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The impact of financial constraints in the European M&A activity

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Dissertation written under the supervision of Alberta di Giuli

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Abstract:

In this dissertation, we study of the effect of financial constraints on acquisition gains on the European market, using for that purpose a sample of European acquisitions made between 1985 and 2019. The results obtained indicate that the presence of financial constraints on target companies increase the abnormal returns for both parties involved in the transaction. Likewise, the American market, these findings seems to corroborate the existing literature, that these constrained companies once have an injection of capital, or a more unrestricted access to external investors (capital markets), unlock previously inaccessible profitable initiatives. This creation of value is profitable to the acquiring party, since the employed capital is applied in positive net value projects that would most likely perish unexercised if the acquisition failed to materialize.

Keywords: Financial constraints, majority acquisitions, acquisition premium, acquisition gains

O impacto das restrições financeiras na atividade europeia de fusões e aquisições

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Abstrato:

Nesta dissertação, estudamos o efeito que as restrições financeiras têm nos ganhos das aquisições no mercado europeu, utilizando para esse propósito uma amostra de aquisições realizadas entre 1985 e 2019. Os resultados obtidos indicam que a presença de restrições financeiras em empresas adquiridas aumenta o retorno anormal para ambos partidos envolvidos na transação. Da mesma forma que o mercado americano, estes resultados parecem corroborar a literatura existente, que estas empresas restritas, uma vez que sofrem uma injeção de capital, ou um acesso mais irrestrito a investidores externos (mercados de capital), desbloqueiam iniciativas rentáveis previamente inacessíveis. Esta criação de valor é rentável para o partido adquirente, uma vez que o capital empregado é aplicado em projetos com valor líquido positivo que seriam muito provavelmente perecidos inexercitados caso a aquisição falhasse em se materializar.

Palavras-chave: Restrições financeiras, aquisições maioritárias, prémio de aquisição, ganhos de aquisição

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Introduction

The methodology followed in this dissertation verified that the degree of financial constraints within a company has a substantial influence on M&A behaviour. With the study conducted, we observe that the degree of financial constraints of targeted firms affects the value created with the merger and acquisition announcement in the European region.

By undergoing this empirical analysis, we can infer that the degree of financial limitations on acquired firms is one driver of value that investors take advantage of in M&A practices in the European region, in line with literature findings in the US market. The univariate tests that we undertook show that, when facing an acquisition, if the target is financial constraint, gains tend to be materialised by both the bidder and the target across different financial constraint definitions. This reality might impel that, investors can look at this reality in order to create value ignoring "normal" sources of value. Employing Composite I as the indicator of financial constrained targets, the abnormal returns experienced by bidders and targets are 0.80% and 0.13% higher respectively, around announcement window. Regarding the premium of the transaction, no consensus results was obtained, as according to different measures, contradictory conclusions could be retrieved.

The second approach taken, was a multivariate regression on the acquisition gains. The results obtained imply that, keeping everything else constant, the level of financial constraints of target companies, influences the value created upon an M&A deal to both sides of negotiation table. A target labelled constrained according to Composite I Index, observes an abnormal return of 5.42% around announcement window, with a p-value inferior to 10%, while providing a positive 4.98% to the acquirer on the acquisition, with a p-value inferior to 1%. Again, the study conducted was unsuccessful to find any significant impact that financial constraints play on the acquisition premium, across all measures of financial constraints.

In order to overview the robustness of conclusions retrieved, acquisitions where matched according to the propensity score, being the bidders' characteristics subject to control, was the instrument utilized to test potential endogeneity concerns. The results obtained through that test corroborate any spurious signals that could be arisen. Finally, the same analysis was performed in a shorter time horizon surrounding the announcement window, being the impact of financial constraints in line with the baseline findings of the original criteria.

Literature Review

The potential hidden in financially constrained firms has always been one of the priority focus of attention by investors, as they perceive these entities to possess within its value chain unexploited growth opportunities. In order to determine the factors that are restraining the potential of these companies, an extensive literature is existent on the most appropriate indicators utilised for identifying financial constraint entities. The bond between financial constraints and corporate liquidity demand was shown in previous literature to have direct repercussions on firm policies. This aforementioned tie was initially suggested by (Keynes, 1936), as he stated that one of the most significant upsides of a liquid balance sheet is the capability to take on value-added opportunities when they are available. Contrariwise, balance sheet liquidity relevance is negatively correlated to the access level firms have external capital markets.

One of the first points bidders aim to bring to the financial constrained acquired entity is an increase in liquidity. A driving force behind this injection is related to the mitigation of excessive propensity to cash retention, which would ultimately undercut the adoption of positive net present value project opportunities in the target entity. Several studies showed that firms whose investments opportunities are inhibited by capital market deficiencies manage liquidity to maximize value. In contrast, counterparty firms (unconstrained) demonstrated no systematic patterns, in four out of five tested empirical proxies, for one-period saving decisions. (Almeida, Campello, & Weishbach, 2004). While, the previously mentioned study impels a positive correlation between corporate cash flow sensitivity of cash, (Zhang, Chan, & Bao, 2012) and (Riddick & Whited, 2009) observed that in general terms, the effect observed is, in reality, opposing. Once the measurement error in Tobin's Q is econometrically corrected, the sensitive of cash holdings is negative when a firm faces a positive cash flow environment and positive when a firm faces negative cash flows.

This problem of liquidity was analysed by (Holmstrom & Tirole, 1997) wherein their framework, a company observes its ability to borrow additional funds severely diminished after a severe liquidity shock has emerged. Since at that point, external investors are unwilling to provide the necessary funds, the firm must contract the additional loans ex-ante the liquidity shock. Even when there are no operational synergies associated with the merger, corporate liquidity policy and asset reallocation opportunities proven to be sizeable growth vectors that bidder entities pursuit in order to provide value to its shareholders. Focusing on the impact that asset specificity plays at the industry and firm level, (Almeida, Campello, & Hackbarth, 2011), found that these mergers were more likely to happen when industry-level asset-specificity is

high, and firm-level asset-specificity is low. Inducing that the aforementioned acquisitions had higher chances to occur in industries whose assets are industry-specific but transferable across firms.

Literature has been contemplating the connection effect between financial constraints and corporate policies. Previously proposed by (Fazzari, Hubbard, & Peterson, 1988), they state that when firms face financing constraints, investment expenditure will vary according to the disposal of internal funds, rather than just the disposal of positive net present value projects. Regarding the relationship between financial constraint degree and investment level, (Almeida & Campello, 2007) observed direct evidence that the degree of asset tangibility, served as collateral, impacts the degree of investment when firms face credit constraints. Since the level of pledgeability of the company assets diminishes the credit multiplier of a corporation.

Regarding the implications that financial constraints have on working capital, (Fazzari & Petersen, 1993), stated that when firms face financial constraints, the management of working capital represents a source of liquidity used to offset fixed investment relative to cash-flow shocks. The presence of financial constraints has also shown to have an economic importance effect on inventory management. Firms when facing downturn periods pursue dampening of inventory to decrease to the maximum extent capital stagnated and offset the expected decrease in the cash flow in the recession periods (Carpenter, Fazzari, & Petersen, 1994) & (Kashyap, Lamont, & Stein, 1994).

The above-mentioned potential has been transforming for a long time financially constrained firms' into desirable additions. During the 1960s merger wave, (Hubbard & Palia, 1999) showed that a possible explanation for positive abnormal returns in diversifying acquisitions, relied on the inception of internal markets. After analysing 392 bidder firms, the highest returns were observed when financially "unconstrained" buyers acquired "constrained" companies. The authors found statistical significance on the phenomena that acquiring firms, saw this opportunity to create their internal capital markets in the absence of informationally well-developed external capital markets, by fomenting internal combinations that would permit capital reallocation, bypassing external capital markets. Although the majority of positively rewarded acquisitions in the 1960s were observed in diversifying operations, the informational advantage that buyers were perceived to possess was to be exploited in capital budgeting and allocation process as well as in the improvement of operational processes.

Regarding the post-acquisition capital structure of acquired firms, (Erel, Jang, & Weisbach, 2015) showed that after acquisitions, financial constraints are reduced in the acquired entities, transmitting manager intentions to decrease the cost of capital of the latter. In harmony with

our topic of study, these effects were more influential in deals connected with financing enhancements. Empirical evidence provided the existence of a tendency to decline their capital possessions, their reactivity of cash-to-cash flow and responsiveness to investments while expenditure in projects increases in the periods after the acquisition. These findings were observed both in diversifying and same-industry acquisitions.

Concerning the sources of capital, besides the traditional loan contracts, surveys indicate that credit lines usage is not restricted only to liquidity management. However, instead, they can be utilized to fund growth opportunities (Campello, Graham, & Harvey, 2010). Industry practitioners (CFOs), by providing valuable insights in these studies provided more evidence on the usage of credit lines as a source of funds in the acquisition process. At the same time, cash is utilized as a tool to bear liquidity shortages (Lins, Servaes, & Tufano, 2010).

The role of excess cash in acquisitions has shown to have acute effects in the behaviour of firms. Firms that possess superior amounts of cash-holdings are more likely to engage in acquisitions. However, these same agents tend to experience value decreasing due to alleged destruction of value due to overpayment of the target (winners' curse), unsuccessful diversification strategies and abnormal declines in operating performance of the business units (Harford, 1999). For this reason, if the amount of cash available is a proxy for financial constraint, as the cash available is commonly argued to help to a significant extent a company sustain adverse shocks and is an indicator of stable corporate governance structures (Harford, Mansi, & Maxwell, 2008) & (Dittmar & Mahrt-Smith, 2007). One could expect to verify the same results as the previously mentioned studies found. Though, the inaccurate identification could occur due to a multiplicity of factors. After all, the liquidity management of each company differs within intra-industry and between industry standards, as the appetite for risk and return maximization measures are unique to a corporation.

Another verge to which financial constraints have proven to be relevant is related to the decision of acquisition of minority positions. Notwithstanding the perceived value gains are easier accomplished on majority acquisitions through the expected joint productions synergies. Minority acquisitions tend to be the adopted methodology when the full combination of internal capital markets translates into a higher cost and consequent dilution of the EPS of the acquirer. The authors (Ouimet, 2012) & (Hertzel & Smith, 1993) suggested that minority acquisitions can be the recommended tool to certify the target and provide direct financing. By doing such, it allows an investor to get a more unobstructed view on the target investment opportunities and the expected synergies that a merger would provide. Henceforth, acting as an optimal investor before committing to a majority stake. In the same study, direct evidence emerged that minority

acquisitions are more frequent when the preservation of unscathed target managerial incentives is essential, when the target is financial constraint or can leverage on certification.

Financial constraints have also been an object of study for their impacts on relationship governance. The authors (Fee, Hadlock, & Thomas, 2006), observed that suppliers who are producing negative free cash flows are more likely to have in its ownership structure equity blocks by their primary customers. This finding is inherent to the consideration of equity stake phenomenon, where customers serve as informed sources of capital, easing financial constraints at the supplier level. With the same intent as our study, (Liao, 2014) found that companies who sold minority equity stakes, with intent to relieve capital constraints experienced higher financial returns upon announcement, outperforming their most direct competitors. However, the focus of the study conducted in this thesis is on the acquisitions of majority block positions, where the acquirer obtains 50% or more equity stake upon the transaction agreement. To be noticed, this study differentiates itself from the above-mentioned studies, since it is analysed the role of both bidder and target financial constraints in the merger and acquisition process.

The impact of financial constraints on value creation, was also explored by (Khatami, Marchica, & Mura, 2015) in the US market, where the authors found that the existence of financial limitations on acquired companies increased the abnormal returns significantly for both parties and acquisition premiums. Besides, a secondary analysis conducted in the above mentioned study, observed that one factor that increases the likelihood for a company to receive a takeover bid is to be under financial constraints.

The impact of financial limitations on M&A practices was analysed on an assortment of completed acquisitions utilizing a plurality of variables that have shown in previous empirical studies to provide with high precision the existence of financial constraints in a company. The level of financial restrictions of both acquirers and targets were computed on the five indicators, being those well accepted within the academic community:

i) Composite I & II advanced by (Campello & Chen, 2010). The authors found that these measures reflected the degree to which financial constraint companies stock have higher systematic risk. The latter, experience excessive procyclicality on their business fundamentals, being more sensitive to macroeconomic movements than their counterparties. Thus, such factors are priced in the financial markets. Financial constraints firms endure more significant losses in downturns periods and see their access to credit limited, while experimenting steeper increases in value when the economic environment is more favourable.

ii) The payout ratio utilized by (Fazzari, Hubbard, & Peterson, 1988), on which "financing hierarchy" and tax reform are utilized to explore the sensitivity of investment spending regarding the availability of internal finance, being the effect more incisive in financial constraint firms. The presence of financial constraints was found to have repercussions in industrial organization, with multiple mergers being the unification result of firms with different cost of capital on the margin because of diverse earnings and growth forecasts.

iii) The Kaplan and Zingales (KZ) index utilized by (Lamont, Polk, & Saaá-Requejo, 2001), to investigate whether the impact of financial constraints on firm value is observable in stock returns. Unlike (Campello & Chen, 2010), the empirical analysis undergone in this study argued that financially constrained firms, once accounted for the leverage burden and size effect in security pricing, do not show returns significantly more cyclical than the average.

iv) The HP index proposed (Hadlock & Pierce, 2010), an evolution from the KZ index, since this new measure incorporates both firm size and age for predicting financial constraint level. These emerged as the alternatives measures that increased the prediction accuracy of the distress factor to a greater extent.

Data and Sample Selection

In order to extract the acquisition information regarding the deals performed in the European region, Thomson One Investment Banking database was utilized. In order to study the premiums and gains relative to the transactions, we maintained the approach to utilize only acquisition deals that involved both public listed parties and that where announced between 1985 and 2019. For the extraction of accounting data, Datastream was the selected database. To retrieve daily securities prices, Datastream was also used in order to compute abnormal returns and premiums. To identify, whenever a possible business cycle was present, guidance was retrieved from the indications of the European Central Bank (ECB) Macroeconomic cycles article. The OECD website was the database used to extract the inflation levels of the European region throughout the time window of this thesis. Regarding the financial constraint measures that require the availability of company bond and commercial paper ratings, for the European region, no reliable database was utilized due to the substantial absence of information for the desired variable. Due to this data insufficiency, adjustments were made in the respective financial constraints proxies to adapt to the data availability.

From the deals announced, the companies classified as financial institutions (SIC 6000-6999) plus supervised utility entities (SIC 4909-4939) were removed from the data arrangement since these businesses' activities are subject to a hefty regulatory burden by the governments. Regarding the availability of data, for a deal to be considered an observation for this study, accounting and share price data must be available for bidders and targets one year prior to the acquisition announcement date.

The first requirement regarding the value of the transaction, comprehends the relation between the bidder's market capitalization and deal value. When the ratio of deal value to bidder's market capitalization 43 days prior to the announcement is inferior to 1%, this transaction is removed from the sample. In addition, a second restriction was imposed on the transaction value. Transactions whose deal value was inferior to $1 m where excluded. These two criteria were included, with the concern that the companies included within these criteria, would be in imminent default situations or recently launched companies. Both these situations are not intended to be covered with the analysis of this study. The various requirements imposed yielded a sample of acquisition announcements consisting of 1045 observations made in the European region between 1985 and 2019, where both parties involved were publicly listed companies and the stake intended in the target upon the deal completion was higher than 50%.

Concerning the overview of the gains realized from acquisitions, in this study, the acquisition premium of the transaction and the target and bidder cumulated abnormal returns (CARs) are analysed around the observation window. To compute the acquisition premium, the methodology conducted by (Schwert G. W., 1996) was adopted, where it was concluded that the manifestations of rumours and news surrounding a takeover start to be reflected in the 42nd day preceding the initial bid. Taking this into account, the acquisition premium is extracted through the ratio of the bid proposed to the target company shareholders by the market value of the target (or the percentage intended to acquirer) 43 days prior to the announcement date. For the premium impelled to be considered, it must be between 0 and 2, if this requirement is not met, the observation is retrieved from our final data sample.

The observation window that was utilized in this analysis to compute the cumulative abnormal returns (CARs) was based on 11-day (-5 to +5) around the announcement day. Whenever price data is absent, the observation is removed from the sample. Taking into consideration (Schwert G. W., 1996), the estimation period utilized to compute the expect return is comprehended between the interval of [-316, -43] days precedent the announcement date. To extract the expected returns on the market, the Fama French European 3 factor model was the benchmark model utilized for establishing the predicted return.

1. Methodology

Measures of Financial Constraints

The process of identifying a company under financial distress situation has proven to be a topic where no general agreement has yet been achieved on which measure is the best proxy to classify a company under such financial status. Existing literature has suggested a plurality of methodologies to categorize the level of financial constraint confronted by firms. When overviewing the proposed approaches on discrete measures such as the availability of bonds or the commercial paper rating, one should be cautious regarding the availability of information and whether they are likely to contaminate the study conducted by inducing noise into classification. Another problem that is inherent to the literature, concerns the peculiarity that some authors opt to focus on a specific aspect of what is perceived a broader concept of financial constraints, e.g. size, dividend payout and age (Fazzari, Hubbard, & Peterson, 1988) (Guariglia, 2008) (Schiantarelli, 1996). With the same concern, (Almeida, Campello, & Weishbach, 2004) found that "the KZ index generates constrained/unconstrained firm assignments that are mostly negative correlated with those of the other […] classification criteria". In order to improve the reliability of such indexes suggested in the literature, recent papers have induced more trustworthy alternatives, like (Hadlock & Pierce, 2010) on the Kaplan-Zingales (KZ index), where the flaw in the incorporation of information into both the dependent and independent variable was arranged. The authors showed that the size of the entity is the only input from the Whited-Wu (WW) index that could improve the existing KZ index.

The chosen variables to identify financial constraints are in great majority proposed by (Campello & Chen, 2010), with the intent to diminish to the maximum extent the possible limitations described above.

1.1 Composite I Index

Propesed by (Campello & Chen, 2010), the sample of companies collected from DataStream was arranged according to the four indicators: size, interest coverage ratio, dividend payout ratio and the KZ index discretely[1]. (In Appendix I is described the characterization of the methodology encompassed in the respective financial limitator indicator). After this arrangement, a score encompassed between the range [0,5] is allocated for the respective

[1] This approach raises a possible problem regarding the classification process, since the sample is limited to the companies involved in M&A we are inducing a considerable bias into the analysis since the aforementioned companies possibly will possess different characteristics from the entire population.

distribution. In (Khatami, Marchica, & Mura, 2015), the next procedure, it is allocated a score based on the extremes of the previously mentioned range, 0 and 5, for the set of corporations that at the time of the deal announcement possessed *commercial paper rating* and *bond rating* separately. However, due to the insufficiency mentioned above in the data source, in this study, a divergence was taken. The new requisite impelled a company to have on minimum three of the above four criteria available to avoid our sample to be drastically reduced. In contrast, in the original paper, the requisite was the existence of four variables of the above mentioned six criteria.

In order to attribute a comprehensive score to an observation, the significance of each rank was computed taking into the accordance the availability of inputs. The procedure followed implies that the lower the score of a firm, the higher the financial constraints. Firms above the 70^{th} percentile are classified as unconstrained companies while the firms below the 30^{th} percentile classified as financially constrained companies.

1.2 Composite II index

The procedure to compute Composite II is the same as the Composite I, but the *KZ index* and *size* factors are excluded. The rationale behind this removal is that *KZ index* and *size* factors sporadically provides a contrasting classification to the remaining measures (Almeida, Campello, & Weishbach, 2004). To be noticed that size is used as an explanatory input in the regression undertaken in chapter 3. In the same way as the previous measure, the firms above the 70^{th} percentile classified as unconstrained companies while the firms below the 30^{th} percentile classified as financially constrained companies.

1.3 Alternative Measures

With the intent to observe the degree of effectiveness or to wish the latter two measures are punitive in the classification of companies. Three additional variables are utilized to classify financial constraints to counterbalance such effect: the KZ index, the dividend payout ratio and the (HP) index (Hadlock & Pierce, 2010). Likewise, the labelling criteria maintains as firms above the 70^{th} percentile classified as unconstrained companies while firms below the 30^{th} percentile classified as financially constrained companies. (In Appendix I it is described the characterizations of each variable encompassed in these three financial constraint measures)

Throughout this thesis, and in order to improve the accessibility and interpretation of information, several acronyms are utilized to characterize the multiple classes of acquisitions:

"B" intends for bidder, "T" intends for target, "NFC" intends for "Not Financially Constrained" and "FC" intends for "Financially Constrained".

Panel I

Allocation of the sample according to the level of financial constraints on the five tested variables chosen for indicating financial limitations. This panel shows the distribution of transactions in the collected data set, according to the degree of financial limitations present in both parties involved. The observed data set encompasses all European transactions concerning public companies, being the target and bidder, both publicly listed, in the chronological interval between 1985 and 2019 present in the Thomson One Banker database. Bidders and targets that belonged to the financial and regulated utility industries were removed from the studied sample. %TFC indicates the portion of transactions whose target is constrained in agreement with the respective indicator of financial constrain, %BFC indicates the portion of transactions whose acquirer is constrained in agreement with the respective indicator of financial constrain. The methodology adopted in the indicators of financial constraints is reported thoroughly in Appendix I.

	TFC	TNFC	%TFC	BFC	BNFC	%BFC
Composite I Index	176	83	44.11	70	199	17.90
Composite II Index	30	20	60.00	16	25	39.02
Payout ratio	201	190	43.70	154	163	35.81
KZ	141	109	35.43	139	170	29.39
HP	347	295	46.77	322	385	34.55

From Panel I, it is possible to observe the amount of transactions that are categorised as constrained or unconstrained according to each financial constraint measure tested for both the targets and bidders' groups. Looking at the classification, only Composite II Index fails to classify a sizeable amount of companies as constrained or unconstrained due to deficiency in data availability regarding the interest expense of each company. Due to the aforementioned reason, the analysis of Composite II indicator was removed from the following panels since any conclusions retrieved could spurious the findings of the other measures and did not present statistical significance in any variables that were object of study.

Looking at the allocation of constrained targets in our data set, we observe that across all measures, the number of constrained targets outnumber the number of unconstrained targets. If we make the same analysis, but observing through bidders' perspective, we observe symmetric

results, since, across all measures, the number of deals occurred that had an unconstrained bidder surpass the acquisitions where the bidder was constrained. From this allocation, it could be argued that companies who possess a more efficient/higher-quality access to capital and suffer from a lack of in-house organic growth opportunities with a positive net present value, see the process of mergers and acquisitions as the right tool to propel growth in their business strategy.

Panel II – Firm and deal characteristics - Targets

Sample Statistics. This panel illustrates transaction features and corporation aspects, according to the degree of financial constraints of the acquired companies. The variables for the company were computed according the financial report of the year preceding the deal announcement. The p-values are extracted from the t-tests of equality between the averages of the two sub-classifications.

	Composite I Index			Payout Ratio		
	TFC	TNFC	p-Value	TFC	TNFC	p-Value
Company Level						
Total Assets (€m)	246.82	2751.83	0.061	1078.36	1118.71	0.480
Sales (€m)	214.42	1920.46	0.017	783.56	635.00	0.349
Cost of debt	0.109	0.074	0.031	0.104	0.055	0.120
Coverage ratio	-2.83	27.19	0.029	19.01	1.10	0.122
Total debt/BVE	0.51	0.44	0.327	1.28	2.77	0.283
Tobin's Q	1.48	2.44	0.276	1.61	2.80	0.129
Cash holding/PPE	3.62	1.52	0.011	4.77	3.06	0.142
CapEx/TA	0.07	0.07	0.412	0.07	0.06	0.479
PPE/TA	0.27	0.40	0.000	0.25	0.39	0.000
Observations	176	83		201	190	
Deal Level						
Transaction value (€m)	125.07	498.67	0.000	158.04	239.45	0.052
Diversifying (%)	42.61	45.78	0.317	38.81	54.21	0.001
Percentage Sought (%)	91.91	93.67	0.158	91.21	95.75	0.000
Hostile (%)	0.57	0.00	0.000	0.50	1.58	0.148
Of cash (%)	45.45	51.81	0.784	48.76	46.32	0.83
Of stock (%)	57.39	54.21	0.721	52.24	58.42	0.631

Panel II– Firm and deal characteristics - Targets (Continuation)

Sample Statistics. This panel illustrates transaction features and corporation aspects, according to the degree of financial constraints of the acquired companies. The variables for the company were computed according the financial report of the year preceding the deal announcement. The p-values are extracted from the t-tests of equality between the averages of the two sub-classifications.

	KZ			HP	
	TFC	TNFC	p-Value	TFC	TNFC	p-Value
Company Level						
Total Assets (€m)	320.99	2042.80	0.040	217.10	1750.80	0.000
Sales (€m)	447.74	1343.31	0.051	178.39	1231.76	0.000
Cost of debt	0.057	0.052	0.400	0.092	0.052	0.098
Coverage ratio	9.52	5.12	0.220	14.40	16.91	0.421
Total debt/BVE	4.66	0.10	0.082	2.98	0.39	0.114
Tobin's Q	1.88	2.67	0.001	1.84	2.55	0.000
Cash holding/PPE	1.76	9.26	0.002	3.81	2.10	0.055
CapEx/TA	0.06	0.07	0.446	0.06	0.08	0.087
PPE/TA	0.41	0.17	0.000	0.25	0.36	0.000
Observations	141	109		347	295	
Deal Level						
Transaction value (€m)	188.95	265.98	0.137	345.55	115.16	0.000
Diversifying (%)	36.88	54.13	0.003	43.73	51.30	0.028
Percentage Sought (%)	90.55	96.83	0.000	91.93	92.86	0.195
Hostile (%)	0.71	0.00	0.159	1.15	1.36	0.409
Of cash (%)	46.81	53.21	0.712	31.12	48.14	0.164
Of stock (%)	56.74	57.80	0.934	69.45	54.24	0.252

Panel II– Firm and deal characteristics - Bidders

Sample Statistics. This panel illustrates transaction features and corporation aspects, according to the degree of financial constraints of the acquiring companies. The variables for the company were computed according the financial report of the year preceding the deal announcement. The p-values are extracted from the t-tests of equality between the averages of the two sub-classifications.

	Composite I Index			Payout Ratio		
	BFC	BNFC	p-Value	BFC	BNFC	p-Value
Company Level						
Total Assets (€m)	457.29	20379.14	0.001	9410.88	10361.64	0.000
Sales (€m)	411.86	13221.93	0.000	6445.36	6608.25	0.000
Cost of debt	0.148	0.070	0.104	0.134	0.069	0.120
Coverage ratio	4.75	11.41	0.030	3.50	6.30	0.160
Total debt/BVE	3.38	0.35	0.060	3.79	0.53	0.231
Tobin's Q	1.87	3.53	0.005	2.03	3.73	0.006
Cash holding/PPE	4.77	2.63	0.147	2.16	3.41	0.128
CapEx/TA	0.05	0.12	0.056	0.08	0.08	0.241
PPE/TA	0.27	0.35	0.015	0.30	0.37	0.000
Observations	70	199		154	163	
Deal Level						
Transaction value (€m)	74.64	302.30	0.000	155.68	170.63	0.000
Diversifying (%)	44.29	47.24	0.338	41.56	39.26	0.021
Percentage Sought (%)	89.95	94.33	0.013	89.50	96.69	0.373
Hostile (%)	0.00	2.01	0.035	2.60	2.45	0.117
Of cash (%)	21.43	55.28	0.032	38.31	46.01	0.048
Of stock (%)	80.00	45.23	0.000	62.34	54.60	0.022

Panel II – Firm and deal characteristics - Bidders (Continuation)

Sample Statistics. This panel illustrates transaction features and corporation aspects, according to the degree of financial constraints of the acquiring companies. The variables for the company were computed according the financial report of the year preceding the deal announcement. The p-values are extracted from the t-tests of equality between the averages of the two sub-classifications.

	KZ			HP		
	BFC	BNFC	p-Value	BFC	BNFC	p-Value
Company Level						
Total Assets (€m)	12276.68	3884.51	0.031	3089.42	11951.24	0.000
Sales (€m)	9106.03	3239.65	0.019	2348.66	7807.70	0.000
Cost of debt	0.122	0.067	0.152	0.120	0.070	0.120
Coverage ratio	6.22	21.62	0.074	6.01	17.68	0.160
Total debt/BVE	6.90	0.18	0.028	1.61	3.15	0.231
Tobin's Q	2.79	3.36	0.447	2.80	3.86	0.006
Cash holding/PPE	5.05	6.49	0.195	5.31	3.02	0.128
CapEx/TA	0.08	0.13	0.213	0.14	0.10	0.241
PPE/TA	0.46	0.20	0.000	0.25	0.37	0.000
Observations	139	170		322	385	
Deal Level						
Transaction value (€m)	185.68	241.45	0.177	281.73	107.55	0.000
Diversifying (%)	43.88	49.41	0.167	48.14	40.52	0.021
Percentage Sought (%)	90.79	95.21	0.002	92.34	92.68	0.373
Hostile (%)	1.44	2.94	0.181	1.55	2.86	0.117
Of cash (%)	46.76	43.53	0.610	24.84	57.14	0.048
Of stock (%)	53.96	56.47	0.834	76.40	43.90	0.022

Panel III

This panel illustrates mean values of gains at both the target and bidder level according to the different allocation methods for financial constraints, at targets (A) and bidders (B). The p-values are derived from the t-tests of equality between the averages of the two sub-classifications.

A – Targets' financial constraints								
	Composite I Index				Payout Ratio			
	TFC	TNFC	Diff.	p-Value	TFC	TNFC	Diff.	p-Value
Premium (%)	43.16	64.60	-21.44	0.002	44.13	47.32	-3.18	0.267
Target CAR (%)	17.39	17.27	0.13	0.968	16.09	15.84	0.25	0.462
Bidder CAR (%)	-0.16	-0.97	0.80	0.205	0.06	0.02	0.04	0.480
	KZ				HP			
	TFC	TNFC	Diff.	p-Value	TFC	TNFC	Diff.	p-Value
Premium (%)	45.64	52.70	-7.06	0.154	51.57	34.47	17.10	0.000
Target CAR (%)	15.40	14.88	0.52	0.436	15.51	17.35	-1.84	0.190
Bidder CAR (%)	0.69	-0.43	1.12	0.161	0.08	0.96	-0.88	0.085

B - Bidders' financial constraints								
	Composite I Index				Payout Ratio			
	BFC	BNFC	Diff.	p-Value	BFC	BNFC	Diff.	p-Value
Premium (%)	37.54	53.26	-15.71	0.012	38.10	44.77	-6.67	0.113
Target CAR (%)	12.86	15.18	-2.31	0.274	14.61	16.16	-1.55	0.289
Bidder CAR (%)	1.31	-0.44	1.75	0.055	1.08	-0.49	1.57	0.068
	KZ				HP			
	BFC	BNFC	Diff.	p-Value	BFC	BNFC	Diff.	p-Value
Premium (%)	45.94	46.66	-0.73	0.451	47.93	35.62	12.31	0.000
Target CAR (%)	10.05	17.07	-7.02	0.006	16.10	13.45	2.65	0.079
Bidder CAR (%)	0.79	-0.21	1.00	0.155	0.57	0.63	-0.07	0.458

2. Discriminant Analysis

Before overviewing the relevance of financial constraints, a univariate analysis was conducted in order to see to which point the different indicators for financial constraints, yielded data sets with sizable differences between companies. Panel II highlights accounting characteristics at deal and company level for targets and bidders correspondingly. The information highlighted in the tables is extracted from the annual financial report preceding the deal announcement. Regardless of the conditions considered for yielding the classification, sizable differences were found between the constrained and unconstrained groups.

Like it was found in North America, when the payout ratio is utilized as the defining measure, bidders and targets show characteristics that resemble more one group to other. One possible cause to this result might be driven by the fact that a considerable portion of companies opt not to distribute dividends, allocating them as constrained companies without taking into consideration no additional information.

Furthermore, the European market data seems to follow the literature already existent, (Khatami, Marchica, & Mura, 2015), (Hadlock & Pierce, 2010) and a plurality of other authors, regarding the classification results of KZ index. The resulting allocation of companies, when compared with other measures, differ in some financial indicators. When using KZ, constrained companies hoard relatively more tangible assets and cash reserves, as it is observed in the US.

The first immediate difference that it is possible to infer is that targets, whenever they are classified constrained are on average smaller in terms of book value of assets and revenue. This target group is also aligned with higher interest expenses and lower interest coverage ratios. These findings are in line with the study conducted in the United States market. However, when undergoing the same analysis on the bidders' group, the results are quite puzzling since using all the measures apart from KZ, bidders tend to be smaller in terms of total assets and revenues when they are financially constrained. These results that are not encountered in the United States market. Regarding Tobin's Q, unconstrained companies present a higher value as their market valuation tends to be higher. When analysing the cash reserves company hold, constrained companies tend to garner higher cash holdings, to mitigate possible funding problems, arising from information asymmetries with external investors. Therefore, these companies are better prepared to undertake possible investment opportunities or liquidity shortages (Almeida, Campello, & Weishbach, 2004).

Concerning their capital expenditure, in the targets group, no statistically significant difference is present. On the other hand, the investment is more significant in the bidders' unconstrained group, which might reflect either their growth strategy, more profitable investment opportunities or the fact that external capital markets are backing more favourably their investment/expansion strategy. One could also try to explain this finding with the maturity of their business cycle. However, if we use as a proxy the level of tangible assets as a total portion of total assets as a positive indicator, it would refute such reasoning.

Examining the deals' nature, there are multiple similarities with the US as constrained targets tend to be acquired more through stock offering than cash payment. In addition, these are lesser involved in hostile acquisitions. Shifting to the other side of the negotiation table, unconstrained acquirers appear to carry out with more frequency diversifying transactions and hostile

takeovers, which could be driven by empire-building tendencies. In addition, they tend to recur more to cash to pursue deals conclusions to mitigate synergies dilution. Moreover, whenever a party involved is considered unconstrained, the percentage sought after the deal completion is superior, which could indicate the degree of confidence in the transaction potential to be greater. Panel III addresses premiums and abnormal returns materialized for bidders and targets on the data set. In order to better explore the possible value drivers, the aforementioned measures are explored starting from the target financial constraints (Section A) and bidder financial constraints (Section B).

Overviewing section A, there is a trend, which suggests unconstrained targets experience higher premiums, except when using the HP measure. These results are symmetrical to the ones observed in the US market, inducing a shift on investors' behaviour when analysing a possible acquisition to the company' portfolio. Regarding the CAR realized by the targets, there is some degree of ambiguity between different indicators, with different results arising from different definitions of financial constraint. Being this the situation encountered, no unbreakable conclusion can be retrieved from our findings. Contrarily, on the bidders' side, the European market behaves like its American counterparty. Whenever a bidder acquires a constrained target it observes greater gains in all measures except HP. This report is in line with the previous literature regarding the unexploited potential perceived to be present in constrained companies. However, having this said, the data utilized is not robust enough in any allocation measure utilized to foment statistical evidence in the three studied campus.

Shifting towards section B, all measures apart from HP indicate that whenever the bidder in the transaction is considered unconstrained, the premium associated with the transaction is higher. This fact can be explained by two drivers, first since they are considered unconstrained, they can more easily inflate their offering driving the deal value up, as lenders are willing to back-up these initiatives with more confidence. Secondly, these companies can be pursuing mostly unconstrained targets, that were shown in the previous paragraph to be aligned with higher acquisition premiums. The behaviour on the bidder and target gains is the same as described in the section A.

Comparing the results obtained with the ones found in the North American market, multiple discrepancies where found as also some bonding points. Contrasting with US, premiums are on average superior when one party involved is financially unconstrained. This finding is observable when the target or bidder are unconstrained, which differs from the US market where the bidder's financial constrained showed to have no significant impact. Regarding the target CAR, no concise conclusion was able to retrieve since different indicators yielded

different results. In line with the studies conducted in United States, bidders have greater CAR whenever there is a party financially constrained.

3. Regression analysis

In this section, the relevance of financial constraints on the realized gains from takeovers is observed on both targets' and bidders' groups. The statistical study carried out, aimed at exploring if the existence of financial constraints on bidders or targets influences the value at which the deal was concluded and abnormal returns with ceteris paribus conclusions.

$$Y_i = \alpha_0 + \beta_1 TFC_i + \beta_2 TNFC_i + \beta_3 BFC_i + \beta_4 BNFC_i + \sum_{k-1}^{n} \beta_k X_{k,i} + \epsilon_i$$

The above-mentioned regression was utilized to study different measures surrounding each deal. Y_i stands in one interpretation for the premium realized within the transaction, as a percentage, and in the following two variations as the CAR experienced for the bidder and target correspondingly. TFC_i *(*$TNFC_i$*)* is a dummy variable that assumes the value of 1 if in the observation *i* the target company is yielded as financially constrained (unconstrained). Consistently, BFC_i *(*$BNFC_i$*)* is a dummy variable that assumes the value of 1 if in the observation *i* the target company is yielded as financially constrained (unconstrained). $X_{k,i}$ denotes for a plurality of control variables that have shown in previous literature to be correlated with the behaviour of the different parties involved in the transaction (*diversifying acquisitions*, *hostile acquisitions*, the logarithm of the bidder total assets *bidder size*, the relative size of the two entities assets (*relative size*), in case the company was purchase entirely in cash (*All in cash)* or in stock (*All in stock*)). In addition, it was opted to insert in this regression the control variable (*Percentage Sought*) to investigate whether obtaining a totalitarian position, once the transaction is completed, induces relevant changes in the transaction behaviour for both parties involved. To further mitigate the risk of wrongheaded results, additional control variables were utilized: (*recession*) to regulate possible business cycles interferences, Tobin's Q and the ratio of free cash flow over the book value of assets (for both parties involved). Finally, to control for specific market characteristics that might be present and influential, three additional sets of dummy variables were included. To minimize the influence of transaction multiples, that fluctuate according to different periods, *Year* dummy variable was added and minimising sectorial effects both at a geographical spectrum and specialization practices, *Bidder Country* and *Bidder Industry*, according to Fama-French 12 industries index, dummy variables were incorporated.

Panel IV

Ordinary least squares regression for the model above described, where Y_i stands for the premium of the transaction in section A, target' CAR in section B and to bidder' CAR in section C. Standard errors were tested for robustness and bidders were clustered according to their DataStream identification. P-values are reported in brackets next to the parameter estimates. For improved visualization, *, **, *** denotes respectively a 10%, 5% and 1% significance level.

Section A – Premium (%)				
	Composite I Index	Payout Ratio	KZ	HP
TFC	-5.340	-7.949	-8.235	-4.186
	[0.155]	[0.361]	[0.374]	[0.306]
TNFC	4.719	-3.974	4.322	3.283
	[0.200]	[0.172]	[0.275]	[0.364]
BFC	15.065	12.911	6.911	14.004
	[0.228]	[0.253]	[0.143]	[0.165]
BNFC	7.991	1.737	-5.002	-0.317
	[0.217]	[0.884]	[0.271]	[0.991]
Diversifying	2.591	4.009	6.121	-4.918
	[0.328]	[0.550]	[0.502]	[0.486]
Hostile	16.171	-2.778	0.000	0.000
	[0.442]	[0.870]	[0.000]	[0.000]
Percentage Sought	-0.008	-0.067	0.248	0.250
	[0.332]	[0.811]	[0.164]	[0.225]
All in cash	-16.185*	-18.103**	-16.665*	-17.316*
	[0.078]	[0.046]	[0.081]	[0.063]
All in stock	-13.821*	-14.078*	-14.832	-14.695*
	[0.061]	[0.072]	[0.102]	[0.081]
Relative size	7.633***	7.482***	2.884	10.043***
	[0.000]	[0.000]	[0.154]	[0.000]
Bidder size	24.670***	24.246***	-3.193	28.377***
	[0.000]	[0.000]	[0.820]	[0.000]
Recession	5.511*	3.628	3.791	5.188
	[0.073]	[0.221]	[0.394]	[0.665]
T-Tobin's Q	-0.007	-0.007	0.083**	0.060
	[0.264]	[0.280]	[0.037]	[0.151]
B-Tobin's Q	0.000	0.000	0.000	0.000
	[0.626]	[0.905]	[0.706]	[0.641]
T-FCF/TA	-1.433	-1.351	-0.617	0.168
	[0.289]	[0.293]	[0.819]	[0.948]
B-FCF/TA	0.712	0.763	4.046	5.469**
	[0.292]	[0.205]	[0.102]	[0.048]
Constant	55.459***	57.256***	47.195***	55.344***
	[0.007]	[0.006]	[0.008]	[0.003]

Year Dummies	Yes	Yes	Yes	Yes
Bidder Industry Dummies	Yes	Yes	Yes	Yes
Bidder Country Dummies	Yes	Yes	Yes	Yes
Diff. (TFC-TNFC)	-10.059	-3.975	-12.557	-7.469
Diff. (BFC-BNFC)	7.074	11.174	11.913	14.321
Adj. R-squared	0.076	0.089	0.082	0.087
No. of observations	319	307	209	206

Section B – Target CAR (%)				
	Composite I Index	Payout Ratio	KZ	HP
TFC	5.425*	8.178	3.601*	4.441**
	[0.063]	[0.205]	[0.082]	[0.048]
TNFC	-0.181	-0.770	2.505	3.672
	[0.874]	[0.687]	[0.365]	[0.186]
BFC	1.607	-8.154**	-9.504	-6.917*
	[0.727]	[0.044]	[0.353]	[0.100]
BNFC	4.829*	3.267	-11.195*	0.349
	[0.092]	[0.588]	[0.090]	[0.883]
Diversifying	-5.810*	-5.368	-3.501	-2.582
	[0.075]	[0.110]	[0.399]	[0.571]
Hostile	13.710*	6.862	0.000	0.000
	[0.053]	[0.430]	[0.000]	[0.000]
Percentage Sought	0.054	-0.710	0.082	-0.043
	[0.683]	[0.571]	[0.501]	[0.784]
All in cash	5.288**	4.933*	6.002**	5.673**
	[0.044]	[0.078]	[0.025]	[0.033]
All in stock	-2.457**	-2.361	-2.749*	-3.217*
	[0.042]	[0.163]	[0.091]	[0.063]
Relative size	-3.192***	-3.044***	-3.100***	-2.895**
	[0.005]	[0.009]	[0.006]	[0.037]
Bidder size	-1.586	-1.942	-2.160	-0.623
	[0.589]	[0.505]	[0.394]	[0.859]
Recession	2.571	9.675**	7.692	3.334
	[0.436]	[0.018]	[0.103]	[0.705]
T-Tobin's Q	0.000	0.000	-0.035	-0.038*
	[0.000]	[0.000]	[0.113]	[0.065]
B-Tobin's Q	0.000	0.000	0.000	0.000
	[0.000]	[0.000]	[0.000]	[0.000]
T-FCF/TA	0.703	0.623	0.820	0.463
	[0.146]	[0.228]	[0.480]	[0.675]
B-FCF/TA	-0.372	-0.341	-1.809	-1.232
	[0.447]	[0.494]	[0.141]	[0.274]
Constant	11.898	11.496	10.347	6.713
	[0.313]	[0.328]	[0.149]	[0.394]
Year Dummies	Yes	Yes	Yes	Yes
Bidder Industry Dummies	Yes	Yes	Yes	Yes

Bidder Country Dummies	Yes	Yes	Yes	Yes
Diff. (TFC-TNFC)	5.606	8.618	1.096	0.769
Diff. (BFC-BNFC)	-3.222	-11.421	1.691	-7.266
Adj. R-squared	0.123	0.134	0.174	0.179
No. of observations	319	307	209	206

Section C – Bidder CAR				
	Composite I Index	Payout Ratio	KZ	HP
TFC	4.984***	0.829	2.777*	-3.019
	[0.005]	[0.675]	[0.092]	[0.270]
TNFC	0.166	-1.380	-1.639	-1.160
	[0.932]	[0.482]	[0.567]	[0.674]
BFC	1.019	3.276*	0.057	4.787**
	[0.564]	[0.055]	[0.961]	[0.047]
BNFC	0.448	0.815	7.421	-1.319
	[0.741]	[0.706]	[0.146]	[0.572]
Diversifying	-0.359	-0.241	-2.644**	-2.706**
	[0.747]	[0.833]	[0.031]	[0.042]
Hostile	-7.514	-17.177**	0.000	0.000
	[0.437]	[0.049]	[0.000]	[0.000]
Percentage Sought	-0.009	0.027	0.051	0.052
	[0.845]	[0.517]	[0.327]	[0.229]
All in cash	0.836*	1.106	0.958	1.224*
	[0.090]	[0.181]	[0.121]	[0.082]
All in stock	-0.703	-1.981	-0.431	-0.105
	[0.188]	[0.539]	[0.381]	[0.885]
Relative size	-0.145	0.260	0.147	0.093
	[0.643]	[0.398]	[0.703]	[0.771]
Bidder size	-0.888	-0.304	-0.768	0.128
	[0.388]	[0.755]	[0.545]	[0.844]
Recession	1.060	3.531	4.374	6.986
	[0.745]	[0.281]	[0.244]	[0.269]
T-Tobin's Q	-0.001	0.467	-0.001	0.011
	[0.308]	[0.392]	[0.356]	[0.423]
B-Tobin's Q	0.000	0.132	0.000	0.000
	[0.000]	[0.407]	[0.000]	[0.000]
T-FCF/TA	-0.184	6.333	-0.195	0.348
	[0.563]	[0.427]	[0.525]	[0.626]
B-FCF/TA	0.141	1.494	0.219	0.221
	[0.370]	[0.704]	[0.285]	[0.706]
Constant	-5.927	-4.294	-2.512	-2.293
	[0.313]	[0.328]	[0.149]	[0.394]
Year Dummies	Yes	Yes	Yes	Yes
Bidder Industry Dummies	Yes	Yes	Yes	Yes
Bidder Country Dummies	Yes	Yes	Yes	Yes
Diff. (TFC-TNFC)	4.818	2.209	4.416	-1.859
Diff. (BFC-BNFC)	0.571	2.461	-7.364	6.106

Adj. R-squared	0.063	0.049	0.044	0.061
No. of observations	319	307	209	206

The outcome of the regressions conducted are shown in Panel IV. The Panel IV is divided into three sections, being in section A the acquisition premium study conducted and in the sections B and C, the target abnormal and bidder abnormal return are overviewed respectively across the four indicators of financial constraints. At the end of each section, it is incorporated the difference between the dummy variables coefficients retrieved for indicating the level of financial constrain.

Contrasting with the findings obtained in the US market, in the European region, unconstrained targets seem to be subject of higher premiums (section A). Although no dummy variable (TFC/TFNC) proved to be statistically significant at the desired confidence intervals, the difference between indicators indicate such possible deduction on the four indicators utilized. Overviewing the role of bidder financial constraints, we are faced with the same limitations as in the analysis of the target, regarding the statistical significance of the coefficients obtained. Having this fact established, there is again a tendency present that suggests that bidders who are constrained pursue higher acquisition premiums, which could be a signal of the winner's curse. However, such conclusions cannot be made without having an in-depth investigation at the follow-up period after the acquisition announcement. Overall, the study on the transaction premium was not successful, as the coefficients that were being the object of study are not statistically significant in any indicator utilized.

Section B reports the second measure that this study explored, target materialized gains from the acquisitions. The latter is captured through target abnormal returns in the selected time window, [-5; +5] days, surrounding the announcement date. In three out of four measures, apart from Payout Ratio, the fact that the target is considered constrained, generates a positive abnormal return upon announcement. Pointing out the HP indicator, whenever the target is considered financial constraint, keeping everything else constant, the target company experiences an abnormal return of 4.44% with a p-value inferior of 5%. Overlooking the importance of the bidders' financial situation, some puzzling results were verified, as the KZ index showed results that are negatively correlated to the other measures. This materialization was already pointed out in previous literature (Almeida, Campello, & Weishbach, 2004). From our regression results, according to the Payout ratio and HP, when the bidder is financial constraint the target tends to observe a negative abnormal return, *ceteris paribus*, -8.15% and -6.92% respectively, being these results significant at a 5% and 10% significance level

respectively. Inversely, whenever the acquirer is tagged as unconstrained, as reported by Composite I index the target observes a positive abnormal return. In contrast, the KZ index indicates the opposite is (negative return), both at a 10% significance level.

Section C observes the reaction on the other side of the negotiation table by addressing the bidder' abnormal return upon deal announcement. In two of the measures, Composite I Index and in KZ index whenever the target is considered financial constraint the bidder realizes positive abnormal returns. Other things being equal, a bidder according to Composite I Index realizes a 4.98% higher abnormal return with a p-value of 0.5% when bidding for a constrained company. In line with Section B, the level of financial constraint at the bidder level, also proven to be relevant on the materialized acquirer abnormal returns. In consonance with the Payout Ratio and HP index, the acquirer when is financial constrained observes a positive excess return when completes an acquisition. From our regression results, according to the Payout ratio and HP, when the bidder is financial constraint, the bidder tends to observe a positive abnormal return, *ceteris paribus*, 3.28% and 4.79% respectively, being these results significant at a 10% and 5% significance level respectively.

These results could impel that these acquirers may choose more carefully, which targets they are going to purchase. According to the literature prevailing nowadays, under perfect capital markets, the management team should undertake all projects whose net present value is positive. If no budget restrictions where established, all initiatives should be accepted until the subsequent project has a null added value. However, the reality experienced by the investment board of companies can evade the aforementioned propositions. This fact is augmented if the company is perceived to be under financial distress situation. Creditors and shareholders urge to take a risk averse position when confronted with capital demand for new project financing, increasing therefore the discount rate applied. Thus, managers opt to propose only the projects that provide the greatest rate of return. The multiple capital market players can commend this possible behaviour approach, which ultimately leads to underinvestment. Instigating a confidence boost, resulting in a positive reaction upon the announcement acquisition.

Analysing the results of section B and C, predominantly the degree of financial constraints on acquired corporations indicates to perform a relevant part in influencing abnormal returns for both sides of the negotiation table, going in accordance with the findings existent in the current literature.

Overseeing the impact that the control variables implemented have in the multiple dependent variables, the results obtained to go in line with the discoveries made by previous authors. Whenever an acquisition was considered to be a diversifying move, it post a negative impact

on the target abnormal return (Gondhalekar, Sant, & Ferris, 2004) and bidders' abnormal return (Morck, Shleifer, & Vishny, 1990). Thus can be related to probable feared cross-border effects (Moeller & Schlingemann, 2005), conceivable agency problems resulting in culture clashes (Roll, 1986) & (Denis & McConnell, 2003) or/and managerial motivation to build conglomerates (Amihud & Lev, 1981). Focusing on hostile takeovers, it provided positive abnormal returns to target companies (Bange & Mazzeo, 2004) & (Comment & Schwert, 1995) & (Schwert G. W., 2000), while penalizing the bidders' group (Hubbard & Palia, 1999).

The initiative taken to include the percentage sought as a control variable failed to provide meaningful results across all three measures. On the other hand, controlling for the ratio of size between both parties involved proved to be significant across the premium on the transaction and the target abnormal return. Whenever the target size is greater in proportion to the bidders will be relatively more detrimental to target shareholders, as the acquisition of a larger target will induce greater management entrenchment (Mulherin & Boone, 2000). A puzzling observation emerged when it was observed that contrarily to the US market, the higher the relative size ratio is the acquisition premium will also be higher. This contrasting point could be driven by the controlling premium that is charged in consolidation strategies among market players with similar size or when a smaller player integrates a larger company. Controlling independently for the size of the bidder, evidence was found that the enlargement of the acquirer size induces higher transaction premiums (Moeller, Schlingemann, & Stulz, 2004).

Regarding the chosen payment method, acquisitions paid fully by cash are related to lower premiums than if they were financed through full stock payments being in both cases a decrease in premium, keeping everything else constant (Wansley, Lane, & Yang, 1983). When analysing the target abnormal returns, cash payments induces a positive abnormal return whilst stock payments tend to penalize the return obtained by the acquired entity shareholders (Loughran & Vijh, 1997) & (Cai, Song, & Walking, 2011). On the bidder side, only acquisitions that were paid fully by cash were statistical significant, being the coefficient positive (Huang & Walking, 1987) & (Franks, Harris, & Titman, 1991).

During recession cycles, the analysis conducted, shown that during these periods, it induced greater premiums, perhaps due to the augmentation of information asymmetry between bidders and targets (Fralich & Papadopoulos, 2018). The second spectrum where it proved to be statistical significant is on target abnormal return enabling a positive variation (Hovakimian, 2011) promoting the advantages of in-house financing when facing the existence of external markets glitches.

Controlling for possible overvaluation existing in the market, the acquired firm' Tobin Q proved to be inflate the transaction premium, indicating that companies who are trading at greater valuations, require the bidder to settle the transaction at a higher control premium (Lang, Stulz, & Walking, 1989). Nevertheless, greater target's Tobin Q diminish target's CAR. In addition, a raise in the bidder free cash flow also increases the premium (Lang, Stulz, & Walking, 1991).

4. Robustness tests

4.1 Propensity score matching

One problem that is intrinsic with most regression studies is bonded to the endogeneity problem that can prompt the refutation of any conclusions that were made previously. A root cause in this study conducted, is inherent to acquirer's role and opportunities on offer. Possible discrepancies within the bidders may influence their preferred acquisitions when comparing constrained or unconstrained targets, while those same characteristics may drive the settled transaction premium. Being that the case encountered, then the results obtained would be motivated by bidder characteristics in lieu of target attributes.

In order to contemplate such possibility, the propensity score matching proposed by (Rosenbaum & Rubin, 1983) was the instrument utilized to test for possible endogeneity problems. In order to undertake such methodology, one must collect a group of acquisitions that present no discernible differences on the acquirer and deal characteristics between them, in order to isolate the target constrained (treated group) and unconstrained targets (control group). Subsequently, transaction premiums and abnormal returns to both sides of the agreement can be compared on the two isolated groups. The hypothesis that should be corrupted is that due to the similar deal and acquirer characteristics, the tested measures should provide indistinguishable results. Due to this procedure for classifying observations, where the target company was not considered constrained neither unconstrained, were removed.

The bundle of deals collected were matched on a single scalar propensity score that comprehends the likelihood of a being classified as a constrained target (treated group) considering the bidder and deal specificities. The attributes established to determine identical acquirers were (degree of financial constraint, Tobin's Q and the ratio of free cash flow over total assets) and deal features (diversifying transaction, hostile transaction, payment method, recession period dummy and the relative size of acquirer to target). Panel V illustrates the results obtained for the means of the control and treat groups across the three different measures. In section A, the effect is tested on the targets' classification variation and on section B the test is identical but controlling for the effect on the bidders' classification.

Panel V

Section A: influence of target's financial position on premiums and abnormal returns: propensity score matching. To build this panel, a bundle of transactions was selected that presented no sizable dissimilarities in acquirer and transaction features, comparing then the constrained targets (TFC) with unconstrained targets (TNFC). P-values are reported in brackets next to the parameter estimates. For improved visualization, *, **, *** denotes respectively a 10%, 5% and 1% significance level.

		Composite I	Payout Ratio	KZ	HP
Premium (%)	Diff.	-17.535*	7.061	-22.106**	1.913
	p -Value	[0.087]	[0.483]	[0.045]	[0.840]
TCAR (%)	Diff.	3.410*	2.776	-0.469	9.061*
	p -Value	[0.072]	[0.185]	[0.938]	[0.067]
BCAR (%)	Diff.	5.142***	1.634	2.966	2.274
	p -Value	[0.004]	[0.335]	[0.147]	[0.197]

Section B: influence of acquirer's financial position on premiums and abnormal returns: propensity score matching. To build this panel, a bundle of transactions was selected that presented no sizable dissimilarities in target and transaction features, comparing then the constrained bidders (BFC) with unconstrained bidders (BNFC). P-values are reported in brackets next to the parameter estimates. For improved visualization, *, **, *** denotes respectively a 10%, 5% and 1% significance level.

		Composite I	Payout Ratio	KZ	HP
Premium (%)	Diff.	11.043	10.115	8.321	-2.789
	p -Value	[0.483]	[0.431]	[0.541]	[0.792]
TCAR (%)	Diff.	-10.589	1.844	-0.226	-4.484
	p -Value	[0.202]	[0.775]	[0.982]	[0.205]
BCAR (%)	Diff.	-0.908	-3.805	-1.046	-1.822
	p -Value	[0.594]	[0.411]	[0.728]	[0.190]

Once the propensity score matching was carry out, valuable observations can be retrieved from. The findings obtained despite not being statistically significant across the four measures, indicate that the differences in average values of the desired indicators of value creation, premium and abnormal returns to both parties, go in line with the multivariate analysis conducted in chapter 3. Emphasizing Composite I, the average excess return experienced by bidders is 5.14% higher whenever the target is regarded financially constraint, being this difference statistically significant with a p-value inferior to 0.01. This result induces the aforementioned conclusion, that once the acquirer and transaction features are controlled for econometrically, the gains experienced by it are propelled by the financial constraint status of the target entity.

To further certificate whether this condition could be spurious, in section B of Panel V, the methodology was conducted but on a symmetrical perspective. Contrarily, the deals where compared for those that encompass a constrained acquirer (treated group) with unconstrained acquirers (control group) keeping constant the target and deal specificities. These findings culminate in a failure of the effect played by the bidders' financial condition on an acquisition. Concerns may rise given the fact that the regression conducted in chapter 3 can be overemphasizing the effect of acquirer financial status on acquisitions.

Comprehending the information provided with this analysis, propensity score matching corroborates further the indication, that presence/absence of financial constraints on the acquired entity, affects the value appreciation on the transaction.

4.2 Estimation Window

In order to see to what extent the methodology adopted was relevant, and the conclusions retrieved were not applicable just to set of restrictions imposed, a second analysis was conducted. Besides the propensity score matching, the verification conducted was to validate the accuracy of the same study but focusing on the time window [-3; +3] days upon deal announcement. The panels with the regression results are presented in Appendix II, being the target and bidder abnormal return analysed in section A and B respectively.

All in all, when we overview the results, it was found that the conclusions remain unaltered using event windows ending three days after the announcement date instead of the fifth day following the acquisition decision.

Both these initiatives diminished largely the possibility that the effects observed with the analysis conducted so far could be spurious by an external factor not captured in the methodology embraced.

Conclusion

With economy entering in a deep financial crisis originated by the Covid-19 virus, a surge of mergers and acquisitions is expected to arise in the multiple sectors in the economy once the recession peak is overtaken. This come at time that in the European region many companies were still undergoing the recovering process from the latest financial crisis. The effect of financial constraints on the multiple interactions existing in the market is becoming progressively a studied topic by the academics. The accurate measurement of those indicators can inform more competently the society for the impact that different macroeconomic cycles can have, enabling the multiple stakeholders to prepare themselves with enhanced strategic plans.

Focusing merely on the value creation, the potential hidden underneath companies that are under financial constraints is becoming more a focus point on the investor agenda, as the materialization of such value is perceived increasingly attainable.

For the analysis conducted, a sample of European acquisitions data was collected for the period encompassed between 1985 and 2019, covering within multiple economic cycles. Resorting to a multiplicity of financial constraints indicators, it was possible to separate the companies considered unconstrained and constrained. Henceforth, the impact of financial constraints was analysed on the gains realized upon the acquisition announcement on the bidder and target groups.

This dissertation, contributes with direct manifestations, that on the whole, acquisition of constrained entities are value-magnifying initiatives for acquirers as well as targets. Target abnormal returns are superior and statistically significant higher when targets are financially constraint. Likewise, bidders experience superior returns when targets are financial constraint, as the sphere of prospective valuable initiatives is perceived to be superior and current uncharted profitable projects are attainable. Recurring to the M&A process, acquired companies may encounter their access to external and internal capital markets augmented/facilitated. This will ultimately unlock the projects embraceable, propelling investment and decreasing investment-cash flow sensitiveness, among other effects (Erel, Jang, & Weisbach, 2015).

Contradictorily to the US market, on a univariate analyse, where the firms that were considered financial unconstrained shown to have higher acquisition premiums. On some indicators, in the European region, unconstrained targets were subject to higher acquisition premiums. This failure in consensus does not allow retrieving righteous conclusions, however the factors driving such behaviour should be inspiration for further investigations. Sustaining the indefinite

conclusions, on a univariate analysis, financial constraints showed no significant effect impact on the acquisition premium on a multivariate analysis model.

The dissertation undertaken provides a valuable perspective of what is regarded to be a very opaque event, since many times the drivers behind the acquisition process are ambiguous for the various market players. The different instruments utilized, managed to assess the impact financial constraints have on the M&A mechanism. The results obtained complement the literature existent on M&A and financial constraints, providing insightful information of the European region practices.

Appendix I: Variable Definitions

Financial Constraints Measures

Variable	Definition
Composite I Index	All firms in the extracted database were organized based on *size, interest coverage ratio, dividend payout ratio,* and the *KZ index* separately. Once the desired ratios are computed, companies are assigned a score of 0 to 5 for each distribution. In order to a company to be considered under this composite, it must be possible to retrieve at least three of the above mentioned four criteria for that entity. The next step regards the attribution of an overall score to each firm, weighted average ranks, being the weights attribution based on the number of available components. The lower the overall score, it implies the company to be under higher the financial constraints. Finally, the firms above the 70^{th} percentile classified as unconstrained companies while the firms below the 30^{th} percentile classified as financially constrained companies.
Composite II Index	The principles of allocating companies to the financial constrained or unconstrained group in this indicator are equal to *Composite I Index*, being the only modification relying on the fact that this composite dismisses *KZ index* and *size* for the ranking's allocation.
Payout Ratio	Taking into consideration "(Hubbard & Palia, 1999), *Dividend payout ratio* is defined as the two-year average of the dividend payout ratio from the preceding annual reports at each point in time. Payout ratio is defined as the sum of dividend plus stock repurchases divided by operating income as in (Jagannathan, Stephens, & Weisbach, 2000)". Regarding limits imposed, payout ratio assumes the value of 1 if the extracted value is superior to 1 or if the firm in question reports a negative operating income and distributes dividends nonetheless, (Hadlock & Pierce, 2010). Once we calculated the past two years' distribution ratio for the entities existent in our dataset, observations were ranked accordingly to this value within the [0,5] range with 5 signifying the utmost unconstrained entities (by having the maximum distribution percentage) in order to be in accordance with the above-mentioned measures. Firms above the 70^{th} percentile classified

as unconstrained companies while firms below the 30th percentile are labelled as financially constrained companies.

KZ Index

This measure was initially proposed by (Lamont, Polk, & Saaá-Requejo, 2001). In the formula *CashFlow* represents the ratio of the entity' cash flow over the preceding year amount of PPE. *Tobin'sQ* is Tobin's Q and *Leverage* represents total debt divided by the sum of the latter plus value of shareholder's equity. *Dividends* embodies the ratio of the sum of dividends and stock repurchases over the preceding year amount of PPE. *CashHolding* denotes the entity's capital ownings, extracted as the ratio of cash and short-term investments over the preceding year amount of PPE.

*KZindex = -1.002*CashFlow + 0.283*Q + 3.139*Leverage - 39.368*Dividends -1.315*CashHoldings*

Like in the previous variables, and in order to maintain the consistency in our approach, once the *KZ index* is extracted for the totality of companies in our sample, observations were ranked accordingly to this value within the [0,5] range with 5 signifying the utmost unconstrained entities (by having the top KZ index). Firms above the 70th percentile are labelled as unconstrained companies while firms below the 30th percentile are labelled as financially constrained companies.

HP Index

This measure is in accordance to the proposal by (Hadlock & Pierce, 2010):

*"HP= -0.737*Size + 0.043*Size^2 – 0.040*Age*

where *Size* is the logarithm of the book value of assets (AT) and *Age* is the length of time (in years) since the company become publicly listed on DataStream. Just like the authors proposed, *Size* is winsorized at (the log of) $4.5 billion and *Age* at 37 years". To account for inflation, *size* is corrected for inflation levels for the respective CPI level from the OECD region, being the index values retrieved from the institution website. Once the *HP index* is extracted for the totally of companies in our sample, observations were ranked accordingly to this value within the [0,5] range with 5 signifying the utmost unconstrained entities (by having the top *HP index*). Firms above the 70th percentile classified as unconstrained companies while firms below the 30th percentile classified as financially constrained companies.

Other Variables

Variable	Definition
Premium	As the author (Officer, 2003) defined: "The aggregate amount of each form of payment offered to target shareholders (cash, equity, debt, etc.)" divided by the market value of the target 43 days prior to the bid announcement multiplied by the sought sake. As long as the value extracted belongs to the range [0,2], no alterations are made. If that is not the case, the ratio of "the final (and then the initial) price per share of target stock offered by the bidder" belongs to the range [0,2], no alterations are made. If none restrictions are satisfied, it is considered to be missing.
Target 11-day CAR (%)	"Cumulative target percentage abnormal return in a [-5, +5] time window adjacent the acquisition announcement." (Khatami, Marchica, & Mura, 2015)
Bidder 11-day CAR (%)	"Cumulative bidder percentage abnormal return in a [-5, +5] time window adjacent the acquisition announcement." (Khatami, Marchica, & Mura, 2015)
Total Assets (€m)	"Total assets." (Khatami, Marchica, & Mura, 2015)
Sales (€m)	"Total sales." (Khatami, Marchica, & Mura, 2015)
Cost of debt	Cost of Debt is computed by dividing the Interest Expense by the average of the Total debt from the preceding two years.
Coverage ratio	It is ratio of the Operating Income before Depreciation (EBITDA) divided by Interest Expense.
Total debt/MVE	"Is the ratio of the sum of Long-Term and Current Debt divided by Common Shares Outstanding times the price at the end of the year."
Tobin's Q	From (Hadlock & Pierce, 2010), "Tobin's Q: Total Assets minus Common Equity minus Deferred Taxes plus Shares Outstanding times Price divided by Total Assets."
Cash holding/PPE	From (Hadlock & Pierce, 2010), it is computed as the "ratio between Cash and Short-Term Investments divided by the lagged value of Property, Plant and Equipment."
CapEx/TA	"Capital Expenditure normalized by lagged value of Total Assets." (Khatami, Marchica, & Mura, 2015)

PPE/TA (%)	"Property, Plant and Equipment normalized by Total Assets."
FCF/TA	Free Cash Flows normalized by Total Assets; It is the ratio of the Operating Income Before Depreciation minus Gross Interest Expense minus preferred Dividends minus Common Dividend, divided by Total Assets.
Trans. Value (€m)	Value of Transaction in € million retrieved from Thomson One Investment Banking platform
Diversifying	"Dummy equal to 1 if bidder and target have different 2-digit SIC codes." (Khatami, Marchica, & Mura, 2015)
Hostile	"Dummy equal to 1 if TOIB reports the acquisition to be hostile." (Khatami, Marchica, & Mura, 2015)
All in Cash	"Dummy equal to 1 if TOIB reports the acquisition to be fully settled in cash" (Khatami, Marchica, & Mura, 2015)
All in stock	"Dummy equal to 1 if TOIB reports the acquisition to be fully settled in stocks" (Khatami, Marchica, & Mura, 2015)
Relative size	"Natural logarithm of target total assets divided by bidder total assets" (Khatami, Marchica, & Mura, 2015)
Recession	Dummy takes the value of 1 if the deal was announced in the following years: 1982, 1983, 1993, 2002, 2003, 2008, 2009 and 2010, according to (Patterns of Euro Area and US macroeconomic cycles - what has been different this time?, 2011)
Average book leverage (%)	From (Palepu, 1986), corresponds to the "ratio of Long-Term Debt divided by the sum of Preferred and Common Equity averaged over the three fiscal years prior to the acquisition announcement."
Size	"Total Assets in €m." (Khatami, Marchica, & Mura, 2015)
Market to book	From (Palepu, 1986), it is the "ratio of the market value of the common equity to the book value of Equity"
Average PPE/ TA (%)	From (Billett & Xue, 2007), it corresponds to the " ratio of Plant, Property and Equipment divided by Total Assets averaged over the three fiscal years prior to the acquisition announcement."

Appendix II: Robustness Panels

Ordinary least squares regression for the model above described, where Y_i stands for target' CAR over the time window [-3; +3] surrounding the announcement date in section A, to bidder' CAR over the time window [-3; +3] surrounding the announcement in section B. Standard errors were tested for robustness and bidders were clustered according to their DataStream identification. P-values are reported in brackets next to the parameter estimates. For improved visualization, *, **, *** denotes respectively a 10%, 5% and 1% significance level.

Section A - Target CAR (%)				
	Composite I Index	Payout Ratio	KZ	HP
TFC	3.626*	3.184	4.242*	1.842
	[0.096]	[0.507]	[0.052]	[0.680]
TNFC	-0.278	-0.715	1.137	3.672
	[0.597]	[0.885]	[0.428]	[0.321]
BFC	1.122	-7.812**	-9.504	-6.917*
	[0.857]	[0.060]	[0.353]	[0.100]
BNFC	3.037*	-0.803	-11.195*	2.896
	[0.064]	[0.890]	[0.090]	[0.838]
Diversifying	-5.981**	-6.256**	-5.171	-4.879
	[0.041]	[0.042]	[0.152]	[0.235]
Hostile	-14.435**	-10.151	0.000	0.000
	[0.036]	[0.250]	[0.000]	[0.000]
Percentage Sought	0.055	0.073	-0.056	-0.034
	[0.655]	[0.536]	[0.695]	[0.815]
All in cash	5.788**	6.512**	5.955**	5.872*
	[0.034]	[0.025]	[0.033]	[0.062]
All in stock	-2.957**	-2.316*	-2.377*	-2.843*
	[0.046]	[0.061]	[0.077]	[0.052]
Relative size	-2.884***	-2.869***	-3.018***	-2.663**
	[0.005]	[0.007]	[0.002]	[0.031]
Bidder size	-1.073	-0.771	-1.648	-1.258
	[0.698]	[0.957]	[0.551]	[0.550]
Recession	2.895	7.705	8.003*	7.042
	[0.399]	[0.133]	[0.089]	[0.312]
T-Tobin's Q	-0.010***	-0.011***	-0.037**	-0.037**
	[0.000]	[0.000]	[0.039]	[0.026]
B-Tobin's Q	0.000	0.000	0.000	0.000
	[0.000]	[0.000]	[0.000]	[0.000]
T-FCF/TA	0.837*	0.663	0.520	0.406
	[0.086]	[0.194]	[0.586]	[0.668]
B-FCF/TA	-0.422	-0.325	-1.018	-0.608
	[0.381]	[0.488]	[0.325]	[0.516]
Constant	12.809	12.747	12.053	13.548
	[0.340]	[0.272]	[0.437]	[0.495]

Year Dummies	Yes	Yes	Yes	Yes
Bidder Industry Dummies	Yes	Yes	Yes	Yes
Bidder Country Dummies	Yes	Yes	Yes	Yes
Diff. (TFC-TNFC)	3.904	3.899	3.105	-1.830
Diff. (BFC-BNFC)	-1.915	-7.009	1.691	-9.813
Adj. R-squared	0.130	0.121	0.203	0.209
No. of observations	319	307	209	206

Section B - Bidder CAR				
	Composite I Index	Payout Ratio	KZ	HP
TFC	-2.470*	0.619	1.745*	3.181**
	[0.081]	[0.648]	[0.481]	[0.028]
TNFC	-0.475	-0.178	-1.471	-1.231
	[0.771]	[0.902]	[0.370]	[0.565]
BFC	-0.140	-1.949	1.409	0.142
	[0.932]	[0.150]	[0.586]	[0.886]
BNFC	-1.338	0.337	1.263	12.289***
	[0.160]	[0.838]	[0.412]	[0.010]
Diversifying	0.336	0.307	-1.297	-1.391
	[0.722]	[0.758]	[0.222]	[0.199]
Hostile	7.205	2.427	0.000	0.000
	[0.090]	[0.607]	[0.000]	[0.000]
Percentage Sought	0.011	0.022	0.061	0.053
	[0.764]	[0.550]	[0.074]	[0.180]
All in cash	0.836*	0.958	1.224*	1.041
	[0.090]	[0.121]	[0.082]	[0.157]
All in stock	-0.703	-0.431	-0.105	-0.352
	[0.188]	[0.381]	[0.885]	[0.410]
Relative size	-0.112	0.056	-0.055	0.023
	[0.651]	[0.826]	[0.813]	[0.940]
Bidder size	0.288	0.098	0.698	0.506
	[0.744]	[0.915]	[0.221]	[0.649]
Recession	-0.119	0.149	5.840	4.499
	[0.952]	[0.947]	[0.364]	[0.115]
T-Tobin's Q	0.000	0.000	0.010	0.010
	[0.902]	[0.948]	[0.392]	[0.372]
B-Tobin's Q	0.000	0.000	0.000	0.000***
	[0.141]	[0.185]	[0.236]	[0.002]
T-FCF/TA	-0.219	-0.219	0.186	0.082
	[0.361]	[0.357]	[0.754]	[0.875]
B-FCF/TA	0.175	0.117	0.260	0.416
	[0.211]	[0.488]	[0.607]	[0.362]
Constant	-3.286	-2.013	-4.074*	-6.097*
	[0.644]	[0.478]	[0.094]	[0.070]
Year Dummies	Yes	Yes	Yes	Yes
Bidder Industry Dummies	Yes	Yes	Yes	Yes
Bidder Country Dummies	Yes	Yes	Yes	Yes

Diff. (TFC-TNFC)	-1.995	0.797	3.216	4.412
Diff. (BFC-BNFC)	1.198	-2.286	0.146	-12.147
Adj. R-squared	0.050	0.092	0.041	0.023
No. of observations	319	307	209	206

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