

Are Acquisitions Worthwhile? An Empirical Study of the Post-Acquisition Performance of Privately Held Belgian Companies*

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ABSTRACT. Few studies have addressed the performance of smaller unquoted companies involved in acquisitions, especially in Continental European countries. Therefore this study addresses the post-acquisition financial characteristics of privately held companies involved in 143 Belgian acquisitions between 1992 and 1994. Specifically, this paper examines the financial performance of the acquiring firm after the acquisition, using statistical analysis of industry-adjusted variables. Our findings show that following the acquisition, the profitability, the solvency and the liquidity of most of the combined companies decline. This decline is also reflected in the failure prediction scores. With respect to the added value, acquisitions are found to be accompanied by increases in the labour productivity, but this is caused by the general improvement of gross added value per employee of Belgian companies in the last 10 years. So it seems that, contrary to the general expectations and beliefs, acquisitions usually do not seem to improve the acquirer's financial performance.

1. Introduction

The acquisition of one firm by another one remains a very popular strategic manoeuvre, but is also a heavily contested means of realizing corporate growth. In general, organizations select the acquisition strategy as an alternative or a supplement to internal efforts aimed towards growth, diversification or profitability. Acquisitions are thus investment decisions by the acquiring firms. A firm should implement an acquisition strategy only if it is expected to

improve its organizational performance and if it is preferable to alternative growth strategies. However, it is not certain that acquisitions provide real benefits.

The economic consequences of mergers and acquisitions were investigated in many studies. The empirical literature on the financial effects of acquisitions has drawn on two principal sources of statistical evidence: stock market data and accounting-based data. However, the vast majority of the acquisition literature, deals with the impact of the merger and acquisition announcements on the share price of the bidding and the target company. Since stock market event studies are not suitable for measuring pre- and post-acquisition performance of privately held companies, we use accounting data to study the impact of acquisitions.

Due to a lack of available data and because of the greater visibility of the larger public bids, only few studies addressed the performance of the smaller unquoted companies involved in acquisitions. Nevertheless, Da Silva Rosa et al. (2001) note that the majority of take-over bids are for private targets. Furthermore, most accounting studies were carried out in the U.S. and the U.K. and are usually restricted to samples of large companies with publicly traded securities. Little is known about the performance of target and acquiring companies in the acquisition market in Continental European countries such as Belgium with a bank oriented financial system. Because of the less developed public equity market and therefore a more concentrated shareholder structure, this market is dominated by acquisitions of small, privately held companies. But

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even in Belgium, where the number of quoted companies, and hence the number of takeovers between public companies, is limited, most acquisition studies have used the event-study methodology to assess economic gains from acquisitions (Van Hulle, 1991; Van Hulle et al., 1991). Lack of Belgian accounting data, however, is not an issue, since all Belgian companies, bigger and smaller, are bound to deposit their annual accounts at the 'Balans-centrale' of the Belgian Central Bank.

The focus on event studies implies a serious gap in the research of mergers and acquisitions because theories developed to explain public bids do not necessarily apply to private bids. Chang (1998) shows there seems to exist an important difference in the signalling of the method of payment for privately held firms compared to public firms. Also, the level of competition in the market of corporate control seems to differ between private and public companies. Da Silva Rosa et al. (2001) find that successful bids for private targets result in a positive abnormal return to the bidders, whereas for public bids an insignificant return can be found. The difference in return is interpreted by the fact that the apparently lower competition for private targets allows the bidder to capture a larger part of the return. The foregoing shows once again that one cannot apply theories developed for public bids to explain the results of private bids. Therefore our research is motivated by the lack of empirical research on the operating performance of unquoted companies involved in acquisitions.

This paper aims to evaluate the financial characteristics and performance of unquoted large and small companies (both target and acquirer) that were involved in acquisitions. In this study of 143 Belgian private acquisitions we investigate if acquisitions provide performance gains for the acquirers, using a comprehensive set of measures. The research question is: do the acquiring firms, according to the general expectations and beliefs, show better performance after the acquisition, or should they better not engage in a costly acquisition?

The paper is organized as follows. Section 2 gives a brief review of previous post-acquisition performance research, focusing on studies that use financial accounting data. In Section 3, we

describe the methodology used in this paper, which includes the data collection, the accounting-based performance measures and the methodology. The results are reported in Section 4. The paper ends with a summary and conclusions in Section 5.

2. Literature review

Mergers and acquisitions are one of the actively researched topics in finance. Especially, performance issues have been subject to various academic studies. The vast majority of these studies, however, focus on acquisitions of big, listed companies, and these studies examine the impact of acquisition announcements on stock market returns. Share price event studies, however, are not the only approach to assess the acquisition effects. A second source of statistical evidence derives from companies' annual reports. Both methodologies have their advantages and disadvantages.

Accounting studies of acquisitions have received a lot of criticism. Bruner (2002) compares the research approaches regarding the profitability of mergers and acquisitions. With respect to accounting studies he states that although audited financial statements are a widely accepted benchmark for corporate performance, the potential of questionable accounting practices and inconsistencies defile their value. Other drawbacks of accounting studies are that they are backward looking, have a lack of comparability and that they ignore value of intangible assets. More extremely Fisher and McGowan (1983) state that *'there is no way in which one can look at accounting rates of return and infer anything about relative economic profitability...'* Chatterjee and Meeks (1996) however suggest two competing hypotheses that favour the further use of accounting-based research: (1) the stock market is semi-strong efficient (which means that security prices will adjust immediately to public information such as earnings announcements, a new issue of stock, a proposal to merge two companies,... (Fama, 1970)) and (2) the informational efficiency of the stock market has been overestimated.

Moreover, an important problem with stock market event studies is that they are not suitable

for measuring the pre- and post-acquisition performance of unquoted companies, contrary to the accounting studies of acquisitions. Whereas most empirical studies using the event-study methodology focus on daily stock returns surrounding announcement dates,¹ accounting studies of takeovers usually study accounting rates of return during several years before and after takeovers (Cosh and Hughes, 1994; Chatterjee and Meeks, 1996; Cosh et al., 2001).

Moreover, the studies that do investigate post-acquisition operating performance are usually restricted to samples of very big companies with publicly traded shares (e.g., Healy et al., 1992; Parrino and Harris, 1999). Exceptions are the studies by Ravenscraft and Scherer for the U.S.A. (1987a, b, 1989) and Cosh et al. (1993) and Cosh and Hughes (1994) for the U.K.

Most accounting studies address both the pre-acquisition performance of the target and the acquiring companies and the post-acquisition performance of the acquiring company. The post-acquisition performance studies that use financial accounting data seek to determine whether, on average, acquisitions are followed by changes in profitability. Firstly, these studies investigate the profit potential of the acquired companies, as manifested in their pre-acquisition earnings. Since the target's annual account information is absorbed into that of the acquirer, it can be expected that the pre-acquisition performance of a target company will influence, in a positive or negative sense, the post-acquisition performance of the acquirer. This works well when the acquired company is reasonably large relative to the acquirer, but when the target is small relative to the acquirer, weighted average profitability gains are less likely to show through in the results of the combined firm (Cosh and Hughes, 1994; Higson and Elliott, 1994).

The aim of almost every post-acquisition study is to answer the following question: do acquiring firms show better performance after the acquisition, or should they better have not engaged in a costly acquisition?

Based on an overview of 130 studies, Bruner (2002) indicates that most researchers agree that market returns to target shareholders are positive. Indeed, most empirical work on event

studies, seems to find significant target price increases (gains averaging 28%).

Notwithstanding the fact that researchers do not find a consensus concerning acquirers' gains, bidders mostly seem to earn on average zero adjusted returns. Dodd (1980) shows small but significantly negative returns at announcement date. Agrawal et al. (1992) find that acquirers experience negative abnormal returns of about 10% over the 5 year post-merger period. In a more recent paper Agrawal and Jaffe (2000) conclude that the long-run performance is negative after a merger, though following tender offers the performance does not seem to be negative and might even be positive. Mulherin and Boone (2000) also confirm the small magnitude of bidder returns. In the long term, prior studies of post-merger share-price performance report significant negative abnormal returns that challenge and raise questions about the validity of announcement gains as accurate estimates of the gains from merging. Franks et al. (1991) found that the previous findings of poor performance after the acquisition are likely to be due to benchmark errors rather than to mispricing at the time of acquisition.

Jensen and Ruback (1983), Franks and Harris (1989) and Caves (1989) also find that acquirers appear to show no gains around announcement date, but they stress the fact that they neither find evidence of significant losses.

In accounting studies of acquisitions, the question whether acquisitions create or destroy value is usually addressed by comparing the performance of the combined entity (i.e. the acquiring plus the target company) with control groups. These control groups are of two main types: before-and-after comparisons and comparisons with units that had no merger but are similar in size, industry, etc.

One might expect accounting studies to confirm the conclusions of the event studies. However, as Caves (1989) put forward, accounting studies 'are resoundingly negative on the average productivity of mergers and sharply at variance with the findings of event studies'. Most accounting studies find a great percentage of firms with below average profitability in the years following the merger or acquisition.² Ravenscraft and Scherer (1987a, b) find similar

results in their analysis of actual outcomes of mergers and take-overs of small, non-listed companies. On the other hand Healy et al. (1992) examine post-acquisition performance for the 50 largest U.S. mergers between 1979 and mid-1984 by using cash-flow measures of economic performance and measures containing market values of debt and equity. Unlike the other studies, they find significant improvements in asset productivity of the merged firms relative to their industries, leading to higher operating cash flow returns.

Few studies have investigated the financial performance of private acquisitions. Amihud et al. (1990) found that the signalling implications of the method of payment are likely to be affected by the ownership structure of the firms. Chang (1998) and Da Silva Rosa et al. (2001) confirm this finding. Chang (1998) examined the bidder returns at the announcement of a take-over proposal when the target firm is privately held. His research indicates that bidders experience a positive abnormal stock return, contrary to the negative abnormal return found for bidders acquiring a publicly traded target. Concerning the cash offers, bidders experience no abnormal returns. So it seems that different signalling implications exist due to the method of payment across private and public bids. Da Silva Rosa et al. (2001) find more or less similar results in their research concerning private Australian bids. Cash based bids generate a positive return, but share based bids are not associated with higher abnormal returns for bidders. Da Silva Rosa et al. (2001) stipulate that the higher cost of obtaining information on privately held firms is thus likely to be associated with higher returns for the acquiring firms since they capture a greater proportion of the expected gains.³

3. Data and methodology

3.1. Data

Our main data come from the CD-ROMs of the National Bank of Belgium and from the Belfirst CD-ROM for the years 1989–1999. It concerns published annual accounts of non-financial Belgian companies subject to the legislation.

In Belgium companies are bound to deposit their annual accounts in a prescribed form dependent on their size. A distinction can be made between companies that have to prepare their annual accounts in a complete form and small companies that prepare their annual accounts in an abbreviated form. The first group of companies has more than 100 employees or satisfies at least two of the following criteria: number of employees (yearly average) of at least 50; turnover (VAT excluded) of at least 200 million Belgian francs and total assets of at least 100 million Belgian francs.⁴ Companies that do not meet these criteria are allowed to prepare their annual accounts in an abbreviated form. These companies do not have to apply the full disclosure requirements and e.g. do not have to report sales-figures.

It should be clear that definitions of 'large' and 'small' are very relative (e.g. Cosh and Hughes, 1994). In other surveys small and medium sized companies are often defined as firms employing less than 500 workers. In Belgium the number of companies employing more than 500 workers was only about 300 in the 1990s, relative to a total number of more than 200,000 companies that deposit their annual accounts with the National Bank of Belgium. However, there are many more (between 13,000 and 14,000 in the 1990s) companies with complete form annual accounts.⁵ This means that the population of companies with complete form annual accounts, the so-called large companies in Belgian accounting terms, includes both 'large' and 'small' companies.

All companies with complete form annual accounts acquired in 1992, 1993 or 1994, were selected. (Companies that are acquired, adopt the legal status of 'Absorption by another company'.) The very small or 'micro' companies, with annual accounts in an abbreviated form, were excluded from the analysis.

To this point, we only had a list of companies that were acquired. Their acquirers were not mentioned on the CD-ROMs, nor was it possible to trace them in Belgian financial newspapers since these companies were often too small. Because the National Bank of Belgium has a central database, which collects information about acquisitions in Belgium, the

acquiring companies were traced with the help of the National Bank of Belgium.

In a next step, some companies were excluded from the population of the complete form acquisitions because some information was lacking or because of their special nature, making them difficult to compare with the other companies. Therefore financial intermediation and property companies were excluded. The final population consists of all the 143 acquisitions of “normal” firms with annual accounts in a complete form in the 1992–1994 period. Table I shows that the acquiring firms, as measured by the median total assets, are larger than the acquired firms although the median acquiring firm is also rather small.

Because we include multiple acquisitions in our study (i.e. acquisitions in which the acquirers acquire more than 1 company), the number of acquired companies (143) is larger than the number of acquirers (123). The set of companies comprises 109 ‘single’ acquirers and 14 ‘multiple’ acquirers that acquired 34 target companies. Table II shows the number of multiple and single acquirers and their targets.

3.2. Variables: accounting measures of performance

To evaluate the performance of the target and the acquiring companies, the different basic

TABLE II
Single and multiple acquisitions: number of acquiring and acquired companies

	Number of companies acquired	Number of acquiring companies
Single acquisitions	109	109
Multiple acquisitions	34	14
2 companies acquired	22	11
3 companies acquired	3	1
4 companies acquired	4	1
5 companies acquired	5	1
Total	143	123

elements of the financial situation of a company are investigated: profitability, liquidity, financial structure or solvency, and added value. We use four different profitability measures to evaluate the performance of acquiring and acquired companies, two liquidity measures, two solvency measures and two measures of added value. The 10 financial ratios which are presented in Table III, provide a comprehensive view of a company’s financial situation.

The difference between the gross and the net return on the shareholders’ equity lies in the non-cash expenses (mainly depreciations), which are either excluded (gross) or included (net) as expenses. The gross return on shareholders’ equity is also called the cash flow return on

TABLE I
Total assets of acquired and acquiring firms (in 1000 Belgian francs = 24.79 Euro)

	Median	Interquartile range	Minimum	Maximum
<i>Acquired firms</i>				
Year-3	113,937	289,437	640	4,167,580
Year-2	162,836	425,105	4,712	2,954,756
Year-1	153,285	393,025	803	2,235,430
<i>Acquiring firms</i>				
Year-3	335,563	922,008	499	48,543,140
Year-2	427,137	1,061,803	514	74,314,525
Year-1	439,739	1,049,225	534	76,281,359
Year 0	645,911	1,274,913	554	67,827,444
Year + 1	642,886	1,327,969	575	64,219,280
Year + 2	684,743	1,277,460	587	63,762,093
Year + 3	641,868	1,497,671	11,978	52,974,357
Year + 4	812,587	1,609,820	10,254	77,844,910
Year + 5	861,761	1,805,559	15,047	92,609,841

TABLE III
Overview of the performance measures used (Ooghe and Balcaen, 2000)

Variable	Description	Definition
NSM	Net sales margin before taxes	Net operating income/sales
NRTA	Net return on total assets before taxes	Earnings before interest and taxes/total assets
NRSE	Net return on shareholders' equity after taxes	Profit after taxes/shareholders' equity
CFRSE	Cash flow return on shareholders' equity after taxes	Cash flow after taxes/shareholders' equity
FIR	Financial independence ratio	Shareholders' equity/total liabilities and equity
CFCD	Cash flow coverage of debt	Cash flow after taxes/total debt
CR	Current ratio	Current assets/short term liabilities
NCR	Net cash ratio	Cash and short-term investments/current assets
GAVE	Gross added value per employee	Sales–purchases/number of employees
PEE	Personnel expenses per employee	Personnel expenses/number of employees

shareholders' equity and is an important measure for privately held firms because of their cash flow orientation.

A non-classical measure of liquidity is the net cash ratio, which relates cash and short-term investments to current assets. The financial independence ratio is the complement of the debt-to-total-assets ratio. The second solvency ratio is the cash flow coverage of debt. This ratio is an indicator of the debt repayment potential of a company because it relates the liabilities of debt to the cash flow that can be used to redeem these liabilities.

Some studies show a preference for cash flow measures and for 'fundamental' measures because the researchers are concerned about the reliability of accounting data (Higson and Elliott, 1993). We added the cash flow return of shareholders' equity as our fourth profitability measure and the cash flow coverage of debt as a second solvency ratio, and we included two more 'fundamental' measures to our analysis: gross added value (=output – input = sales – purchases) per employee and personnel expenses per employee (both in thousands of Belgian francs). Although this can be argued, value added can be seen as a proxy for a company's labour productivity and therefore in Northern European countries is a good measure for its overall economic performance and competitive position (Ooghe and Van Wymeersch, 2003).

Acquisitions are often seen as a means of restructuring distressed firms. Therefore, we

include the scores of a short-term and long-term multivariate logit model (RIST short-term risk indicator and RILT long-term risk indicator). These two models that were estimated on a sample of Belgian annual accounts by Ooghe, Joos and De Vos, have proven to be reliable predictors of company failure (see: Ooghe et al., 1995). They integrate different and sometimes contrasting aspects of a company's financial situation. The logit scores vary between 0 and 1 and reflect the failure risk of the company. The higher the score, the larger the failure risk of the company or the weaker its financial situation and vice-versa. The variables included in the models, are presented in Appendix Table A1.

3.3. Methodology

In this study we investigate the post-acquisition performance of the acquiring companies. In order to exclude industry and size effects, we evaluate the industry-adjusted or industry & size-adjusted performance. For the 10 financial ratios and the two multivariate logit scores described above, industry values are available through a yearly study about 'The financial situation of the Belgian companies', performed by the Department of Accountancy and Corporate Finance of the Ghent University.⁶ For each ratio and logit score, this study provides the three quartiles (Q1, Q2 and Q3) for the entire population of Belgian annual accounts and for several subgroups with respect to industry (17 industry classes⁷), size class (large companies

with complete form annual accounts, small companies with abbreviated form annual accounts and companies without employees) and region (Flanders, Wallonia and Brussels). The first two classifications are especially useful for this study.

The values presented in this study, are industry-adjusted or industry & size-adjusted. This is achieved by subtracting the median value for the industry or for the industry & size class from the value of each variable for a given company. The difference between the firm value and its industry or industry & size class median is standardized by dividing it by the interquartile range (= the difference between the third and the first quartile) of that industry or industry & size class (see: Joos et al., 1998). Quartiles rather than averages and standard deviations are preferred because of the asymmetry and non-normality of the distribution of financial ratios. All variables in the formula are calculated for the same year.

$$(X_i - Q_{2\text{-industry } y}) / (Q_{3\text{-industry } y} - Q_{1\text{-industry } y})$$

where X_i is the value of the ratio for firm i ; $Q_{2\text{-industry } y}$ is the median of the ratio for the industry or industry & size-class y of firm i ; and $Q_{3\text{-industry } y} - Q_{1\text{-industry } y}$ is the interquartile range for the ratio for the industry or industry & size-class y of firm i .

Post-acquisition performance studies using annual account information have laboured under a number of difficulties. An important obstacle in evaluating the post-acquisition performance is that the acquired company normally ceases to exist and hence no longer publishes balance sheet information and income statements once it is absorbed. The standard approach in acquisition research to deal with this obstacle is to compare the combined entity's performance before-and-after the acquisition and/or to compare with units that are not absorbed and are similar in industry, size, etc. Both methodologies have their pros and cons but, as industry data were readily available for the acquiring companies in our study, we chose to combine both. Because most of the acquisitions especially with smaller firms are horizontal within the same industry, industry adjustment is relevant.

A problem related to the methodology, is the fact that acquired firms are usually quite small relative to their acquirers. Therefore, a real danger exists that the data of the target company will be 'swamped' within the consolidated whole. Some researchers have tried to avoid this problem by confining their analysis to relatively large acquisitions (e.g., Healy et al., 1992). However, this is not a reliable solution, since other research showed there are systematic profitability differences associated with size. In our study, we compare the actual post-acquisition industry- or industry & size-adjusted values of the acquirers with the asset-weighted combined pre-acquisition industry- or industry & size-adjusted performance of the acquirer and the acquired firm. By taking the asset-weighted combination, we account for the relative size of the targets compared with their acquirers, according to their total assets.

A problem of traditional before-after comparisons is the business cycle influence. If the post-acquisition value of a performance measure is compared with the value before acquisition, it is possible that the change in performance is merely due to better or worse economic conditions and not a result of the acquisition. By adjusting the value of the different performance measures with their industry median, both measured over the same year, business cycle influences are no longer an issue since the industry median used to adjust the firm values also reflects business cycle influences.

Furthermore, since the companies in our study were acquired in different years, the population involved could be divided into three parts according to the year in which the acquisition took place (1992, 1993 or 1994). Information on annual accounts was collected for each of the three populations from 3 years prior to the acquisition year to 5 years after the acquisition year. The acquisition year is year (0), the last year before acquisition is year (-1), the first year after acquisition year (+1) and so on. This procedure allowed us to evaluate the performance of the acquiring and the target company, relative to the year of acquisition.

For most of the acquiring companies (not for all), data were available for the whole period,

from 3 years before the acquisition to 5 years after the acquisition. Annual account information of the target company is no longer available from year (0) on. Year (0) is excluded from the analysis because year (0) figures are affected by one-time merger costs, incurred during that year, making it difficult to compare them with the results for other years (Healy et al., 1992).

Our hypothesis is that the post-acquisition performance of the acquirer in terms of profitability, liquidity, solvency and added value, is higher than the pre-acquisition performance of the combined entity. Since we compare financial ratios of a combined post-acquisition entity (the target absorbed by the acquirer) with financial ratios of a combined pre-acquisition entity, we can apply a two-related sample test. Since our data are financial ratios and since financial ratios are not normally distributed, a non-parametric test has to be applied.⁸ The non-parametric Wilcoxon matched (=pairs) signed rank test is testing whether there are statistically significant differences between two related samples of pair-wise observations and is based on the ranking of differences between the related observations, in our study the financial performance measures of the companies (acquiring + acquired) before and after acquisition.

4. Results concerning the post-acquisition performance

The results are divided into five parts. The various parts discuss the profitability, the solvency, the liquidity, the added value measures and the failure scores of the acquirer in the post-acquisition years, compared with the weighted-average ratios of the acquirer and its target in the three pre-acquisition years.

4.1. Post-acquisition profitability

In Figure 1 we present the evolution of the profitability measures before and after the acquisition from year (-3) to year (+5). Figure 1 is based on the industry-adjusted medians. According to the methodology and the formula used (see Section 3) the industry-adjusted profitability measures in Figure 1 can be negative, indicating the profitability ratios are below the industry median.

Figure 1 clearly shows how the acquirer's profitability changes over time. The NSM and the NRTA decline after the acquisition and recover after year (+4). In each of the post-acquisition years both ratios are lower than the weighted average of the acquirer and target in

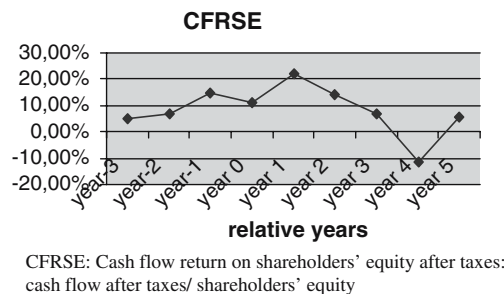
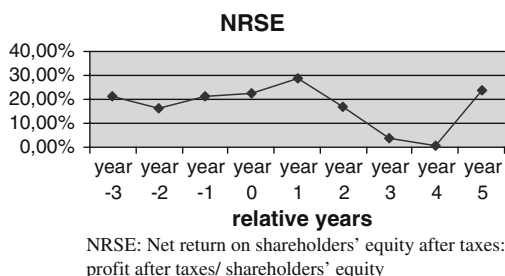
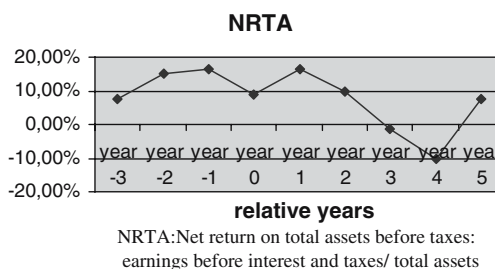
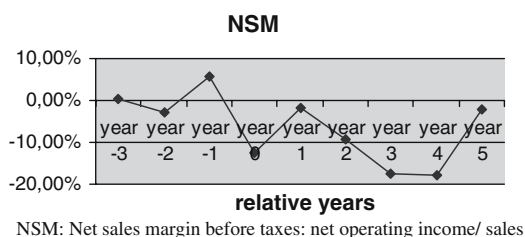


Figure 1. Evolution of the industry-adjusted profitability before and after acquisition (medians).

year (−1). The CFRSE and the NRSE improve the first year after acquisition and are higher than the weighted average in year (−1). They show a sharp decline afterwards. However, from year (+4) on, there is also a recovery in these profitability measures.

The results of the Wilcoxon test with respect to the year-to-year differences in profitability before and after acquisition are reported in Table IV. In this table we focus on the differences in profitability for each of the five post-acquisition years and the combination of acquirer and target in year (−1). Nearly the same conclusions about the differences between the post-acquisition years and year (−2) and year (−3) can be drawn.

Panel A shows the differences in profitability measures between the acquirer in year (+1) and the combination of the acquirer and target in year (−1). It reports more negative than positive differences, because the number of companies with a higher post-acquisition ratio ($N2_{post} > pre$) is lower than the number of companies with a lower post-acquisition ratio ($N3_{post} < pre$). This indicates that the weighted-average pre-acquisition profitability is higher than the post-acquisition one of the acquirer. However, the decline in profitability in year (+1) after acquisition is not statistically significant at the 5% level, and this leads to the conclusion that the acquirers do not seem to be able to improve their profit performance in year (+1) after the acquisition.

We also investigate profitability changes between year (−1) and the years (+2), (+3), (+4) and (+5). The results are reported in Panels B, C, D and E of Table IV. Panel B shows a decrease in CFRSE that is statistically significant at the 5% level. The same holds for the decrease in NRSE at the 10% level. Similar conclusions can be drawn from the industry & size adjusted differences.

Panels C and D reveal a significant decline 3 and 4 years post-acquisition of the industry-adjusted and the industry & size adjusted profitability measures.

The apparent decrease in profitability following acquisitions could have several explanations. One explanation is that the acquiring companies may have experienced ‘managerial control loss problems’. It is quite possible that the acquirers experience unex-

pected problems in managing and integrating their acquisitions. As the combined organization becomes more complex, the acquiring management loses its control and is no longer able to manage its organization efficiently. Finally, this causes profitability levels to decline after the acquisition. A related explanation could be the fact that expected synergies did not realise.

Another explanation for the decrease in profitability is that it may reflect the tendency for abnormal returns to regress over time towards more ‘normal’ levels. The acquirer in general reaches its top profitability level 1 year prior to the acquisition. This may explain why the acquirer engages in an acquisition and therefore a decline in profitability could have nothing to do with the acquisition, but be merely a logical decline after a very profitable period in the acquirer’s history.

It should be noticed that in a prior study concerning the pre-acquisition profile of privately held companies involved in acquisitions (Camerlynck and Ooghe, 2000), it was found that acquisitions are no alternative to bankruptcy. The authors more specifically found that target companies in the pre-acquisition period are more profitable than their industry medians. So the decline in profitability of the combined entity cannot be attributed to the target company.

4.2. Post-acquisition solvency

Figure 2 gives the evolution of the median of the two solvency ratios for the period from year (−3) to year (+5). As we can see from Figure 2, in the pre-acquisition years the combination of the acquiring and the acquired company reaches its peak with respect to (industry-adjusted) solvency 2 years prior to acquisition and declines somewhat 1 year prior to acquisition. In an earlier study about the pre-acquisition profile of privately held companies involved in acquisitions (Camerlynck and Ooghe, 2000) we noticed that the acquirer’s cash flow coverage of debt decreased in the pre-acquisition years. As the weight of the acquirer in the weighted average is generally more important than that of the acquired company, it is quite logical that these lower values are reflected in the weighted average cash flow coverage of debt.

TABLE IV
Post acquisition performance results with respect to profitability (Wilcoxon Signed Rank Test)

	Non-adjusted				Industry-adjusted				Industry & size adjusted			
	N1 ^a	N2 ^b	post > pre	N3 ^c	post < pre	P-value	N1 ^a	N2 ^b	post > pre	N3 ^c	post < pre	P-value
<i>1st post-merger year (Panel A)</i>												
NSM (+1)–NSM (–1)	125	55		70	0.155		128	58		70	0.388	
NRTA (+1)–NRTA (–1)	129	60		69	0.543		128	63		65	0.766	
NRSE (+1)–NRSE (–1)	129	61		68	0.775		128	64		64	0.915	
CFRSE (+1)–CFRSE (–1)	129	60		69	0.414		128	63		65	0.754	
<i>2nd post-merger year (Panel B)</i>												
NSM (+2)–NSM (–1)	117	63	54		0.608		120	62	58		0.775	
NRTA (+2)–NRTA (–1)	121	64	57		0.633		120	63	57		0.985	
NRSE (+2)–NRSE (–1)	121	52	69		0.086*		120	53	67		0.123	
CFRSE (+2)–CFRSE (–1)	121	47	74		0.033**		120	51	69		0.129	
<i>3rd post-merger year (Panel C)</i>												
NSM (+3)–NSM (–1)	106	50	56		0.255		109	39	70		0.007***	
NRTA (+3)–NRTA (–1)	111	46	65		0.096*		109	39	70		0.061*	
NRSE (+3)–NRSE (–1)	111	58	53		0.899		109	45	64		0.354	
CFRSE (+3)–CFRSE (–1)	111	48	63		0.655		109	44	65		0.39	
<i>4th post-merger year (Panel D)</i>												
NSM (+4)–NSM (–1)	94	49	45		0.944		97	35	62		0.017**	
NRTA (+4)–NRTA (–1)	98	47	51		0.214		97	32	65		0.002***	
NRSE (+4)–NRSE (–1)	98	51	47		0.836		97	38	59		0.11	
CFRSE (+4)–CFRSE (–1)	98	44	54		0.711		97	37	60		0.198	
<i>5th post-merger year (Panel E)</i>												
NSM (+5)–NSM (–1)	90	48	42		0.654		93	42	51		0.974	
NRTA (+5)–NRTA (–1)	93	45	48		0.207		93	46	47		0.353	
NRSE (+5)–NRSE (–1)	93	53	40		0.650		93	47	46		0.689	
CFRSE (+5)–CFRSE (–1)	93	40	53		0.440		93	42	51		0.353	

Notes:

^aNumber of observations.

^bNumber of firms with a higher post-acquisition ratio.

^cNumber of firms with a lower post-acquisition ratio.

The highest number of companies in the comparison between post- and pre-acquisition ratios is printed in bold.

*The post-acquisition ratio is significantly different from the pre-acquisition ratio at the 10% level.

**The post-acquisition ratio is significantly different from the pre-acquisition ratio at the 5% level.

***The post-acquisition ratio is significantly different from the pre-acquisition ratio at the 1% level.

NSM: Net sales margin before taxes; net operating income/sales.

NRTA: Net return on total assets before taxes: earnings before interest and taxes/total assets.

NRSE: Net return on shareholders' equity after taxes: profit after taxes/shareholders' equity.

CFRSE: Cash flow return on shareholders' equity after taxes: cash flow after taxes/shareholders' equity.

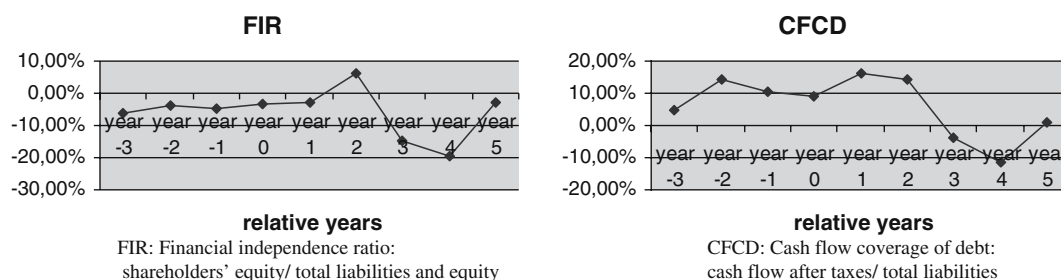


Figure 2. Evolution of the industry-adjusted solvency before and after acquisition (medians).

In the first and the second year after the acquisition, we observe an improvement of both solvency ratios. After year (+2) however, there is a sharp decline in the financial independence ratio and in the cash flow coverage of debt till year (+4).

In Table V we present the results of Wilcoxon tests for the differences in solvency between year (-1) and the years (+1), (+2), (+3), (+4) and (+5). The differences are not significant in the first and second year after the acquisition (Panels A and B).

In the third and fourth year after the acquisition (Panels C and D) we observe a significant decline in the solvency of the acquirer, compared to the year before the acquisition.

When we look not only at the solvency differences with the first year before acquisition, but also at the differences from year (-2) and year (-3) to each of the post-acquisition years (not reported), we may conclude that acquisitions have a negative impact upon the acquirer's solvency: the acquirers are more leveraged in the post-acquisition years compared to their pre-acquisition debt levels.

Our findings are similar to those of Higson and Elliott (1994), although they are less pronounced. Higson and Elliott (1994) found significantly higher debt levels in the four-year period after take-overs for a sample of 340 U.K. take-overs in the period 1976–1990, and stated that *'this financial structure result is perhaps the most clear cut of all changes around acquisition'*. However, we note that the post-take-over study by Higson and Elliott (1994) deals with the performance of listed companies involved in acquisitions. In addition, Ghosh

and Jain (2000) also found strong empirical evidence of a statistically and economically significant increase in financial leverage of combined firms after mergers.

4.3. Post-acquisition liquidity

As we can see from Figure 3, there is a decline in liquidity in the post-acquisition years. With respect to the NCR, we notice an increase from year (-1) to year (+2) and a decline in the subsequent years. The CR shows a sharp decline in the post-acquisition period. It seems very clear that acquisitions have a negative impact on the acquirer's liquidity. Probably the acquirers use the cash of the targets to finance the acquisition.

Table VI gives the results of the Wilcoxon test for the differences in liquidity. In the first 2 years after the acquisition (Panels A and B) no significant differences are found. If adjusted for industry or industry & size, the CR is significantly lower in the third, fourth and fifth year after the acquisition (Panels C, D and E). In a previous study (Camerlynck and Ooghe, 2000) it was found that relative to their industry median, target companies are highly liquid, whereas the acquirers show a low liquidity. The initial increase in liquidity in the first years after acquisition can hence be explained by the positive influence of the liquidity of the target. The decline in the liquidity in the long-run could be explained by the fact that the acquirers experience even after acquisition a growth-resource imbalance in the long-run: the financial resources necessary to finance the growth of the company are not sufficient.

TABLE V
Post take-over performance results with respect to solvency (Wilcoxon Signed Rank Test)

	Non-adjusted			Industry-adjusted			Industry & size adjusted		
	N1 ^a	N2 ^b post > pre	N3 ^c post < pre	P-value	N1 ^a	N2 ^b post > pre	N3 ^c post < pre	P-value	P-value
<i>1st post-merger year (Panel A)</i>									
FIR (+1)–FIR (–1)	129	67	62	0.965	128	70	58	0.660	0.538
CFCD (+1)–CFCD (–1)	128	69	59	0.493	128	73	55	0.236	0.513
<i>2nd post-merger year (Panel B)</i>									
FIR (+2)–FIR (–1)	121	66	55	0.546	120	70	50	0.296	0.702
CFCD (+2)–CFCD (–1)	121	55	66	0.355	120	60	60	0.969	0.382
<i>3rd post-merger year (Panel C)</i>									
FIR (+3)–FIR (–1)	111	53	58	0.255	109	44	65	0.010***	0.003***
CFCD (+3)–CFCD (–1)	110	50	60	0.224	109	47	62	0.041**	0.011**
<i>4th post-merger year (Panel D)</i>									
FIR (+4)–FIR (–1)	98	52	46	0.987	97	41	56	0.020**	0.008***
CFCD (+4)–CFCD (–1)	98	49	49	0.150	97	38	59	0.004***	0.000***
<i>5th post-merger year (Panel E)</i>									
FIR (+5)–FIR (–1)	93	48	45	0.829	93	50	43	0.534	0.647
CFCD (+5)–CFCD (–1)	93	64	29	0.000***	93	47	46	0.427	0.143

Notes:

^aNumber of observations.

^bNumbers of firms with a higher post-acquisition ratio.

^cNumber of firms with a lower post-acquisition ratio.

The highest number of companies in the comparison between post- and pre-acquisition ratios is printed in bold.

*The post-acquisition ratio is significantly different from the pre-acquisition ratio at the 10% level.

**The post-acquisition ratio is significantly different from the pre-acquisition ratio at the 5% level.

***The post-acquisition ratio is significantly different from the pre-acquisition ratio at the 1% level.

FIR: Financial independence ratio: shareholders' equity/total liabilities and equity.

CFCD: Cash flow coverage of debt: cash flow after taxes/total debt.

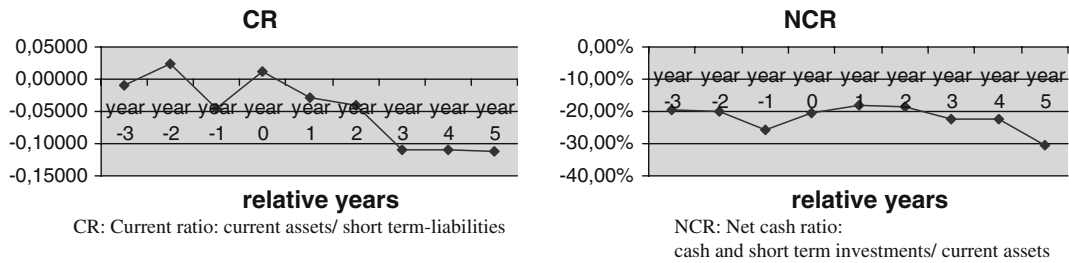


Figure 3. Evolution of the industry-adjusted liquidity before and after acquisition (medians).

4.4. Post-acquisition added value measures

The added value measures are plotted in Figure 4. Both the GAVE and the PEE decline in post-acquisition years till year (+4).

The results of the Wilcoxon test are presented in Table VII. The differences in the (non-adjusted) GAVE between the combination of acquirer and target in year (-1) and the acquirer in the five post-acquisition years are all statistically significant at the 5% level and indicate that there is an increase in GAVE.

However, if we look at the industry-adjusted or industry & size-adjusted figures, the differences are no longer significant in the first and second year after acquisition (Panels A and B). In the years (+3) and (+4) after the acquisition (Panels C and D) there is even a 1% significant decrease in the GAVE. Hence, we may conclude that the non-adjusted increase in productivity after the acquisition is due to an improvement. Indeed, Belgian companies, in general, have experienced an important increase of the GAVE the last 10 years (Ooghe and Balcaen, 2000).

Table VII (Panels A–E) also shows the results from the Wilcoxon test with respect to the PEE. Just as the GAVE, the non-industry-adjusted measures reveal a significant increase in the PEE for all years. It should be noticed that the higher personnel expenses in year +1 can be explained by the presence of redundancy benefits. However, the increase is also due to the industry effect, as we can see from the industry- and industry & size adjusted measures.

Both the GAVE and the PEE consists of a numerator (gross added value or personnel expenses) and a denominator (number of employees). This implies that the observed

increase could be caused by a decrease in the number of employees after the acquisition.

As mergers are often associated with restructuring activity, one could expect that the acquirer does not keep all employees of the target company. On the other hand, if the acquiring company experiences significant growth, it is possible that this growth requires an increasing number of employees. Empirical research on the impact of firm acquisitions on labour is rather limited for Europe and suffers from the same problem as most acquisition studies, namely that they are confined to analyses of acquisitions of big companies with publicly-traded securities.

An important exception to this observation is the study of Brown and Medoff (1988), who directed their attention to the market for corporate control of very small firms, acknowledging the fact that a substantial fraction of the work force is employed by small firms. According to them, the public's perception is conditioned by a relatively small number of highly publicized and extremely hostile acquisitions. In their research they distinguish among several different types of acquisitions. In simple sales (i.e., firm A changes ownership without being integrated with any other firm) they find an increase in employment by roughly 9%. Firms that are part of 'assets only acquisitions' (i.e., firm A purchases firm B and absorbs firm B's workers, or firms A and B combine to firm C) are associated with employment growth of about 2%. Apparently Brown and Medoff (1988) found little support for the common public perception that acquisitions provide the occasion to slash employment.

In our research we compared the number of employees that have joined the acquirer after the

TABLE VI
Post take-over performance results with respect to liquidity (Wilcoxon Signed Rank Test)

	Non-adjusted				Industry-adjusted				Industry & size adjusted				
	N1 ^a	N2 ^b post > pre	N3 ^c post < pre	P-value	N1 ^a	N2 ^b post > pre	N3 ^c post < pre	P-value	N1 ^a	N2 ^b post > pre	N3 ^c post < pre	P-value	
<i>1st post-merger year (Panel A)</i>													
CR (+1)–CR (–1)	128	69	59	0.964	128	68	60	0.998	127	66	61	0.876	
NCR (+1)–NCR (–1)	129	67	62	0.999	128	67	61	0.954	128	66	62	0.779	
<i>2nd post-merger year (Panel B)</i>													
CR (+2)–CR (–1)	118	61	57	0.856	120	65	55	0.755	118	59	59	0.714	
NCR (+2)–NCR (–1)	118	56	62	0.827	120	56	64	0.785	118	57	61	0.995	
<i>3rd post-merger year (Panel C)</i>													
CR (+3)–CR (–1)	110	54	56	0.339	109	49	60	0.007***	108	47	61	0.004***	
NCR (+3)–NCR (–1)	111	53	58	0.755	109	50	59	0.731	109	53	56	0.575	
<i>4th post-merger year (Panel D)</i>													
CR (+4)–CR (–1)	98	51	47	0.939	97	41	56	0.016**	97	42	55	0.015**	
NCR (+4)–NCR (–1)	98	50	48	0.358	97	50	47	0.193	97	54	43	0.121	
<i>5th post-merger year (Panel E)</i>													
CR (+5)–CR (–1)	93	41	52	0.034**	93	40	53	0.037**	93	42	51	0.067*	
NCR (+5)–NCR (–1)	93	45	48	0.950	93	40	53	0.556	93	48	45	0.686	

Notes:

^aNumber of observations.

^bNumbers of firms with a higher post-acquisition ratio.

^cNumber of firms with a lower post-acquisition ratio.

The highest number of companies in the comparison between post- and pre-acquisition ratios is printed in bold.

*The post-acquisition ratio is significantly different from the pre-acquisition ratio at the 10% level.

**The post-acquisition ratio is significantly different from the pre-acquisition ratio at the 5% level.

***The post-acquisition ratio is significantly different from the pre-acquisition ratio at the 1% level.

CR: Current ratio; current assets/short-term liabilities.

NCR: Net cash ratio; cash and short-term investments/current assets.

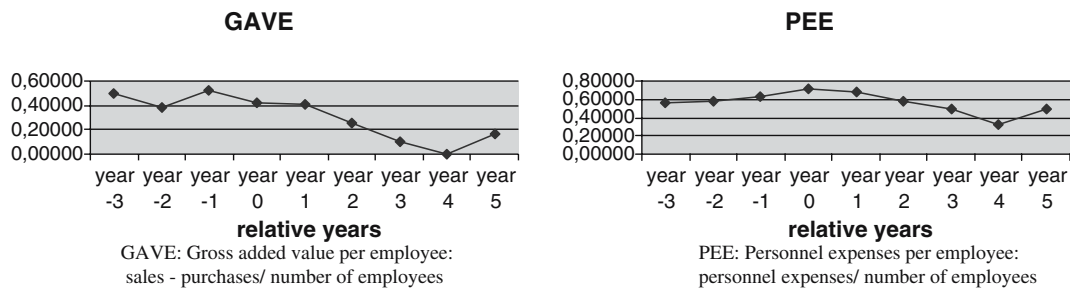


Figure 4. Evolution of the industry-adjusted added value before and after acquisition (medians).

acquisition took place, with the number of employees of the target in the year prior to the acquisition, but we did not find statistically significant results.

4.5. Post-acquisition failure scores

In Figure 5 we observe, till year (+4) after the acquisition, a decline of the failure scores, especially of the long-term failure score, which implies that the financial situation deteriorates.

The results of the Wilcoxon test are reported in Table VIII. For the short-term non-adjusted logit score we observe (almost) no statistically significant differences, which means that the short-term risk of failure is about equal before and after the acquisition.

Concerning the long-term failure scores however, we may conclude from the industry-adjusted values that the post-acquisition long-term failure risk is higher than the pre-acquisition risk. This difference is significant at the 1% level for all years.

So, we may conclude that acquisitions have a negative impact on the overall financial situation of the acquiring company in the long term. This conclusion coincides in general with the negative evolution of the individual aspects of the financial situation discussed above.

5. Summary and conclusions

In the extended empirical literature on the financial effects of acquisitions, two different approaches are developed: stock market event studies that use the target and the bidding firm's stock prices, and accounting studies that use annual accounts information, derived from the companies' annual reports.

This paper evaluates the post-acquisition performance of the acquiring company by using the standard approach in acquisition research, i.e., the before-after analysis of the acquisition. Because we evaluate the performance of small, privately held companies that were involved in a acquisition, accounting data are used.

The research question is: do acquiring firms perform better after the acquisition? Earlier research shows no significant increase in the post-acquisition profitability. This study leads to several conclusions with respect to the financial characteristics and performance of the acquiring companies.

Firstly, acquisitions have a negative impact on the acquirer's profitability. However, these results are almost never statistically significant. One year prior to the acquisition, the combined entity of the acquirer and its target reaches its highest profit margins. This was caused by a sharp rise in the acquirer's sales margin one year prior to acquisition. In the first post-acquisition years, a significant decline in profit margins is noticed. A similar result is found with respect to the net return on total assets: the higher the net return on assets realized by the acquirer in year (-1), the higher the weighted averages. However, in the post-acquisition years the acquirer is not able to maintain these high profitability levels.

Possible explanations for the apparent decrease in profitability, following the acquisition, are: 'managerial control loss problems' and some kind of 'mean reversion' in accounting rates of return. It may be that acquirers experience unexpected problems in managing and integrating their acquisitions. As the combined organization becomes more complex, the acquiring management loses its control and is no

TABLE VII
Post take-over performance results with respect to added value (Wilcoxon Signed Rank Test)

	Non-adjusted				Industry-adjusted				Industry & size adjusted			
	N1 ^a	N2 ^b post > pre	N3 ^c post < pre	P-value	N1 ^a	N2 ^b post > pre	N3 ^c post < pre	P-value	N1 ^a	N2 ^b post > pre	N3 ^c post < pre	P-value
1st post-merger year (Panel A)												
GAVE (+1)–GAVE (–1)	121	75	45	0.014**	123	70	53	0.415	120	66	54	0.340
PEE (+1)–PEE (–1)	121	90	31	0.000***	123	82	41	0.000***	120	80	40	0.000***
2nd post-merger year (Panel B)												
GAVE (+2)–GAVE (–1)	109	68	40	0.003***	115	52	63	0.439	106	46	60	0.389
PEE (+2)–PEE (–1)	109	76	32	0.000***	115	60	55	0.484	106	59	47	0.140
3rd post-merger year (Panel C)												
GAVE (+3)–GAVE (–1)	105	68	36	0.024**	104	37	67	0.000***	101	36	65	0.003***
PEE (+3)–PEE (–1)	105	81	24	0.000***	104	47	57	0.023**	101	47	54	0.104
4th post-merger year (Panel D)												
GAVE (+4)–GAVE (–1)	87	62	24	0.001***	92	30	62	0.000***	84	29	55	0.001***
PEE (+4)–PEE (–1)	87	69	18	0.000***	92	35	57	0.002***	84	38	46	0.014***
5th post-merger year (Panel E)												
GAVE (+5)–GAVE (–1)	87	59	28	0.005***	88	28	60	0.002***	86	43	43	0.719
PEE (+5)–PEE (–1)	87	70	17	0.000***	88	41	47	0.924	86	50	36	0.145

Notes:

^aNumber of observations.

^bNumbers of firms with a higher post-acquisition ratio.

^cNumber of firms with a lower post-acquisition ratio.

The highest number of companies in the comparison between post- and pre-acquisition ratios is printed in bold.

**The post-acquisition ratio is significantly different from the pre-acquisition ratio at the 5% level.

***The post-acquisition ratio is significantly different from the pre-acquisition ratio at the 1% level.

GAVE: Gross added value per employee; sales-purchases/number of employees.

PEE: Personnel expenses per employee; personnel expenses/number of employees.

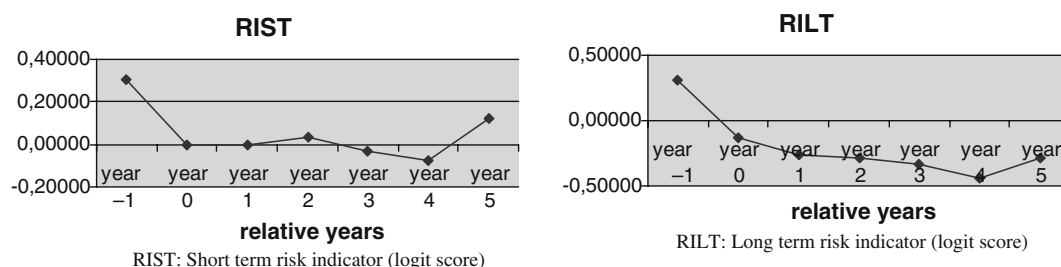


Figure 5. Evolution of the industry-adjusted failure scores before and after acquisition (medians).

longer able to manage its organization efficiently, which results in declining profits. On the other hand, a decrease in profitability may reflect the tendency for abnormal rates of return to regress over time toward 'normal' levels. We found acquirers reach their top profitability level 1 year prior to the acquisition, perhaps stimulating them towards an acquisition. Therefore, a decline in profitability may have very little to do with the acquisition itself, but may be merely a logical decline after a period of very high profits in the acquirer's history.

Secondly, we analyse the changes in the solvency position after acquisition. Here, similar conclusions as with respect to the profitability are obtained. In the first 2 years after the acquisition the solvency improves, but from year (+2) on we observe a sharp decline in the financial independence and the cash flow coverage of debt, which is at variance with the rise in the acquirer's solvency in the pre-acquisition years. The acquirers are thus more leveraged in the post-acquisition years, compared to their debt levels in year (-1).

Thirdly, we also investigate the changes in liquidity position after acquisition. Here again, the acquisition has a significant negative impact on the acquirer's liquidity.

In addition, we also investigate some more 'fundamental' performance measures to evaluate the overall economic performance of companies, involved in acquisitions. We find a sharp increase of the acquirer's gross added value per employee, which suggests that acquisition has a positive impact upon the acquirer's labour productivity. However, the increased productivity

after acquisition is due to the general improvement in gross added value. Belgian companies in general experienced an important increase in gross added value per employee over the last 10 years. With respect to the personnel expenses per employee, we observe a significant increase for all years, but this effect disappears once the industry effect is taken into account.

Finally, we also analyse pre- and post-acquisition failure scores. With respect to the short-term scores no differences can be found. The long-term industry-adjusted failure scores however reveal a significant deterioration of the financial situation of the acquirer after the acquisition.

Focusing on acquisitions of small, privately held companies, the general conclusion is that acquisitions usually do not seem to improve the acquirer's performance. On the contrary, especially from the third year after the acquisition on, the profitability, solvency and liquidity of the acquiring firm deteriorate, and this overall deterioration is reflected in a higher long-term failure risk. Acquisitions in general seem to be much more difficult to manage than the acquirers thought before. This conclusion is in line with the post-acquisition results of earlier studies, which mainly address to the acquisition of large and publicly traded companies.

Further research could investigate whether better and worse performing acquisitions can be distinguished from each other in terms of their pre-acquisition characteristics? What are the potentially differentiating financial characteristics of successful acquisitions?

TABLE VIII
Post take-over performance results with respect to failure scores (Wilcoxon Signed Rank Test)

	Non-adjusted				Industry-adjusted				Industry & size adjusted			
	N1 ^a	N2 ^b post > pre	N3 ^c post < pre	P-value	N1 ^a	N2 ^b post > pre	N3 ^c post < pre	P-value	N1 ^a	N2 ^b post > pre	N3 ^c post < pre	P-value
<i>1st post-merger year (Panel A)</i>												
RIST (+1)–RIST (–1)	114	54	60	0.697	111	51	60	0.256	111	55	56	0.998
RILT (+1)–RILT (–1)	114	62	52	0.846	111	88	23	0.000***	111	63	48	0.200
<i>2nd post-merger year (Panel B)</i>												
RIST (+2)–RIST (–1)	106	46	60	0.344	104	51	53	0.544	104	59	45	0.476
RILT (+2)–RILT (–1)	106	59	47	0.424	104	83	21	0.000***	104	61	43	0.200
<i>3rd post-merger year (Panel C)</i>												
RIST (+3)–RIST (–1)	107	50	57	0.661	103	44	59	0.113	103	45	58	0.405
RILT (+3)–RILT (–1)	107	58	49	0.901	103	82	51	0.000***	103	64	39	0.065*
<i>4th post-merger year (Panel D)</i>												
RIST (+4)–RIST (–1)	96	44	52	0.190	91	37	54	0.040**	91	40	51	0.181
RILT (+4)–RILT (–1)	96	54	42	0.161	91	74	17	0.000***	91	63	28	0.023**
<i>5th post-merger year (Panel E)</i>												
RIST (+5)–RIST (–1)	90	32	53	0.070*	86	40	46	0.616	86	42	44	0.650
RILT (+5)–RILT (–1)	90	51	39	0.273	86	73	13	0.000***	86	51	35	0.153

Notes:

^aNumber of observations.

^bNumber of firms with a higher post-acquisition ratio.

^cNumber of firms with a lower post-acquisition ratio.

The highest number of companies in the comparison between post- and pre-acquisition ratios is printed in bold.

*The post-acquisition ratio is significantly different from the pre-acquisition ratio at the 10% level.

**The post-acquisition ratio is significantly different from the pre-acquisition ratio at the 5% level.

***The post-acquisition ratio is significantly different from the pre-acquisition ratio at the 1% level.

RIST: Short-term risk indicator (logit score).

RILT: Long-term risk indicator (logit score).

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Notes

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¹ Event studies that also look at the long-run post-acquisition performance are: Franks et al. (1991), Healy et al. (1992), Agrawal et al. (1992) and Loughran and Vijh (1997).

² For an excellent summary of earlier accounting studies, see Chatterjee and Meeks (1996).

³ It was impossible to examine exactly the impact of the method of payment although for Belgian private acquisitions payment in cash is by far the most frequently used payment method. With respect to the accounting method the pooling of interests method is legally obliged in Belgium since 1993 (Ooghe et al., 2002).

⁴ 200 million Belgian francs = 4 957 870 Euro; 100 million Belgian francs = 2 478 935 Euro.

⁵ Source: Ooghe and Balcaen (2000) and the CD-ROM's of the National Bank of Belgium.

⁶ Ooghe and Balcaen (2000), De financiële toestand van de Belgische ondernemingen: sleutelratio's en risicoindicatoren 1991–1999.

⁷ For an overview of the 17 industry classes and the number of acquired and acquiring companies per industry: see Appendix Table A2.

⁸ We also applied a cross-sectional regression analysis to incorporate the relation between pre- and post-acquisition industry-adjusted performance (see Healy et al., 1992; Rahman and Limmack, 2000):

$$\text{Ratio}_{\text{post},i} = \alpha + \beta \text{Ratio}_{\text{pre},i} + \varepsilon_i$$

where $\text{Ratio}_{\text{post},i}$ is the median industry-adjusted ratio for company i in the five post-acquisition years; $\text{Ratio}_{\text{pre},i}$ is the median industry-adjusted ratio for the combination of target and acquirer in the three pre-acquisition years; α is the abnormal industry-adjusted performance, independent of the pre-acquisition performance; and β measures the effect of the pre-acquisition performance on the post-acquisition performance.

The results from the regression analysis are not reported since they were not significant.

Appendix

TABLE A1
Multivariate logit failure prediction model: Ooghe, Joos and De Vos (see Ooghe et al., 1995)

	Variables	Sign
	<i>One year prior to failure</i>	
	Intercept	–
X1	Direction of the financial leverage = net return on total assets before taxes – average interest rate of debt (dummy variable: 1 if > 0, 0 if < 0)	–
X2	(Accumulated profits or losses + retained earnings)/(equity + liabilities less accrued charges and deferred income)	–
X3	Cash & short-term investments/total assets	–
X4	Overdue taxes and social security charges (dummy variable: 1 if > 0, 0 else)	+
X5	(Inventories + accounts receivable – accounts payable – taxes, remuneration and social security debt – advances received on contracts in progress)/total assets	–
X6	Net return on operating assets before taxes	–
X7	Short-term financial debt (mainly bank debt + other guarantees)/short-term debt	+
X8	Debts guaranteed/total debt	–
	<i>Three years prior to failure</i>	
	Intercept	–
X1	(Accumulated profits or losses + retained earnings)/(equity + liabilities less accrued charges and deferred income)	–
X2	Publication lag of the annual accounts	+
X3	Overdue taxes and social security charges (dummy variable: 1 if > 0, 0 else)	+
X4	(Earnings before interest, taxes, depreciation and amortization (EBITDA) – capital investments)/total assets	–
X5	Relationships with affiliated enterprises = (amounts receivable from them + commitments guaranteed on their behalf + other financial commitments in their favour)/total assets	–
X6	Total debt/(equity + liabilities less accrued charges and deferred income)	+

TABLE A2
Number of sample companies per industry

Industry ^a	Number of companies							
	Acquired firms				Acquiring firms			
	1992	1993	1994	Total	1992	1993	1994	Total
1. Agriculture	1	1	0	2	0	2	0	2
2. Utilities	0	0	0	0	0	0	0	0
3. Manufacturing (4–8)	7	11	14	32	9	9	16	34
4. Metals	1	5	5	11	1	6	5	12
5. Food	4	3	5	12	4	1	6	11
6. Chemicals	0	0	2	2	1	0	2	3
7. Textiles and apparel	1	1	1	3	2	1	2	5
8. Timber	1	2	1	4	1	1	1	3
9. Paper and printing	1	0	3	4	1	0	2	3
10. Construction	2	1	4	7	1	1	4	6
11. Wholesale	10	5	25	40	7	6	18	31
12. Retail	1	0	3	4	1	1	0	2
13. Hotel, restaurant & catering	0	3	5	8	0	2	1	3
14. Transportation	3	1	8	12	2	3	7	12
15. Real estate	5	4	6	15	4	2	7	13
16. Business services ^b	6	3	7	16	7	2	6	15
17. Personal services	2	1	0	3	1	1	0	2
Total (1–2, 4–17)	38	30	75	143	33	29	61	123

^aThe industry classification is the classification used in a yearly study about “The financial situation of the Belgian companies” (Ooghe and Balcaen, 2000). More specifically, it is based on the Belgian version of the European NACE codes, a classification comparable to the SIC codes in the U.S.A.

^bExclusive management activities of holdings (NACE-BEL 74.151) and coordination centres (NACE-BEL 74.152) because of their special nature.

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