(-15.85)	(-16.48)	(-17.19)	(-17.43)	(-17.34)	(-17.34)	(-17.26)
Observations	102,788	102,788	102,788	102,788	102,788	102,788	102,788	102,788	102,788	102,788
R^2	0.202	0.202	0.203	0.203	0.204	0.205	0.206	0.206	0.207	0.207

t statistics in parentheses

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

$$Avg.Excess\ Firm\ Value_{i,t} = \beta_0 + \beta_1\ Unrelated\ Diversification_{i,t} + \beta_2\ Interest\ Rate_t + \beta_3\ Unrelated\ Diversification \times Interest\ Rate_{i,t} + \beta_4\ Leverage_{i,t} + \beta_5\ Cash\ Holdings_{i,t} + \gamma_i + X_t + \varepsilon_{i,t}\ \ if\ Fiscal\ Year < 2000 \quad (A.2)$$

$$Avg.Excess\ Firm\ Value_{i,t} = \beta_0 + \beta_1\ Unrelated\ Diversification_{i,t} + \beta_2\ Interest\ Rate_t + \beta_3\ Unrelated\ Diversification \times Interest\ Rate_{i,t} + \beta_4\ Leverage_{i,t} + \beta_5\ Cash\ Holdings_{i,t} + \gamma_i + X_t + \varepsilon_{i,t}\ if\ Fiscal\ Year \geq 2000 \quad (A.3)$$

Table A.8 – Regressions of the asset-weighted average excess firm value on the diversification type between diversified firms, interest rate and their interaction term, divided into two periods of analysis: 1989-1999 (Panel A) and 2000-2022 (Panel B)

	(1) 3-month	(2) 6-month	(3) 1-year	(4) 2-year	(5) 3-year	(6) 5-year	(7) 7-year	(8) 10-year	(9) 20-year	(10) 30-year
Panel A: Period analysed: 1989-1999										
Unrelated Diversification	-0.107	-0.109	-0.110	-0.125	-0.113	-0.0672	-0.0653	0.00975	-0.0678	0.107
	(-1.58)	(-1.55)	(-1.50)	(-1.51)	(-1.25)	(-0.60)	(-0.53)	(0.07)	(-0.31)	(0.62)
Interest Rate	0.0795***	0.0721***	0.0620***	0.0469***	0.0432**	0.0435**	0.0350*	0.0522**	0.0733*	0.0786***
	(5.24)	(4.96)	(4.42)	(3.47)	(3.19)	(2.93)	(2.20)	(3.01)	(2.52)	(3.57)
Unrelated Diversification x Interest Rate	**0.0102**	**0.0102**	**0.0104**	**0.0128**	**0.0106**	**0.00301**	**0.00286**	**-0.00874**	**-0.00563**	**-0.0226**
	(0.99)	**(0.97)**	**(0.95)**	**(1.08)**	**(0.83)**	**(0.19)**	**(0.17)**	**(-0.47)**	**(-0.18)**	**(-0.98)**
Leverage	0.0248	0.0271	0.0288	0.0235	0.0218	0.0184	0.0162	0.0165	0.0774	0.0156
	(0.29)	(0.31)	(0.33)	(0.27)	(0.25)	(0.21)	(0.18)	(0.19)	(0.80)	(0.18)
Cash Holdings	0.531***	0.535***	0.539***	0.542***	0.543***	0.544***	0.544***	0.544***	0.565**	0.544***
	(4.08)	(4.12)	(4.16)	(4.17)	(4.17)	(4.17)	(4.17)	(4.17)	(3.15)	(4.17)
GDP Growth	0.00869	0.00467	-0.000102	-0.00396	-0.00545	-0.00652	-0.00609	-0.00765	-0.0515***	-0.00985+
	(1.63)	(0.91)	(-0.02)	(-0.80)	(-1.09)	(-1.29)	(-1.19)	(-1.47)	(-4.35)	(-1.82)
Inflation	-0.0794***	-0.0693***	-0.0561***	-0.0407***	-0.0334**	-0.0246*	-0.0160	-0.0209*	-0.162***	-0.0256*
	(-5.46)	(-5.14)	(-4.48)	(-3.54)	(-3.06)	(-2.35)	(-1.54)	(-1.98)	(-7.09)	(-2.30)
Unemployment Rate	0.121***	0.111***	0.0960***	0.0703***	0.0572***	0.0396***	0.0339***	0.0271**	0.0846***	0.0146
	(6.52)	(6.31)	(5.88)	(5.29)	(4.88)	(3.98)	(3.53)	(2.85)	(5.91)	(1.45)
Constant	-0.948***	-0.877***	-0.765***	-0.583***	-0.509***	-0.444***	-0.394**	-0.448***	-0.279	-0.549***
	(-6.00)	(-5.77)	(-5.33)	(-4.56)	(-4.22)	(-3.73)	(-3.21)	(-3.48)	(-1.49)	(-3.60)
Observations	4,925	4,925	4,925	4,925	4,925	4,925	4,925	4,925	3,562	4,925
R^2	0.0437	0.0420	0.0394	0.0342	0.0325	0.0302	0.0282	0.0292	0.0485	0.0298
Panel B: Period analysed: 2000-2022										
Unrelated Diversification	-0.0448	-0.0463	-0.0463	-0.0444	-0.0423	-0.0363	-0.0303	-0.0256	-0.0189	-0.00816
	(-0.88)	(-0.91)	(-0.90)	(-0.85)	(-0.79)	(-0.63)	(-0.47)	(-0.35)	(-0.22)	(-0.09)
Interest Rate	0.0202**	0.0209**	0.0247**	0.0310***	0.0368***	0.0463***	0.0508***	0.0558***	0.0569***	0.0625***
	(2.62)	(2.72)	(3.01)	(3.38)	(3.60)	(3.75)	(3.72)	(3.61)	(3.45)	(3.39)
Unrelated Diversification x Interest Rate	**-0.000287**	**0.000568**	**0.000487**	**-0.000524**	**-0.00136**	**-0.00323**	**-0.00477**	**-0.00563**	**-0.00633**	**-0.00883**
	(-0.04)	**(0.07)**	**(0.06)**	**(-0.06)**	**(-0.14)**	**(-0.27)**	**(-0.35)**	**(-0.35)**	**(-0.35)**	**(-0.43)**
Leverage	0.355***	0.356***	0.357***	0.359***	0.361***	0.364***	0.364***	0.366***	0.366***	0.366***
	(10.00)	(10.02)	(10.07)	(10.13)	(10.18)	(10.26)	(10.29)	(10.33)	(10.35)	(10.36)
Cash Holdings	0.614***	0.614***	0.615***	0.619***	0.622***	0.627***	0.631***	0.633***	0.636***	0.636***
	(4.58)	(4.58)	(4.58)	(4.61)	(4.63)	(4.67)	(4.70)	(4.71)	(4.73)	(4.73)
GDP Growth	-0.00880***	-0.00846**	-0.00793**	-0.00763**	-0.00745**	-0.00756**	-0.00814**	-0.00866***	-0.00865***	-0.0101***
	(-3.33)	(-3.20)	(-3.00)	(-2.88)	(-2.82)	(-2.87)	(-3.10)	(-3.31)	(-3.30)	(-3.83)
Inflation	0.0198***	0.0187***	0.0173***	0.0167***	0.0166***	0.0169***	0.0178***	0.0179***	0.0170***	0.0205***
	(4.43)	(4.15)	(3.84)	(3.71)	(3.69)	(3.76)	(3.98)	(3.98)	(3.76)	(4.55)
Unemployment Rate	0.00732	0.00841	0.0105+	0.0128*	0.0142*	0.0136*	0.0104+	0.00650	0.000587	-0.00134
	(1.25)	(1.42)	(1.73)	(2.08)	(2.27)	(2.25)	(1.86)	(1.25)	(0.12)	(-0.29)
Constant	-0.372***	-0.381***	-0.402***	-0.436***	-0.466***	-0.506***	-0.518***	-0.524***	-0.523***	-0.541***
	(-6.91)	(-7.00)	(-7.16)	(-7.35)	(-7.42)	(-7.35)	(-7.18)	(-6.86)	(-6.39)	(-6.12)
Observations	9,770	9,770	9,770	9,770	9,770	9,770	9,770	9,770	9,770	9,770
R^2	0.0525	0.0530	0.0538	0.0553	0.0566	0.0587	0.0595	0.0604	0.0609	0.0605

t statistics in parentheses
+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.9 – Regressions of the asset-weighted average excess firm value on the diversification intensity, interest rate and their interaction term divided into two periods of analysis: 1989-1999 (Panel A) and 2000-2022 (Panel B)

	(1) 3-month	(2) 6-month	(3) 1-year	(4) 2-year	(5) 3-year	(6) 5-year	(7) 7-year	(8) 10-year	(9) 20-year	(10) 30-year
Panel A: Period analysed: 1989-1999										
Low Intensity	-0.116**	-0.121**	-0.130**	-0.147**	-0.169**	-0.209**	-0.214*	-0.241**	-0.280+	-0.282**
	(-2.73)	(-2.73)	(-2.75)	(-2.64)	(-2.69)	(-2.69)	(-2.54)	(-2.66)	(-1.76)	(-2.61)
Medium Intensity	-0.0759	-0.0728	-0.0681	-0.0434	-0.0288	-0.00405	0.0149	0.00791	0.143	0.0145
	(-1.61)	(-1.50)	(-1.35)	(-0.76)	(-0.46)	(-0.06)	(0.19)	(0.10)	(0.94)	(0.15)
High Intensity	-0.169*	-0.169*	-0.169*	-0.133	-0.101	-0.0254	0.0196	0.0417	0.0355	0.104
	(-2.22)	(-2.14)	(-2.00)	(-1.30)	(-0.87)	(-0.18)	(0.13)	(0.26)	(0.15)	(0.56)
Interest Rate	0.0514***	0.0484***	0.0437***	0.0380***	0.0352***	0.0324***	0.0281***	0.0325***	0.0483***	0.0418***
	(10.74)	(10.61)	(9.96)	(9.01)	(8.53)	(7.75)	(6.60)	(7.15)	(7.24)	(7.32)
Low Intensity x Interest Rate	**0.00621**	**0.00693**	**0.00839**	**0.0107**	**0.0139**	**0.0197+**	**0.0197**	**0.0237+**	**0.0266**	**0.0287+**
	(0.86)	**(0.95)**	**(1.10)**	**(1.24)**	**(1.47)**	**(1.73)**	**(1.62)**	**(1.84)**	**(1.14)**	**(1.93)**
Medium Intensity x Interest Rate	**-0.00500**	**-0.00542**	**-0.00604**	**-0.0102**	**-0.0125**	**-0.0162**	**-0.0189**	**-0.0175**	**-0.0386**	**-0.0177**
	(-0.65)	**(-0.70)**	**(-0.76)**	**(-1.15)**	**(-1.30)**	**(-1.46)**	**(-1.62)**	**(-1.43)**	**(-1.58)**	**(-1.26)**
High Intensity x Interest Rate	**-0.00322**	**-0.00305**	**-0.00296**	**-0.00923**	**-0.0143**	**-0.0257**	**-0.0319**	**-0.0347**	**-0.0363**	**-0.0420+**
	(-0.25)	**(-0.23)**	**(-0.22)**	**(-0.58)**	**(-0.81)**	**(-1.23)**	**(-1.46)**	**(-1.53)**	**(-1.02)**	**(-1.66)**
Leverage	0.334***	0.334***	0.334***	0.333***	0.333***	0.333***	0.332***	0.332***	0.315***	0.332***
	(15.67)	(15.68)	(15.69)	(15.65)	(15.63)	(15.61)	(15.59)	(15.59)	(13.17)	(15.59)
Cash Holdings	0.477***	0.478***	0.478***	0.478***	0.478***	0.478***	0.478***	0.478***	0.477***	0.478***
	(12.50)	(12.52)	(12.52)	(12.52)	(12.51)	(12.50)	(12.49)	(12.50)	(11.16)	(12.50)
GDP Growth	0.00197	-0.000506	-0.00373+	-0.00641**	-0.00749***	-0.00840***	-0.00817***	-0.00928***	-0.0340***	-0.0106***
	(0.90)	(-0.23)	(-1.75)	(-2.97)	(-3.42)	(-3.76)	(-3.62)	(-4.04)	(-6.92)	(-4.49)
Inflation	-0.0309***	-0.0265***	-0.0200***	-0.0126*	-0.00865+	-0.00383	0.000977	-0.00190	-0.0718***	-0.00447
	(-5.30)	(-4.76)	(-3.72)	(-2.46)	(-1.75)	(-0.81)	(0.21)	(-0.40)	(-8.70)	(-0.91)
Unemployment Rate	0.0964***	0.0916***	0.0835***	0.0693***	0.0613***	0.0498***	0.0461***	0.0410***	0.0738***	0.0324***
	(14.96)	(14.85)	(14.48)	(14.29)	(14.19)	(13.50)	(12.93)	(11.73)	(13.94)	(8.81)
Constant	-0.807***	-0.773***	-0.712***	-0.623***	-0.573***	-0.510***	-0.483***	-0.471***	-0.419***	-0.482***
	(-15.39)	(-15.31)	(-14.97)	(-14.72)	(-14.63)	(-14.37)	(-13.95)	(-14.05)	(-10.01)	(-13.96)
Observations	52,055	52,055	52,055	52,055	52,055	52,055	52,055	52,055	39,695	52,055
R^2	0.0696	0.0695	0.0692	0.0684	0.0682	0.0679	0.0675	0.0677	0.0656	0.0678

t statistics in parentheses
+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.9 (continued) – Regressions of the asset-weighted average excess firm value on the diversification intensity, interest rate and their interaction term divided into two periods of analysis: 1989-1999 (Panel A) and 2000-2022 (Panel B)

	(1) 3-month	(2) 6-month	(3) 1-year	(4) 2-year	(5) 3-year	(6) 5-year	(7) 7-year	(8) 10-year	(9) 20-year	(10) 30-year
Panel B: Period analysed: 2000-2022										
Low Intensity	-0.115***	-0.117***	-0.119***	-0.119***	-0.120***	-0.118***	-0.112**	-0.107*	-0.0883	-0.0742
	(-4.96)	(-4.99)	(-4.96)	(-4.67)	(-4.37)	(-3.61)	(-2.94)	(-2.37)	(-1.64)	(-1.23)
Medium Intensity	-0.144***	-0.146***	-0.148***	-0.148***	-0.149***	-0.148***	-0.146***	-0.142**	-0.137*	-0.127*
	(-5.14)	(-5.15)	(-5.10)	(-4.83)	(-4.55)	(-3.89)	(-3.37)	(-2.86)	(-2.36)	(-1.98)
High Intensity	-0.0456	-0.0458	-0.0432	-0.0317	-0.0157	0.0226	0.0565	0.0923	0.126	0.165
	(-0.96)	(-0.95)	(-0.88)	(-0.61)	(-0.28)	(0.35)	(0.78)	(1.12)	(1.33)	(1.57)
Interest Rate	0.0260***	0.0266***	0.0303***	0.0376***	0.0440***	0.0544***	0.0593***	0.0644***	0.0656***	0.0719***
	(10.04)	(10.24)	(10.86)	(12.15)	(12.85)	(13.64)	(13.94)	(13.94)	(14.02)	(13.89)
Low Intensity x Interest Rate	**0.0122***	**0.0124***	**0.0129***	**0.0120+**	**0.0115**	**0.00954**	**0.00688**	**0.00488**	**-0.000311**	**-0.00375**
	(2.11)	**(2.20)**	**(2.19)**	**(1.87)**	**(1.63)**	**(1.13)**	**(0.71)**	**(0.44)**	**(-0.03)**	**(-0.28)**
Medium Intensity x Interest Rate	**0.00652**	**0.00707**	**0.00784**	**0.00778**	**0.00783**	**0.00702**	**0.00596**	**0.00445**	**0.00267**	**0.000240**
	(1.04)	**(1.15)**	**(1.22)**	**(1.11)**	**(1.02)**	**(0.76)**	**(0.57)**	**(0.37)**	**(0.21)**	**(0.02)**
High Intensity x Interest Rate	**-0.0219**	**-0.0203**	**-0.0206**	**-0.0240**	**-0.0291+**	**-0.0393***	**-0.0464***	**-0.0536***	**-0.0549***	**-0.0636***
	(-1.28)	**(-1.22)**	**(-1.24)**	**(-1.45)**	**(-1.66)**	**(-2.00)**	**(-2.18)**	**(-2.30)**	**(-2.35)**	**(-2.44)**
Leverage	0.470***	0.470***	0.470***	0.471***	0.472***	0.473***	0.474***	0.475***	0.475***	0.475***
	(43.54)	(43.55)	(43.59)	(43.70)	(43.79)	(43.95)	(44.03)	(44.10)	(44.16)	(44.17)
Cash Holdings	0.885***	0.884***	0.884***	0.882***	0.881***	0.880***	0.880***	0.881***	0.882***	0.882***
	(26.46)	(26.44)	(26.41)	(26.37)	(26.33)	(26.28)	(26.30)	(26.30)	(26.33)	(26.37)
GDP Growth	-0.000980	-0.000616	-0.000000843	0.000459	0.000628	0.000269	-0.000626	-0.00159	-0.00186	-0.00374**
	(-0.85)	(-0.53)	(-0.00)	(0.39)	(0.54)	(0.23)	(-0.54)	(-1.39)	(-1.63)	(-3.28)
Inflation	-0.00149	-0.00282	-0.00436*	-0.00539*	-0.00554*	-0.00494*	-0.00357	-0.00305	-0.00380+	0.000637
	(-0.70)	(-1.30)	(-1.99)	(-2.45)	(-2.51)	(-2.24)	(-1.62)	(-1.38)	(-1.71)	(0.29)
Unemployment Rate	0.0162***	0.0170***	0.0191***	0.0221***	0.0237***	0.0230***	0.0191***	0.0140***	0.00689**	0.00458*
	(6.05)	(6.26)	(6.88)	(7.91)	(8.44)	(8.50)	(7.58)	(5.96)	(3.19)	(2.16)
Constant	-0.332***	-0.339***	-0.359***	-0.399***	-0.431***	-0.473***	-0.483***	-0.483***	-0.478***	-0.498***
	(-14.88)	(-15.01)	(-15.50)	(-16.55)	(-17.18)	(-17.87)	(-18.08)	(-17.94)	(-17.88)	(-17.76)
Observations	108,867	108,867	108,867	108,867	108,867	108,867	108,867	108,867	108,867	108,867
R^2	0.201	0.201	0.202	0.202	0.203	0.204	0.205	0.205	0.206	0.206

t statistics in parentheses
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Section 3.2: Change regressions and equations

$$\Delta\, Avg.Excess\ Firm\ Value_{i,t} = \beta_0 + \beta_1\, Diversification_{i,t} + \beta_2\, \Delta\, Interest\ Rate_t + \beta_3\, Diversification \times$$

$$\Delta\, Interest\ Rate_{i,t} + \beta_4\, Leverage_{i,t} + \beta_5\, Cash\ Holdings_{i,t} + \gamma_i + X_t + \varepsilon_{i,t} \quad \text{(A.4)}$$

Table A.10 – Regressions of the change in the asset-weighted average excess firm value of the diversification status, change in the interest rate and their interaction term

	(1) 1-month	(2) 3-month	(3) 6-month	(4) 1-year	(5) 2-year	(6) 3-year	(7) 5-year	(8) 7-year	(9) 10-year	(10) 20-year	(11) 30-year
Diversification	-0.760	-154.0	-153.7	-153.7	-154.0	-154.0	-153.1	-151.9	-150.6	-228.4	-149.1
	(-0.66)	(-1.10)	(-1.10)	(-1.10)	(-1.09)	(-1.09)	(-1.09)	(-1.09)	(-1.09)	(-1.32)	(-1.09)
Δ Interest Rate	0.0946	-1.139	-1.501	-2.382	-7.595	-14.65	-30.41	-40.62	-48.41	-60.80	-58.59
	(0.60)	(-1.25)	(-1.30)	(-1.33)	(-1.38)	(-1.36)	(-1.22)	(-1.10)	(-0.93)	(-0.79)	(-0.67)
Diversification x Δ Interest Rate	**0.276**	**1.933**	**2.315**	**3.607**	**12.00**	**23.30**	**53.71**	**80.70**	**100.4**	**160.8**	**93.19**
	(1.01)	**(1.17)**	**(1.11)**	**(1.06)**	**(0.98)**	**(0.90)**	**(0.89)**	**(0.92)**	**(1.01)**	**(1.18)**	**(0.92)**
Leverage	-4.338	-2.958	-2.957	-2.946	-2.906	-2.892	-2.895	-2.957	-3.006	-3.486	-3.151
	(-0.85)	(-0.72)	(-0.72)	(-0.72)	(-0.71)	(-0.71)	(-0.71)	(-0.72)	(-0.73)	(-0.82)	(-0.76)
Cash Holdings	1.849	40.33	40.22	40.17	40.03	39.96	40.26	40.62	40.83	42.04	40.84
	(0.71)	(1.22)	(1.22)	(1.22)	(1.22)	(1.21)	(1.22)	(1.22)	(1.23)	(1.10)	(1.23)
GDP Growth	1.403	-4.551	-4.507	-4.471	-4.211	-3.642	-2.143	-1.569	-1.404	2.003	-2.237
	(0.91)	(-0.82)	(-0.83)	(-0.82)	(-0.80)	(-0.73)	(-0.47)	(-0.35)	(-0.32)	(0.61)	(-0.55)
Inflation	-2.869	12.67	12.88	13.02	13.57	13.59	12.44	11.23	10.76	3.504	10.04
	(-0.90)	(1.15)	(1.18)	(1.20)	(1.25)	(1.27)	(1.25)	(1.21)	(1.15)	(0.41)	(1.07)
Unemployment Rate	1.597	2.364	2.358	2.257	1.910	1.818	2.326	2.759	3.083	1.188	3.251
	(0.67)	(0.55)	(0.55)	(0.52)	(0.43)	(0.40)	(0.52)	(0.64)	(0.74)	(0.34)	(0.81)
Constant	-5.495	-13.19	-13.90	-13.78	-14.22	-16.36	-24.07	-27.13	-29.40	-14.37	-25.70
	(-0.49)	(-0.40)	(-0.43)	(-0.42)	(-0.44)	(-0.52)	(-0.81)	(-0.95)	(-1.06)	(-0.69)	(-0.94)
Observations	83,992	132,027	132,027	132,027	132,027	132,027	132,027	132,027	132,027	121,555	132,027
R^2	0.0000496	0.0000250	0.0000251	0.0000253	0.0000262	0.0000268	0.0000271	0.0000269	0.0000264	0.0000454	0.0000249

t statistics in parentheses
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

$$\Delta\, Avg.Excess\ Firm\ Value_{i,t} = \beta_0 + \beta_1\, Unrelated\ Diversification_{i,t} + \beta_2\, \Delta\, Interest\ Rate_t +$$

$$\beta_3\, Unrelated\ Diversification \times \Delta\, Interest\ Rate_{i,t} + \beta_4\, Leverage_{i,t} + \beta_5\, Cash\ Holdings_{i,t} + \gamma_i + X_t + \varepsilon_{i,t} \quad \text{(A.5)}$$

$$\Delta\, Avg.Excess\ Firm\ Value_{i,t} = \beta_0 + \beta_1\, Related\ Diversification_{i,t} + \beta_2\, \Delta\, Interest\ Rate_t + \beta_3\, Related\ Diversification \times$$

$$\Delta\, Interest\ Rate_{i,t} + \beta_4\, Leverage_{i,t} + \beta_5\, Cash\ Holdings_{i,t} + \gamma_i + X_t + \varepsilon_{i,t} \quad \text{(A.6)}$$

Table A.11 – Regressions of the change in the asset-weighted average excess firm value on the diversification type, unrelated (Panel A) and related diversification (Panel B) compared to focused firms, change in the interest rate and their interaction term

	(1) 1-month	(2) 3-month	(3) 6-month	(4) 1-year	(5) 2-year	(6) 3-year	(7) 5-year	(8) 7-year	(9) 10-year	(10) 20-year	(11) 30-year
Panel A: Unrelated diversification compared to focused firms											
Unrelated Diversification	-2.119	-198.6	-198.6	-198.8	-199.6	-199.8	-198.5	-196.4	-194.5	-303.6	-193.3
	(-1.43)	(-0.96)	(-0.96)	(-0.96)	(-0.96)	(-0.96)	(-0.96)	(-0.96)	(-0.96)	(-1.17)	(-0.96)
Δ Interest Rate	0.105	-1.008	-1.321	-2.113	-6.884	-13.29	-27.03	-35.85	-42.14	-52.32	-49.77
	(0.61)	(-1.03)	(-1.07)	(-1.11)	(-1.20)	(-1.20)	(-1.06)	(-0.95)	(-0.79)	(-0.68)	(-0.56)
Unrelated Diversification x Δ Interest Rate	**0.307**	**2.250**	**2.960**	**4.940**	**18.31**	**38.56**	**88.70**	**128.4**	**142.8**	**218.2**	**102.1**
	(1.11)	**(1.01)**	**(1.03)**	**(1.04)**	**(1.04)**	**(1.03)**	**(1.02)**	**(1.02)**	**(1.01)**	**(1.19)**	**(0.87)**
Leverage	-4.377	-2.829	-2.832	-2.820	-2.778	-2.766	-2.778	-2.835	-2.881	-3.255	-3.009
	(-0.86)	(-0.69)	(-0.69)	(-0.68)	(-0.67)	(-0.67)	(-0.67)	(-0.69)	(-0.70)	(-0.76)	(-0.73)
Cash Holdings	1.935	41.59	41.51	41.45	41.26	41.16	41.39	41.70	41.92	43.03	42.07
	(0.74)	(1.27)	(1.27)	(1.26)	(1.26)	(1.26)	(1.27)	(1.27)	(1.27)	(1.13)	(1.27)
GDP Growth	1.434	-4.961	-4.910	-4.879	-4.654	-4.148	-2.855	-2.367	-2.212	1.144	-2.919
	(0.90)	(-0.86)	(-0.87)	(-0.87)	(-0.85)	(-0.80)	(-0.62)	(-0.52)	(-0.50)	(0.34)	(-0.70)
Inflation	-2.941	11.24	11.36	11.48	12.02	11.99	10.87	9.815	9.426	1.786	8.795
	(-0.89)	(0.93)	(0.95)	(0.97)	(1.01)	(1.03)	(1.00)	(0.97)	(0.93)	(0.20)	(0.87)
Unemployment Rate	1.665	1.005	1.010	0.920	0.602	0.534	1.006	1.384	1.662	-0.552	1.802
	(0.68)	(0.23)	(0.23)	(0.21)	(0.13)	(0.11)	(0.22)	(0.31)	(0.38)	(-0.15)	(0.42)
Constant	-5.745	-1.653	-2.218	-2.090	-2.464	-4.297	-10.88	-13.51	-15.57	1.467	-12.42
	(-0.49)	(-0.05)	(-0.07)	(-0.06)	(-0.07)	(-0.13)	(-0.34)	(-0.44)	(-0.51)	(0.06)	(-0.41)
Observations	81,458	128,392	128,392	128,392	128,392	128,392	128,392	128,392	128,392	118,111	128,392
R^2	0.0000507	0.0000249	0.0000250	0.0000252	0.0000263	0.0000271	0.0000276	0.0000274	0.0000266	0.0000484	0.0000247
Panel B: Related diversification compared to focused firms											
Related Diversification	0.763	-57.47	-56.61	-56.09	-55.10	-54.01	-53.78	-54.42	-55.11	-102.5	-54.93
	(0.50)	(-0.46)	(-0.45)	(-0.45)	(-0.45)	(-0.44)	(-0.44)	(-0.44)	(-0.45)	(-0.60)	(-0.46)
Δ Interest Rate	0.111	-0.983	-1.310	-2.138	-7.274	-14.16	-27.72	-35.17	-37.62	-49.67	-33.55
	(0.62)	(-1.08)	(-1.14)	(-1.19)	(-1.29)	(-1.29)	(-1.12)	(-0.97)	(-0.73)	(-0.67)	(-0.38)
Related Diversification x Δ Interest Rate	**0.204**	**1.072**	**0.864**	**0.864**	**0.380**	**-4.199**	**-11.10**	**-9.645**	**15.43**	**78.03**	**54.77**
	(0.72)	**(0.71)**	**(0.57)**	**(0.41)**	**(0.06)**	**(-0.31)**	**(-0.31)**	**(-0.17)**	**(0.21)**	**(0.48)**	**(0.40)**
Leverage	-4.381	-3.310	-3.305	-3.286	-3.225	-3.204	-3.220	-3.291	-3.367	-3.427	-3.523
	(-0.85)	(-0.79)	(-0.79)	(-0.78)	(-0.77)	(-0.76)	(-0.77)	(-0.79)	(-0.80)	(-0.80)	(-0.84)
Cash Holdings	1.829	36.83	36.70	36.60	36.33	36.20	36.53	36.92	37.23	38.85	37.42
	(0.69)	(1.34)	(1.34)	(1.33)	(1.33)	(1.33)	(1.33)	(1.34)	(1.34)	(1.19)	(1.34)
GDP Growth	1.476	-7.041	-7.007	-6.994	-6.767	-6.144	-4.544	-4.011	-4.125	-0.752	-5.355
	(0.91)	(-1.12)	(-1.13)	(-1.13)	(-1.13)	(-1.09)	(-0.93)	(-0.85)	(-0.88)	(-0.21)	(-1.13)
Inflation	-3.017	12.12	12.39	12.68	13.70	13.85	12.38	10.96	10.17	3.334	8.976
	(-0.90)	(1.02)	(1.04)	(1.07)	(1.14)	(1.17)	(1.13)	(1.08)	(1.01)	(0.36)	(0.90)
Unemployment Rate	1.683	0.458	0.445	0.322	-0.123	-0.254	0.337	0.809	1.136	-0.162	1.220
	(0.67)	(0.09)	(0.09)	(0.07)	(-0.02)	(-0.05)	(0.07)	(0.17)	(0.24)	(-0.05)	(0.27)
Constant	-5.887	0.772	0.0525	0.0590	-0.718	-3.193	-11.12	-13.64	-13.71	-8.364	-5.990
	(-0.49)	(0.02)	(0.00)	(0.00)	(-0.02)	(-0.10)	(-0.36)	(-0.47)	(-0.48)	(-0.54)	(-0.20)
Observations	79,862	124,625	124,625	124,625	124,625	124,625	124,625	124,625	124,625	115,031	124,625
R^2	0.0000510	0.00000688	0.00000699	0.00000719	0.00000806	0.00000869	0.00000844	0.00000787	0.00000715	0.00000671	0.00000633

t statistics in parentheses
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

$$´\Delta\, Avg.Excess\ Firm\ Value_{i,t} = \beta_0 + \beta_1\, Unrelated\ Diversification_{i,t} + \beta_2\, \Delta\, Interest\ Rate_t +$$

$$\beta_3\, Unrelated\ Diversification \times \Delta\, Interest\ Rate_{i,t} + \beta_4\, Leverage_{i,t} + \beta_5\, Cash\ Holdings_{i,t} + \gamma_i + X_t + \varepsilon_{i,t} \quad \text{(A.7)}$$

Table A.12 – Regressions of the change in the asset-weighted average excess firm value on the diversification type between diversified firms, change in the interest rate and their interaction term

	(1) 1-month	(2) 3-month	(3) 6-month	(4) 1-year	(5) 2-year	(6) 3-year	(7) 5-year	(8) 7-year	(9) 10-year	(10) 20-year	(11) 30-year
Unrelated Diversification	-3.057	2.507	2.508	2.515	2.545	2.581	2.618	2.588	2.523	3.482	2.357
	(-0.88)	(0.49)	(0.49)	(0.49)	(0.49)	(0.50)	(0.51)	(0.51)	(0.50)	(0.61)	(0.47)
Δ Interest Rate	0.00112	0.00884	0.00884	0.00758	-0.00746	0.0393	0.426	0.875	0.682	0.876	-1.631
	(0.01)	(0.11)	(0.09)	(0.05)	(-0.02)	(0.06)	(0.31)	(0.42)	(0.24)	(0.20)	(-0.34)
Unrelated Diversification x Δ Interest Rate	**0.0239**	**-0.00813**	**-0.0123**	**-0.0292**	**-0.200**	**-0.593**	**-2.067**	**-3.667**	**-5.004**	**-6.162**	**-7.210**
	(0.34)	**(-0.15)**	**(-0.18)**	**(-0.27)**	**(-0.63)**	**(-0.96)**	**(-1.40)**	**(-1.56)**	**(-1.57)**	**(-1.39)**	**(-1.38)**
Leverage	0.368	0.691	0.694	0.699	0.708	0.705	0.698	0.691	0.691	0.814	0.701
	(0.60)	(0.72)	(0.72)	(0.73)	(0.73)	(0.73)	(0.72)	(0.71)	(0.72)	(0.78)	(0.72)
Cash Holdings	1.316	0.529	0.531	0.535	0.562	0.610	0.737	0.806	0.832	0.901	0.704
	(0.34)	(0.19)	(0.19)	(0.19)	(0.20)	(0.21)	(0.26)	(0.28)	(0.29)	(0.28)	(0.24)
GDP Growth	0.130	0.0625	0.0606	0.0574	0.0552	0.0688	0.120	0.157	0.208	0.226	0.253
	(0.48)	(0.27)	(0.26)	(0.25)	(0.24)	(0.29)	(0.48)	(0.58)	(0.71)	(0.70)	(0.82)
Inflation	-0.308	-0.153	-0.141	-0.113	-0.0354	-0.00584	-0.00736	-0.0244	0.00398	-0.191	0.0621
	(-0.51)	(-0.30)	(-0.28)	(-0.23)	(-0.07)	(-0.01)	(-0.02)	(-0.06)	(0.01)	(-0.47)	(0.18)
Unemployment Rate	-0.193	-0.201	-0.202	-0.206	-0.223	-0.232	-0.228	-0.218	-0.205	-0.332	-0.177
	(-0.41)	(-0.52)	(-0.52)	(-0.53)	(-0.58)	(-0.61)	(-0.58)	(-0.54)	(-0.50)	(-0.70)	(-0.43)
Constant	2.507	-0.883	-0.894	-0.925	-1.021	-1.128	-1.440	-1.633	-2.019	-1.596	-2.538
	(0.68)	(-0.22)	(-0.23)	(-0.23)	(-0.26)	(-0.28)	(-0.34)	(-0.36)	(-0.42)	(-0.29)	(-0.51)
Observations	6,664	11,037	11,037	11,037	11,037	11,037	11,037	11,037	11,037	9,968	11,037
R^2	0.000366	0.000152	0.000152	0.000153	0.000176	0.000212	0.000303	0.000377	0.000440	0.000553	0.000526

t statistics in parentheses
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

$$\Delta\ Avg.Excess\ Firm\ Value_{i,t} = \beta_0 + \beta_1\ Low\ Intensity_{i,t} + \beta_2\ Medium\ Intensity_{i,t} + \beta_3\ High\ Intensity_{i,t} +$$

$$\beta_4\ \Delta\ Interest\ Rate_t + \beta_5\ Low\ Intensity \times \Delta\ Interest\ Rate_{i,t} + \beta_6\ Medium\ Intensity \times \Delta\ Interest\ Rate_{i,t} +$$

$$\beta_7\ High\ Intensity \times \Delta\ Interest\ Rate_{i,t} + \beta_8\ Leverage_{i,t} + \beta_9\ Cash\ Holdings_{i,t} + \gamma_i + X_t + \varepsilon_{i,t} \quad \text{(A.8)}$$

Table A.13 – Regressions of the change in the asset-weighted average excess firm value on the diversification intensity, change in the interest rate and their interaction term

	(1) 1-month	(2) 3-month	(3) 6-month	(4) 1-year	(5) 2-year	(6) 3-year	(7) 5-year	(8) 7-year	(9) 10-year	(10) 20-year	(11) 30-year
Low Intensity	-1.214	-36.02	-35.62	-35.36	-34.92	-34.47	-34.63	-35.20	-35.52	-93.47	-35.19
	(-0.87)	(-0.44)	(-0.43)	(-0.43)	(-0.43)	(-0.42)	(-0.42)	(-0.43)	(-0.44)	(-0.99)	(-0.44)
Medium Intensity	0.701	-286.3	-286.2	-286.4	-287.6	-288.1	-286.6	-283.9	-281.1	-376.5	-279.2
	(0.48)	(-1.23)	(-1.23)	(-1.23)	(-1.23)	(-1.23)	(-1.23)	(-1.23)	(-1.23)	(-1.30)	(-1.23)
High Intensity	-3.333	-900.5	-900.9	-901.4	-902.8	-903.5	-899.8	-891.0	-882.0	-1180.9	-868.3
	(-0.41)	(-1.33)	(-1.33)	(-1.33)	(-1.33)	(-1.33)	(-1.33)	(-1.33)	(-1.34)	(-1.35)	(-1.34)
Δ Interest Rate	0.0947	-1.185	-1.558	-2.466	-2.466	-7.814	-31.13	-41.52	-49.47	-61.63	-60.00
	(0.60)	(-1.28)	(-1.33)	(-1.35)	(-1.35)	(-1.39)	(-1.23)	(-1.12)	(-0.94)	(-0.80)	(-0.69)
Low Intensity x Δ Interest Rate	**0.293**	**0.213**	**-0.0884**	**-0.514**	**-3.385**	**-10.18**	**-23.24**	**-27.90**	**-13.71**	**47.47**	**21.72**
	(1.04)	**(0.24)**	**(-0.09)**	**(-0.31)**	**(-0.54)**	**(-0.69)**	**(-0.65)**	**(-0.53)**	**(-0.21)**	**(0.44)**	**(0.18)**
Medium Intensity x Δ Interest Rate	**0.165**	**3.107**	**3.967**	**6.462**	**22.55**	**46.30**	**104.4**	**147.4**	**157.8**	**188.8**	**82.93**
	(0.77)	**(1.25)**	**(1.25)**	**(1.26)**	**(1.26)**	**(1.26)**	**(1.27)**	**(1.27)**	**(1.29)**	**(1.23)**	**(1.07)**
High Intensity x Δ Interest Rate	**0.446+**	**10.51**	**13.98**	**22.65**	**77.72**	**163.8**	**403.9**	**615.7**	**765.7**	**1088.9**	**849.1**
	(1.72)	**(1.27)**	**(1.28)**	**(1.26)**	**(1.19)**	**(1.16)**	**(1.13)**	**(1.13)**	**(1.14)**	**(1.22)**	**(1.21)**
Leverage	-4.338	-2.763	-2.763	-2.753	-2.718	-2.711	-2.724	-2.788	-2.833	-3.261	-2.965
	(-0.85)	(-0.67)	(-0.67)	(-0.67)	(-0.66)	(-0.66)	(-0.66)	(-0.68)	(-0.69)	(-0.77)	(-0.72)
Cash Holdings	1.852	40.47	40.36	40.29	40.11	40.01	40.28	40.64	40.90	42.53	41.05
	(0.71)	(1.22)	(1.22)	(1.22)	(1.22)	(1.22)	(1.22)	(1.23)	(1.23)	(1.10)	(1.23)
GDP Growth	1.403	-4.614	-4.565	-4.526	-4.253	-3.663	-2.127	-1.544	-1.381	1.986	-2.228
	(0.91)	(-0.84)	(-0.84)	(-0.83)	(-0.81)	(-0.73)	(-0.47)	(-0.35)	(-0.32)	(0.60)	(-0.55)
Inflation	-2.869	12.96	13.17	13.30	13.85	13.84	12.65	11.41	10.95	3.626	10.23
	(-0.90)	(1.17)	(1.20)	(1.22)	(1.27)	(1.29)	(1.27)	(1.22)	(1.17)	(0.42)	(1.09)
Unemployment Rate	1.598	2.387	2.384	2.280	1.921	1.826	2.349	2.798	3.138	1.244	3.319
	(0.67)	(0.56)	(0.56)	(0.53)	(0.43)	(0.40)	(0.53)	(0.65)	(0.75)	(0.35)	(0.82)
Constant	-5.515	-11.15	-11.89	-11.75	-12.16	-14.32	-22.18	-25.31	-27.72	-12.00	-24.11
	(-0.49)	(-0.34)	(-0.37)	(-0.36)	(-0.38)	(-0.46)	(-0.75)	(-0.89)	(-1.00)	(-0.63)	(-0.89)
Observations	83,992	132,027	132,027	132,027	132,027	132,027	132,027	132,027	132,027	121,555	132,027
R^2	0.0000498	0.0000746	0.0000749	0.0000753	0.0000773	0.0000794	0.0000815	0.0000817	0.0000801	0.000120	0.0000752

t statistics in parentheses
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Section 4: Robustness check

An analysis was conducted to verify the robustness of the main results established in the paper. It was performed by recalculating the dependent variable, *Average Excess Firm Value*, by using as weight the ratio between the segments' sales and the total sales of the firm. Consequently, it becomes a sales-weighted *Average Excess Firm Value*. This also signifies that the sample analysed changed, as seen in Table A.14. The observations that were deleted were those in which the sum of the segments' sales varied by more than 5% from the total sales, instead of those in which the sum of the segments' assets varied by more than 5% from the total assets reported by the enterprise, in a given year.

Table A.14 – Breakdown of the number of observations in the full sales-weighted sample per Diversification Status (Panel A), Diversification Type (Panel B) and Diversification Intensity (Panel C)

	(1) Absolute Frequency	(2) Relative Frequency (%)
Panel A: Diversification Status		
Diversified Firms	49,562	25.175
Non-Diversified Firms	147,307	74.825
Total	196,869	100
Panel B: Diversification Type		
Unrelated Diversification Firms	30,950	15.721
Related Diversification Firms	18,612	9.454
Non-Diversified Firms	147,307	74.825
Total	196,869	100
Panel C: Diversification Intensity		
Low Diversification Intensity Firms	24,438	12.413
Medium Diversification Intensity Firms	20,887	10.610
High Diversification Intensity Firms	4,237	2.152
Non-Diversified Firms	147,307	74.825
Total	196,869	100

Table A.15 displays the descriptive statistics for key firm-level variables, from 1989 to 2022, for the sales-weighted sample and when accounting for firms' diversification status for Balance Sheet, Income Statement and Market variables (Panel A) and control variables (Panel B). The results were similar to those obtained with the asset-weighted sample with diversified companies being, on average, larger and older, while specialised firms having, on average, a higher operating leverage, cash holdings, leverage and Tobin's Q.

Table A.15 – Univariate statistics for key firm-level variables, from 1989 to 2022, for the entire sales-weighted sample and when accounting for firms' diversification status. Balance Sheet, Income Statement and Market Value items are in millions of U.S. dollars and control variables, excluding Size and Age, are winsorised at the top and bottom first percentiles

	(1) Full Sample				(2) Diversified				(3) Non-Diversified			
	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max
Panel A: Balance Sheet, Income Statement and Market Variables												
Total Assets	3188.124	17711.1	0	797769	6507.631	27364.71	0	797769	2063.841	12700.87	0	558933
Common Equity	1140.654	6988.848	-86154	348296	2358.667	10678.93	-25869	348296	727.9796	5107.127	-86154	233236
Cash and Short-term Investments	330.4443	2320.579	-8.03	139649	668.669	3648.345	-0.004	139649	215.8436	1627.245	-8.03	100580
Debt in Current Liabilities	190.5276	2127.881	-882	193695	440.3466	3710.62	-882	193695	105.8957	1170.089	-154	98392.86
Long-term Debt	780.0639	4467.644	-0.023	330067	1449.971	6403.973	0	330067	552.939	3552.352	-0.023	207174
Market Value	3636.932	24363.23	0	2324390	6674.717	33180.08	0.000711	2036897	2532.732	20114.29	0	2324390
Sales	2408.981	13419.08	-1964.999	611289	4884.493	19276.15	-7.617	481091.2	1576.086	10624.87	-1964.999	611289
COGS	1648.948	10212.6	-1707.9	452776	3386.432	15114.78	-366.645	442548.5	1064.364	7820.934	-1707.9	452776
SG&A Expenses	368.8196	2124.892	-283	211641	719.1278	2701.396	-101	82008	250.9571	1877.202	-283	211641
Net Income	131.8731	1357.092	-98696	104821	286.6405	1847.432	-98696	76033	79.80102	1141.173	-87681.13	104821
Dividends per Share (mean)	0.062291	1.794612	0	750	0.1146323	3.496889	0	750	0.0440172	0.2731066	0	33.8075
Dividends per Share (median)	0.0489718	1.764222	0	750	0.0937796	3.452243	0	750	0.033328	0.1932173	0	23.8
Closing Share Price (mean)	24.7284	557.9146	0.0000257	119643.8	43.12195	1052.135	0.0000257	119643.8	18.112	157.7321	0.0000877	24200
Closing Share Price (median)	24.4812	548.826	1.00e-06	113992.5	42.74983	1034.145	1.00e-06	113992.5	17.90974	157.1781	0.0001	24150
Panel B: Control Variables												
Size	5.024303	2.636031	-6.907755	13.58957	6.290162	2.418147	-6.907755	13.58957	4.595359	2.568049	-6.907755	13.23378
Age	7.644709	8.943528	-30	76	11.19441	10.79514	-28	76	6.595886	8.022849	-30	73
Cash Holdings	0.1982656	0.2321656	0	0.9094908	0.1391702	0.1621424	0	0.9094908	0.2182998	0.248347	0	0.9094908
Tobin's Q	2.706569	3.812187	0.5272471	25.4887	1.947264	2.124114	0.5272471	25.4887	2.982931	4.230117	0.5272471	25.4887
Leverage	0.2985819	0.3769251	0	2.214884	0.2826146	0.2677253	0	2.214884	0.3039954	0.4072151	0	2.214884
Short-term Leverage	0.0899704	0.2152174	0	1.375843	0.0625597	0.1364562	0	1.375843	0.0992613	0.2353	0	1.375843
Long-term Leverage	0.1963579	0.2407146	0	1.128931	0.2169774	0.2154147	0	1.128931	0.1893633	0.2483251	0	1.128931
Operating Leverage	1.14506	1.048502	0.0139225	5.813693	1.036082	0.8271391	0.0139225	5.813693	1.181987	1.111155	0.0139225	5.813693
Dividend-Price Ratio (mean)	0.002048	0.0050784	0	0.0329736	0.0028141	0.0050833	0	0.0329736	0.0017724	0.0050483	0	0.0329736
Dividend-Price Ratio (median)	0.0016155	0.0041869	0	0.0276498	0.0022496	0.0042183	0	0.0276498	0.0013874	0.0041519	0	0.0276498
Number of Segments	1.467555	0.9855252	1	11	2.857209	1.130107	2	11	1	0	1	1
Observations	196,869				49,562				147,307			

Figure A.4 and Figure A.5 show the average evolution of the sales-weighted Balance Sheet and Income Statement and winsorised control variables, respectively, dependent on the diversification status, from 1989 to 2022.

Figure A.4 – Evolution of key Balance Sheet, Income Statement and Market Value variables, in millions of U.S. dollars, from 1989 to 2022, for the sales-weighted sample, dependent on the average firm's diversification status

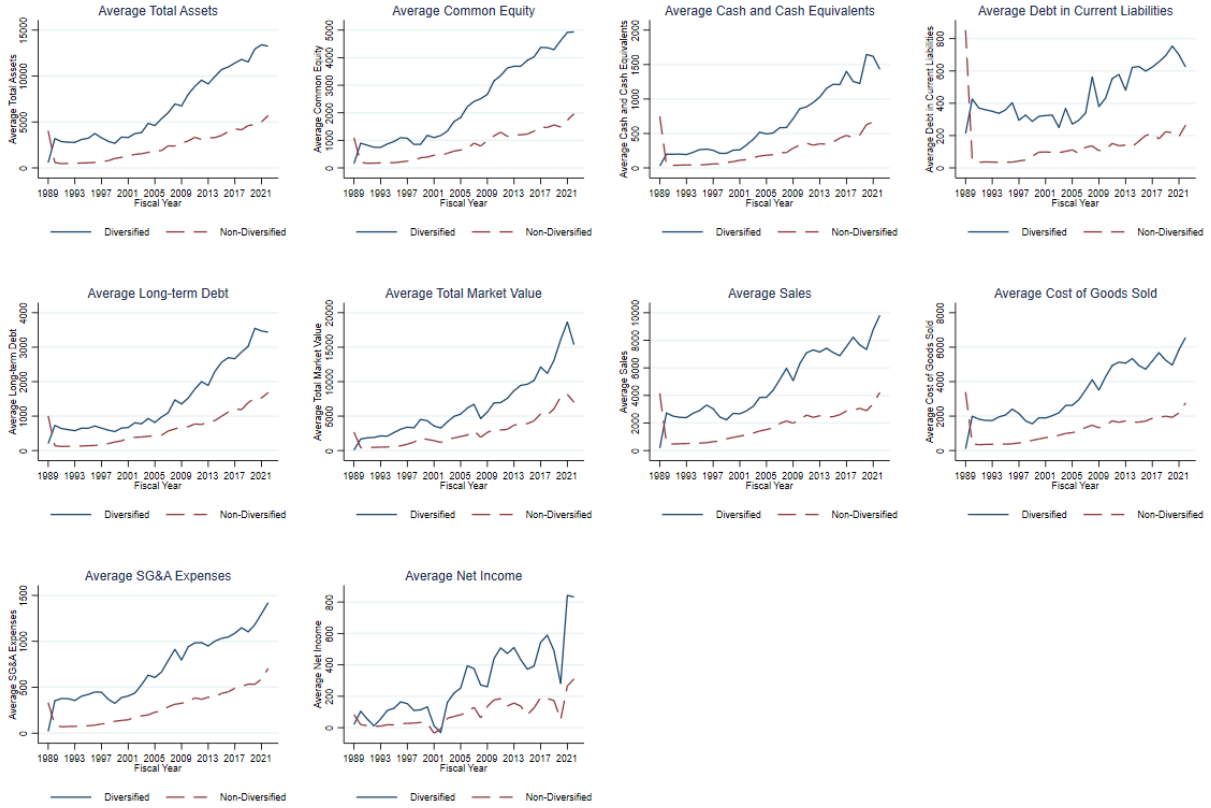
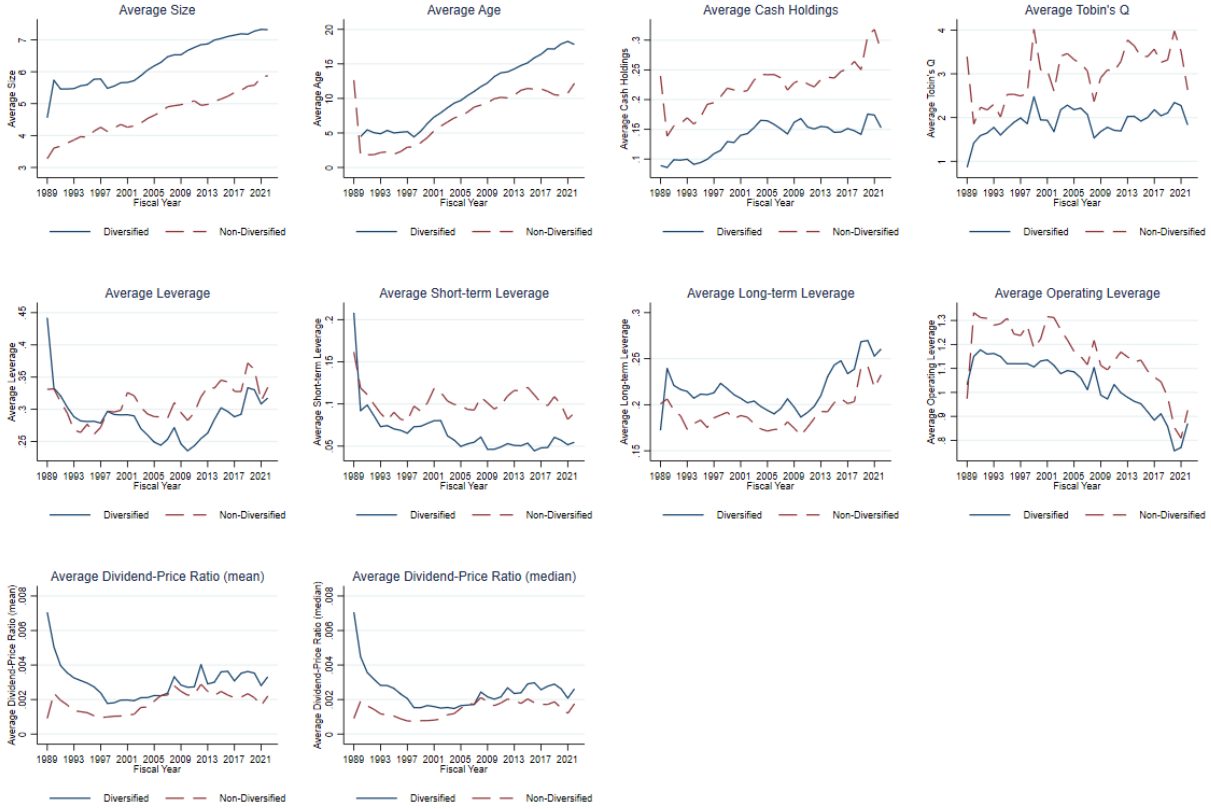
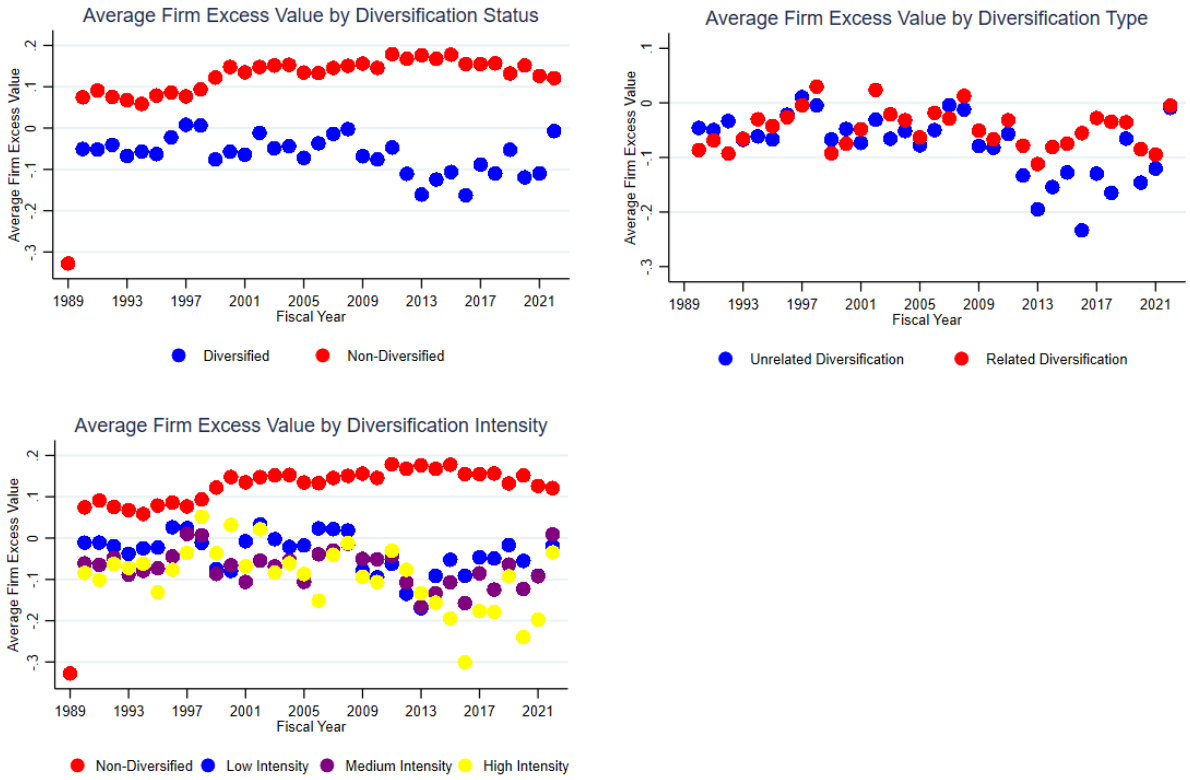


Figure A.5 – Evolution of control variables winsorised at the top and bottom one percentile, excluding Size and Age, from 1989 to 2022, for the sales-weighted sample, dependent on the average firm's diversification status



In addition, when looking at the dependent variable, the average excess firm value, for the 33 years, becomes 12.72%, for focused companies, and -6.33%, for diversified ones. The average evolution of this variable conditional on the diversification status, intensity, and type of diversification, for the sample period, is shown in Figure A.6. The diversification discount seems to continue to increase with the number of segments, but not be dependent on the diversification type.

Figure A.6 – Evolution of the sales-weighted average firm excess value, from 1989 to 2022, dependent on the Diversification Status, Diversification Type and Diversification Intensity



A robustness check was performed for all the regressions in Section 4. As in the previous regressions, these continue to include both firm-fixed effects and control variables for macroeconomic indicators. The former deals with the endogeneity concern of the diversification decision, while the latter is included due to the inability to utilise year-fixed effects. This happens because of collinearity concerns that arise, given that this paper's objective is to study the effects of the impact of interest rate changes on the average firm excess value. Additionally, standard errors were still made robust and clustered at a firm level. All tables were maintained in the same order as in the main analysis.

Table A.16 shows the results gathered in the scenario of a hypothetical economy, where only two firms operate, a diversified and a non-diversified one. As with the asset-weighted counterpart, the interaction terms continue to be positive and statistically significant at a 0.1%-level for all eleven interest rates.

Table A.16 – Regressions of the sales-weighted average excess firm value on the diversification status, interest rate and their interaction term for a hypothetical economy with just two firms, a focused and a diversified one, operating

	(1) 1-month	(2) 3-month	(3) 6-month	(4) 1-year	(5) 2-year	(6) 3-year	(7) 5-year	(8) 7-year	(9) 10-year	(10) 20-year	(11) 30-year
Diversification	-0.252***	-0.237***	-0.240***	-0.245***	-0.255***	-0.265***	-0.283***	-0.295***	-0.308***	-0.341***	-0.332***
	(-554.62)	(-414.66)	(-417.01)	(-428.80)	(-441.08)	(-447.14)	(-443.82)	(-423.57)	(-399.64)	(-432.99)	(-351.38)
Interest Rate	-0.00512***	-0.0111***	-0.0112***	-0.0118***	-0.0125***	-0.0131***	-0.0140***	-0.0143***	-0.0149***	-0.0146***	-0.0155***
	(-112.45)	(-189.11)	(-194.81)	(-208.02)	(-225.04)	(-227.78)	(-212.21)	(-195.82)	(-175.89)	(-142.98)	(-153.01)
Diversification x Interest Rate	**0.0223*** **	**0.0191*** **	**0.0191*** **	**0.0200*** **	**0.0211*** **	**0.0225*** **	**0.0250*** **	**0.0262*** **	**0.0279*** **	**0.0326*** **	**0.0298*** **
	(182.32)	**(170.04)**	**(173.72)**	**(182.61)**	**(190.70)**	**(194.95)**	**(193.08)**	**(184.81)**	**(174.68)**	**(208.89)**	**(162.01)**
Leverage	-0.00178***	-0.000484	-0.000591+	-0.000822**	-0.00114***	-0.00131***	-0.00145***	-0.00141***	-0.00137***	-0.000817*	-0.00116***
	(-6.77)	(-1.51)	(-1.86)	(-2.68)	(-3.88)	(-4.51)	(-4.96)	(-4.68)	(-4.42)	(-2.48)	(-3.53)
Cash Holdings	-0.00255***	0.000543	0.000526	0.000517	0.000564	0.000646	0.000751	0.000697	0.000554	0.00108+	0.000197
	(-4.50)	(0.87)	(0.85)	(0.87)	(0.98)	(1.14)	(1.31)	(1.19)	(0.93)	(1.74)	(0.31)
GDP Growth	-0.00165***	-0.00380***	-0.00377***	-0.00372***	-0.00359***	-0.00352***	-0.00340***	-0.00331***	-0.00322***	-0.00321***	-0.00303***
	(-44.06)	(-113.29)	(-116.65)	(-119.84)	(-119.73)	(-119.50)	(-116.78)	(-111.00)	(-106.81)	(-99.42)	(-96.51)
Inflation	0.00229***	0.00343***	0.00357***	0.00369***	0.00374***	0.00372***	0.00366***	0.00348***	0.00347***	0.00370***	0.00306***
	(19.94)	(43.94)	(47.97)	(51.20)	(50.60)	(48.67)	(43.96)	(39.41)	(37.14)	(35.71)	(30.49)
Unemployment Rate	0.00157***	-0.00533***	-0.00542***	-0.00551***	-0.00522***	-0.00486***	-0.00393***	-0.00324***	-0.00247***	-0.00147***	-0.00139***
	(32.89)	(-75.88)	(-77.12)	(-79.84)	(-83.97)	(-84.46)	(-80.01)	(-71.44)	(-57.69)	(-30.51)	(-30.37)
Constant	0.151***	0.197***	0.199***	0.202***	0.206***	0.208***	0.211***	0.212***	0.213***	0.213***	0.218***
	(343.64)	(310.56)	(313.49)	(322.89)	(352.07)	(368.36)	(388.37)	(386.48)	(374.71)	(311.39)	(337.29)
Observations	119,162	193,437	193,437	193,437	193,437	193,437	193,437	193,437	193,437	177,535	193,437
R^2	0.860	0.803	0.806	0.814	0.821	0.825	0.828	0.825	0.823	0.827	0.812

t statistics in parentheses
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

All the following tables study the firm-level data of the sales-weighted sample. Table A.17 displays the regressions dependent on the diversification status. Now, diversification yields even more power as an instrument to insulate from interest rate shocks, in the short term, with the interaction terms, being positive and statistically significant from the 1-month interest rate to the 1-year one, instead of just significant for the 1-month rate.

Table A.17 – Regressions of the sales-weighted average excess firm value on the diversification status, interest rate and their interaction term

	(1) 1-month	(2) 3-month	(3) 6-month	(4) 1-year	(5) 2-year	(6) 3-year	(7) 5-year	(8) 7-year	(9) 10-year	(10) 20-year	(11) 30-year
Diversification	-0.104***	-0.103***	-0.103***	-0.102***	-0.0964***	-0.0926***	-0.0838***	-0.0764***	-0.0682***	-0.0701**	-0.0486*
	(-8.55)	(-9.35)	(-9.24)	(-8.86)	(-7.80)	(-7.00)	(-5.53)	(-4.54)	(-3.67)	(-3.08)	(-2.15)
Interest Rate	0.0257***	0.0339***	0.0342***	0.0358***	0.0381***	0.0406***	0.0452***	0.0478***	0.0514***	0.0582***	0.0577***
	(10.14)	(18.39)	(18.64)	(18.96)	(19.30)	(19.53)	(19.79)	(19.81)	(19.99)	(19.47)	(19.97)
Diversification x Interest Rate	**0.0167*** **	**0.00391+**	**0.00396***	**0.00396***	**0.00278**	**0.00199**	**0.0000381**	**-0.00169**	**-0.00330**	**-0.00323**	**-0.00686***
	(5.06)	**(1.71)**	**(1.76)**	**(1.72)**	**(1.14)**	**(0.76)**	**(0.01)**	**(-0.53)**	**(-0.94)**	**(-0.76)**	**(-1.71)**
Leverage	0.572***	0.543***	0.543***	0.545***	0.547***	0.548***	0.551***	0.551***	0.553***	0.568***	0.554***
	(26.92)	(30.65)	(30.69)	(30.76)	(30.86)	(30.95)	(31.09)	(31.14)	(31.24)	(31.31)	(31.30)
Cash Holdings	0.669***	0.678***	0.678***	0.678***	0.678***	0.677***	0.676***	0.676***	0.676***	0.687***	0.675***
	(20.53)	(27.70)	(27.71)	(27.72)	(27.70)	(27.68)	(27.64)	(27.63)	(27.62)	(26.79)	(27.61)
GDP Growth	-0.00224*	0.00283***	0.00276**	0.00255**	0.00191*	0.00161+	0.00104	0.000431	-0.000125	-0.00155+	-0.00159+
	(-2.44)	(3.32)	(3.24)	(3.00)	(2.27)	(1.92)	(1.25)	(0.52)	(-0.15)	(-1.76)	(-1.96)
Inflation	0.00129	-0.00438**	-0.00535***	-0.00593***	-0.00600***	-0.00598***	-0.00603***	-0.00523***	-0.00560***	-0.00247	-0.00330*
	(0.78)	(-2.88)	(-3.48)	(-3.85)	(-3.89)	(-3.89)	(-3.92)	(-3.42)	(-3.65)	(-1.54)	(-2.19)
Unemployment Rate	0.0173***	0.0267***	0.0272***	0.0275***	0.0262***	0.0247***	0.0203***	0.0164***	0.0115***	0.00798***	0.00367**
	(8.79)	(15.62)	(15.81)	(16.02)	(15.72)	(15.23)	(13.32)	(11.23)	(8.17)	(5.53)	(2.64)
Constant	-0.331***	-0.434***	-0.440***	-0.449***	-0.457***	-0.465***	-0.470***	-0.471***	-0.466***	-0.498***	-0.479***
	(-17.35)	(-25.83)	(-25.95)	(-26.20)	(-26.50)	(-26.67)	(-26.71)	(-26.58)	(-26.29)	(-25.38)	(-25.86)
Observations	106,869	167,966	167,966	167,966	167,966	167,966	167,966	167,966	167,966	155,913	167,966
R^2	0.0857	0.0818	0.0820	0.0826	0.0837	0.0844	0.0856	0.0860	0.0865	0.0897	0.0869

t statistics in parentheses
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

In Table A.18, diversified and focused enterprises of similar size were once again compared through the creation of quartiles. The outcomes slightly diverge from those reached when using the asset-weighted sample. Here, some interaction terms either become statistically significant, e.g.: the 1-month interest rate interaction term of the first size quartile, improve their significance level, e.g.: the 1-month rate for the second quartile or became statistically insignificant, e.g.: 5- to the 30-year interaction terms for the fourth quartile. Nonetheless, as was previously the case, when using the asset-weighted dependent variable, it is still possible

to observe that the best results are revealed when comparing smaller firms present in the first quartile, with all the interaction terms becoming or improving their significance level. Also, the insulation against changes to interest rates offered by diversification seems to continue to generally decrease as the size of compared companies increases.

Table A.18 – Regressions of the sales-weighted average excess firm value on the diversification status, interest rate and their interaction term, divided into quartiles depending on size: First Size Quartile (Panel A), Second Size Quartile (Panel B), Third Size Quartile (Panel C) and Fourth Size Quartile (Panel D)

	(1) 1-month	(2) 3-month	(3) 6-month	(4) 1-year	(5) 2-year	(6) 3-year	(7) 5-year	(8) 7-year	(9) 10-year	(10) 20-year	(11) 30-year
Panel A: First Size Quartile											
Diversification	-0.216***	-0.232***	-0.235***	-0.243***	-0.259***	-0.276***	-0.311***	-0.334***	-0.366***	-0.400***	-0.425***
	(-4.14)	(-5.45)	(-5.45)	(-5.45)	(-5.34)	(-5.29)	(-5.20)	(-5.07)	(-5.08)	(-4.34)	(-4.87)
Interest Rate	0.0160+	0.0171**	0.0181***	0.0199***	0.0229***	0.0256***	0.0309***	0.0338***	0.0378***	0.0499***	0.0447***
	(1.84)	(3.22)	(3.43)	(3.64)	(3.95)	(4.14)	(4.44)	(4.56)	(4.70)	(5.03)	(4.82)
Diversification x Interest Rate	**0.0452****	**0.0317*****	**0.0314*****	**0.0329*****	**0.0346*****	**0.0372*****	**0.0425*****	**0.0449*****	**0.0500*****	**0.0515****	**0.0565*****
	(3.02)	**(3.79)**	**(3.81)**	**(3.88)**	**(3.86)**	**(3.89)**	**(3.93)**	**(3.86)**	**(3.96)**	**(3.18)**	**(3.88)**
Leverage	0.733***	0.721***	0.722***	0.723***	0.724***	0.725***	0.728***	0.728***	0.729***	0.738***	0.731***
	(25.28)	(31.10)	(31.12)	(31.15)	(31.22)	(31.27)	(31.35)	(31.38)	(31.42)	(30.86)	(31.45)
Cash Holdings	0.595***	0.608***	0.608***	0.608***	0.609***	0.609***	0.610***	0.611***	0.612***	0.627***	0.613***
	(8.92)	(13.08)	(13.08)	(13.10)	(13.11)	(13.12)	(13.15)	(13.16)	(13.18)	(12.72)	(13.21)
GDP Growth	-0.00632	-0.00224	-0.00246	-0.00272	-0.00311	-0.00320	-0.00328	-0.00350	-0.00385	-0.00727*	-0.00503+
	(-1.64)	(-0.72)	(-0.79)	(-0.88)	(-1.01)	(-1.04)	(-1.07)	(-1.14)	(-1.26)	(-2.11)	(-1.66)
Inflation	0.00565	0.00387	0.00317	0.00265	0.00192	0.00136	-0.0000620	-0.0000416	-0.00135	0.00673	-0.0000103
	(0.77)	(0.68)	(0.56)	(0.47)	(0.34)	(0.24)	(-0.01)	(-0.01)	(-0.23)	(1.05)	(-0.00)
Unemployment Rate	0.0249***	0.0324***	0.0331***	0.0337***	0.0336***	0.0331***	0.0307***	0.0279***	0.0239***	0.0217***	0.0166**
	(3.30)	(5.37)	(5.48)	(5.63)	(5.81)	(5.87)	(5.72)	(5.37)	(4.71)	(4.00)	(3.25)
Constant	-0.000378	-0.189***	-0.196***	-0.207***	-0.221***	-0.232***	-0.248***	-0.253***	-0.252***	-0.296***	-0.264***
	(-0.01)	(-3.59)	(-3.71)	(-3.87)	(-4.12)	(-4.28)	(-4.50)	(-4.56)	(-4.55)	(-4.50)	(-4.58)
Observations	21,949	39,682	39,682	39,682	39,682	39,682	39,682	39,682	39,682	35,758	39,682
R^2	0.152	0.140	0.140	0.140	0.140	0.141	0.141	0.142	0.142	0.146	0.142
Panel A: Second Size Quartile											
Diversification	-0.0495	-0.0489+	-0.0488+	-0.0480+	-0.0443	-0.0427	-0.0372	-0.0300	-0.0234	-0.0126	-0.00314
	(-1.64)	(-1.95)	(-1.92)	(-1.82)	(-1.54)	(-1.37)	(-1.01)	(-0.73)	(-0.51)	(-0.21)	(-0.05)
Interest Rate	0.0317***	0.0340***	0.0343***	0.0363***	0.0389***	0.0419***	0.0472***	0.0493***	0.0535***	0.0576***	0.0602***
	(7.18)	(10.45)	(10.59)	(10.79)	(10.81)	(10.89)	(10.85)	(10.59)	(10.63)	(9.40)	(10.35)
Diversification x Interest Rate	**0.0239****	**0.00160**	**0.00172**	**0.00198**	**0.00119**	**0.000977**	**-0.000223**	**-0.00202**	**-0.00320**	**-0.00564**	**-0.00690**
	(3.00)	**(0.31)**	**(0.34)**	**(0.38)**	**(0.21)**	**(0.16)**	**(-0.03)**	**(-0.26)**	**(-0.38)**	**(-0.51)**	**(-0.69)**
Leverage	0.169***	0.129***	0.130***	0.131***	0.131***	0.132***	0.134***	0.134***	0.136***	0.151***	0.137***
	(5.23)	(4.98)	(5.01)	(5.04)	(5.05)	(5.08)	(5.13)	(5.14)	(5.21)	(5.56)	(5.24)
Cash Holdings	0.466***	0.552***	0.552***	0.552***	0.552***	0.552***	0.551***	0.552***	0.552***	0.539***	0.553***
	(11.29)	(16.67)	(16.69)	(16.71)	(16.71)	(16.69)	(16.67)	(16.68)	(16.69)	(15.66)	(16.72)
GDP Growth	0.00639**	0.00895***	0.00866***	0.00831***	0.00765***	0.00744***	0.00709***	0.00668***	0.00624***	0.00673***	0.00495**
	(3.18)	(5.19)	(5.05)	(4.87)	(4.52)	(4.40)	(4.21)	(3.98)	(3.72)	(3.53)	(2.97)
Inflation	-0.00879*	-0.00904**	-0.00971**	-0.0101***	-0.0103***	-0.0105***	-0.0113***	-0.0107***	-0.0118***	-0.0112***	-0.00985**
	(-2.50)	(-3.04)	(-3.26)	(-3.39)	(-3.43)	(-3.51)	(-3.74)	(-3.53)	(-3.83)	(-3.41)	(-3.25)
Unemployment Rate	0.0155***	0.0264***	0.0269***	0.0273***	0.0256***	0.0241***	0.0194***	0.0151***	0.01000***	0.00555+	0.00137
	(3.75)	(7.57)	(7.68)	(7.81)	(7.58)	(7.33)	(6.33)	(5.18)	(3.59)	(1.92)	(0.50)
Constant	-0.440***	-0.522***	-0.528***	-0.539***	-0.547***	-0.557***	-0.565***	-0.563***	-0.559***	-0.580***	-0.570***
	(-12.24)	(-16.54)	(-16.60)	(-16.74)	(-16.84)	(-16.93)	(-16.94)	(-16.76)	(-16.73)	(-15.01)	(-16.36)
Observations	23,027	42,837	42,837	42,837	42,837	42,837	42,837	42,837	42,837	39,018	42,837
R^2	0.0264	0.0341	0.0344	0.0352	0.0360	0.0368	0.0377	0.0376	0.0380	0.0357	0.0379
Panel A: Third Size Quartile											
Diversification	-0.0656***	-0.0479**	-0.0473**	-0.0444*	-0.0356+	-0.0296	-0.0176	-0.00710	0.000285	0.00709	0.0217
	(-3.33)	(-2.79)	(-2.72)	(-2.47)	(-1.82)	(-1.40)	(-0.70)	(-0.25)	(0.01)	(0.17)	(0.53)
Interest Rate	0.0156***	0.0313***	0.0312***	0.0327***	0.0355***	0.0381***	0.0426***	0.0452***	0.0480***	0.0520***	0.0526***
	(4.14)	(11.32)	(11.31)	(11.38)	(11.42)	(11.33)	(11.03)	(10.83)	(10.54)	(9.68)	(9.90)
Diversification x Interest Rate	**0.0119***	**-0.00562**	**-0.00544**	**-0.00560**	**-0.00702****	**-0.00788****	**-0.00980****	**-0.0116****	**-0.0127****	**-0.0141****	**-0.0157****
	(2.34)	**(-1.59)**	**(-1.56)**	**(-1.56)**	**(-1.81)**	**(-1.86)**	**(-1.96)**	**(-2.09)**	**(-2.03)**	**(-1.84)**	**(-2.12)**
Leverage	0.0374	-0.00653	-0.00592	-0.00522	-0.00473	-0.00381	-0.00176	-0.000986	0.00126	0.0182	0.00227
	(1.25)	(-0.28)	(-0.25)	(-0.22)	(-0.20)	(-0.16)	(-0.07)	(-0.04)	(0.05)	(0.74)	(0.10)
Cash Holdings	0.636***	0.641***	0.642***	0.642***	0.641***	0.640***	0.638***	0.638***	0.637***	0.647***	0.638***
	(14.26)	(16.22)	(16.23)	(16.23)	(16.20)	(16.17)	(16.11)	(16.08)	(16.07)	(15.99)	(16.07)
GDP Growth	-0.00583***	-0.0000510	-0.0000762	-0.000148	-0.000515	-0.000674	-0.00104	-0.00153	-0.00197+	-0.00293*	-0.00313**
	(-4.46)	(-0.04)	(-0.06)	(-0.12)	(-0.43)	(-0.56)	(-0.87)	(-1.29)	(-1.67)	(-2.35)	(-2.67)
Inflation	0.00729**	-0.00188	-0.00264	-0.00316	-0.00329	-0.00331	-0.00357	-0.00300	-0.00352	-0.00169	-0.00166
	(2.88)	(-0.82)	(-1.15)	(-1.37)	(-1.42)	(-1.43)	(-1.52)	(-1.28)	(-1.48)	(-0.68)	(-0.71)
Unemployment Rate	0.00517	0.0134***	0.0137***	0.0141***	0.0134***	0.0124***	0.00901***	0.00563*	0.00150	-0.00217	-0.00530*
	(1.62)	(4.95)	(5.03)	(5.16)	(5.02)	(4.74)	(3.66)	(2.41)	(0.67)	(-0.97)	(-2.47)
Constant	-0.221***	-0.281***	-0.285***	-0.295***	-0.308***	-0.318***	-0.328***	-0.330***	-0.326***	-0.348***	-0.334***
	(-7.45)	(-10.85)	(-10.89)	(-11.06)	(-11.31)	(-11.42)	(-11.42)	(-11.37)	(-11.12)	(-10.54)	(-10.71)
Observations	27,900	42,428	42,428	42,428	42,428	42,428	42,428	42,428	42,428	39,855	42,428
R^2	0.0342	0.0422	0.0423	0.0428	0.0439	0.0446	0.0455	0.0457	0.0458	0.0461	0.0452
Panel A: Fourth Size Quartile											
Diversification	-0.0550***	-0.0410**	-0.0418**	-0.0421**	-0.0401*	-0.0382*	-0.0322	-0.0260	-0.0186	-0.0351	-0.00307
	(-3.97)	(-2.83)	(-2.85)	(-2.81)	(-2.51)	(-2.23)	(-1.64)	(-1.18)	(-0.76)	(-1.20)	(-0.10)
Interest Rate	0.00940**	0.0251***	0.0249***	0.0256***	0.0270***	0.0284***	0.0311***	0.0332***	0.0352***	0.0395***	0.0393***
	(2.77)	(7.94)	(7.95)	(7.94)	(7.98)	(7.98)	(8.02)	(8.15)	(8.18)	(8.77)	(8.26)
Diversification x Interest Rate	**0.00727+**	**0.0000292**	**0.000387**	**0.000601**	**-0.0000835**	**-0.000698**	**-0.00239**	**-0.00385**	**-0.00549**	**-0.000703**	**-0.00825**
	(1.78)	**(0.01)**	**(0.12)**	**(0.18)**	**(-0.02)**	**(-0.19)**	**(-0.56)**	**(-0.83)**	**(-1.09)**	**(-0.12)**	**(-1.43)**
Leverage	0.0105	-0.00304	-0.00158	0.000289	0.00306	0.00561	0.0105	0.0134	0.0168	0.0352	0.0193
	(0.28)	(-0.09)	(-0.05)	(0.01)	(0.09)	(0.17)	(0.31)	(0.40)	(0.50)	(1.03)	(0.57)
Cash Holdings	0.510***	0.487***	0.488***	0.490***	0.493***	0.494***	0.495***	0.496***	0.496***	0.499***	0.496***
	(10.18)	(10.06)	(10.07)	(10.11)	(10.17)	(10.20)	(10.22)	(10.25)	(10.24)	(10.12)	(10.23)
GDP Growth	-0.00751***	-0.00140	-0.00118	-0.00110	-0.00148	-0.00179+	-0.00251**	-0.00316***	-0.00372***	-0.00560***	-0.00483***
	(-8.15)	(-1.49)	(-1.24)	(-1.16)	(-1.58)	(-1.95)	(-2.82)	(-3.64)	(-4.36)	(-6.36)	(-5.77)
Inflation	0.0142***	0.00256	0.00159	0.000985	0.00113	0.00149	0.00229	0.00312+	0.00349*	0.00668***	0.00533**
	(8.21)	(1.48)	(0.89)	(0.55)	(0.63)	(0.84)	(1.31)	(1.81)	(2.04)	(3.80)	(3.20)
Unemployment Rate	0.00354	0.00721***	0.00763***	0.00791***	0.00722***	0.00628**	0.00351+	0.00100	-0.00208	-0.00409*	-0.00687***
	(1.53)	(3.35)	(3.49)	(3.60)	(3.37)	(3.02)	(1.84)	(0.57)	(-1.26)	(-2.54)	(-4.37)
Constant	-0.0986***	-0.136***	-0.140***	-0.146***	-0.152***	-0.156***	-0.159***	-0.162***	-0.159***	-0.183***	-0.169***
	(-4.04)	(-5.88)	(-5.98)	(-6.12)	(-6.26)	(-6.33)	(-6.34)	(-6.36)	(-6.19)	(-6.90)	(-6.21)
Observations	33,993	43,019	43,019	43,019	43,019	43,019	43,019	43,019	43,019	41,282	43,019
R^2	0.0179	0.0238	0.0240	0.0245	0.0256	0.0262	0.0271	0.0278	0.0279	0.0311	0.0282

t statistics in parentheses
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

The results of the comparison between the different types of diversification and single-segment firms, shown in Table A.19, continue to be robust. Now, when interest rate shocks occur, unrelated diversification has a positive effect on the average firm excess value, in the short to medium terms, as not only the 1-month interest rate's interaction term is positive and significant but also the ones from the 3-month to 1-year rates. Moreover, when contrasting related diversification to specialized firms, as happens with the asset-weighted sample, only the 1-month rate's interaction term is statistically significant, even though the significance level decreased from 1% to 5%.

Table A.19 – Regressions of the sales-weighted average excess firm value on the diversification type, unrelated (Panel A) and related diversification (Panel B) compared to focused firms, interest rate and their interaction term

	(1) 1-month	(2) 3-month	(3) 6-month	(4) 1-year	(5) 2-year	(6) 3-year	(7) 5-year	(8) 7-year	(9) 10-year	(10) 20-year	(11) 30-year
Panel A: Unrelated diversification compared to focused firms											
Unrelated Diversification	-0.115***	-0.112***	-0.112***	-0.111***	-0.106***	-0.103***	-0.0941***	-0.0874***	-0.0793***	-0.0953***	-0.0603*
	(-6.72)	(-7.92)	(-7.86)	(-7.56)	(-6.74)	(-6.11)	(-4.93)	(-4.15)	(-3.45)	(-3.35)	(-2.18)
Interest Rate	0.0263***	0.0348***	0.0351***	0.0367***	0.0392***	0.0417***	0.0463***	0.0489***	0.0524***	0.0589***	0.0587***
	(10.03)	(18.22)	(18.46)	(18.76)	(19.10)	(19.31)	(19.55)	(19.56)	(19.70)	(18.96)	(19.62)
Unrelated Diversification x Interest Rate	**0.0193*** **	**0.00587***	**0.00589***	**0.00564***	**0.00413**	**0.00315**	**0.000976**	**-0.000665**	**-0.00230**	**0.000288**	**-0.00581**
	(4.64)	**(2.16)**	**(2.20)**	**(2.05)**	**(1.42)**	**(1.01)**	**(0.28)**	**(-0.18)**	**(-0.56)**	**(0.06)**	**(-1.23)**
Leverage	0.590***	0.559***	0.559***	0.560***	0.562***	0.564***	0.566***	0.567***	0.568***	0.583***	0.569***
	(26.43)	(30.44)	(30.47)	(30.54)	(30.64)	(30.73)	(30.86)	(30.91)	(30.99)	(31.00)	(31.04)
Cash Holdings	0.660***	0.669***	0.669***	0.669***	0.669***	0.668***	0.667***	0.667***	0.666***	0.678***	0.666***
	(18.76)	(25.88)	(25.89)	(25.90)	(25.87)	(25.85)	(25.80)	(25.79)	(25.78)	(24.92)	(25.78)
GDP Growth	-0.00159	0.00374***	0.00362***	0.00336***	0.00269**	0.00237**	0.00179*	0.00119	0.000624	-0.000671	-0.000867
	(-1.56)	(3.98)	(3.87)	(3.60)	(2.91)	(2.58)	(1.97)	(1.32)	(0.69)	(-0.69)	(-0.97)
Inflation	0.000299	-0.00530**	-0.00624***	-0.00678***	-0.00689***	-0.00691***	-0.00705***	-0.00629***	-0.00670***	-0.00367*	-0.00436**
	(0.16)	(-3.21)	(-3.75)	(-4.05)	(-4.12)	(-4.14)	(-4.22)	(-3.78)	(-4.01)	(-2.09)	(-2.65)
Unemployment Rate	0.0189***	0.0294***	0.0299***	0.0301***	0.0287***	0.0271***	0.0225***	0.0185***	0.0135***	0.00986***	0.00535***
	(8.74)	(15.82)	(16.00)	(16.18)	(15.91)	(15.44)	(13.64)	(11.68)	(8.78)	(6.24)	(3.52)
Constant	-0.339***	-0.455***	-0.461***	-0.470***	-0.478***	-0.485***	-0.490***	-0.490***	-0.484***	-0.514***	-0.495***
	(-16.32)	(-25.25)	(-25.36)	(-25.59)	(-25.89)	(-26.04)	(-26.09)	(-25.98)	(-25.72)	(-24.66)	(-25.39)
Observations	93,408	151,072	151,072	151,072	151,072	151,072	151,072	151,072	151,072	139,467	151,072
R^2	0.0898	0.0842	0.0845	0.0851	0.0861	0.0869	0.0880	0.0884	0.0888	0.0922	0.0892
Panel B: Related diversification compared to focused firms											
Related Diversification	-0.0870***	-0.0877***	-0.0872***	-0.0856***	-0.0795***	-0.0757***	-0.0674**	-0.0593*	-0.0517+	-0.0315	-0.0318
	(-5.62)	(-5.85)	(-5.75)	(-5.49)	(-4.75)	(-4.21)	(-3.22)	(-2.52)	(-1.96)	(-1.00)	(-0.96)
Interest Rate	0.0255***	0.0345***	0.0348***	0.0366***	0.0394***	0.0422***	0.0472***	0.0499***	0.0535***	0.0597***	0.0599***
	(9.61)	(17.60)	(17.83)	(18.17)	(18.62)	(18.92)	(19.31)	(19.39)	(19.60)	(18.94)	(19.55)
Related Diversification x Interest Rate	**0.0105***	**0.000660**	**0.000813**	**0.00140**	**0.000982**	**0.000760**	**-0.000481**	**-0.00237**	**-0.00375**	**-0.00869**	**-0.00745**
	(2.54)	**(0.20)**	**(0.25)**	**(0.42)**	**(0.28)**	**(0.20)**	**(-0.11)**	**(-0.49)**	**(-0.69)**	**(-1.42)**	**(-1.18)**
Leverage	0.585***	0.563***	0.564***	0.565***	0.567***	0.569***	0.572***	0.573***	0.574***	0.588***	0.575***
	(25.94)	(29.92)	(29.95)	(30.02)	(30.14)	(30.23)	(30.37)	(30.42)	(30.50)	(30.53)	(30.55)
Cash Holdings	0.649***	0.664***	0.664***	0.663***	0.662***	0.661***	0.660***	0.660***	0.659***	0.671***	0.659***
	(18.77)	(25.47)	(25.48)	(25.47)	(25.43)	(25.39)	(25.34)	(25.33)	(25.32)	(24.62)	(25.33)
GDP Growth	-0.00181+	0.00261**	0.00257**	0.00241*	0.00185*	0.00158+	0.00102	0.000376	-0.000211	-0.00109	-0.00175+
	(-1.77)	(2.73)	(2.69)	(2.53)	(1.96)	(1.68)	(1.09)	(0.41)	(-0.23)	(-1.11)	(-1.91)
Inflation	0.000000170	-0.00399*	-0.00499**	-0.00566***	-0.00589***	-0.00595***	-0.00611***	-0.00532**	-0.00574***	-0.00387*	-0.00342*
	(0.00)	(-2.36)	(-2.92)	(-3.30)	(-3.42)	(-3.46)	(-3.55)	(-3.11)	(-3.35)	(-2.18)	(-2.03)
Unemployment Rate	0.0169***	0.0283***	0.0288***	0.0294***	0.0285***	0.0273***	0.0231***	0.0191***	0.0141***	0.00980***	0.00579***
	(7.73)	(14.54)	(14.73)	(15.00)	(14.97)	(14.69)	(13.25)	(11.46)	(8.76)	(6.03)	(3.67)
Constant	-0.319***	-0.443***	-0.450***	-0.461***	-0.474***	-0.484***	-0.492***	-0.493***	-0.487***	-0.513***	-0.498***
	(-15.31)	(-23.80)	(-23.92)	(-24.22)	(-24.67)	(-24.95)	(-25.23)	(-25.25)	(-25.16)	(-24.31)	(-25.06)
Observations	89,575	140,225	140,225	140,225	140,225	140,225	140,225	140,225	140,225	130,737	140,225
R^2	0.0924	0.0870	0.0872	0.0878	0.0890	0.0898	0.0911	0.0915	0.0921	0.0954	0.0926

t statistics in parentheses
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table A.20 presents the comparison of diversified firms when analysing the diversification type they performed. When using the sales-weighted *Average Excess Firm Value*, unrelated diversification is better at insulating interest rate shocks than their related counterparts, as its interaction terms became statistically significant from the 1-month to the 1-year and the 20-year rates. This contrasts with what transpired when using the asset-weighted dependent variable, where all interaction terms were statistically insignificant. All in all, it demonstrates

that, under this analysis, a company that pursues unrelated diversification is not only "more" but also "better" diversified (Kuppuswamy and Villalonga 2016), leading to a better hedge against interest rate shocks, due to the heterogeneity that unrelated diversification provides. However, this change in the result attained may originate from the large difference in the number of observations considered in the analysis.

Table A.20 – Regressions of the sales-weighted average excess firm value on the diversification type between diversified firms, interest rate and their interaction term

	(1) 1-month	(2) 3-month	(3) 6-month	(4) 1-year	(5) 2-year	(6) 3-year	(7) 5-year	(8) 7-year	(9) 10-year	(10) 20-year	(11) 30-year
Unrelated Diversification	-0.0598**	-0.0579**	-0.0592**	-0.0602**	-0.0632**	-0.0654**	-0.0697**	-0.0730*	-0.0763*	-0.112**	-0.0800*
	(-2.58)	(-2.87)	(-2.91)	(-2.91)	(-2.89)	(-2.83)	(-2.65)	(-2.50)	(-2.34)	(-2.85)	(-1.98)
Interest Rate	0.0196***	0.0225***	0.0228***	0.0249***	0.0270***	0.0291***	0.0323***	0.0335***	0.0355***	0.0382***	0.0395***
	(4.29)	(6.13)	(6.28)	(6.56)	(6.62)	(6.64)	(6.46)	(6.20)	(6.04)	(5.70)	(5.86)
Unrelated Diversification x Interest Rate	**0.0126***	**0.00754***	**0.00751***	**0.00698+**	**0.00633**	**0.00601**	**0.00582**	**0.00606**	**0.00635**	**0.0145+**	**0.00621**
	(2.52)	**(2.01)**	**(2.05)**	**(1.84)**	**(1.55)**	**(1.35)**	**(1.12)**	**(1.05)**	**(1.00)**	**(1.89)**	**(0.83)**
Leverage	0.261***	0.197***	0.198***	0.200***	0.201***	0.202***	0.205***	0.205***	0.207***	0.221***	0.208***
	(5.78)	(5.37)	(5.40)	(5.44)	(5.47)	(5.50)	(5.56)	(5.58)	(5.64)	(5.79)	(5.66)
Cash Holdings	0.708***	0.676***	0.677***	0.678***	0.681***	0.682***	0.684***	0.685***	0.685***	0.707***	0.686***
	(11.56)	(13.19)	(13.20)	(13.24)	(13.29)	(13.31)	(13.35)	(13.36)	(13.38)	(13.46)	(13.39)
GDP Growth	-0.00673***	-0.000487	-0.000469	-0.000491	-0.000886	-0.00107	-0.00151	-0.00202	-0.00245*	-0.00539***	-0.00361**
	(-4.92)	(-0.37)	(-0.36)	(-0.38)	(-0.69)	(-0.84)	(-1.19)	(-1.61)	(-1.97)	(-4.03)	(-2.93)
Inflation	0.0148***	0.00340	0.00261	0.00200	0.00200	0.00207	0.00225	0.00301	0.00287	0.00852***	0.00481*
	(5.80)	(1.45)	(1.10)	(0.84)	(0.85)	(0.88)	(0.95)	(1.28)	(1.22)	(3.41)	(2.08)
Unemployment Rate	0.00660*	0.00933***	0.00981***	0.0104***	0.00957***	0.00860***	0.00533*	0.00220	-0.00152	-0.00427*	-0.00752***
	(2.07)	(3.44)	(3.59)	(3.79)	(3.58)	(3.30)	(2.19)	(0.96)	(-0.70)	(-1.98)	(-3.65)
Constant	-0.294***	-0.302***	-0.307***	-0.317***	-0.322***	-0.328***	-0.329***	-0.325***	-0.317***	-0.336***	-0.320***
	(-8.61)	(-10.09)	(-10.14)	(-10.27)	(-10.24)	(-10.16)	(-9.77)	(-9.36)	(-8.84)	(-8.55)	(-8.08)
Observations	30,755	44,635	44,635	44,635	44,635	44,635	44,635	44,635	44,635	41,622	44,635
R^2	0.0326	0.0308	0.0311	0.0318	0.0328	0.0335	0.0345	0.0348	0.0352	0.0379	0.0355

t statistics in parentheses
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

As the results of Table A.21 are evidence, there continues to be a decrease in the benefits attained as the diversification intensity increases, with low-intensity firms, i.e. those operating in two segments, continuing to be those that benefit from the highest absorbance of interest rate shocks. Here, the 1-month interaction terms for both *Low* and *Medium Intensity* continued to be positive and statistically significant and negative and statistically significant for the 30-year rate for those firms engaged in high-intensity diversification. Also, it became significant but negative for the 30-year rate for the medium-intensity companies.

Table A.21 – Regressions of the sales-weighted average excess firm value on the diversification intensity, interest rate and their interaction term

	(1) 1-month	(2) 3-month	(3) 6-month	(4) 1-year	(5) 2-year	(6) 3-year	(7) 5-year	(8) 7-year	(9) 10-year	(10) 20-year	(11) 30-year
Low Intensity	-0.0884***	-0.0825***	-0.0825***	-0.0818***	-0.0778***	-0.0757***	-0.0704***	-0.0647**	-0.0601*	-0.0509+	-0.0471+
	(-6.13)	(-6.09)	(-6.01)	(-5.78)	(-5.10)	(-4.61)	(-3.72)	(-3.07)	(-2.58)	(-1.78)	(-1.65)
Medium Intensity	-0.128***	-0.128***	-0.128***	-0.126***	-0.119***	-0.114***	-0.102***	-0.0931***	-0.0816***	-0.0869**	-0.0561*
	(-8.82)	(-9.35)	(-9.23)	(-8.83)	(-7.78)	(-6.96)	(-5.43)	(-4.46)	(-3.53)	(-3.05)	(-1.99)
High Intensity	-0.140***	-0.139***	-0.139***	-0.136***	-0.128***	-0.121***	-0.105**	-0.0949**	-0.0817*	-0.120*	-0.0512
	(-5.41)	(-5.81)	(-5.75)	(-5.48)	(-4.81)	(-4.26)	(-3.27)	(-2.68)	(-2.10)	(-2.39)	(-1.10)
Interest Rate	0.0258***	0.0339***	0.0341***	0.0357***	0.0381***	0.0406***	0.0451***	0.0478***	0.0514***	0.0581***	0.0578***
	(10.16)	(18.34)	(18.59)	(18.91)	(19.26)	(19.48)	(19.76)	(19.78)	(19.97)	(19.44)	(19.96)
Low Intensity x Interest Rate	**0.0210*** **	**0.00323**	**0.00329**	**0.00350**	**0.00274**	**0.00240**	**0.00131**	**-0.0000834**	**-0.000922**	**-0.00374**	**-0.00334**
	(4.70)	**(1.09)**	**(1.13)**	**(1.18)**	**(0.88)**	**(0.72)**	**(0.35)**	**(-0.02)**	**(-0.21)**	**(-0.70)**	**(-0.66)**
Medium Intensity x Interest Rate	**0.0133****	**0.00423**	**0.00425**	**0.00409**	**0.00258**	**0.00148**	**-0.00117**	**-0.00321**	**-0.00553**	**-0.00414**	**-0.0101***
	(3.17)	**(1.44)**	**(1.47)**	**(1.39)**	**(0.83)**	**(0.44)**	**(-0.31)**	**(-0.79)**	**(-1.25)**	**(-0.77)**	**(-1.99)**
High Intensity x Interest Rate	**0.00938**	**0.00385**	**0.00399**	**0.00357**	**0.00143**	**-0.000337**	**-0.00401**	**-0.00628**	**-0.00893**	**0.000422**	**-0.0142+**
	(1.18)	**(0.75)**	**(0.79)**	**(0.69)**	**(0.26)**	**(-0.06)**	**(-0.62)**	**(-0.91)**	**(-1.20)**	**(0.04)**	**(-1.70)**
Leverage	0.573***	0.543***	0.544***	0.545***	0.547***	0.548***	0.551***	0.552***	0.553***	0.568***	0.554***
	(26.94)	(30.66)	(30.70)	(30.77)	(30.87)	(30.96)	(31.10)	(31.15)	(31.24)	(31.32)	(31.31)
Cash Holdings	0.669***	0.678***	0.678***	0.678***	0.678***	0.677***	0.676***	0.676***	0.675***	0.687***	0.675***
	(20.52)	(27.69)	(27.70)	(27.71)	(27.70)	(27.67)	(27.63)	(27.62)	(27.61)	(26.79)	(27.60)
GDP Growth	-0.00222*	0.00281**	0.00274**	0.00252**	0.00189*	0.00159+	0.00102	0.000413	-0.000142	-0.00155+	-0.00161*
	(-2.42)	(3.29)	(3.21)	(2.97)	(2.25)	(1.90)	(1.23)	(0.50)	(-0.17)	(-1.76)	(-1.98)
Inflation	0.00127	-0.00435**	-0.00532***	-0.00590***	-0.00597***	-0.00595***	-0.00600***	-0.00521***	-0.00558***	-0.00248	-0.00329*
	(0.76)	(-2.86)	(-3.47)	(-3.83)	(-3.88)	(-3.87)	(-3.90)	(-3.41)	(-3.64)	(-1.55)	(-2.18)
Unemployment Rate	0.0173***	0.0266***	0.0271***	0.0274***	0.0261***	0.0246***	0.0203***	0.0164***	0.0115***	0.00794***	0.00365**
	(8.80)	(15.55)	(15.74)	(15.95)	(15.66)	(15.17)	(13.28)	(11.20)	(8.15)	(5.51)	(2.63)
Constant	-0.330***	-0.432***	-0.438***	-0.447***	-0.456***	-0.463***	-0.469***	-0.470***	-0.465***	-0.497***	-0.478***
	(-17.27)	(-25.72)	(-25.83)	(-26.08)	(-26.39)	(-26.56)	(-26.61)	(-26.49)	(-26.20)	(-25.30)	(-25.80)
Observations	106,869	167,966	167,966	167,966	167,966	167,966	167,966	167,966	167,966	155,913	167,966
R^2	0.0861	0.0820	0.0823	0.0829	0.0840	0.0847	0.0858	0.0862	0.0867	0.0899	0.0872

t statistics in parentheses
$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The regressions that study if there was a change over time in the criticality of diversification as an instrument to hedge against interest rate shocks, by dividing the sample period into two subperiods: 1989-1999 and 2000-2022, were rerun. Table A.22 exhibits the results of the regressions when considering the diversification status. By using the sales-weighted *Average Excess Firm Value*, the results, that were attained after the 2000s, showed that the interaction terms became positive and statistically significant for the short and medium terms, i.e. the 3-month to 3-year interest rates. In addition, the interaction terms for the medium- to long-term rates, i.e. from the 5-year to the 30-year rates, which previously were negative and statistically significant, became non-significant. These outcomes paint diversification as being an even better tool in hedging against interest rate shocks, since the turn of the century, because, when using the asset weight, it had only turned positive and statistically significant from the 3-month to 1-year rates.

Table A.22 – Regressions of the sales-weighted average excess firm value on the diversification status, interest rate and their interaction term divided into two periods of analysis: 1989-1999 (Panel A) and 2000-2022 (Panel B)

	(1) 3-month	(2) 6-month	(3) 1-year	(4) 2-year	(5) 3-year	(6) 5-year	(7) 7-year	(8) 10-year	(9) 20-year	(10) 30-year
Panel A: Period analysed: 1989-1999										
Diversification	-0.0935***	-0.0953***	-0.0965***	-0.0729**	-0.0492+	0.00596	0.0368	0.0519	0.0572	0.0921+
	(-4.36)	(-4.30)	(-4.15)	(-2.74)	(-1.68)	(0.17)	(0.96)	(1.30)	(0.90)	(1.96)
Interest Rate	0.0415***	0.0382***	0.0341***	0.0308***	0.0299***	0.0305***	0.0285***	0.0333***	0.0435***	0.0432***
	(9.59)	(9.38)	(8.84)	(8.32)	(8.19)	(8.07)	(7.30)	(8.06)	(7.01)	(8.35)
Diversification x Interest Rate	**0.00281**	**0.00305**	**0.00322**	**-0.00147**	**-0.00565**	**-0.0148****	**-0.0195****	**-0.0216*****	**-0.0240***	**-0.0267*****
	(0.76)	**(0.81)**	**(0.84)**	**(-0.34)**	**(-1.20)**	**(-2.65)**	**(-3.28)**	**(-3.50)**	**(-2.44)**	**(-3.82)**
Leverage	0.210***	0.211***	0.211***	0.210***	0.210***	0.209***	0.209***	0.209***	0.211***	0.210***
	(7.65)	(7.68)	(7.70)	(7.64)	(7.63)	(7.61)	(7.58)	(7.61)	(6.81)	(7.62)
Cash Holdings	0.437***	0.438***	0.438***	0.438***	0.438***	0.437***	0.437***	0.436***	0.447***	0.436***
	(13.27)	(13.29)	(13.30)	(13.29)	(13.29)	(13.26)	(13.24)	(13.23)	(12.29)	(13.21)
GDP Growth	0.000341	-0.00231	-0.00561**	-0.00869***	-0.00991***	-0.0110***	-0.0111***	-0.0121***	-0.0275***	-0.0135***
	(0.16)	(-1.15)	(-2.84)	(-4.39)	(-4.94)	(-5.38)	(-5.36)	(-5.77)	(-6.29)	(-6.21)
Inflation	-0.0284***	-0.0245***	-0.0199***	-0.0151***	-0.0124**	-0.00899*	-0.00547	-0.00827*	-0.0575***	-0.0108*
	(-5.59)	(-5.08)	(-4.28)	(-3.37)	(-2.86)	(-2.14)	(-1.31)	(-1.96)	(-7.99)	(-2.47)
Unemployment Rate	0.0740***	0.0695***	0.0630***	0.0521***	0.0459***	0.0369***	0.0340***	0.0297***	0.0535***	0.0223***
	(14.13)	(13.97)	(13.65)	(13.46)	(13.24)	(12.19)	(11.49)	(10.06)	(12.05)	(6.97)
Constant	-0.594***	-0.556***	-0.500***	-0.430***	-0.396***	-0.360***	-0.346***	-0.342***	-0.321***	-0.364***
	(-12.94)	(-12.73)	(-12.29)	(-11.90)	(-11.72)	(-11.43)	(-11.09)	(-11.19)	(-8.22)	(-11.40)
Observations	54,595	54,595	54,595	54,595	54,595	54,595	54,595	54,595	42,542	54,595
R^2	0.0353	0.0352	0.0350	0.0344	0.0343	0.0341	0.0339	0.0342	0.0352	0.0344
Panel B: Period analysed: 2000-2022										
Diversification	-0.0959***	-0.0968***	-0.0979***	-0.0981***	-0.0984***	-0.0958***	-0.0911***	-0.0829***	-0.0703**	-0.0586*
	(-8.00)	(-8.02)	(-7.98)	(-7.64)	(-7.22)	(-6.03)	(-4.96)	(-3.87)	(-2.76)	(-2.05)
Interest Rate	0.0296***	0.0300***	0.0334***	0.0393***	0.0448***	0.0539***	0.0581***	0.0636***	0.0642***	0.0716***
	(13.76)	(14.00)	(14.58)	(15.46)	(15.98)	(16.47)	(16.49)	(16.47)	(16.18)	(16.19)
Diversification x Interest Rate	**0.00820****	**0.00825****	**0.00855****	**0.00817****	**0.00788***	**0.00630**	**0.00433**	**0.00175**	**-0.00165**	**-0.00445**
	(3.00)	**(3.09)**	**(3.08)**	**(2.67)**	**(2.33)**	**(1.53)**	**(0.92)**	**(0.33)**	**(-0.28)**	**(-0.68)**
Leverage	0.581***	0.581***	0.583***	0.585***	0.588***	0.593***	0.595***	0.597***	0.598***	0.599***
	(28.47)	(28.49)	(28.56)	(28.71)	(28.85)	(29.09)	(29.20)	(29.33)	(29.37)	(29.40)
Cash Holdings	0.688***	0.688***	0.687***	0.686***	0.684***	0.682***	0.682***	0.681***	0.681***	0.682***
	(21.79)	(21.78)	(21.77)	(21.74)	(21.70)	(21.65)	(21.65)	(21.64)	(21.65)	(21.68)
GDP Growth	-0.000892	-0.000511	0.0000877	0.000331	0.000400	-0.0000295	-0.000928	-0.00182*	-0.00208*	-0.00395***
	(-0.99)	(-0.56)	(0.10)	(0.36)	(0.44)	(-0.03)	(-1.03)	(-2.02)	(-2.31)	(-4.41)
Inflation	-0.00129	-0.00278	-0.00430*	-0.00474**	-0.00454**	-0.00356*	-0.00202	-0.00154	-0.00209	0.00225
	(-0.76)	(-1.63)	(-2.49)	(-2.74)	(-2.63)	(-2.07)	(-1.18)	(-0.90)	(-1.21)	(1.33)
Unemployment Rate	0.0192***	0.0199***	0.0218***	0.0239***	0.0249***	0.0233***	0.0191***	0.0140***	0.00682***	0.00459**
	(9.94)	(10.20)	(10.94)	(11.91)	(12.39)	(12.16)	(10.74)	(8.46)	(4.47)	(3.05)
Constant	-0.362***	-0.368***	-0.388***	-0.421***	-0.449***	-0.485***	-0.492***	-0.494***	-0.487***	-0.511***
	(-19.39)	(-19.53)	(-20.05)	(-20.95)	(-21.52)	(-22.05)	(-22.02)	(-21.74)	(-21.17)	(-21.04)
Observations	113,371	113,371	113,371	113,371	113,371	113,371	113,371	113,371	113,371	113,371
R^2	0.0879	0.0881	0.0887	0.0900	0.0912	0.0933	0.0942	0.0951	0.0956	0.0958

t statistics in parentheses
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

By comparing the findings attained when studying both unrelated and related diversification to single-segment companies presented in Table A.23, the outcomes attained with the sales-weighted *Average Excess Firm Value* were different from those in which the asset weight was used. Better results were achieved when comparing unrelated diversification to standalone firms. This is the case as from the 3-month to the 3-year rates, the interaction terms became positive and statistically significant. Furthermore, it is in contrast with the results using the asset weight, where all interaction terms remained statistically insignificant. So, under the sales-weighted sample, unrelated diversification became a more important tool to guard against these shocks. However, related diversification no longer presented protective properties against interest rate shocks as it had when using the asset-weighted dependent variable. The interaction terms of related diversification compared to focused firms did not become statistically significant as they had before. These outcomes may partially be explained by Table A.24 where the different types of diversification were compared. Here, unrelated diversification is presented

as being a superior tool to hedge against interest rate shocks, given that, since the 2000s, all interaction terms became positive and statistically significant unlike what had happened when using an asset weight where there was no statistically significant difference in the interaction terms over time.

Table A.23 – Regressions of the sales-weighted average excess firm value on the diversification type compared to focused firms, interest rate and their interaction term divided into two periods of analysis: 1989-1999 (Panel A.1 and Panel B.1) and 2000-2022 (Panel A.2 and Panel B.2)

	(1) 3-month	(2) 6-month	(3) 1-year	(4) 2-year	(5) 3-year	(6) 5-year	(7) 7-year	(8) 10-year	(9) 20-year	(10) 30-year
Panel A: Unrelated diversification compared to focused firms										
Panel A.1.: Period analysed: 1989-1999										
Unrelated Diversification	-0.0802***	-0.0813**	-0.0812**	-0.0582*	-0.0317	0.0310	0.0610	0.0866*	0.0959	0.139**
	(-3.34)	(-3.28)	(-3.14)	(-1.98)	(-0.98)	(0.81)	(1.46)	(1.97)	(1.37)	(2.68)
Interest Rate	0.0361***	0.0333***	0.0297***	0.0269***	0.0263***	0.0271***	0.0256***	0.0300***	0.0395***	0.0390***
	(8.09)	(7.95)	(7.49)	(7.11)	(7.06)	(7.08)	(6.50)	(7.16)	(6.29)	(7.43)
Unrelated Diversification x Interest Rate	**0.00206**	**0.00219**	**0.00213**	**-0.00223**	**-0.00677**	**-0.0169****	**-0.0212*****	**-0.0250*****	**-0.0284****	**-0.0315*****
	(0.52)	**(0.54)**	**(0.51)**	**(-0.48)**	**(-1.34)**	**(-2.83)**	**(-3.34)**	**(-3.77)**	**(-2.63)**	**(-4.19)**
Leverage	0.222***	0.223***	0.224***	0.222***	0.222***	0.222***	0.221***	0.222***	0.224***	0.222***
	(7.92)	(7.93)	(7.95)	(7.91)	(7.90)	(7.88)	(7.86)	(7.89)	(7.03)	(7.90)
Cash Holdings	0.421***	0.422***	0.422***	0.422***	0.422***	0.421***	0.421***	0.420***	0.421***	0.420***
	(12.53)	(12.55)	(12.55)	(12.55)	(12.54)	(12.51)	(12.49)	(12.48)	(11.28)	(12.45)
GDP Growth	-0.000245	-0.00252	-0.00535**	-0.00796***	-0.00902***	-0.0100***	-0.0101***	-0.0110***	-0.0244***	-0.0123***
	(-0.11)	(-1.21)	(-2.62)	(-3.89)	(-4.35)	(-4.73)	(-4.74)	(-5.08)	(-5.40)	(-5.47)
Inflation	-0.0209***	-0.0175***	-0.0134**	-0.00923*	-0.00698	-0.00412	-0.00141	-0.00364	-0.0495***	-0.00586
	(-3.95)	(-3.49)	(-2.77)	(-2.00)	(-1.56)	(-0.95)	(-0.33)	(-0.84)	(-6.61)	(-1.30)
Unemployment Rate	0.0690***	0.0651***	0.0593***	0.0500***	0.0446***	0.0367***	0.0340***	0.0303***	0.0527***	0.0237***
	(12.59)	(12.52)	(12.31)	(12.38)	(12.34)	(11.67)	(11.11)	(9.90)	(11.41)	(7.17)
Constant	-0.560***	-0.527***	-0.478***	-0.418***	-0.389***	-0.360***	-0.348***	-0.346***	-0.329***	-0.367***
	(-11.73)	(-11.62)	(-11.32)	(-11.19)	(-11.17)	(-11.13)	(-10.91)	(-11.09)	(-8.32)	(-11.32)
Observations	51,871	51,871	51,871	51,871	51,871	51,871	51,871	51,871	40,266	51,871
R^2	0.0324	0.0323	0.0322	0.0318	0.0317	0.0316	0.0315	0.0318	0.0309	0.0320
Panel A.2.: Period analysed: 2000-2022										
Unrelated Diversification	-0.107***	-0.108***	-0.109***	-0.111***	-0.112***	-0.112***	-0.110***	-0.104***	-0.0932**	-0.0824*
	(-6.37)	(-6.41)	(-6.41)	(-6.25)	(-6.04)	(-5.32)	(-4.57)	(-3.79)	(-2.87)	(-2.28)
Interest Rate	0.0307***	0.0311***	0.0346***	0.0407***	0.0464***	0.0558***	0.0600***	0.0655***	0.0657***	0.0730***
	(13.70)	(13.92)	(14.45)	(15.28)	(15.77)	(16.25)	(16.29)	(16.27)	(15.97)	(15.96)
Unrelated Diversification x Interest Rate	**0.00971****	**0.00976****	**0.01000****	**0.00941***	**0.00916***	**0.00779**	**0.00601**	**0.00402**	**0.000531**	**-0.00211**
	(2.87)	**(2.96)**	**(2.91)**	**(2.49)**	**(2.19)**	**(1.53)**	**(1.03)**	**(0.60)**	**(0.07)**	**(-0.26)**
Leverage	0.597***	0.598***	0.599***	0.601***	0.604***	0.608***	0.610***	0.613***	0.613***	0.614***
	(27.98)	(28.00)	(28.06)	(28.20)	(28.33)	(28.55)	(28.64)	(28.75)	(28.80)	(28.82)
Cash Holdings	0.680***	0.680***	0.679***	0.677***	0.676***	0.674***	0.674***	0.673***	0.674***	0.674***
	(19.95)	(19.94)	(19.93)	(19.90)	(19.86)	(19.82)	(19.83)	(19.83)	(19.84)	(19.87)
GDP Growth	-0.000105	0.000274	0.000868	0.00111	0.00119	0.000792	-0.000106	-0.000998	-0.00125	-0.00316**
	(-0.10)	(0.27)	(0.85)	(1.09)	(1.17)	(0.78)	(-0.11)	(-1.00)	(-1.24)	(-3.17)
Inflation	-0.00252	-0.00404*	-0.00555**	-0.00601**	-0.00583**	-0.00492**	-0.00339+	-0.00298	-0.00356+	0.000868
	(-1.36)	(-2.15)	(-2.93)	(-3.16)	(-3.06)	(-2.59)	(-1.79)	(-1.57)	(-1.86)	(0.46)
Unemployment Rate	0.0212***	0.0219***	0.0238***	0.0260***	0.0270***	0.0256***	0.0214***	0.0161***	0.00867***	0.00636***
	(9.99)	(10.23)	(10.91)	(11.81)	(12.28)	(12.13)	(10.87)	(8.82)	(5.15)	(3.83)
Constant	-0.372***	-0.379***	-0.399***	-0.433***	-0.462***	-0.500***	-0.507***	-0.509***	-0.499***	-0.523***
	(-18.32)	(-18.47)	(-18.96)	(-19.82)	(-20.37)	(-20.92)	(-20.95)	(-20.77)	(-20.34)	(-20.28)
Observations	99,201	99,201	99,201	99,201	99,201	99,201	99,201	99,201	99,201	99,201
R^2	0.0918	0.0919	0.0925	0.0938	0.0949	0.0970	0.0978	0.0988	0.0992	0.0993

t statistics in parentheses
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table A.23 (continued) – Regressions of the sales-weighted average excess firm value on the diversification type compared to focused firms, interest rate and their interaction term divided into two periods of analysis: 1989-1999 (Panel A.1 and Panel B.1) and 2000-2022 (Panel A.2 and Panel B.2)

	(1) 3-month	(2) 6-month	(3) 1-year	(4) 2-year	(5) 3-year	(6) 5-year	(7) 7-year	(8) 10-year	(9) 20-year	(10) 30-year
Panel B: Related diversification compared to focused firms										
Panel B.1.: Period analysed: 1989-1999										
Related Diversification	-0.113**	-0.116**	-0.120**	-0.0832+	-0.0659	-0.0300	0.0120	-0.0101	-0.0278	-0.00180
	(-2.96)	(-2.94)	(-2.89)	(-1.72)	(-1.22)	(-0.45)	(0.16)	(-0.13)	(-0.24)	(-0.02)
Interest Rate	0.0401***	0.0374***	0.0338***	0.0300***	0.0286***	0.0276***	0.0252***	0.0292***	0.0391***	0.0375***
	(8.31)	(8.30)	(7.93)	(7.43)	(7.22)	(6.85)	(6.09)	(6.63)	(6.11)	(6.75)
Related Diversification x Interest Rate	**0.00445**	**0.00492**	**0.00553**	**-0.00194**	**-0.00517**	**-0.0116**	**-0.0186**	**-0.0147**	**-0.0126**	**-0.0154**
	(0.65)	**(0.71)**	**(0.77)**	**(-0.24)**	**(-0.57)**	**(-1.05)**	**(-1.58)**	**(-1.19)**	**(-0.71)**	**(-1.10)**
Leverage	0.226***	0.227***	0.227***	0.226***	0.226***	0.225***	0.224***	0.224***	0.235***	0.224***
	(7.63)	(7.65)	(7.67)	(7.63)	(7.61)	(7.59)	(7.56)	(7.57)	(7.17)	(7.56)
Cash Holdings	0.423***	0.424***	0.424***	0.424***	0.424***	0.424***	0.424***	0.424***	0.445***	0.424***
	(11.97)	(11.98)	(11.99)	(11.99)	(11.99)	(11.98)	(11.97)	(11.98)	(11.48)	(11.97)
GDP Growth	-0.00257	-0.00510*	-0.00839***	-0.0115***	-0.0128***	-0.0139***	-0.0140***	-0.0151***	-0.0275***	-0.0164***
	(-1.05)	(-2.16)	(-3.62)	(-4.95)	(-5.42)	(-5.78)	(-5.75)	(-6.09)	(-5.58)	(-6.41)
Inflation	-0.0222***	-0.0190***	-0.0150***	-0.0107*	-0.00851+	-0.00570	-0.00270	-0.00541	-0.0554***	-0.00763
	(-3.81)	(-3.44)	(-2.79)	(-2.07)	(-1.69)	(-1.17)	(-0.55)	(-1.10)	(-6.74)	(-1.50)
Unemployment Rate	0.0775***	0.0737***	0.0676***	0.0571***	0.0511***	0.0422***	0.0392***	0.0349***	0.0608***	0.0274***
	(12.65)	(12.67)	(12.53)	(12.55)	(12.50)	(11.81)	(11.26)	(10.08)	(11.79)	(7.41)
Constant	-0.607***	-0.574***	-0.521***	-0.448***	-0.411***	-0.364***	-0.346***	-0.336***	-0.343***	-0.347***
	(-11.48)	(-11.46)	(-11.24)	(-11.02)	(-10.90)	(-10.58)	(-10.27)	(-10.28)	(-8.39)	(-10.37)
Observations	45,278	45,278	45,278	45,278	45,278	45,278	45,278	45,278	35,790	45,278
R^2	0.0369	0.0368	0.0367	0.0362	0.0361	0.0358	0.0356	0.0357	0.0368	0.0358
Panel B.2.: Period analysed: 2000-2022										
Related Diversification	-0.0778***	-0.0783***	-0.0785***	-0.0767***	-0.0743***	-0.0658**	-0.0560*	-0.0410	-0.0234	-0.00750
	(-5.08)	(-5.09)	(-5.02)	(-4.67)	(-4.26)	(-3.20)	(-2.34)	(-1.46)	(-0.70)	(-0.20)
Interest Rate	0.0297***	0.0301***	0.0337***	0.0399***	0.0457***	0.0554***	0.0599***	0.0657***	0.0662***	0.0735***
	(13.22)	(13.44)	(13.97)	(14.87)	(15.40)	(16.01)	(16.19)	(16.29)	(16.13)	(16.13)
Related Diversification x Interest Rate	**0.00392**	**0.00405**	**0.00443**	**0.00411**	**0.00354**	**0.00111**	**-0.00171**	**-0.00568**	**-0.00922**	**-0.0130**
	(1.09)	**(1.15)**	**(1.21)**	**(1.02)**	**(0.79)**	**(0.20)**	**(-0.27)**	**(-0.79)**	**(-1.19)**	**(-1.48)**
Leverage	0.596***	0.596***	0.597***	0.600***	0.602***	0.607***	0.609***	0.611***	0.612***	0.613***
	(27.48)	(27.50)	(27.56)	(27.70)	(27.82)	(28.04)	(28.13)	(28.25)	(28.29)	(28.31)
Cash Holdings	0.672***	0.671***	0.670***	0.668***	0.666***	0.663***	0.663***	0.662***	0.663***	0.663***
	(19.99)	(19.98)	(19.96)	(19.92)	(19.88)	(19.81)	(19.81)	(19.80)	(19.81)	(19.84)
GDP Growth	-0.000371	0.00000592	0.000603	0.000897	0.000993	0.000610	-0.000276	-0.00117	-0.00142	-0.00330***
	(-0.37)	(0.01)	(0.59)	(0.88)	(0.97)	(0.60)	(-0.27)	(-1.16)	(-1.41)	(-3.29)
Inflation	-0.00276	-0.00421*	-0.00573**	-0.00634***	-0.00626***	-0.00549**	-0.00404*	-0.00364+	-0.00427*	0.0000727
	(-1.50)	(-2.26)	(-3.03)	(-3.34)	(-3.30)	(-2.89)	(-2.14)	(-1.93)	(-2.25)	(0.04)
Unemployment Rate	0.0193***	0.0200***	0.0220***	0.0243***	0.0254***	0.0243***	0.0203***	0.0152***	0.00800***	0.00574***
	(8.99)	(9.22)	(9.91)	(10.87)	(11.37)	(11.30)	(10.14)	(8.19)	(4.67)	(3.40)
Constant	-0.355***	-0.361***	-0.381***	-0.416***	-0.446***	-0.486***	-0.495***	-0.499***	-0.492***	-0.516***
	(-17.40)	(-17.54)	(-18.05)	(-18.97)	(-19.56)	(-20.20)	(-20.32)	(-20.25)	(-19.99)	(-19.99)
Observations	94,947	94,947	94,947	94,947	94,947	94,947	94,947	94,947	94,947	94,947
R^2	0.0951	0.0953	0.0959	0.0971	0.0983	0.100	0.101	0.102	0.103	0.103

t statistics in parentheses
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table A.24 – Regressions of the sales-weighted average excess firm value on the diversification type between diversified firms, interest rate and their interaction term, divided into two periods of analysis: 1989-1999 (Panel A) and 2000-2022 (Panel B)

	(1) 3-month	(2) 6-month	(3) 1-year	(4) 2-year	(5) 3-year	(6) 5-year	(7) 7-year	(8) 10-year	(9) 20-year	(10) 30-year
Panel A: Period analysed: 1989-1999										
Unrelated Diversification	-0.00856	-0.00635	-0.000777	-0.0189	-0.0170	-0.0100	-0.0358	0.00898	0.0983	0.0412
	(-0.19)	(-0.14)	(-0.02)	(-0.34)	(-0.28)	(-0.13)	(-0.43)	(0.10)	(0.73)	(0.38)
Interest Rate	0.0590***	0.0526***	0.0462***	0.0370***	0.0345***	0.0335**	0.0259*	0.0375**	0.0501**	0.0539***
	(6.41)	(5.89)	(5.28)	(4.09)	(3.62)	(3.04)	(2.20)	(2.97)	(2.70)	(3.52)
Unrelated Diversification x Interest Rate	**0.00143**	**0.000897**	**-0.000183**	**0.00314**	**0.00276**	**0.00157**	**0.00570**	**-0.00144**	**-0.0150**	**-0.00621**
	(0.20)	**(0.12)**	**(-0.02)**	**(0.37)**	**(0.30)**	**(0.14)**	**(0.47)**	**(-0.11)**	**(-0.77)**	**(-0.40)**
Leverage	-0.0591	-0.0584	-0.0574	-0.0613	-0.0626	-0.0650	-0.0674	-0.0663	-0.170*	-0.0664
	(-0.90)	(-0.89)	(-0.88)	(-0.94)	(-0.96)	(-0.99)	(-1.03)	(-1.01)	(-2.42)	(-1.01)
Cash Holdings	0.448***	0.449***	0.449***	0.450***	0.450***	0.449***	0.449***	0.449***	0.431***	0.449***
	(5.55)	(5.57)	(5.58)	(5.58)	(5.58)	(5.57)	(5.57)	(5.56)	(4.51)	(5.55)
GDP Growth	0.00703*	0.00329	-0.000828	-0.00457	-0.00610+	-0.00751*	-0.00769*	-0.00900**	-0.0287***	-0.0110**
	(2.26)	(1.08)	(-0.27)	(-1.46)	(-1.92)	(-2.30)	(-2.33)	(-2.67)	(-3.71)	(-3.13)
Inflation	-0.0643***	-0.0563***	-0.0477***	-0.0409***	-0.0374***	-0.0335***	-0.0293***	-0.0329***	-0.106***	-0.0371***
	(-7.40)	(-6.86)	(-6.15)	(-5.58)	(-5.28)	(-4.93)	(-4.34)	(-4.79)	(-8.01)	(-5.15)
Unemployment Rate	0.0661***	0.0578***	0.0474***	0.0325***	0.0242***	0.0123*	0.00836+	0.00281	0.0291***	-0.00728
	(7.44)	(6.79)	(5.98)	(4.91)	(4.08)	(2.38)	(1.65)	(0.55)	(3.86)	(-1.31)
Constant	-0.584***	-0.517***	-0.436***	-0.317***	-0.265***	-0.205*	-0.153+	-0.181*	-0.0928	-0.224*
	(-6.87)	(-6.25)	(-5.47)	(-4.14)	(-3.46)	(-2.51)	(-1.78)	(-2.03)	(-0.76)	(-2.18)
Observations	12,041	12,041	12,041	12,041	12,041	12,041	12,041	12,041	9,028	12,041
R^2	0.0223	0.0211	0.0199	0.0181	0.0175	0.0167	0.0157	0.0162	0.0263	0.0165
Panel B: Period analysed: 2000-2022										
Unrelated Diversification	-0.0597**	-0.0608**	-0.0625**	-0.0671**	-0.0727**	-0.0860**	-0.0973**	-0.113**	-0.125**	-0.134**
	(-2.63)	(-2.67)	(-2.73)	(-2.85)	(-2.97)	(-3.12)	(-3.11)	(-3.11)	(-2.91)	(-2.77)
Interest Rate	0.0179***	0.0181***	0.0208***	0.0252***	0.0292***	0.0349***	0.0367***	0.0382***	0.0379***	0.0414***
	(4.42)	(4.51)	(4.85)	(5.26)	(5.51)	(5.59)	(5.38)	(5.08)	(4.82)	(4.74)
Unrelated Diversification x Interest Rate	**0.00991***	**0.00985***	**0.00996***	**0.0102***	**0.0111***	**0.0134***	**0.0153***	**0.0184***	**0.0188+**	**0.0205+**
	(2.33)	**(2.38)**	**(2.30)**	**(2.14)**	**(2.08)**	**(2.04)**	**(2.01)**	**(2.08)**	**(1.94)**	**(1.88)**
Leverage	0.255***	0.256***	0.258***	0.262***	0.266***	0.273***	0.275***	0.279***	0.280***	0.281***
	(5.96)	(5.98)	(6.03)	(6.12)	(6.22)	(6.38)	(6.44)	(6.53)	(6.55)	(6.58)
Cash Holdings	0.713***	0.713***	0.713***	0.715***	0.716***	0.719***	0.721***	0.722***	0.724***	0.725***
	(12.13)	(12.13)	(12.14)	(12.18)	(12.22)	(12.28)	(12.32)	(12.35)	(12.37)	(12.38)
GDP Growth	-0.00621***	-0.00594***	-0.00546***	-0.00522***	-0.00511***	-0.00537***	-0.00605***	-0.00671***	-0.00690***	-0.00829***
	(-4.60)	(-4.37)	(-3.98)	(-3.81)	(-3.73)	(-3.97)	(-4.54)	(-5.08)	(-5.23)	(-6.34)
Inflation	0.0135***	0.0124***	0.0113***	0.0109***	0.0109***	0.0115***	0.0127***	0.0131***	0.0126***	0.0159***
	(5.20)	(4.74)	(4.26)	(4.10)	(4.13)	(4.39)	(4.87)	(5.02)	(4.80)	(6.17)
Unemployment Rate	0.00621*	0.00667*	0.00818*	0.00986**	0.0108***	0.00992**	0.00675*	0.00286	-0.00257	-0.00424+
	(2.02)	(2.14)	(2.56)	(3.05)	(3.34)	(3.22)	(2.40)	(1.11)	(-1.12)	(-1.89)
Constant	-0.293***	-0.297***	-0.312***	-0.336***	-0.358***	-0.381***	-0.380***	-0.372***	-0.357***	-0.367***
	(-9.03)	(-9.05)	(-9.25)	(-9.57)	(-9.77)	(-9.83)	(-9.60)	(-9.13)	(-8.50)	(-8.18)
Observations	32,594	32,594	32,594	32,594	32,594	32,594	32,594	32,594	32,594	32,594
R^2	0.0325	0.0326	0.0331	0.0344	0.0357	0.0379	0.0388	0.0397	0.0404	0.0404

t statistics in parentheses
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

When running the regressions that analyse the secular change that diversification intensity had

as a form to protect firms from interest rate shocks, the results using a sales-weighted dependent variable are depicted in Table A.25. These show that diversification has become not only an effective tool to combat interest rate shocks in the two-segment enterprises like in the asset-weighted sample but also in the remaining ones, in the short to medium terms.

Table A.25 – Regressions of the sales-weighted average excess firm value on the diversification intensity, interest rate and their interaction term divided into two periods of analysis: 1989-1999 (Panel A) and 2000-2022 (Panel B)

	(1) 3-month	(2) 6-month	(3) 1-year	(4) 2-year	(5) 3-year	(6) 5-year	(7) 7-year	(8) 10-year	(9) 20-year	(10) 30-year
Panel A.: Period analysed: 1989-1999										
Low Intensity	-0.0998***	-0.105***	-0.115***	-0.117**	-0.116**	-0.103*	-0.0867+	-0.0841	-0.174*	-0.0721
	(-3.60)	(-3.66)	(-3.77)	(-3.27)	(-2.93)	(-2.15)	(-1.67)	(-1.56)	(-2.05)	(-1.15)
Medium Intensity	-0.106***	-0.105***	-0.0977**	-0.0530	-0.0101	0.0795+	0.122*	0.149**	0.287***	0.213***
	(-3.61)	(-3.44)	(-3.06)	(-1.46)	(-0.25)	(1.72)	(2.46)	(2.88)	(3.40)	(3.52)
High Intensity	-0.0581	-0.0549	-0.0453	0.0207	0.0852	0.220**	0.280***	0.325***	0.399*	0.434***
	(-1.29)	(-1.19)	(-0.94)	(0.36)	(1.33)	(2.81)	(3.31)	(3.63)	(2.22)	(4.11)
Interest Rate	0.0413***	0.0379***	0.0338***	0.0305***	0.0296***	0.0301***	0.0280***	0.0329***	0.0435***	0.0428***
	(9.54)	(9.32)	(8.77)	(8.23)	(8.08)	(7.95)	(7.19)	(7.95)	(7.02)	(8.27)
Low Intensity x Interest Rate	**0.00626**	**0.00712**	**0.00871**	**0.00820**	**0.00772**	**0.00487**	**0.00191**	**0.00150**	**0.0132**	**-0.000451**
	(1.23)	**(1.38)**	**(1.64)**	**(1.37)**	**(1.18)**	**(0.64)**	**(0.24)**	**(0.18)**	**(1.01)**	**(-0.05)**
Medium Intensity x Interest Rate	**0.00187**	**0.00146**	**0.000173**	**-0.00813**	**-0.0155***	**-0.0301*****	**-0.0362*****	**-0.0401*****	**-0.0617*****	**-0.0480*****
	(0.38)	**(0.29)**	**(0.03)**	**(-1.42)**	**(-2.49)**	**(-4.18)**	**(-4.77)**	**(-5.10)**	**(-4.74)**	**(-5.40)**
High Intensity x Interest Rate	**-0.00919**	**-0.00949**	**-0.0109**	**-0.0220****	**-0.0324*****	**-0.0533*****	**-0.0611*****	**-0.0676*****	**-0.0788****	**-0.0806*****
	(-1.36)	**(-1.41)**	**(-1.56)**	**(-2.73)**	**(-3.58)**	**(-4.80)**	**(-5.19)**	**(-5.41)**	**(-2.84)**	**(-5.61)**
Leverage	0.210***	0.211***	0.212***	0.210***	0.210***	0.210***	0.209***	0.210***	0.211***	0.210***
	(7.66)	(7.68)	(7.70)	(7.65)	(7.63)	(7.62)	(7.60)	(7.63)	(6.80)	(7.64)
Cash Holdings	0.437***	0.437***	0.437***	0.437***	0.437***	0.436***	0.436***	0.435***	0.446***	0.435***
	(13.26)	(13.28)	(13.29)	(13.28)	(13.28)	(13.24)	(13.22)	(13.21)	(12.28)	(13.18)
GDP Growth	0.000337	-0.00231	-0.00559**	-0.00863***	-0.00983***	-0.0109***	-0.0110***	-0.0120***	-0.0274***	-0.0134***
	(0.16)	(-1.15)	(-2.83)	(-4.36)	(-4.90)	(-5.32)	(-5.30)	(-5.71)	(-6.28)	(-6.15)
Inflation	-0.0282***	-0.0243***	-0.0196***	-0.0147**	-0.0120**	-0.00840*	-0.00488	-0.00762+	-0.0579***	-0.0101*
	(-5.55)	(-5.03)	(-4.22)	(-3.29)	(-2.76)	(-2.00)	(-1.17)	(-1.81)	(-8.04)	(-2.32)
Unemployment Rate	0.0737***	0.0692***	0.0627***	0.0518***	0.0456***	0.0367***	0.0337***	0.0296***	0.0535***	0.0222***
	(14.07)	(13.91)	(13.58)	(13.37)	(13.15)	(12.10)	(11.40)	(9.99)	(12.06)	(6.93)
Constant	-0.591***	-0.553***	-0.497***	-0.427***	-0.393***	-0.357***	-0.343***	-0.340***	-0.320***	-0.362***
	(-12.87)	(-12.66)	(-12.21)	(-11.81)	(-11.62)	(-11.33)	(-11.00)	(-11.11)	(-8.19)	(-11.33)
Observations	54,595	54,595	54,595	54,595	54,595	54,595	54,595	54,595	42,542	54,595
R^2	0.0355	0.0354	0.0352	0.0347	0.0347	0.0347	0.0346	0.0350	0.0358	0.0353
Panel B: Period analysed: 2000-2022										
Low Intensity	-0.0753***	-0.0760***	-0.0772***	-0.0777***	-0.0787***	-0.0782***	-0.0744**	-0.0686*	-0.0572+	-0.0497
	(-5.29)	(-5.30)	(-5.28)	(-5.02)	(-4.73)	(-3.95)	(-3.22)	(-2.53)	(-1.77)	(-1.36)
Medium Intensity	-0.122***	-0.123***	-0.124***	-0.123***	-0.123***	-0.118***	-0.111***	-0.100***	-0.0856**	-0.0702+
	(-8.45)	(-8.46)	(-8.37)	(-7.90)	(-7.36)	(-5.97)	(-4.85)	(-3.71)	(-2.67)	(-1.94)
High Intensity	-0.142***	-0.143***	-0.145***	-0.147***	-0.148***	-0.146***	-0.144***	-0.137**	-0.126*	-0.112+
	(-5.48)	(-5.49)	(-5.44)	(-5.21)	(-4.89)	(-4.08)	(-3.47)	(-2.84)	(-2.21)	(-1.78)
Interest Rate	0.0296***	0.0300***	0.0334***	0.0393***	0.0448***	0.0539***	0.0581***	0.0637***	0.0642***	0.0716***
	(13.76)	(14.00)	(14.58)	(15.46)	(15.97)	(16.48)	(16.49)	(16.47)	(16.19)	(16.20)
Low Intensity x Interest Rate	**0.00794***	**0.00792***	**0.00831***	**0.00807***	**0.00807+**	**0.00721**	**0.00546**	**0.00352**	**0.000187**	**-0.00161**
	(2.20)	**(2.25)**	**(2.27)**	**(2.01)**	**(1.83)**	**(1.36)**	**(0.90)**	**(0.51)**	**(0.03)**	**(-0.19)**
Medium Intensity x Interest Rate	**0.00757***	**0.00771***	**0.00795***	**0.00740+**	**0.00688**	**0.00466**	**0.00236**	**-0.000962**	**-0.00445**	**-0.00818**
	(2.10)	**(2.20)**	**(2.18)**	**(1.85)**	**(1.55)**	**(0.87)**	**(0.39)**	**(-0.14)**	**(-0.60)**	**(-0.97)**
High Intensity x Interest Rate	**0.0119+**	**0.0119+**	**0.0120+**	**0.0116**	**0.0109**	**0.00835**	**0.00661**	**0.00408**	**0.000649**	**-0.00297**
	(1.82)	**(1.87)**	**(1.82)**	**(1.61)**	**(1.37)**	**(0.88)**	**(0.62)**	**(0.33)**	**(0.05)**	**(-0.21)**
Leverage	0.581***	0.582***	0.583***	0.586***	0.588***	0.593***	0.595***	0.598***	0.598***	0.599***
	(28.47)	(28.50)	(28.57)	(28.72)	(28.86)	(29.10)	(29.20)	(29.33)	(29.38)	(29.41)
Cash Holdings	0.688***	0.688***	0.687***	0.685***	0.684***	0.681***	0.681***	0.681***	0.681***	0.681***
	(21.78)	(21.77)	(21.76)	(21.73)	(21.69)	(21.64)	(21.64)	(21.63)	(21.64)	(21.66)
GDP Growth	-0.000874	-0.000492	0.000106	0.000349	0.000419	-0.00000978	-0.000907	-0.00179*	-0.00206*	-0.00393***
	(-0.96)	(-0.54)	(0.12)	(0.38)	(0.46)	(-0.01)	(-1.00)	(-2.00)	(-2.29)	(-4.39)
Inflation	-0.00132	-0.00281+	-0.00432*	-0.00477**	-0.00457**	-0.00359*	-0.00205	-0.00158	-0.00213	0.00221
	(-0.78)	(-1.65)	(-2.51)	(-2.76)	(-2.65)	(-2.08)	(-1.20)	(-0.92)	(-1.23)	(1.31)
Unemployment Rate	0.0192***	0.0199***	0.0218***	0.0239***	0.0248***	0.0233***	0.0191***	0.0140***	0.00682***	0.00459**
	(9.93)	(10.19)	(10.93)	(11.90)	(12.38)	(12.15)	(10.74)	(8.46)	(4.47)	(3.06)
Constant	-0.360***	-0.366***	-0.386***	-0.419***	-0.447***	-0.484***	-0.490***	-0.493***	-0.485***	-0.510***
	(-19.30)	(-19.44)	(-19.96)	(-20.87)	(-21.44)	(-21.98)	(-21.95)	(-21.67)	(-21.11)	(-20.99)
Observations	113,371	113,371	113,371	113,371	113,371	113,371	113,371	113,371	113,371	113,371
R^2	0.0882	0.0884	0.0890	0.0903	0.0915	0.0936	0.0945	0.0954	0.0959	0.0961

t statistics in parentheses
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

All in all, it is possible to conclude that if anything the analysis performed with the asset-weighted *Average Excess Firm Value* is more conservative than the one that uses the sales-weighted dependent variable. In fact, the latter analysis presented similar but improved results in which diversification is viewed as an even more effective instrument in hedging against interest rate shocks, particularly in the short to medium terms. The only regressions that pointed

towards a distinct interpretation from that attained when using an asset weight were the ones analysing the different types of diversification, i.e. unrelated and related diversification. This may originate from the fact that these were the regressions in which there was a bigger alteration in the observations considered in the analysis.