HOW DO TAKEOVERS CREATE SYNERGIES? EVIDENCE FROM FRANCE

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Abstract:

Based on bidder-target asymmetry, our study investigates the source of synergy gains derived from corporate takeovers and their specific contribution to bidder value creation. Prior researches have focused on the relevance of only one source of potential synergy. We find that French takeovers tend to create long-term operating and financial synergies. These two synergy components are positive and significant with a large contribution of the former. Furthermore, cutbacks in investment expenditures represent the most significant source of operating synergies, while post-acquisition market power is non-significant. Moreover, both total and operating synergies are higher in focused takeovers initiated by "value" as opposed to "glamour" bidders. Lastly, financial synergies are likely to arise from bidder leverage level and target relative size.

Key words: takeovers, operating synergy, financial synergy, investment cutbacks.

1. Introduction

Research on corporate takeovers, as contributors to an external growth strategy, has highlighted the question of expected value creation following a M&A and placed at the center of academic debate the issue of how to distribute the value created between the firms involved. The empirical results on bidder performance are controversial. They have frequently been analyzed on the basis of different theoretical assumptions such as synergistic gains, market for corporate control, management behavioral bias, agency costs of free cash-flow and, lastly, the market timing

hypothesis. In any event, synergy gains are the primary motivation of the bidder firm and arise from multiple sources: operational synergies related to the operating cycle (revenue increase, investment cutbacks and market power, and financial synergies (risk reduction through diversification, lower bankruptcy risk…). Lastly, synergies can be attributed to improved operating efficiency and reduced cost of inefficient management.

In our study, we investigate the nature of long-term post-acquisition synergies and their specific contribution to bidder shareholder gains. Our approach differs from prior research that examined the relevance of each of these synergy components, often focusing on only one potential source of synergy gains. In fact, Devos et al. (2009) was the first study to investigate the different sources of synergy and their relative magnitude in the U.S.A. market, while our study is based on a sample of 59 French takeovers and covers the period from 1999 to 2011. We find that French takeovers create long-term gains with double synergistic sources: operating and financial. These synergy gains are positive and significant with a large contribution of the former. Furthermore, decomposition of operating synergies reveals positive and significant investment expenditure cutbacks, a negative but non-significant effect on operating income and no impact in terms of market power. Multivariate analysis indicates that both total and operating synergies are higher in focused takeovers initiated by "value" bidders. In addition, the small relative size of the target firm contributes to positive operating synergies. Lastly, financial synergies arise to a sizable extent from bidder leverage level and target relative size.

The remainder of this article is organized as follows. Section 2 reviews the literature on the sources of synergies. Section 3 explores the explanatory factors pertaining to synergy components. Section 4 successively presents sample data, methodology, and empirical results. Section 5 concludes the article.

2. The sources of acquisition synergies: A literature review

Since the 1990s and in a context of market globalization, corporate control transactions have grown, leading to lower competition intensity due to the increased market power of the firms having merged. Markedly different from previous M&A waves, the two recent waves (1995-2001 and 2004-2007) are primarily characterized by inter-industry relatedness, friendly transactions and cross-border deals. As regards the sources of bidder synergy, it has received little attention in the literature, even though the different components of synergy gains and their relative contributions are of prime importance to the bidder firms. Higher operating synergies are synonymous with revenue increase, cost savings, investment cutbacks and greater market power. Indeed, enhanced efficiency with regard to productive assets improves the operating cash flows, leading to heightening of the firm's value. As for financial synergies, they encompass tax savings and decreased bankruptcy risk through diversification of the merged entity, which generates lower weighted average cost of capital. Lubatkin (1983) identifies synergies derived from economies of scale and cost savings, from the

merged entity's market power, and from improvement in the risk rating achieved by the latter. According to Wang and Xie (2009), synergies are carried out by combining and optimizing productive assets following a change in control. The authors contend that synergy gains may be attributed to economies of scale and to heightened bargaining power, and that they effectively enhance growth potential. They thereby justify the premium paid by the acquirer to take control of the target. On the basis of this discussion, we propose the following hypothesis:

H1: corporate acquisitions create significant long-term synergy gains for the bidder.

Operating synergies arise from enhanced productive efficiency, which in turn leads to improved operating profits. Productive efficiency can also be achieved by reducing the working capital through savings in capital expenditures. According to Wang and Xie (2009), the savings include economies of scale and scope and are occasioned by combining business with functional forces. They also involve stronger growth with regard to new or previously existing markets, which in turn engenders increased market power on account of larger market share. Greater market power allows the merged company to benefit from better pricing conditions and delivery terms from its customers and suppliers. Such a situation leads to higher incomes and/or lower costs, thereby increasing operating profits. Analysis of operating profit does not dissociate production efficiency from the aforementioned market power effect.

When the productive assets of the firms involved in M&A are combined, operating synergies are generated, and they are likely to increase the expected cash flows. Using the discounted cash-flow model, this positive impact entails, if everything remains constant, an increase in the firm's value. However, prior studies analyzing post-acquisition operating performance show contrasting results. Some of them report relatively limited improvement, while others underline significantly impacted operating performance (Halkos and Tzeremes (2013); Yen and André, 2007; Kruse et al., 2007; Rahman and Limmack 2004; Linn and Switzer, 2001; Healy et al. 1992)). On the other hand, studies such as those of Yeh and Hoshion (2002) and Clark and Ofek (1994) reveal a significant decline in post-acquisition operating performance, and others underscore only an insignificant impact on operating performance (Dutta and Jog, 2009; Martynova et al. 2006; Sharma and Ho, 2002; Ghosh, 2001).

In a context of industry similarity, M&A often cause lowered competition intensity. Higher market power (pricing policy, payment terms…) for the combined firm constitutes a potential source of synergies functioning at the expense of the different stakeholders (customers, suppliers). However, given an efficient combination of the productive assets, customers can profit from resultant price advantages, which mitigate the effects of diminished competitive intensity (Focarelli and Panetta, 2003; Bernard et al. 2010). In addition, there occurs an increase in selling prices that contributes to improved firm revenues. In either case, the increased operating margin (selling prices effect and/or cost effect) attests to value creation arising from greater market power. As for empirical results on the competitive effects of M&A, they are contrasted. Kim

and Signal (1993), Karceski et al. (2005) and Garmaise and Moskowitz (2006) show that merged firms are likely to have more market power and can change the terms of trade. Other findings such as those of Focarelli and Panetta (2003) and Gugler et al. (2003) are inconclusive. Taken as a whole, this research motivates the following hypothesis.

H2: Operating synergies constitute a significant component of total synergies.

In literature, several authors agree that financial synergies arise from tax savings, risk reduction by diversification in a conglomerate takeover context, bankruptcy risk decrease due to the size effect (Fama and French, 1993), increased post-acquisition debt capacity and lower cost of capital. As for their effects, financial synergies engender lower weighted average cost of capital, which leads to an increase in the post-acquisition firm value. Financial synergies also contribute to higher operating cash-flows of the merged firm by allocating the free cash-flows from one firm to the other, and this mechanism creates positive NPV investments. A consolidation strategy allows for an increase of the post-acquisition firm's value. Empirically, Hayn (1989), Dhaliwal et al. (2005) and Devos et al. (2009) show that the financial synergies are able to motivate takeovers strategies. We consequently propose the following hypothesis.

H3: Financial synergies are a significant source of total synergies.

3. Explanatory factors of synergy sources: A literature review

A growing body of literature is focused on the intrinsic and extrinsic determinants of bidder value creation (destruction). In this context, our study analyzes the determinants of the different sources of long-term synergy gains accruing to bidders. Several relatively recent studies show that horizontal corporate M&A create more operating synergies than do diversifying M&A and that the greater the degree of similarity between the respective sectors of the merging firms, the higher the potential for synergy gains (Agrawal et al. (1992), Healy et al. (1992), Lang and Stulz (1994), Bae et al. (2002), Devos et al. (2009), Rahman and Lambkin (2015) show. On the other hand, according to Ghosh (2001), Campa and Kedia (2002), Graham et al. (2002) and Kruse et al. (2007), conglomerate acquisitions tend to outperform focused acquisitions. Lastly, Linn and Switzer (2001), Sharma and Ho (2002) and Powell and Stark (2003) find an insignificant relationship between potential synergy gains and industry relatedness. As the majority of studies nonetheless provide evidence for a positive relationship between interrelated deals and synergies, we assume the following:

H4: Focused corporate acquisitions create more synergies than diversifying ones

According to Rau and Vermaelen (1999), André et al. (2004) and Sudarsanam and Mahate (2003), the acquiring companies with a Market to book (MTB) lower than 1 ("value firm") exhibit higher abnormal returns than those with a MTB greater than 1 ("glamour firm"). "Value" bidders are inclined to undertake external growth strategies so as to compensate for a lack of organic growth opportunities. Capital markets are often skeptical about the "growing" bidder's ability to integrate other companies during this kind of process (Lakonishok et al. 1994). Conversely, Lang et al. (1994) and Morck et al. (1990) show that "growing" bidders are likely to benefit from favorable market opinion when the acquisition is announced. Furthermore, Hamza (2009) conclude that when the bidder's growth potential is lower than the target's (Bidder MTB/ target MTB ratio), bidder value creation is stronger. All in all, operating performance is negatively related to the bidder market to book.

H5: Bidders with low MTB create more synergies than bidders with high MTB

The impact of target relative size on post-acquisition bidder performance remains controversial. Acquisition of large companies can entail integration difficulties, favor CEO power concentration, and lead to increased agency costs. On the other hand, a large target is likely to mean economy of scale and/or scope and market power; for instance, its existence can enable the merged entity to reduce financing costs and distress risk (Fama and French, 1993), thereby decreasing the cost of capital. Previous studies (Switzer 1996; Linn and Switzer, 2001) argue that acquisition of a relatively large target significantly improves long-term post-acquisition performance. Other studies highlight a negative impact on bidder performance (Clark and Ofek, 1994; Yen and André, 2007), while still others document an insignificant relationship between post-acquisition synergy and target relative size. All in all, the literature supports the argument that the magnitude of operating and financial synergies is related to target size.

H6: Target relative size significantly affects synergy gains

Jensen (1986) supports the disciplinary effect of debt that helps to guarantee long-term repayment and contributes reducing the agency costs of free cash flows. However, even while generating tax savings, high firm leverage can lead to financial distress and significantly increase capital costs. Harford (1999), Ghosh and Jain (2000) and Yen and André (2007) show a positive relationship between a high level of bidder debt and post-acquisition performance. In contrast, Clark and Ofek (1994), Switzer (1996), Linn and Switzer (2001) document insignificant empirical results. Our conclusion is that pre-acquisition bidder leverage is associated with heightened financial synergies.

H7: Pre-acquisition bidder leverage is positively associated with financial synergies
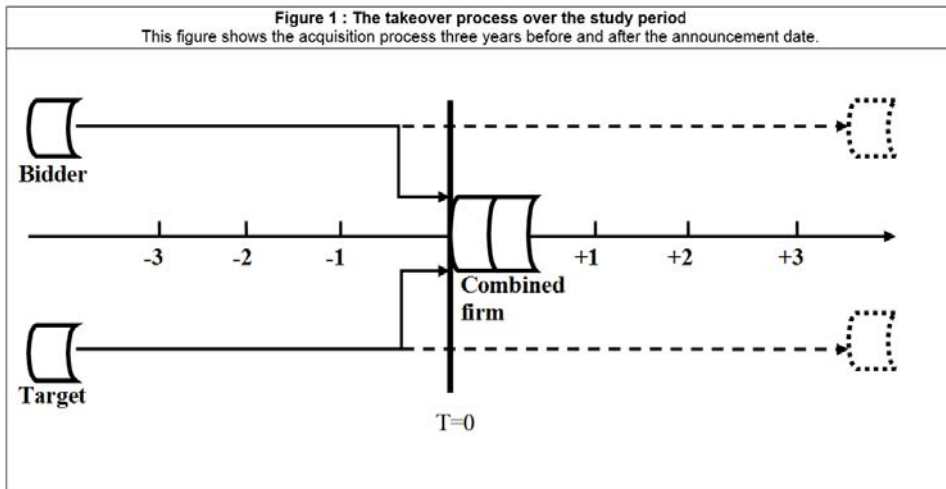
4. Data and Methodology

4.1 Data

Our research analyzes the nature of synergy gains arising from the strategic acquisition process and their specific contributions to bidder value creation in a French context. The study focus also on the determinants of each component of long-term synergy gains from the standpoint of the bidder. Data on takeovers were collected from the "Autorité des Marchés Financiers" (AMF) database. Our study covers the 1999-2011 period with an initial sample of 197 takeovers: cash offers and stock swap acquisitions. We excluded non listed bidding firms and takeovers for which the AMF database did not provide information on the deals ("Note d'information"). We likewise excluded financial and banking companies (SIC codes between 6000 and 6999, Barber and Lyon, 1996; Sharma and Ho, 2002) insofar as they have different operating, financial and risk-based characteristics. The final sample includes 59 takeovers. Accounting and financial data were collected from, Thomson One Banker database, while annual company reports and takeover documents were provided by the AMF website. Table 1 presents the sample selection procedure.

Table 1 : Sampling procedure

Selection criteria	Number of deals
Initial sample of French takeovers over the period 1999-2008	197
18 financial and banking firms (SIC codes between 6000 and 6999).	43
Non-listed bidding firms, firms with missing data and recently established bidders.	81
Bidder and/or target without control firm.	14
Final sample	**59**

In reference to figure 1 on the acquisition process, we compare the post-acquisition performance of the merged entity with the performances of target and bidder control firms. We use the Barber and Lyon (1996) approach, which documents the fact that the control firm did not undertake takeovers during the study period (2 years prior and three years after the acquisition). The control firms are matched in terms of industry and size (between 70% and 130% of total assets).

Appendix 1 reports the distribution of our sample across activity sectors. The deals involve 7 activity sectors. The most represented sector is the industry sector with 23 deals, while the least represented sector is the Petroleum and Gas sector with 3 deals.

Figure 1 : The takeover process over the study period
This figure shows the acquisition process three years before and after the announcement date.

4.2 Synergy assessment process

Our empirical validation approach is based on two important contributions to literature, those of Bradley et al. (1988) and those of Devos et al. (2009). The synergy gains'-value is obtained by the difference between the present value of the capital cash flows of the merged entity and the aggregated present values of the capital cash flows of both the target control firm and the bidder control firm. To this end, we use financial and accounting forecasting data.

The combined firm forecasts for the first three post-acquisition years may present significant errors. Some studies have questioned the ability of financial analysts to provide accurate financial post-acquisition forecasts and they show that the potential error of analysts is 3 times higher than normal. To overcome this limitation, we propose an alternative approach that provides forecasts for control firms. This method contributes to the compilation of more accurate accounting and financial data. Appendix 2 presents our assessment approach with regard to operating, financial and total synergies.

For a relevant comparison of the different sources of post-acquisition synergies, we divide the value of the synergy gains by the market value of the involved firms, and thereby eliminate the size effect (Healy et al. 1992; Agrawal and Jaffe, 2001). Some studies divide the value of synergies by the total assets of a firm, thereby ruling out its potential growth in the M&A context. In addition, we decompose synergies into operational and financial synergies. Garzella and Fiorentino (2014) find that 75.76% of potential synergy gains are associated with operating and financial synergies. According to Huyghebaert and Luypaert (2013), operational synergies result either from an increase in operating revenues or by increasing savings in capital expenditure. To conclude, we divide the operational synergies into two components:

revenue increase and investment cutbacks, our objective being to examine the individual effect of each component (see Appendix 3).

4.3 Description of the relevant variables

Our study examines whether French takeover operations pave the way to synergy gains for the acquirer. Based on the methodology of Devos et al (2009), we to determine, first, the value of the total synergy (TS) and its components based on operational synergy (OS), financial synergy (FS), increase of income (RI) and investment cutbacks (CUT), secondly, the factors affecting the value of synergy gains.

To determine whether the nature of takeover transaction affects the extent of synergy gains, we use the following explanatory variables: FOCDIV a dummy variable that equals one if the bidder and the target have two-digit main industry codes, and zero otherwise. RSIZE is the relative effect of target size, which is equal to total target assets divided by total bidder assets. With regard to synergistic takeovers, this variable remains controversial (Yen and Andre 2007). We examine whether purchaser indebtedness (Bidder Leverage), which is equal to the book value of debt, significantly affects takeover synergies. Moreover, to estimate the effect of the past performance of the acquirer on synergy gains, we use the MTB ratio, which is equal to the ratio of market value of equity to book value of equity.

In addition, we use control variables such as: MOP (method of payment), a dummy variable which is equal to one if the transaction is financed by cash and zero if not; type of operation (OT) takes a dummy variable equal to one if it is a tender offer and zero otherwise. Finally, we use the bidder liquidity (BIDLIQUI), which is equal to cash and short-term investments. Appendix 4 describes the set of dependent and independent variables employed in our empirical study.

5. Empirical analysis

In this article, we analyze the synergy components of the merged entity and their relative contributions to long-term total synergy gains, after which, we examine the factors that influence the magnitude of synergies, which are compared with those created by the target control firm and the bidder control firm.

5.1 The synergy components

Table 2 presents the results with respect to the sources of synergies of the merged entity and the relative contribution of each total synergy component. We point out that 3 years post-acquisition, total synergy gains (TS) are about 12.37%. In addition, we show that operating synergies (OS) are the principal component of TS and totaled 10.5% (85% of TS), whereas financial synergies (FS) amounted to about 1.87% (15% of TS). The main initial finding is that TS and each component (OS and FS) are significantly higher than the respective aggregated synergies of the control firms.

These results are in line with those of Houston et al. (2001) and Dong et al. (2006). While the relevance of the relative contribution of the OS has often been confirmed in several studies, however, other studies underscore performance measurement challenges and problems. In addition, we analyze OS decomposition and show that investment cutbacks contribute positively and significantly in 15.2% of OS and offset the negative but non-significant impact of the revenue decrease (-5.32%). This result is consistent with those of Devos et al. (2009) and Gugler et al. (2004), who point out that investment cutbacks represent the main determinant of operating synergy gains. As for the contribution of FS to TS, our results likewise confirm those of Devos et al. (2009), who show that FS contribute to only 1.64% of value creation and therefore do not constitute a central motivation in corporate acquisition strategy. Conversely, Hayn (1989), Erickson (1998) and Dhaliwal et al. (2005) stress the role of tax attributes in bidder performance.

Table 2: Takeovers synergy sources

	Total synergies (TS)	Financial synergies(FS)	Operating synergies (OS)		
			Revenue increase	Investment cutbacks	Total operating synergies (OS)
Mean	12,37%* (1,69)	1,87%** (2,35)	-5,32% (-1,32)	15,82%** (2,29)	10,5% (1,29)
Relative contribution		15,12%	-43%	127,89%	84,88%
% of firms with synergies >0	58,63%	56,90%	53,44%	50%	51,72%

This table shows the decomposition of the total synergies (financial synergies, operating synergies) and that of the operating synergies (revenue increase, investment cutbacks). ***, ** and * indicates significance at the 1, 5 and 10 percent levels respectively.

Table 3 presents the synergy gains for combined firms compared to the aggregated synergy gains achieved by control firms. It indicates that during this period, TS gains follow a downward trend. More precisely, TS is 13.75% for the first post-acquisition year, 9.56% for the 2nd year and 3.93% for the 3rd year. The same trend is observed for OS, while it is smaller for FS. Lastly, bidder TS and both OS and FS significantly outperform the respective synergies achieved by control firms.

Table 3: Post-acquisition synergy variation

Panel A : Total synergies

Year	Combined firm	Control Firm (CF)			Adjusted Performance		
		CF/Bidder	CF/Target	CF/Combined(CF/Bidder + CF/Target)			
	Mean %	Mean %	Mean %	Mean %	Mean %	T-Stat	Nb.Obs
+1	17,33%	1,88%	1,7%	3,58%	13,75%**	(2,32)	
+2	13,94%	3,38%	1,00%	4,38%	9,56%	(1,29)	59
+3	12,71%	6,99%	1,79%	8,78%	3,93%**	(2,11)	
				Post-acquisition synergy averages (3years)	12,37%*	(1,69)	

Panel B : Financial synergies

+1	2,94%	0,64%	0,24%	0,88%	2,05%**	(2,05)	
+2	2,83%	0,67%	0, 41%	1,08%	1,76%**	(2,13)	59
+3	2,47%	0,66%	0,23%	0,89%	1,58%	(1,32)	
				Post-acquisition synergy averages (3years)	1,87%**	(2,35)	

Panel C : Operating synergies

+1	16,41%	0,91%	1,98%	2,89%	13,52%**	(2,36)	
+2	11,53%	2,63%	1,27%	3,9%	7,63%	(1,24)	59
+3	10,16%	4,26%	1,56%	5,82%	4,34%	(1,04)	
				Post-acquisition synergy averages (3years)	10,5%	(1,29)	

*This table shows a mean analysis of total synergy gains and their components for the combined firms compared to the aggregated ones obtained by the target and the acquirer control firms. ***, ** and * indicate significance at the 1, 5 and 10 percent levels respectively.*

Table 4 presents a comparison of the OS components between the combined firm and the control firm. The results show that over the 3 post-acquisition years, investment cutbacks follow a decreasing trend, dropping from 9.75% to 4.31%. At the same time, we observe increased capital spending by the control firms. Hence, for the merged entity adjusted performance is positive and significant. Revenue increase is more pronounced without the acquisition compared to post-acquisition revenue increase of the merged entity. Consequently, adjusted performance is non-significantly negative.

Table 4: Operating synergy components

Panel A : Operating synergies

Year	Combined firm	CF/Bidder	CF/Target	CF/Combined (CF/Bidder + CF/Target)	Adjusted Performance		
	Mean %	Mean %	Mean %	Mean %	Mean %	T-Stat	Nb.Obs
+1	16,41%	0,91%	1,98%	2,89%	13,52%**	(2,36)	
+2	11,53%	2,63%	1,27%	3,9%	7,63%	(1,24)	59
+3	10,16%	4,26%	1,56%	5,82%	4,34%	(1,04)	
			Post-acquisition synergy averages (3years)		10,5%	(1,29)	

Panel B : Investment cutbacks

+1	9,75%	-4,67%	-1,75%	-6,42%	16,17%**	(2,23)	
+2	5,78%	-2,98%	-2,28%	-5,26%	11,04%*	(1,70)	59
+3	4,31%	-5,43%	-1,91%	-7,34%	11,65%	(1,38)	
			Post-acquisition synergy averages (3years)		15,82**	(2,09)	

Panel C : Revenue increase

+1	6,31%	6,29%	5,85%	12,14%	-5,83%	(-1,35)	
+2	5,61%	6,91%	4,79%	11,7%	-6,09%	(-1,01)	59
+3	5,89%	5,24%	4,87%	10,11%	-4,42%	(-1,1)	
			Post-acquisition synergy averages (3years)		-5,32	(1,29)	

*This table illustrates a mean analysis of operating synergy gains and their components for the combined firms compared to the aggregated gains obtained by the target and the acquirer control firms. ***, ** and * indicates significance at the 1, 5 and 10 percent levels respectively."*

5.2 The synergy determinants

To analyze the determinants of the abovementioned synergy components, we examine, in univariate and multivariate contexts, the factors that may affect synergies.

5.2.1 Univariate analysis

Our univariate analysis explores the different explanatory factors as discriminating variables between two subsamples. Using table 5, we analyze the impact of each of the factors (Focused strategy vs. diversifying strategy, Bidder leverage, target relative size, Bidder Market to Book) on the different synergy components.

Table 5: Impact of bidder strategy by sources of synergy

	Total synergies (TS)	Financial synergies(FS)	Operating synergies (OS)		
			Total operating synergies	Revenue increase	Investment cutbacks
Panel A: Impact of Bidder strategy by sources of synergy					
Group 1 : Focused takeovers (N=44)					
Mean	11,91** (-1,93)	2,98 (1,37)	8,93** (1,93)	-2,96 (-0,64)	11,89*** (-2,66)
%>0	66%	43,18%	56,81%	52,27%	54,54%
Group 2 : Diversifying takeovers (N=15)					
Mean	4,67 (1,49)	1,46 (1,09)	3,21 (1,43)	-2,75 (-1,52)	5,96* (1,98)
%>0	64,28%	57,14%	64,28%	50%	57,28%
Panel B: Impact of Bidder leverage by sources of synergy					
Group 1 : Bidder leverage> Median (N=29)					
Mean	9,4 (1,36)	2,27*** (2,81)	7,13* (1,76)	3,41 (1,33)	3,73 (1,29)
%>0	51,72%	65,51%	58,62%	44,82%	62,06%
Group 2 : Bidder leverage< Median (N=30)					
Mean	6,19 (0,99)	0,3** (2,47)	5,89 (0,76)	-0,6 (0,41)	6,48 (0,28)
%>0	62,06%	44,82%	51,72%	62,06%	65,51%
Panel C : Impact of target relative size by sources of synergy					
Target relative size> Median (N=28)					
Mean	5,6 (1,06)	0,28 (1,34)	5, 32 (1,17)	-1,1 (1,38)	6,42 (1,02)
%>0	53,57%	42,85%	53,57%	57,14%	57,14%
Target relative size< Median (N=31)					
Mean	10** (2,41)	3,8** (2,12)	6,2 (1,24)	-3,93 (1,33)	10,13* (1,98)
%>0	63,33%	60%	60%	43,33%	63,33%
Panel D: Impact of Bidder Market to Book by sources of synergy					
MTB > Median (N=30)					
Mean	7,6 (1,38)	0,21 (1,05)	7,38 (1,49)	3,1 (0,96)	4,28 (0,86)
%>0	58,62%	55,17%	55,17%	44,82%	62,06%
MTB < Median (N=29)					
Mean	9,7 (1,32)	1,34* (1,82)	8,49 (0,91)	-5,09 (1,31)	13,53* (1,79)
%>0	65,51%	58,62%	52,17%	48,27%	55,17%

*This table shows the impact of the different explanatory variables (Bidder strategy, Bidder leverage, Target relative size, Bidder Market to Book) on the different synergy components. ***, ** and * indicates significance at the 1, 5 and 10 percent levels respectively.*

Table 5 indicates that on average, focused acquisitions create more TS (11.93% significant at 5%) then diversifying acquisitions, which exhibit positive but non-significant gains of 4.67%. This finding is consistent with Hamza (2009) in the French context. FS contribute positively but not significantly in both strategies. The result regarding diversifying acquisitions is not in line with certain theoretical assumptions. Indeed, diversifying takeovers can reduce earnings volatility and/or increase the debt capacity of the conglomerate firm. The OS with regard to focused deals are significantly higher than for diversifying deals (8.93% vs. 3.21%). The decomposition of OS shows that the exclusive synergy source of focused acquisitions resides in investment cutbacks (11.89% significant at 1%). In a diversifying acquisition context, investment cutbacks are positive (5.96%) and significant. In the French context, focused acquisitions lead to a restructuring investment and to rationalization of long-term resources (Graham et al. 2002; Villalonga, 2004). Lastly, a negative but non-significant revenue increase for both strategies is recorded (-2.96 % for focused strategy and -2.75 % for diversifying strategy).

We examine the impact of bidder leverage on takeover synergy gains and find that TS gains are greater for highly leveraged bidders (> median), who also create positive and significant FS (2.27% significant at 1%). In addition, OS are higher for leveraged bidders (7.13% significant at 5%) with a positive but non-significant contribution of the two components (revenue increase and investment cutbacks) amounting to 3.1% and 3.73% respectively. Overall, our results show that bidders with a high level of debt are more efficient and generate higher operating and financial synergies. Our results are consistent with those of Harford (1999), Ghosh and Jain (2000), Yen and André (2007) but contrast with those of Clark and Ofek (1994), Switzer (1996) and Linn and Switzer (2001).

As for the impact of target relative size on total synergies and its components, panel C of Table 5 suggests that bidders who acquire targets with low relative size (<median) exhibit a positive and significant TS of 10%. These synergies are due to a double impact; a positive and significant FS of 3.8% and a positive but non-significant OS. These results are in line with those of Healy et al. (1992), Heron and Lie (2002), Powell and Stark (2005) and Yen and André (2007), who highlight an insignificant relationship between post-acquisition operating performance and target relative size. In spite of the globally non-significant contribution of the OS, investment cutbacks (10.13%) contribute significantly to the latter. This result confirms those of Devos et al. (2009) and Moeller et al. (2004).

Lastly, we show that bidders with low MTB ("value" firms) exhibit higher synergy gains than bidders with high market to book ("glamour" firms). These gains are mainly due to investment cutbacks, of which the contribution came to 13.53%. FS provide a small but significant contribution of 1.34% for bidders with low MTB as opposed to 0.21% for bidders with high MTB. This finding suggests that "value" bidders exhibit operating synergy gains by implementing an external growth strategy in order to compensate for a lack of organic growth opportunities. Our results confirm those of

Devos et al. (2009), who argue that bidders with low MTB are more efficient than those with high MTB.

5.2.2 Multivariate analysis

Multivariate analysis indicates below the different econometric specifications regarding the determinants of the total, operating and financial acquisitions synergies respectively.

Sources of synergies	Econometric specifications
Total synergies (TS)	$(TS)_i = \alpha0 + \alpha1 FOCDIV + \alpha2\ RSIZE + \alpha3\ MTB + \alpha4\ BIDLEV + (Control\ variables) + \varepsilon$ **(Equation1)**
Financial Synergies (FS)	$(FS)_i = \alpha0 + \alpha1 FOCDIV + \alpha2\ RSIZE + \alpha3 MTB + \alpha4 BIDLEV + (Control\ variables) + \varepsilon$ **(Equation2)**
Operating Synergies (OS)	$(OS)_i = \alpha0 + \alpha1 FOCDIV + \alpha2\ RSIZE + \alpha3 MTB + \alpha4 BIDLEV + (Control\ variables) + \varepsilon$ **(Equation3)**
Revenue increase (RI)	$(RI)_i = \alpha0 + \alpha1 FOCDIV + \alpha2\ RSIZE + \alpha3 MTB + \alpha4 BIDLEV + (Control\ variables) + \varepsilon$ **(Equation4)**
Investment cutbacks (CUT)	$(CUT)_i = \alpha0 + \alpha1 FOCDIV + \alpha2\ RSIZE + \alpha3 MTB + \alpha4 BIDLEV + (Control\ variables) + \varepsilon$ **(Equation5)**

Table 6 presents the correlation coefficient between the independent variables. The value of the variance inflation factors (VIF-test) indicates that multicollinearity does not seem to be a serious issue, since it is located far below the critical value of 10.

Table 6: Correlation matrix

	FOCDIV	OT	RSIZE	BIDLEV	BIDLIQ	MTB	MOP	R^2	Tolerance	VIF
FOCDIV	1,0000							0,0507	0,9493	1,0534
OT	0,1651	1,0000						0,0442	0,9558	1,0463
RSIZE	-0,1220	-0,0773	1,0000					0,0725	0,9275	1,0782
BIDLEV	-0,0598	0,0073	-0,0048	1,0000				0,5512	0,4488	2,2283
BIDLIQ	0,0190	0,0778	-0,1441	0,7238	1,0000			0,5682	0,4318	2,3160
MTB	-0,0573	0,0489	0,0845	-0,0311	-0,1699	1,0000		0,0618	0,9382	1,0659
MOP	0,0849	0,0326	-0,1546	-0,1153	-0,0273	-0,0945	1,000	0,0489	0,9511	1,0514
								Mean		1,4056

This table presents Spearman correlation coefficients. FOCDIV: acquisition type (focused vs. diversifying), OT: offer type (tender offer, merger), RSIZE: target relative size, BIDLEV: bidder leverage, MOP: method of payment (Cash, stock, Mix), MTB: market to book ratio, BIDLIQU: bidder liquidity.

Table 7 shows different estimations for the 5 models presented above (Equation 1 to 5) that test the determinants of the long-term bidder synergy gains (TS, OS an FS). All of the models confirm our univariate results.

Table 7: The determinants of long-term bidder synergy gains

Panel A : The determinants of total synergy components

	Total synergies (I)	Financial synergies (II)	Operating synergies (III)
Intercept	-0,148 (0,6)	-0,021 (0,9)	-0,126 (1,01)
FOCDIV	0,114** (2,1)	-0,008 (-0,9)	0,121** (2,07)
RSIZE	-0,093 (1,37)	0,051 (1,82)*	-0,041* (1,71)
BIDLEV	0,254 (1,58)	0,024 (1,67)*	0,231 (1,02)
MTB	-0,231** (2,16)	-0,015 (1,04)	-0,214* (1,89)
OT	-0,129 (0,31)	0,007 (0,98)	-0,135 (1,38)
MDP	-0,166 (0,056)	-0,085 (1,05)	-0,08 (1,01)
BIDLIQ	-0,310 (0,041)	-0,013 (0,65)	-0,296 (0,61)
R^2	0,357	0,241	0, 3

Panel A : The determinants of operating synergy components

	Total operating synergies (III)	Revenue increase (IV)	Investment cutbacks (V)
Intercept	-0,126 (1,01)	-0,041 (0,08)	-0,088 (0,7)
FOCDIV	0,121** (2,07)	0,029 (1,01)	0,083 (1,72)*
RSIZE	-0,041 (1,71)*	-0,051 (1,04)	0,042 (0,081)
BIDLEV	0,231 (1,02)	0,16 (1,00)	0,21 (0,88)
MTB	-0,214* (1,89)	0,078 (1,06)	-0,279* (1,68)
OT	-0,135 (1,38)	0,031 (0,76)	-0,161 (0,5)
MDP	-0,08 (1,01)	0,014 (0,67)	-0,091 (0,81)
BIDLIQ	-0,296 (0,61)	0,16 (1,03)	-0,302 (0,84)
R^2	0,357	0,241	0, 3

This table outlines the determinants of long-term bidder synergy gains. Panel A presents the regression results for total long-term synergies as well as their components (Financial synergies, Operating synergies) with regard to the determinants of long-term bidder synergy gains. Panel B presents the regression results of Total long-term operating synergies as well as their components (Revenue increase, Investment cutbacks) with regard to the determinants of long-term bidder synergy gains. FOCDIV: acquisition type (focused vs. diversifying), OT: offer type (tender offer, merger), RSIZE: target relative size, BIDLEV: bidder leverage, MOP: method of payment (Cash, stock, Mix), MTB: market to book ratio, BIDLIQU: bidder liquidity. ***, ** and * indicate significance at the 1, 5 and 10 percent levels respectively."

Model I examines the determinants of bidder TS gains. The results show that focused acquisitions (FOCDIV) are associated positively and significantly with TS gains. This finding highlights the fact that diversifying acquisition strategy is underperforming. Moreover, we find a negative and significant relationship between MTB and the TS that is in line with the findings of Devos et al. (2009) as well as those of Villalonga (2004) and Graham et al. (2002). "Glamour" bidders are less efficient in the long term than "value" bidders. Our results confirm those of Devos et al. (2009), who argue that MTB for high bidders is less efficient than for low bidders. Neither the

other independent variables nor the control variables are significant determinants of bidder TS.

Model II tests the explanatory variables of bidder FS gains. The results show that both target relative size (RSIZE) and bidder debt (BIDLEV) are significant. A large target relative size leads to lower distress risk (Fama and French, 1993) and increases bidder debt capacity. As for BIDLEV, it is positively and significantly associated with the FS and translates tax-related considerations in terms of tax savings (Erickson, 1998; Dhaliwal et al. 2005, Devos et al. (2009). This situation is also that of a bidder who seeks to optimize an existing financial structure.

Model III tests the determinants of the OS gains for the bidder. The findings show that target relative size, bidder MTB and focused acquisition are significantly related to the OS. The positive and significant relationship between long-term OS and bidder focused acquisition strategy indicates that the latter creates more OS compared to a diversifying strategy. In addition, bidders that carry out OS tend to prefer low target relative size. The most comprehensively elaborated explanation in the literature (Clark and Ofek, 1994; Yen and André, 2007) is that a focused strategy allows for better integration of the target and control of the acquisition process (organizational, cultural ...). Lastly, we find a negative and significant relationship between the OS and the MTB. "Value" bidders favor acquisition strategy in case of lacking organic growth.

Models IV and V test the explanatory factors of the bidder OS components. The results show that focused takeovers are a significant and a positive explanatory variable for investment cutbacks. Consequently, focused acquisitions are sources of cutbacks in corporate investment expenditures insofar as bidders are engaged in restructuring investment and rationalization of their long-term resources. In addition, "value" bidders exhibit the most post-acquisition investment cutbacks. In case of lacking organic growth opportunities, acquisition transactions constitute a mechanism of long-term resource optimization. Finally, there are no explanatory variables that significantly determine the revenue variation. Indeed, our empirical results show that, as an OS component, revenue variation is statistically non-significant.

6. Conclusion

Based on bidder-target-asymmetry, our study investigates the sources of synergy gains derived from corporate takeovers and their specific contributions to bidder value creation. This issue has received scant attention in the literature. Our approach differs from previous research, which has examined the relevance of each synergy component and has frequently focused on only one potential source of synergy gains. By contrast, our empirical study is largely focused on the precise determinants of total, operating and financial long-term synergy gains. Our sample is composed 59 French takeovers between 1999 and 2011. We find that French takeovers create long-term gains with double synergistic components: operating and financial synergies. These two components are positive and significant, particularly the first. Furthermore, investment expenditure cutbacks constitute the main significant

source of operating synergies, while effect on operating revenues is negative but insignificant. Consequently, we consider that there is no effect on post-acquisition market power. Multivariate analysis shows that both total and operating synergies are higher in focused takeovers and for "value" bidders. In addition, low relative size of the target company contributes to positive operating synergies. Lastly, financial synergies arise from bidder leverage level and target relative size. This study has some limitations in terms of the available sample size compared to studies conducted in other contexts. The methodology employed for assessment of long-term performance, which has been frequently applied in financial studies, continues to generate debate and discussion in the literature. Future research could also examine hostile operations in order to determine the extent of their disciplinary character, which leads to operational synergies, and to validate the manager-shareholder information asymmetry hypothesis.

7. References

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Appendix 1: Sample distribution across industries

Bidder/target firms	Number	%
Petroleum and Gas	3	5,08%
Industry	23	38,98%
Consumer Goods	9	15,25%
Health	5	8,47%
Consumer services	8	13,56%
Utilities	1	1,69%
Technology	10	16,95%
TOTAL	59	100%

Appendix 2: Assessment process for the total, operating and financial synergies

Sources of synergy	Total synergies (ST)	Operating Synergies (OS)	Financial Synergies (FS)
Discounted value of CCF of a firm i (DV)	$VA(CCF)^i = \sum_{t=1}^{n}\dfrac{(CCF)^i_t}{(1+K)^t} + [\dfrac{CCF_n(1+Inf)}{(K-Inf)(1+K)^n}] With, [\dfrac{CCF_n(1+Inf)}{(K-Inf)(1+K)^n}](implied\ value)$		
Calculation	$TS = DV(CCF)_{Co} - DV(CCF)_T - DV($	$OS = DV[CCF(OP)]_{Co} - DV[CCF(OP)]_T - DV[C$	$FS = DV[CCF(F)]_{Co} - DV[CCF(F)]_T - DV[C$
Decomposition	$CCF^i_t = [(S*OM)(1-IS)]^t_k - Invest^i_t$ $+ [Debt*R*IS]^i_t$	$CCF^i_t(op) = [(S*OM)(1-IS)]^t_k - Invest^i_t$	$CCF(F)^i_t = [Debt*R*IS]^i_t$

CCF: Capital Cash Flows. TS: Total synergies. OS: operating synergies. FS: Financial synergies. DV (CCF) Combined: Discounted value of CCF (year 1 to 3) of the combined firm. DV (CCF) Target: Discounted value of CCF (year 1 to 3) of the target firm (absence of acquisition). DV (CCF) Bidder: Discounted value of CCF (year 1 to 3) of the bidding firm (absence of acquisition). S*OM: Operating profit = Sales * Operating margin rate. Invest: Total investment = Investment + Working capital variation– Amortization. Debt: Long-term debt. : Implied final value. i: firm i (combined firm, target control firm, bidder control firm). t: year from 1 to 3. CCFn: Capital cash flow at n=3. IS: corporate tax rate. R: Government bond return rate of 10 years. Inf: long-term inflation rate estimated by «Banque de France » collected from «Banque de France» and «Inflation- France» websites. K: discount rate estimated by the CAPM.

Appendix 3: Assessment process for the operating synergy components.

	Operating synergy components	
	Revenue increase	Cutbacks in investment expenditures
Calculation	$\Delta OR^i_t = [(S*OM)(1-IS)]^i_{t+1} - [(S*OM)(1-IS)]^i_t$	$\Delta IE^i_t = [Invest]^i_{t+1} - [Invest]^i_t$
Discounted value (DV)	$DV(\Delta OR)^i_t = \sum_{t=1}^{n}\dfrac{(\Delta OR)^i_t}{(1+K)^t} + [\dfrac{\Delta OR_n(1+Inf)}{(K-Inf)(1+K)^n}]$	$DV(\Delta IE)^i_t = \sum_{t=1}^{n}\dfrac{(\Delta IE)^i_t}{(1+K)^t} + [\dfrac{\Delta IE_n(1+Inf)}{(K-Inf)(1+K)^n}]$
Implied final value	$\dfrac{\Delta OR_n(1+Inf)}{(K-Inf)(1+K)^n}$	$\dfrac{\Delta DI_n(1+Inf)}{(K-Inf)(1+K)^n}$
Bidder post-acquisition synergies	$DV(\Delta OR)_{Co} - DV(\Delta OR)_T - DV(\Delta OR)_B$	$DV(\Delta IE)_{Co} - DV(\Delta IE)_T - DV(\Delta IE)_B$

ΔOR^i_t: Operating revenue variation post-acquisition at n=3 (combined firm, target control firm, bidder control firm). (S*OM) (1-IS): operating profit after taxes. DV (ΔOR)co: Discounted value of the operating revenue of the combined firm. DV (ΔOR)T: Discounted value of the operating revenue of the target control firm. DV (ΔOR)B: Discounted value of the operating revenue of the bidder control firm. ΔIE t: Investment expenditures variation. (merged firm, target control firm, bidder control firm). Invest: Investment in noncurrent assets and working capital. DV (ΔIE)co: Discounted value of the investment expenditures of the combined firm. DV (ΔIE)T: Discounted value of the investment expenditures of the target control firm. DV (ΔIE)B: Discounted value of the investment expenditures of the bidder control firm. i: Combined firm, target control firm, bidder control firm. t: From merger year (0) to 3 years post-fusion (3). Inf: long-term inflation rate estimated by « Banque de France » collected from website « Banque de France » and « Inflation- France ». K: discount rate estimated by the CAPM. : Implied final value. : represent the implied final value.

Appendix 4: Description of the relevant variables

Variables	Name	Measure
Dependent Variables		
(TS)i	Post-acquisition total synergies of the bidder i.	$[(S*OM)(1-IS)]^i_t - Invest^i_t - [Debt*R*IS]^i_t$
(FS)i	Post-acquisition financial synergies of the bidder i.	$[Debt*R*IS]^i_t$
(OS)i	Post-acquisition operating synergies of the bidder i.	$[(S*OM)(1-IS)]^i_t - Invest^i_t$
(RI)i	Post-acquisition revenue increase of the bidder i.	$[(S*OM)(1-IS)]^i_{t+1} - [(S*OM)(1-IS)]^i_t$
(CUT)i	Post-acquisition investment cutbacks of the bidder i.	$[Invest]^i_{t+1} - [Invest]^i_t$
Independent Variables		
FOCDIV	Focused Vs. diversifying acquisition	Dummy variable :1 for focused acquisition, 0 for diversifying one
OT	Tender offer Vs. merger	Dummy variable: 1 for tender offer, 0 for merger.
RSIZE	Target relative size	Ratio of Target total assets/Bidder total assets
MOP	Method of payment	Dummy variable: 1 for cash acquisition, 0 otherwise
BIDLEV	Bidder leverage.	Book value of debt
MTB	Market to book ratio	Ratio of market value of equity/ book value of equity
BIDLIQ	Bidder liquidity	Cash and short-term investments.