



# INVESTMENT BANKING EXPLAINED

[ AN INSIDER'S GUIDE  
TO THE INDUSTRY ]

SECOND EDITION

MICHEL FLEURIET

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## Synergies in M&As

**A**chieving synergies is the fundamental rationale for M&As, and it is generally believed that a combination of businesses will create value only if the value of synergies is positive. IBs have become more involved in the kinds of detailed, bottom-up estimations of synergies that are needed to produce a successful transaction. There are synergies when the value and performance of the merged entity are more than the sum of the two original entities taken separately.

Synergies can be either revenue or cost synergies, as illustrated by two simple equations:

- **$2 + 2 = 5$ .** On the revenue side, the goal of the transaction is to cross-sell the products and services of one company to the customers of the other or to develop and sell more products and services or both.
- **$2 + 2 = 3$ .** On the cost side, the combination of two firms permits the reduction of operating costs and expenditures.

There are various types of synergies in M&A.

## Types of Synergies in M&A Transactions

Economic synergies come from revenue increases, cost reductions, and/or cost avoidance. Financial synergies improve the balance sheet by reducing working capital, fixed assets, and borrowing or funding costs.

The Alliance Renault-Nissan-Mitsubishi (the Alliance) is a source of many examples because its *raison d'être* was to continually identify and develop synergies between these companies that kept their independence. Contrary to a full merger, where the synergies cannot always be measured after the deal once the merged businesses have been completely integrated, each year the Alliance published new synergies objectives and their achievement (the results were reviewed by the controllers of each company).

Revenue synergies in an M&A transaction can come by cross-selling the products and services of one company to the customers of the other, by developing and selling more products jointly, or by jointly creating new products. An example of cross-selling in the Alliance is seen when Nissan used Renault's Curitiba plant to establish a foothold in Brazil, the fourth-largest car market in the world, and later produced vehicles in a new factory at its Resende Industrial Complex in Rio de Janeiro. Its goal was to achieve a market share of 5 percent and lead the Japanese automakers in Brazil in quality and customers and not to compete with Renault. Another example: Renault used Nissan's implantation when it began producing cars in China in 2016 at a joint-venture plant with Dongfeng Motor Corporation, which was Nissan's trusted partner for more than a decade.

Another type of synergy is to sell more products jointly. For instance, in 2018, India was home to the largest Alliance plant, where 12 models were produced, some of them Renault, others Nissan. In Russia, the Alliance built different Renault, Nissan, Datsun, and LADA models in the same plant.

Finally, the combined company can jointly create new products that could be sold under the different brands. For instance, in the late 2010s, the Alliance invested jointly in innovation to prepare a future with zero emissions (electric cars) and zero fatalities (self-driving cars).

On the cost side, the combination of two firms in an M&A transaction permits a reduction in operating costs and expenses. More precisely, these synergies may come from economies of scale and scope, best practices, the sharing of capabilities and opportunities, and often the stimulating effect of the combination on the individual companies.

Economies of scale are factors that cause the unit cost of producing a car to fall as the volume of its output increases. The main costs of producing a car are purchases of parts, services, and equipment. In the Alliance a common organization was created quickly after the transaction to be responsible for the purchasing strategy and for selecting the suppliers of parts, services, and equipment around the world. Ten years later, all Alliance commodity purchases were done through this organization, and the collaboration across platforms, power trains, and other parts was significant, unleashing even more potential economies of scale.

Another component of cost is in manufacturing. The main driver of the Alliance strategy was the creation of high volumes for common parts to allow innovation in the manufacturing of parts, aggressive cost-reduction technology in modules and parts specification, and the introduction of competitive technology.

Another source of possible synergies in M&A transactions is economies of scope, lowering manufacturing and engineering costs by producing a range of products together. Economies of scope are achieved when the joint production of two or more products or services is accomplished more cheaply than producing them separately. Again, the Alliance provides an excellent example with the Common Module Family (CMF) platform. CMF was a modular architecture system that dissected a vehicle into five fundamental zones: the engine compartment, cockpit, front underbody, rear underbody, and the vehicle's electronic architecture. This modular architecture system, announced in 2013, allowed the Alliance to build a wider range of vehicles from a smaller pool of parts. By 2020, with CMF fully deployed in plants worldwide, 70 percent of all Alliance vehicles will fall within the CMF scope. The approach is expected to cut purchasing costs by as much as 30 percent and engineering costs by up to 40 percent.

Other economies of scale in M&A are more traditional and come from centralizing logistics and sharing common information systems infrastructure and administrative functions. For instance, in addition to synergies on parts, platforms, and purchasing, the Alliance created numerous teams that unlocked cost saving in transportation, administrative costs, and information systems. In logistics, a unified team communized packing and shipping. Another team reduced customs duties and administrative costs that each company incurred separately.

Another source of synergies that often comes unnoticed in M&As is the impact of a combination of businesses on *working capital requirements*



(WCRs). The size of WCRs depends on credit terms and inventory levels. A post-merger entity is often able to negotiate better terms and implement better inventory management policies.

Economies of scope in *capital expenditure* (CAPEX) means that a plant designed and equipped to produce different models is less expensive than building a plant for each model. Under the six-year plan adopted in 2016, the Alliance member companies increased their use of shared vehicle architectures, with 9 million units expected to be derived from four common platforms, up from 2 million vehicles on two platforms in 2016. A *platform* consists of the chassis and all the mechanical pieces that can be fixed onto it. Broadly speaking, without standardization, an automobile manufacturer must build an assembly line for each platform, which means one line for each model if each one is based on its own platform. With a high level of standardization and common components, many different models can be based on the same platform. Thanks to the modular architecture CME, the Alliance can also manufacture cars from a brand in a plant from the other brand. Of course, CAPEX is less than if they had to build different models in different plants!

There are three kinds of financial synergies: tax benefits, debt capacity, and economic risk reduction. Given the asymmetry of income taxes (no tax on deficit), the tax paid by a combined firm may be lower than the taxes paid by each firm before the merger. In addition, a reverse merger with the firm carrying a loss absorbing the profit-making one may be a way to use tax loss carryforward in some jurisdictions. Finally, combining firms with limited debt capacity may generate debt capacity for the merged entity.

## Valuing Synergies

IBs use many methods to value synergies, but the theory is simple: the synergy from a merger or acquisition is the fair value of the combined firm minus the sum of the fair value of the two firms as separate entities. I explained in Chapter 14 that the *fair value* is the true or intrinsic value of the property interest, exclusive of any element of value arising from the accomplishment or expectation of a merger or acquisition. The value of synergies  $S$  equals the value of the combined firm after the merger ( $VAT$ ) minus the sum of the values of each firm as separate entities ( $VA + VT$ ):

$$S = VAT - (VA + VT)$$

Alternatively, the value of synergy equals the value of the combined firm with synergy minus the value of the combined firm without synergy.

I explained in Chapter 15 that the value of a firm is based on the present value of its free cash flows. The value of the combined entity  $VAT$  is the present value of the free cash flows of the combined entities with synergy. The value of each company,  $VA$  and  $VT$ , is the present value of the free cash flows of each entity independently without synergy. Therefore, synergy is calculated by the present value of the incremental cash flow associated with the deal, and it may arise from their size and/or their timing and/or a reduction in their risk.

I discussed the sources of incremental cash flows earlier, but it is important for valuation purposes to deconstruct and articulate the drivers of value creation in detail for each year.

- Increase in revenues
- Decrease in operating costs
- Decrease in taxes
- Decrease in WCRs
- Decrease in CAPEX

Because synergies tend to mount over time, the value of synergies can be stated as the present value of ongoing synergies after two or three years. But for how long? In the case of the Alliance, the cumulative value of synergies was less than €2 billion from 1999 to 2002, which was the period of Nissan revival. It took 10 years for the Alliance to start generating hard synergies from €1.5 billion in 2009 to €3 billion in 2013 and to €6 billion in 2018.

Once the ongoing yearly synergies have been estimated, their net present value can be calculated with the usual discounted-cash-flow model. Theoretically, one should use a discount rate that takes the risk of the cash flows into account. Determination of the discount rate is a matter of policy in each IB. Typically, banks will use a weighted average cost of capital (WACC), with the capital structure of the merged entity being used for the weights of the costs of debt and equity, as you will see in the case study at the end of this chapter. There is, of course, some circularity in these cal-



culations, which can be resolved by spreadsheet approximations. But this method does not consider the sizable risk of not delivering the synergies in time. Experience shows that the present value often overestimates the actual synergies, which can be slow in coming. The other method consists of applying price/earnings multiple to these synergies. But, again, using the multiple of the acquirer may overvalue the synergies, as the market reaction often shows when the deal is announced.

Finally, there can be revenue deterioration resulting from the disruption caused by the merger itself. Many mergers fail because leaders do not pay enough attention to the existing businesses.

## Sharing the Synergies

Once the synergies have been evaluated, there is the problem of dividing the spoils. As I explained in Chapter 14, the value of a company to the seller is the sum of the company's stand-alone future cash flows, whereas the value to a buyer is the target's stand-alone cash flows plus the value of the synergies that the acquirer can capture.

With a cash transaction, the target firm's shareholders are not entitled to share in any downstream synergies because they will have left the combined entity. Therefore, all synergies should go to the buyers. But sellers often negotiate an *acquisition premium*, which is a portion of the value of synergies that induces the seller to accept the transaction. Research by the consulting firm Boston Consulting Group (BCG) and the Technical University of Munich (TUM) shows that in successful deals, buyers and sellers share the synergies.<sup>1</sup> Acquirers cannot expect to capture 100 percent of those synergies for themselves; sellers will anticipate the buyers' synergies and demand a takeover premium, reasoning that the target is worth more in the hands of the acquirers than in their own. The BCG/TUM research suggests that sellers collect, on average, 31 percent of the average capitalized value of expected synergies.

The gain to the acquirer is equal to the synergies minus the acquisition premium. Thus no acquirer should pay an acquisition premium more than the value of the synergies. But why not 50/50? Is 30 percent of synergies to the sellers and 70 percent to the buyer, as the BCG/TUM research indicates, too much or unfair? The problem is that this premium is paid immediately as part of the price, whereas the synergies will mate-

realize only over time. Therefore, the discount rate used to value these synergies should consider the risk that they won't materialize. Otherwise, the acquirer might overpay for the value of the synergies. Usually bankers use the cost of capital without consideration for this risk, as the case study at the end of this chapter shows (see BNP Paribas' methodology). A way to take this risk into account in a private transaction is for the buyer to agree on a contingent earn-out. An earn-out allows a purchaser to pay a portion of the purchase price to a seller in the future on the realization of performance targets. Usually the buyer wants to base the earn-out on the target's stand-alone profitability, which is problematic for acquisitions needing structural integration. In that case, it makes sense to tie the target's payout to the realization of synergies. The parties may want to share the synergies equally as they arise. But the acquirer needs to organize a plan for generating and measuring the synergies.

Another way to account for the risk of overpaying for synergies is to structure the transaction as an all-stock merger. As I explained in Chapter 14, a merger is a stock-financed acquisition in which the acquired entity disappears. The acquired firm disappears, all its businesses are transferred to the acquiring company (or to the new corporate entity), and the selling shareholders receive shares in the combined company in exchange for their shares in the defunct acquired firm. There is a profound difference between cash-financed and stock-financed acquisitions. In a cash-financed acquisition, the target's shareholders leave with cash in exchange for their shares. In a stock-financed acquisition, the selling shareholders join the purchasing shareholders as owners of the acquiring company.

If stock-financed M&As resemble marriages, cash-financed M&As are more akin to divorces. In a cash-financed acquisition, everything hinges on the acquisition premium, which is like alimony. All of it is given to the "divorcing" shareholders, who take the money and run and are not entitled to any downstream synergies. In a merger, by contrast, the shareholders of the target company have a continuing interest in the ongoing concern and share in the synergies. Much as in a marriage, the spouses share in the common wealth, but in a merger, the two groups don't share 50/50 as they would in a marriage—the breakdown depends on the exchange ratio.

The *exchange ratio* is the number of shares of the acquiring company that a selling shareholder will receive for one share of the acquired company. It also defines the share of the synergies that the selling shareholders

will be entitled to. Suppose that firm A acquires firm T in an all-stock transaction. Typically, firm A will issue new stock to finance the acquisition. The shareholders of target company T receive stock in acquiring company A in exchange for each share of the stock of T they hold. The number of shares they receive depends on the exchange ratio, which indicates how many shares of firm A they will receive in exchange for one of their shares. Thus, firm T's shareholders participate in future synergies in function of the exchange ratio.

If all-equity mergers are a way to account for the risk of overpaying synergies, why do acquirers tend to overpay more in stock deals than in cash deals? In 2006, Richard Dobbs, Marc Goedhart, and Hannu Suonio from McKinsey reviewed nearly 1,000 global M&As from 1997 to 2006, comparing share prices two days before and two days after each deal was announced to assess the financial markets' initial reaction to the deals.<sup>2</sup> They measured the proportion of all transactions in which the initial share price reaction for the acquirer was negative (adjusted for market movements). This represents the proportion of acquirers that the market perceives as having transferred more than 100 percent of the value created in their deal to the sellers. The study found that in all-cash deals, an average of around 49 percent of acquirers overpay compared with 69 percent for all-stock deals—a difference that has remained constant from 1997 to 2006.

Why are acquirers in stock deals deemed to overpay more often than in cash deals? This occurs because of the risk that their share of the synergies will be smaller than the acquisition premium they paid to convince selling shareholders to sell.

Because the selling shareholders share in the synergies, it should not come as a surprise that the post-merger stock performance is related to the method of payment. In the debate over whether there is an abnormal return after a merger, Professors Tim Loughran and Anand Vijh found that acquirers in cash offers earn positive long-run abnormal returns, whereas acquirers in stock-financed mergers earn negative returns.<sup>3</sup> In other words, acquirers in stock deals overpay more often than those in cash deals. This observation is confirmed by the 2006 study by McKinsey that I mentioned earlier. The difficulty with these studies is the period covered. In the late 1990s, stock deals accounted for well over half of all M&A activity by dollar value, but for the following 22 years it was less than 20 percent according to data from Dealogic.

Another explanation for the fact that acquirers in stock deals overpay more often than those in cash deals is the use of earnings per share (EPS) for measuring value generated by the transaction.

Many analysts spend time on accretion or dilution to check whether the combined (pro forma) EPS is greater than the acquirer's stand-alone EPS (accretion) or lower (dilution). They believe that accretion equals value creation and dilution means that value has been destroyed. The reason is probably that EPS is linked to the market value of the share by the price/earnings ratio. Given a fixed P/E ratio, if EPS is expected to increase because of the transaction, the market value of the share will increase as well. But there is a mathematical certainty that shows how wrong the accretion approach is: the higher an acquirer's P/E ratio in relation to the target, the more its EPS will increase with an all-stock merger!<sup>4</sup>

## CASE STUDY

### **The Financial Advisors' Opinions in the Merger between Alcatel and Lucent**

In 2006, two communications equipment companies, France-based Alcatel and US-based Lucent, the latter being the successor of AT&T's Western Electric, reached agreement on a \$13.4 billion merger.<sup>5</sup> The new company, Alcatel-Lucent, ran into serious cross-cultural issues at various levels. In 2015, Finland's Nokia merged with Alcatel-Lucent in a \$16.6 billion deal.

The 2006 transaction was structured as a merger of equals, with Lucent shareowners receiving US-listed American depositary shares of Alcatel (Alcatel ADSs)<sup>6</sup> in exchange for their shares of Lucent common stock. The exchange ratio was 0.1952 Alcatel ADS for one Lucent share. In the merger agreement, the exchange ratio had to correspond to parity for the Lucent and Alcatel share prices over a period prior to the market rumors of the merger—in other words, the exchange ratio was to be “at market” level.

Four IBs certified that the exchange ratio in the proposed merger was fair from a financial point of view. Goldman Sachs was financial advisor to Alcatel. Morgan Stanley and JPMorgan Chase were financial advisors to Lucent. The Alcatel board of directors chose the bank BNP Paribas to deliver a fairness opinion. Following are the methodologies used by the four IBs to render their opinions.

## Goldman Sachs' Methodology

1. **Historical stock trading analysis.** Goldman Sachs reviewed the historical trading prices for Lucent common stock for the 12-month period that ended March 23, 2006, the day before news of a potential combination was reported in the press. The relative share price performance of Lucent was examined in relation to selected companies (as hereinafter defined) and Alcatel and in relation to the S&P's 500 Index and the S&P 500 Telecom Index.
2. **Selected company's analysis.** Goldman Sachs reviewed and compared estimated enterprise value to estimated calendar year 2008 revenue ratios and estimated price to estimated calendar year 2008 EPS ratios for Alcatel and Lucent with corresponding financial information, ratios, and public market multiples for six publicly traded corporations in the communications technology industry (Cisco, LM Ericsson, Nokia, Nortel, Motorola, and Siemens).

Although none of the selected companies was directly comparable to Alcatel or Lucent, the companies included were chosen because they were publicly traded companies with operations that were considered somewhat similar to Alcatel and Lucent.

3. **Historical exchange ratio analysis.** For the period from March 23, 2005, through March 28, 2006, Goldman Sachs computed the daily implied exchange ratios of the closing stock market prices of Alcatel ADSs to Lucent common stock and compared them with the exchange ratio of Alcatel ADSs to Lucent common stock (0.1952).
4. **Contribution analysis.** Goldman Sachs reviewed the estimated future operating and financial information, including, among other things, sales; earnings before interest, taxes, depreciation, and amortization (EBITDA); earnings before interest and taxes (EBIT); and net income of Alcatel, Lucent, and the combined entity resulting from the merger. The information was based on Alcatel management's assumptions for Alcatel and Lucent and, in the second instance, on the median of estimates from the Institutional Brokers Estimate System (IBES). The analysis also indicated that at share prices as of March 23, 2006, holders of Alcatel ordinary shares represented 61.6 percent of the combined outstanding common equity and 58.5 percent of the combined enterprise value.

5. **Synergies analysis.** Goldman Sachs reviewed the impact of the estimated pretax operating synergies, including revenue synergies and cash restructuring costs, for calendar years 2007, 2008, 2009, and 2010 (estimates were provided by the managements of Alcatel and Lucent). The bank analyzed the value of 100 percent of the synergies using discounted-cash-flow analysis and multiples analysis.
6. **Accretion/dilution analysis.** Goldman Sachs analyzed the pro forma financial effects of the merger on Alcatel's estimated EPS using (a) estimates of earnings for Alcatel and Lucent based on the views of Alcatel management using the fully diluted number of shares and (b) estimates of earnings for Alcatel and Lucent based on IBES estimates. For calendar years 2007, 2008, and 2009, Goldman Sachs compared the projected EPS for Alcatel common stock on a stand-alone basis with the projected EPS for the combined company.

### **JPMorgan Chase's Methodology**

1. **Historical common stock performance.** JPMorgan Chase's analysis of the performance of Lucent common stock and Alcatel ADSs involved a historical analysis of their respective trading prices over the period from December 30, 2005, to March 31, 2006, the last trading day prior to the public announcement of the merger.
2. **Exchange ratio premium analysis.** JPMorgan Chase calculated the exchange ratio premium (discount) for 22 M&A transactions between listed companies in various industries (e.g., telecom, pharmaceuticals, finance, oil and gas, and food and beverage) relative to the implied exchange ratio based on average prices over the 30-day period before the official announcement of the transaction. For the selected transactions, the average 30-day exchange ratio premium was 2 percent and the median 30-day exchange ratio premium was 1 percent.
3. **Relative contribution analysis.** JPMorgan Chase reviewed the relative contributions of Lucent and Alcatel to the historical and forecasted revenue, EBITDA, and net income of the combined company for the calendar years ending December 31, 2005, and December 31, 2006. The calendar year 2006 forecasted revenue, EBITDA, and net income for both Lucent and Alcatel were based on management estimates.

4. **Publicly traded comparable company analysis.** JPMorgan Chase compared the financial and operating performance of Lucent and Alcatel with publicly available information on seven publicly traded companies engaged in businesses that JPMorgan Chase deemed relevant to Lucent's and Alcatel's businesses (Cisco, Nokia, Motorola, Ericsson, Nortel, Juniper Networks, and Tellabs). Readers might want to check the differences with Goldman's comparables.
5. **Discounted-cash-flow analysis.** JPMorgan Chase calculated ranges of implied equity value per share for both Lucent common stock and Alcatel ADSs by performing discounted-cash-flow analysis based on management projections for the calendar year ending December 31, 2006, for both Lucent and Alcatel and using extrapolations of such projections for the calendar years ending December 31, 2007 to 2010, which were based on publicly available estimates of certain securities research analysts.
6. **Value-creation analysis.** JPMorgan Chase analyzed the pro forma impact of the merger on the equity value per share of Lucent common stock. The pro forma results were calculated as if the merger had closed on December 31, 2006, and were based on the unaffected price per share of Lucent common stock on March 23, 2006, prior to the public disclosure by Lucent and Alcatel that they were in merger discussions. JPMorgan Chase calculated the potential increase/decrease in the equity value per share of Lucent common stock.

## Morgan Stanley's Methodology

1. **Historical common stock performance.** Morgan Stanley's analysis of the performance of Lucent common stock consisted of a historical analysis of trading prices over the period from December 30, 2005, to March 31, 2006.
2. **Comparative stock price performance.** Morgan Stanley performed analyses of the historical closing prices of Lucent common stock, the Alcatel ADSs, and an equally weighted index of communications equipment companies consisting of LM Ericsson Telephone Co. and Nortel Networks Corp.
3. **Exchange ratio premium analysis.** Morgan Stanley reviewed the ratios of the closing prices of Lucent common stock to the corre-



sponding closing prices of the Alcatel ADSs over various periods ending March 31, 2006.

4. **Relative contribution analysis.** Morgan Stanley analyzed the relative contributions of Lucent and Alcatel to historical and estimated revenue, EBITDA, and net income of the combined company for the calendar years ending December 31, 2005, and December 31, 2006, based on available management estimates by Lucent and Alcatel.
5. **Present value of equity research analyst price targets analysis.** Morgan Stanley performed an analysis of the present value per share of Lucent common stock and Alcatel ordinary shares by analyzing the 12-month target prices based on publicly available equity research estimates.
6. **Comparable company analysis.** While noting that no comparable public company was identical to Alcatel or Lucent, Morgan Stanley compared selected financial information for Alcatel and Lucent with publicly available information for comparable communications equipment companies that shared certain product characteristics and similar customer bases with Alcatel and Lucent, respectively. The bank selected the price/earnings multiple and the aggregate value divided by the estimated EBITDA for calendar years 2006 and 2007. The *aggregate value* of a company was defined as the market value of equity minus cash and cash equivalents plus the value of any debt, capital leases, minority interests, and preferred stock obligations of the company.
7. **Discounted-cash-flow analysis.** Morgan Stanley calculated ranges of implied equity value per share for Alcatel and Lucent as of March 31, 2006, based on a discounted-cash-flow analysis using management projections for calendar years 2005 and 2006 and extrapolations of such projections for calendar years from 2007 to 2010. The unlevered free cash flows from calendar years 2006 through 2010 and the terminal value were then discounted to present values using a range of discount rates from 10.0 to 11.0 percent. Morgan Stanley incorporated a risk premium into Alcatel's and Lucent's predicted weighted average cost of capital to consider unique risks for the companies and for the communications equipment industry.
8. **Pro forma analysis of the merger.** Morgan Stanley analyzed the pro forma impact of the merger on estimated EPS for Lucent for calen-

dar years 2007 and 2008. The bank performed the analysis assuming no synergies as well as with the realization of annual pretax synergies during calendar years 2007 and 2008.

## BNP Paribas' Methodology

BNP Paribas' methodology is of interest because it spells out the value of synergies in the merger.

1. BNP Paribas first compared the proposed parity of 0.1952 Alcatel ADS per Lucent share with the parity resulting from the performance of the Lucent share price and that of the Alcatel ADS (which correlates exactly with the price of the ordinary Alcatel share) over several periods prior to market rumors on March 24, 2006. The proposed parity was lower than the averages recorded on March 23, 2006 (one month, three months, six months, and one year averages). It was higher than the parity of the last share prices only on March 23, 2006 (0.1848). The proposed parity was also compared with the parity resulting from the target share prices of financial analysts prior to March 24, 2006. For each 12-month period preceding this date, it was lower than the parity resulting from the average target share prices for Alcatel and Lucent.
2. BNP Paribas then performed a valuation of the Alcatel shareholders' share in the value of the combined company's equity, synergies included, and compared this value with the value of Alcatel's equity prior to the rumors of March 24, 2006 (the market capitalization of Alcatel calculated based on the one-month average share price on March 23, 2006, was used as a reference). The value of the combined company was determined using two separate methods:
  - **By discounting the free cash flows of the group resulting from the merger, synergies included.** As explained earlier in this chapter, the discount rate used to value these synergies should consider the risk that they won't materialize. The bank extrapolated the free cash flows after 2009, the last year of the financial projections prepared by Alcatel, on a normalized basis, assumed to grow at 2 percent per year (inflation included). A discount rate of 9.7 percent, corresponding to its estimate of the weighted average cost of capital of the combined company, was used. This

discount rate did not consider the risk that the synergies won't occur.

- **Through a comparison of the multiples of Alcatel, Lucent, and comparable companies** (Avaya, Cisco Systems, Ericsson, Motorola, Nokia, and Nortel Networks). The most relevant multiple was the value of capital employed over EBIT, which factored in the earnings power and capital intensity of the companies without factoring in the impacts of different financial structures. This multiple was calculated for 2007 and 2008 because financial analysts' estimates were unavailable for 2009. This multiple was applied to projections of the EBIT of the combined company for 2007 and 2008.

Expected synergies for 2007 and 2008 representing only 30 and 70 percent, respectively, of the synergies expected over the long term, discounted at the weighted average cost of capital, were factored in "to provide a truer image of the earnings power of the combined company" (but not the risk that the expected synergies might not happen as I mentioned earlier in this chapter).

3. The two methods were applied both based on the consensus of financial analysts' forecasts for both companies and based on projections prepared by Alcatel. The cost of implementing the synergies resulting from the merger was deducted from the asset value to determine the equity value in the multiples approach, but they were included in the flows in the discounted-cash-flow approach.

Regardless of the method used to value the equity of the combined company, and given the expected synergies, Alcatel's shareholders' share in the equity of the combined company (60 percent) was substantially higher than the value of Alcatel's equity prior to the announcement of the merger (calculated based on the Alcatel one-month average share price on March 23, 2006).

The value creation for Alcatel shareholders, calculated using the discounted-cash-flow method, was still positive even when the actual synergies realized represented approximately half the expected synergies. With the financial projections for Lucent drawn from analysts' consensus estimates for 2006, 2007, and 2008 only, the percentage of the value created by the merger that the Alcatel shareholders would get would be close to the percentage of their share in the capital of the combined com-

pany (60 percent). Additionally, also based on the financial projections for Lucent drawn from the analysts' consensus, the creation of value for Alcatel shareholders, calculated using the discounted-cash-flow method, was still positive when the actual synergies realized represented approximately only one-third of the expected synergies.

BNP Paribas analyzed the impact of the merger on Alcatel's forecast EPS. This analysis was based on projections made by Alcatel for Alcatel and Lucent (factoring in only the service cost) and expected synergies from the merger in 2007, 2008, and 2009. EPS were calculated before depreciation of intangibles and excluding the cost of implementing the synergies. This analysis reveals, given the expected synergies, a slight increase in Alcatel's EPS for 2007 and an increase of over 30 percent in 2008 and 2009.

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# About the Author

**Michel Fleuriet** was the Harry W. Reynolds International Adjunct Professor of Finance, Wharton School of Finance at the University of Pennsylvania, and the founder of Université Paris-Dauphine's master's program in investment banking. Prior to his career in academia, Fleuriet served as chairman of HSBC France, chairman and head of investment banking at Merrill Lynch France, and CEO of Chase Manhattan France. He was for many years a professor of finance at HEC and holds a PhD in law from the Université Panthéon-Sorbonne and a PhD in finance from Wharton. His principal experience is in corporate finance and mergers and acquisition.