Do foreign takeovers affect currency risk exposure? Evidence from a sample of French acquirers

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ABSTRACT

The paper examines cross-border takeovers through the lens of currency risk management. Using a sample of 152 large cross-border deals undertaken by listed French firms, the study document that, acquirers are firms with higher exposure to target currency prior to the takeover announcement. The value of the acquiring firm becomes less sensitive to the target currency following the transaction. Acquirer abnormal returns are also positively associated with a decrease in exposure to the target currency. The gain is economically substantial. For an acquirer worth €100 million in equity, a one-unit decrease in currency exposure leads to a euro gain of €1.68 million.

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1. Introduction

Following the globalization of business over the last decades, almost all domestic firms are exposed to currency risk (i.e., risk induced by the fluctuations of exchange rates), either because they sell outputs abroad (i.e., exporters), or buy inputs from abroad (i.e., importers), or simply because they compete with foreign firms in their domestic market.

Firms are known to use derivatives to hedge currency risk (Stulz, 2004; Bartram, Brown, and Fehle, 2009). However, risk exposures hedged by the use of derivatives are relatively modest compared to firm size (Guay and Khotari, 2003). The main reason is probably due the fact that hedging via derivatives is not always possible, especially for long-term exposures, and when possible, may be expensive due to rollover concerns (see Froot, Scharfstein, and Stein (1993), and also Garfinkel and Hankins (2011)). Besides the use of derivatives, the risk management program of companies includes therefore other means of hedging, such as financial and operating activities (see, e.g., Pantzalis, Simkins, and Laux, 2001; Kim, Mathur, and Nam, 2006; Garfinkel and Hankins, 2011).

This article focuses on operational hedging, which aims at mitigating corporate risks by increasing operational flexibility and geographical diversification. Operational hedging implies, among others, the flexibility to transfer production from one geographical location to another following the change in demand and/or exchange rate uncertainties. Compared to their financial counterparts, operational hedging requires higher level of capital expenditure, and is more suited for managing long-run exposure (see, e.g., Chowdhry and Howe, 1999; Pantzalis, Simkins, and Laux, 2001).

A simple way to implement operational hedging consists therefore in undertaking cross-border mergers and acquisitions (M&A), such as increasing currency denominated sales or costs by buying a foreign company. If currency risk management is one of the drivers of the decision to implement a cross-border takeover, we expect that the value of the acquirer becomes less sensitive to the fluctuations of the target currency following the cross-border deal. We test this conjecture in this paper using a sample of large French companies involved in cross-border M&A transactions.

Our empirical analyses are based on a sample of 152 cross-border M&A deals undertaken by French firms included in the SBF 250 index[1] during the period 1999–2010. We focus on SBF 250 firms, because these are the largest listed French firms with ongoing international activities. Following Adler and Dumas (1984), we use a modified market model to measure the currency exposure of the acquirer, which consists in regressing the acquirer's stock return on the return of the corresponding exchange rate (i.e., the exchange rate relative to the target firm currency), while controlling for the overall direction of the stock market (for other recent applications of Adler and Dumas's method see, e.g., Pantzalis, Simkins, and Laux, 2001; Bartram, Burns, and Helwege, 2010).

We define the exchange rate as the price of the domestic currency in foreign currency (i.e., euro per unit of foreign currency). In our sample 15.1% of the firms are significantly exposed to the target's currency prior to the takeover announcement. Using the same approach as in Pantzalis, Simkins, and Laux, (2001), we split the sample into net exporters and net importers, thanks to the sign of the exposure coefficient prior to the takeover announcement. In our empirical framework, net exporters are negatively exposed to the target currency prior to the announcement of the deal, while net importers are exposed positively.

Our univariate analysis indicates that the effect of the cross-border deal on currency risk exposure is significantly positive for the net exporter subsample (i.e., the exposure decreases in absolute value following the takeover announcement) and significantly negative for the net importer subsample. Consistent with the findings of previous U.S. studies (see, e.g., Akhigbe, Martin, and Newman, 2003; Bartram, Burns, Helweg, 2010), these results suggest that cross-border deals in our sample are natural hedge on average for acquirers.

To control for omitted trends in the evolution of the exposure coefficient and unobserved differences between firms implementing cross-border deals and the ones that do not, we rely also on

[1] The SBF 250 index includes 250 leading French companies listed on Euronext Paris.

a difference-in-differences approach to assess the robustness of our results (see Roberts and Whited, 2011). The treatment is the announcement of a cross-border deal, and the control group includes firms from the SBF250 index not involved in a cross-border transaction in the same year and in the same country. The results are also confirmed within a difference-in-differences setting. Moreover, our difference-in-differences analysis puts forward that, relative to the control group, the treated firms in our sample have significantly higher exposure coefficient in absolute value prior to the announcement of the deal. This result provides additional support to our initial conjecture, such that operational hedging of currency risk is an important determinant of cross-border M&A decisions.

Our empirical approach allows us also to assess whether operational hedging is value creating or not for shareholders. There is some evidence in the literature that financial hedging creates value. For example, Allayannis and Weston (2001) and Carter, Rogers, and Simkins (2006) document that financial hedging is associated with a 5% to 10% increase in firm value.[2] However, to the best of our knowledge, the value creation effects of operational hedging strategies have been less explored in finance literature. The only exception is Kim, Mathur, and Nam (2006), in which the authors use a sample of 424 U.S. firms and find that operational hedging increase firm value as a range of 4.8–17.9%. (The used proxy for firm value is the Tobin's *q* ratio.)

In M&A research, a widely used approach to measure the value creation associated with a corporate decision is the announcement abnormal returns derived from an event study analysis (see Betton, Eckbo, and Thorburn, 2008). Our results confirm that operational hedging is value creating for shareholders within the context of M&A announcements. Acquirer abnormal returns are positively associated with a decrease in its (absolute) exposure to the target currency. The gain is economically substantial. A decrease in the acquirer exposure to the target currency by one unit leads to an abnormal gain of 1.7% for acquirer shareholders. For an acquirer worth €100 million in equity, this represents a euro gain of €1.7 million. However, our results suggest that the positive

[2] Recently, Campello et al. (2011) show two exact channels through which financial hedging might affect corporate value. They find that hedgers pay low interest spreads and are less likely to have investment restrictions in their loan contracts.

effect of operational hedging on corporate value is mainly driven by the cross-border deals of net exporters. This result is to some extent consistent with Chowdhry and Howe (1999), who argue that it is optimal for a multinational corporation to engage in operational hedging when both exchange rate uncertainty and demand uncertainty are high. Net exporters are severely affected by both uncertainties in comparison to net importers, the latter being mainly affected by exchange rate uncertainty.[3]

Our research complements previous findings in the literature devoted to multinational firms within the U.S. context. Pantzalis, Simkins, and Laux (2001) document that greater international network breadths attenuate exposure to currency risk whereas the concentration of networks in a few countries increase exposure. Choi and Jiang (2009) report that multinational corporations are less exposed to exchange rate risk than non-multinational firms, suggesting also that operational hedging reduces exposure to currency risk. Kim, Mathur, and Nam (2006) document that financial and operational hedging activities tend to be complement and they both enhance firm value. In contrast to these studies, which provide a cross-sectional comparison of multinational and non-multinational firms, we adopt both a cross-sectional and a time series comparison in order to analyze the decision to undertake a cross-border deal through the lens of currency risk management. We show that the internalization process through the implementation of cross-border deals is a response to some extent to high currency exposure and it allows firms to reduce their sensitivity to exchange rate risk.

The closest research to our paper is Bartram, Burns, and Helwege (2010), in which the authors analyze the evolution of the exposure coefficient to the target currency for a sample of U.S. cross-border acquirers. We provide additional evidence by focusing on a French sample of acquirers, and complement their results by adopting a difference-in-differences framework which allows us to better ascertain whether the cross-border transaction is a response to high currency exposure.

[3] At least, if we assume that the domestic demand is perceived to be less risky than the foreign demand.

Moreover, we complement their analysis by assessing also the value effects associated with operational hedging activities.

Our research contributes also to M&A literature in a broader sense. A significant corporate finance literature investigates the determinants of an acquirer’s abnormal returns around M&A decision announcements and identifies the most important ones to be the payment means, the target’s status, the relative size of the deal, and uncertainty about the target’s valuation (for a review, see Betton, Eckbo, and Thorburn, 2008). We propose adding a novel determinant to this list within the context of cross-border transactions, namely, the willingness to operationally hedge currency risk. Another related M&A article is the one of Garfinkel and Hankins (2011), in which the authors show that merger waves are driven by risk management considerations. They document in particular that an increase in cash flow uncertainty encourage U.S. firms to vertically integrate, suggesting that vertical M&As are operational hedging mechanism that reduces the cost of increased uncertainty. In this paper, we focus on cross-border takeovers, and assess the effect of these transactions on currency risk exposure. In contrast to Garfinkel and Hankins (2011), we also assess the value effect of operational hedging mechanisms and show that operational hedging is value creating for shareholders.

We organize the remainder of this article as follows: in Section 2, we describe the sample of M&As studied, and explain how currency exposure is measured as well as how the associated value effect is estimated. Section 3 is devoted to the empirical analysis. Section 4 concludes.

2. Data and methods

2.1. Sample construction

We start by listing the firms composing the SBF250 index over the period from January 1999 to December 2010. The sample period starts in January 1999, which corresponds to the introduction of the euro, simply to avoid considering cross-border deals within the Eurozone. Then, we track the cross-border M&A activities of these firms using the Thomson Securities Data Company (SDC)

Mergers and Acquisitions database. We impose the following sample selection criteria for our M&A sample:

1. The acquirer is a listed French company which completed a cross-border M&A deal with a deal size above $1 million. The transaction is announced in the period 1999–2010, and the percentage held by the acquirer is below 50% before the deal and equal to 100% after the deal. These filters lead to an initial sample of 446 deals.
2. The acquirer is included in the SBF250 index with available stock price in the Thomson Reuters Datastream database during 1999–2010 and the target is outside the Eurozone. This filter reduces the sample size to 250 deals.
3. To focus on significant transaction, following Masulis, Wang, and Xie (2007), we further impose that the size of the deal relative to the size of the acquirer is greater than 1%. This final filter reduces the sample size to 152 deals.

The final sample size might seem small but it is consistent with the sample sizes used in previous studies devoted to currency risk. For example, Akhigbe, Martin, and Newman (2003) use a sample of 156 foreign acquisitions by U.S. firms, while Bartram, Burns, and Helwege (2010) consider a sample of 102 cross-border deals undertaken by U.S. acquirers. Another example is the sample used by Pantzalis, Simkins, and Laux (2001), which includes 220 U.S. multinational firms.

Panel A of Table 1 provides the sample distribution by announcement year. The sample exhibits a first peak in the number of transactions between 1999 and 2000, consistent with the well-documented "friendly" M&A wave of the end of the 1990s (Betton, Eckbo, and Thorburn, 2008), and a second peak in 2006. The differences between the yearly average and median deal size highlight the existence of some large transactions in the sample. Moreover, the average deal size tends to be higher in peak years, consistent with the evidence reported in Netter, Stegemoller, and Wintoki (2011). Panel B of Table 1 reports the sample distribution by target currency (or target nationality). Out of the 152 deals, 53.29% of the targets are U.S. firms and 13.82% are U.K. firms.

[Insert Table 1 About Here]

2.2. Measuring currency exposures

Following Adler and Dumas (1984), it is common to estimate currency exposures using a time series regression which relates the firm stock returns to the corresponding exchange rate returns, while controlling for the return of the market portfolio (see, e.g., Pantzalis, Simkins, and Laux, 2001; Choi and Jiang, 2009; Bartram, Burns, and Helwege, 2010). For each acquirer in the sample, the estimated equation is as follow:

$$R_{i,t} = \alpha_i + \beta_{1,i} R_{M,t} + \beta_{2,i} R_{FX,t} + \varepsilon_{i,t}, \quad (1)$$

where $R_{i,t}$ is the return for acquirer *i*; $R_{M,t}$ is the return of the French stock market index; $R_{FX,t}$ is the return on the foreign exchange rate (*FX*), $\varepsilon_{i,t}$ is the regression residual, and *t* denotes the time subscript. In our empirical setting, the returns are computed on a weekly frequency and the exchange rate *FX* corresponds to the price of the domestic currency (i.e., the currency of the acquirer country) in foreign currency (i.e., the currency of the target country).[4] For each firm *i*, the estimated coefficient β_2 is a measure of its exposure relative to the corresponding target currency.

The firm exposure to currency risk results from unexpected exchange rate variations, which affects the firm's cost structure (e.g., raw materials, labor costs…) and output prices. The firm is not exposed to currency risk (β_2=0) if input costs and output prices are determined locally without being affected by foreign competition or if the firms have already hedged financially or operationally both the expected and unexpected changes in exchange rates.

A negative (positive) value for $R_{FX,t}$ indicates a depreciation (appreciation) of the domestic currency between time *t* – 1 and time *t* relative to the foreign currency. For example, if the exchange rate between EUR (the domestic currency) and USD (the foreign currency) moves from EUR/USD = 1.446 at time *t* – 1 to 1.430 at time *t*, this will translate into a negative $R_{FX,t}$ of –1.11% (=1.430/1.446 – 1) over the period, corresponding to a depreciation of the euro relative to the U.S. dollar. This will benefit to French exporters. A negative (positive) change in FX suggests therefore that domestic

[4] It corresponds to euro per unit of foreign currency.

exporters will find it easier (difficult) to sell their goods in the U.S., or their USD denominated sales will have higher (lower) value on a euro basis, while domestic importers will find USD denominated foreign goods more (less) expensive. Thus, after having accounted for foreign operations (sales and input purchases), industry competitions, and hedging activities, a negative (positive) value for β_2 indicates that the firm is a "net exporter" ("net importer").

To estimate Equation 2, we rely on weekly stock prices and exchange rates downloaded from the Thomson Reuters Datastream database. The exposure with respect to the target currency is estimated over a one-year window prior to the takeover announcement. The estimation window starts at week –52 and ends at week –1 relative to the announcement week of the deal.

Panel A of Table 2 reports summary statistics on the exposure of French acquirers to the currency of the target prior to the takeover announcement. For the full sample, the average acquirer in the sample is negatively exposed to the target currency with a coefficient value of –0.11, the corresponding *p*-value being 0.03. Moreover, the range of exposures is quite substantial, with a minimum and maximum exposure coefficient of –1.69 and 1.72, respectively. Concerning the statistical significance of the exposure coefficients, the stock returns of 7.9% (15.1%) of the sample acquirers are significantly exposed to the target currency at the 5% (10%) level using the full sample. The cross-sectional distribution reported in column 1, Panel A of Table 2 suggests that some firms are positively exposed, while others are negatively affected by exchange rate movements. The last two columns in Panel A of Table 2 present the summary statistics of the exposure coefficients separately for firms with positive and negative exposures. Out of 152 firms, 57 firms are exposed positively (37.5%), and 95 ones are exposed negatively (62.5%). Half of the net importers have an exposure which is in the range of [0.43; 1.72], while half of the net exporters are in the range of [–1.69; –0.38].

2.3. Abnormal stock performance

To assess the value creation effects of operational hedging strategies we rely on short term abnormal returns.

Since Fama et al. (1969) published their study, the accepted method for isolating the impact of a particular event on market valuations is the event study methodology. In the first step, we construct a model for normal returns, that is, the individual firm returns that would have occurred in the absence of the event. We use the classical market model to estimate these normal returns:

$$R_{i,t} = \alpha_i + \beta_i R_{M,t} + \varepsilon_{i,t}, \quad (2)$$

where $R_{i,t}$ is the observed return for firm *i* on day *t*; $R_{M,t}$ is the return of a concurrent local country stock market index on day *t*; α_i and β_i are, respectively, the estimated ordinary least squares (OLS) regression intercept and slope; and $\varepsilon_{i,t}$ is the regression residual.[5] We estimate the market model parameters over the period from event day –250 to event day –10, where event day 0 is the announcement date.

The abnormal return (AR) for day *t* corresponds to the difference between the observed return on day *t* and that estimated using the market model:

$$AR_{i,t} = R_{i,t} - (\alpha_i + \beta_i R_{M,t}). \quad (3)$$

To compute the cumulative abnormal return (CAR), we determine, for each firm, the abnormal return across the three days around the announcement day (from day –1 to day +1, where day 0 is the announcement day).

In Panel B of Table 2, we report summary statistics about acquirer CARs. The average acquirer CAR is positive and statistically significant with a value of 1.18% (*p*-value = 0.02), indicating that the cross-border acquisitions in our sample are value creating decision for acquirer shareholders on average. This result is largely consistent with recent literature, which shows that acquirers' CARs around the announcement date of cross-border acquisitions are slightly positive. For example, Faccio, McConnell, and Stolin (2006) report an average acquirer CAR of 1.13% in an international sample of cross-border deals, while Aktas, de Bodt, and Cousin (2011) document an average acquirer

[5] Brown and Warner (1985) confirm the robustness of the short-term event study method to the choice of the return generating process (see also Kothari and Warner, 2007).

CAR of 2%.[6] Interestingly, over the considered period, the cross-border acquisitions of companies negatively exposed to the target currency are more value creating (average acquirer CAR = 1.89%) than the ones of firms positively exposed (average acquirer CAR = –0.12%).

However, the result in Panel B of Table 2 does not allow us to ascertain whether the value creation effect observed for net exporters is induced by an operational hedging motive or not. We will come back to this issue in Section 3 within the framework of a multivariate regression approach.

2.4. Empirical methods

2.4.1. Difference-in-differences estimator

To assess the effect of a cross-border acquisition on the acquirer's exposure to the target's currency, we adopt a difference-in-differences (DD) approach (see Roberts and Whited, 2011). The DD approach combines the two single difference estimators: the cross-sectional difference and the time series difference. The cross-sectional difference control for omitted trends by comparing the treated groups and the control group over the same time period. The time series comparison controls for unobserved differences between the two groups of firms by looking at the same firms before and after the treatment. In our framework, the treatment is the announcement of a cross-border deal in a given target country.

The DD estimator is obtained with the following regression model:

$$\beta_{2,i,TP} = c_i + c_y + \alpha_1 TP_i + \alpha_2 TG_i + \alpha_3 (TG_i \times TP_i) + \varepsilon_i, \quad (4)$$

where β_2 is the outcome variable (i.e., the exposure coefficient to the target's currency for both treated and control firms), *i* is the firm index, c_i and c_y are firm- and year-fixed effects[7], *TP* and *TG* are dummy variables identifying the post-treatment period (with respect to the pre-treatment period) and the treated group (with respect to the control group), respectively. The post-treatment

[6] Recent large sample U.S. studies document also an average acquirer CAR of around 1% (see, e.g., Betton, Eckbo, and Thorburn, 2008; Netter, Stegemoller, and Wintoki, 2011).

[7] Year-fixed effects are used to control for general business and economic conditions, and they are coded with respect to the deal announcement year.

period starts at week +1 following the observation of the treatment at week 0, and ends at week +52 relative to the announcement week of the deal. The pre-treatment period corresponds to the period [–52, –1] prior to the announcement week of the deal. The subscript *TP* of the left-hand side variable denotes the time period over which the outcome variable, , is computed. There are two outcomes per firm in the sample: one is computed over the pre-treatment period (*TP* = 0), and the other over the post-treatment period (*TP* = 1). The firms that have undertaken a cross-border acquisition are the "treated" firms. The control group includes firms from the SBF 250 index which have not announced a deal in the corresponding target country during the period [–52, –1]. The net effect of the cross-border deal on the target's currency exposure is measured by , which corresponds to the difference-in-differences estimator.

Figure 1 presents a graphical presentation of the difference-in-differences estimator for acquirers that are net importers (i.e., firms that are positively exposed to the target's currency prior the takeover announcement).[8]

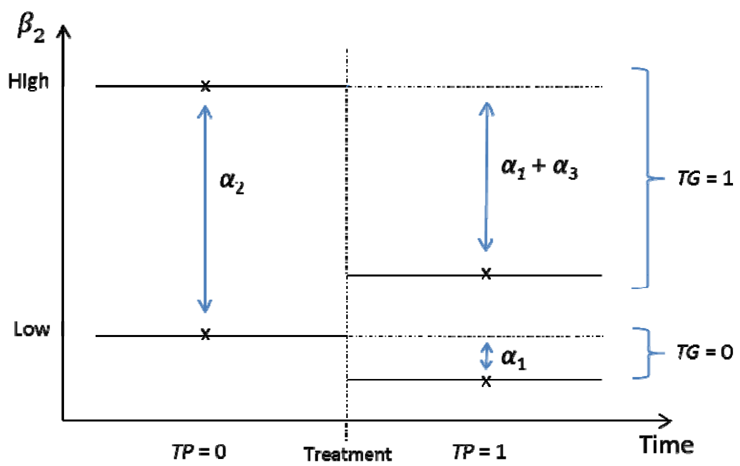

Figure 1. This figure provides a graphical presentation of the difference-in-differences estimator for acquirers that are net importers (i.e., firms that are positively exposed to the target's currency prior the takeover announcement). The treatment is the announcement of a cross-border takeover. *TG* is a dummy variable which identifies the treated group (1, for the treated firms, and 0, for the control group). *TP* is a dummy variable which identifies the post-treatment period (1, for the post-treatment period, 0 for the pre-treatment period). The X-axis and Y-axis represent the time period and the exposure coefficient to the target currency ( ),

[8] For net exporters, the graphical representation is the same, but the exposure coefficient should be in absolute value in the Y-axis.

respectively. The coefficients α_1, α_2 and α_3 are from Equation (4). The difference-in-differences estimator is given by α_3.

If operational hedging is a motive for cross-border takeovers, we expect that our sample acquirers (high β_2) are significantly more exposed to the target's currency in the pre-treatment period in comparison to the control group (low β_2). This intuition is captured by the coefficient α_2 in Figure 1. The treatment is expected to affect only the treated group, but the exposure coefficient of the sample firms (both the treated and control group) could change through time for other reasons that are unobserved (i.e., following a macroeconomic shock for example). The coefficient α_1 takes into account the change that is not due to the treatment. In Figure 1, we have assumed that it is negative, but it could be also null or positive. To isolate the part of the change due to the treatment, the double difference compares the exposure coefficient of the treated group to its level prior to the treatment, as well as to the change observed for the control group. The net effect of the treatment is therefore given by coefficient α_3.

2.4.2. P-values

Reported *p*-values in the multivariate regression analyzing the determinant of the acquirer CAR are derived from a percentile *t* bootstrap procedure (see Horowitz, 2002). Specifically, we bootstrap student statistics of each coefficient using the following procedure. From the original data matrix, we draw, with replacements, one thousand bootstrap samples with the same number of observations as in the original sample. For each of these bootstrap samples, we estimate the regression coefficients, and compute the corresponding adjusted standard errors. This provides the bootstrap *t*-statistics. Lastly, we tabulate the empirical distribution of the bootstrap *t*-statistics for each coefficient and use this distribution to test the significance of the regression coefficients. Case-by-case resampling is employed, which is robust to heteroskedasticity.

3. Results

3.1. The impact of cross-border deals on currency exposure

Table 3 presents the univariate analysis, which compares the average exposure coefficient of acquirers to the corresponding target currency following the transaction to the average exposure coefficient over the pre-treatment period. The results indicate that the exposure to the target currency decreases on average for net importers from 0.498 before the treatment to 0.262 after the treatment, while it increases on average for net exporters from –0.473 before the treatment to 0.064 after the treatment. The impact of cross-border deals on currency exposure is statistically significant for both net importers and net exporters.

The univariate results are also confirmed in Table 4 using a difference-in-differences framework. In Table 4, the coefficient of the interaction variable "*TP × TG*", which corresponds to difference-in-differences estimator, is significantly negative with a value of –0.301 for net importers (*p*-value = 0.06), while it is significantly positive for net exporters with a value of 0.546 (*p*-value = 0.00). These results indicate that, for net importers, the treatment (i.e., the announcement of a cross-border transaction in the target country) affects negatively their exposure coefficient relative to both the pre-treatment period and the control group. The impact of the treatment is positive for net exporters.

The results reported in Tables 3 and 4 are consistent with the idea that the decision to undertake a cross-border transaction might entail an operational hedging motive, because the exposure coefficient to the target currency decreases in absolute value following the announcement of the deal. In addition, our difference-in-differences analysis puts forward that, relative to the control group and prior to the announcement of the deal, the treated firms in our sample have significantly higher exposure coefficient. In Table 4, the coefficient of the variable identifying the treated group (variable *TG*) is significantly positive for acquirers that are net importers (coefficient value = 0.451), and significantly negative for the ones that are net exporters (coefficient value =

–0.449). This result indicates that the firms involved in cross-border transactions are the ones that are highly exposed (in absolute value) to the target currency, which provides additional support to our initial conjecture, such that operational hedging of currency risk might play an important role in the decision to undertake cross-border M&A deals.

3.2. Value effects

In Table 5, we present multivariate regression analyses of acquirers' announcement abnormal returns. In each column the sample includes both net importers and net exporters. Each specification also includes the following control variables: *deal size*, *relative size*, *stock*, *related*, *U.S. target*, and *private target*. Variable definitions are stated in the legend of Table 5.

In column 1 of Table 5, the variable of interest is *Delta* $|\beta_2|$, which corresponds to the difference between the post-treatment and pre-treatment period of the acquirer's exposure coefficient to the target currency in absolute value. The higher the variable *Delta* $|\beta_2|$, the lower becomes the sensitivity of the acquirer's market value to target currency fluctuations following the cross-border transaction. The coefficient of this variable is negative and statistically significant, indicating that acquirer abnormal returns are positively associated with a decrease in its (absolute) exposure to the target currency. The gain is economically substantial. A decrease in the acquirer exposure to the target currency by one unit leads to an abnormal gain of 1.68% for acquirer shareholders. For an acquirer worth €100 million in equity, this represents a euro gain of €1.68 million. In column 2, this result is confirmed when the dummy variables identifying net exporters and net importers are included into the regression specification.

In column 3 of Table 5, the result presented in Panel B of Table 3 is confirmed within the framework of a multivariate setting, such that net exporters earn on average positive acquirer abnormal returns of 2.03%, while net importers break even on average with their cross-border acquisition decisions.

In column 4 of Table 5, the dummy variables identifying net exporters and net importers are interacted with the variable *Delta* β_2, which measures the change in exposure coefficient following the announcement of the cross-border transaction. In this new specification, among the variables of interest, only the variable "*Exporters × Delta* β_2" is statically significant with a *p*-value of 0.00. The associated coefficient is positive, which indicates that the announcement CARs of next exporters increase when their exposure coefficients become less negative. The evidence reported in column 4 of Table 5 indicates therefore that the positive effect of operational hedging on corporate value is essentially driven by the cross-border deals of net exporters. This result is consistent to some extent with the theoretical argument provided by Chowdhry and Howe (1999). According to these authors, it is optimal for a multinational corporation to engage in operational hedging only when both exchange rate uncertainty and demand uncertainty are high. Net exporters are severely affected by both uncertainties in comparison to net importers, which are mainly affected by exchange rate uncertainty.

Concerning the control variables in Table 5, four variables keep their sign and (almost) their significance across the four specifications. Consistent with the literature, relative size is associated with higher acquirer abnormal returns (see Moeller, Schlingemann, and Stulz, 2004), and acquisition fully paid in stock generates lower abnormal returns for acquirer shareholders (see, a.o., Travlos, 1987; Mitchell, Pulvino, and Stafford, 2004). Private target acquisitions in our sample affect acquirer abnormal returns negatively, which contrasts with the results reported by Fuller, Netter, and Stegemoller (2002) within the context of U.S. domestic deals. The acquisition of private foreign targets might be perceived more risky by acquirer shareholders, in comparison to listed targets for which more information is available. The fourth control variable keeping its sign and significance across the four specification is the variable *U.S. target*. Since 53% of the sample involves the acquisition of a U.S. target, we thought it might be useful in controlling for this attribute. The coefficient of this variable is positive, suggesting that the acquisition of U.S. targets is positively associated with acquirer abnormal returns.

4. Conclusion

In complement to financial hedges, firms are known to use also operational hedging mechanisms (Kim, Mathur, and Nan, 2006). This article focuses on cross-border takeovers, and analyzes the takeover decision through the lens of currency risk management. Using a sample of large listed French firms, we document that acquirers are firms with higher exposure to target currencies, and their market values become less sensitive to the fluctuations of the target currency following the takeover. These results suggest that operational hedging of currency risk exposure might be an important driver of the decision to undertake cross-border deals.

Relying on classical event study results, we provide also evidence that operational hedging is value creating for shareholders. Our findings suggest that acquirer gains are positively associated to change in currency risk exposure. The value effect is particularly stronger for firms that are net exporters.

References

Adler Michael, and Bernard Dumas, 1984, Exposure to currency risk: Definition and measurement, Financial Management 13, 41–50.

Akhigbe, Aigbe, Anna D. Martin, and Melinda Newman, 2003, Exchange rate exposure and valuation effects of cross-border acquisitions, Journal of International Financial Markets, Institutions and Money, 13, 255–269.

Aktas, Nihat, Jean-Gabriel Cousin, and Eric de Bodt, 2011, Do financial markets care about SRI? Evidence from mergers and acquisitions, Journal of Banking and Finance 35, 1753–1761.

Allayannis, George, and James Weston, 2001, The use of foreign currency derivatives and firm market value, Review of Financial Studies 14, 243–276.

Bartram, Söhnke M., Gregory W. Brown, and Frank R. Fehle, 2009, International evidence on financial derivatives usage, Financial Management 38, 185–206.

Betton, Sandra, B. Espen Eckbo, and Karin S. Thorburn, 2008, Corporate takeovers, in B. Espen Eckbo, ed.: Handbook of Corporate Finance, Empirical Corporate Finance Volume 2 (Elsevier, North Holland, Amsterdam), pp. 291–429.

Boehmer, Ekkehart, Jim Musumeci, and Annette Poulsen, 1991, Event study methodology under conditions of event induced variance, Journal of Financial Economics 30, 253–272.

Brown, Stephen, and Jerold Warner, 1985, Using daily stock returns: The case of event studies, Journal of Financial Economics 14, 3–31.

Campello, Murillo, Chen Lin, Yue Ma, and Hong Zou, 2011, The real and financial implications of corporate hedging, Journal of Finance 66, 1615–1647.

Carter, David A., Daniel A. Rogers, and Betty J. Simkins, 2006, Does hedging affect firm value? Evidence from the U.S. airline industry, Financial Management 35, 53–87.

Choi, Jongmoo Jay, and Cao Jiang, 2009, Does multinationality matter? Implications of operational hedging for the exchange risk exposure, Journal of Banking and Finance 33, 1973–1982.

Chowdhry, Bhagwan, and Jonathan Howe, 1999, Corporate risk management for multinational corporations: Financial and operating hedging policies, European Financial Review 2, 229–246.

Faccio, Mara, John McConnell, and David Stolin, 2006, Returns to acquirers of listed and unlisted targets, Journal of Financial and Quantitative Analysis 41, 197–220.

Fama, Eugene, Lawrence Fisher, Michael Jensen, and Richard Roll, 1969, The adjustment of stock prices to new information, International Economic Review 10, 1–21.

Froot, Kenneth A., David S. Scharfstein, and Jeremy C. Stein, 1993,Risk management: Coordinating corporate investment and financing policies, Journal of Finance 48, 1629–1658.

Fuller, Kathleen, Jeffry Netter, and Mike Stegemoller, 2002, What do returns to acquiring firms tell us? Evidence from firms that make many acquisitions, Journal of Finance 57, 1763–1793.

Garfinkel, Jon A., and Kristine Watson Hankins, 2011, The role of risk management in mergers and merger waves, Journal of Financial Economics 101, 515–532.

Horowitz, J.L., 2002. The bootstrap. In: Heckman, J.J., Leamer, E.E. (Ed.), Handbook of Econometrics. Elsevier, North Holland, Amsterdam, Vol. 5, pp. 3159–3228.

Kothari, S.P., and Jerold B. Warner, 2007, Econometrics of event studies, in B. Espen Eckbo, ed.: Handbook of Corporate Finance, Empirical Corporate Finance Volume 1 (Elsevier, North Holland, Amsterdam), pp. 3–36.

Kim, Young Sang, Ike Mathur, and Jouahn Nam, 2006, Is operational hedging a substitute for or a complement to financial hedging? Journal of Corporate and Finance 12, 834–853.

Mitchell, Mark, Todd Pulvino, and Eric Stafford, 2004, Price pressure around mergers, Journal of Finance 59, 31–63.

Moeller, Sara B., Frederik P. Schlingemann, and René M. Stulz, 2004, Firm size and the gains from acquisitions, Journal of Financial Economics 73, 201–228.

Netter, Jeffry, Mike Stegemoller, and M Babajide Wintoki, 2011, Implications of data screens on merger and acquisition analysis: A large sample study of mergers and acquisitions from 1992-2009, Review of Financial Studies 24, 2316–2357.

Pantzalis, Christos, Betty J. Simkins, and Paul A. Laux, 2001, Operational hedges and the foreign exchange exposure of U.S. multinational corporations, Journal of International Business Studies 32, 793–812.

Roberts, Michael R., Toni M. Whited, 2011, Endogeneity in empirical corporate finance, Unpublished manuscript available at SSRN: http://ssrn.com/abstract=1748604.

Stulz, René M., 2004, Should we fear derivatives? Journal of Economic Perspectives 18, 173–192.

Travlos, Nikolaos, 1987, Corporate takeover bids, methods of payment, and bidding firms' stock returns, Journal of Finance 43, 943–963.

Table 1. Sample distribution

Panel A reports the sample distribution by announcement year. Panel B provides the sample distribution by the currency of the target company. *N* and % denote, respectively, the number of acquisitions and the percentage of the sample in each year or in each target currency. The mean and the median deal sizes are in million EUR. The deal size is defined by SDC as the total value of the consideration paid by the acquirer, excluding fees and expenses.

Panel A. Sample distribution by announcement year

Year	*N*	Proportion (%)	Deal size	
			Mean	Median
1999	22	14.47%	1,266.63	393.76
2000	19	12.50%	6,251.35	1,064.65
2001	13	8.55%	2,032.60	328.14
2002	7	4.61%	650.81	105.02
2003	7	4.61%	127.71	51.50
2004	14	9.21%	186.01	181.34
2005	13	8.55%	620.49	131.62
2006	18	11.84%	1,883.72	346.11
2007	14	9.21%	1,081.43	364.40
2008	14	9.21%	587.64	143.70
2009	11	7.24%	557.13	276.09
Total	152	100.00%	1,661.76	252.78

Panel B. Sample distribution by target currency

Target currency	*N*	Proportion (%)	Mean deal size
Austrian Dollar	2	1.32%	270.04
Brazilian Real	4	2.63%	354.88
British Pound	21	13.82%	3,414.84
Canadian Dollar	6	3.95%	8,336.57
Danish Krone	2	1.32%	607.35
Hungarian Forint	2	1.32%	355.00
Indian Rupee	5	3.29%	90.18
Korean Won	4	2.63%	233.07
Norwegian Krone	3	1.97%	183.61
Polish Zloty	2	1.32%	232.24
Swedish Krona	4	2.63%	1,696.41
Swiss Franc	6	3.95%	1,555.29
U.S. Dollar	81	53.29%	1,185.21
Other	10	6.58%	1,245.46
Total	152	100.00%	1,661.76

Table 2. Summary statistics

Panel A provides summary statistics on currency risk exposure of French acquirers to the target currency. Panels B reports the acquirer announcement abnormal returns. The currency risk exposure is measured using the estimate of β_2 from Equation 2. The exposure coefficient is estimated using firm-level ordinary least squares regression with weekly data over a one-year period prior to the announcement of the deal. The acquirer announcement abnormal returns are 3-day market adjusted abnormal returns estimated around the deal announcement day. In Panel B, the *p*-value is computed using the Boehmer et al. (1991) standardized approach, which is known to be robust to the event-induced variance phenomenon affecting announcement returns.

Panel A. Currency risk prior to the deal announcement

Currency risk exposure (β_2)	Full sample	Net importers ($\beta_2 > 0$)	Net exporters ($\beta_2 < 0$)
Average	–0.11	0.50	–0.47
(*p*-value)	(0.03)	(0.00)	(0.00)
Minimum	–1.69	0.01	–1.69
First quartile	–0.44	0.18	–0.69
Median	–0.12	0.43	–0.38
Third quartile	0.26	0.71	–0.14
Maximum	1.72	1.72	–0.01
Number of firms (% of total sample firms)	152 (100%)	57 (37.5%)	95 (62.5%)
Firms (%) significantly exposed at 1% level	3 (2%)	2 (3.5%)	1 (1.1%)
Firms (%) significantly exposed at 5% level	12 (7.9%)	5 (8.8%)	7 (7.4%)
Firms (%) significantly exposed at 10% level	23 (15.1%)	7 (12.3%)	16 (16.8%)

Panel B. Short term abnormal return

3-day abnormal returns	Full sample	Net importers ($\beta_2 > 0$)	Net exporters ($\beta_2 < 0$)
Average	1.18%	–0.12%	1.89%
(*p*-value)	(0.02)	(0.93)	(0.01)
Minimum	–9.73%	–8.45%	–9.73%
First quartile	–1.69%	–2.10%	–1.33%
Median	0.42%	–0.35%	0.69%
Third quartile	3.41%	3.01%	4.19%
Maximum	21.87%	10.45%	21.87%

Table 3. Cross-border deals and currency risk: Univariate analysis

This table presents our univariate analysis. The acquirer's currency risk exposure is measured using the estimate of β_2 from Equation 2. The exposure coefficient is estimated over a one-year period before and a one-year period after the takeover announcement using firm-level ordinary least squares regression with weekly data. We report also the *p*-value from a test of mean differences between the exposure coefficient estimated before and after the takeover announcement.

	Net importers ($\beta_2 > 0$)			Net exporters ($\beta_2 < 0$)		
	Before	After	*p*-value	Before	After	*p*-value
Currency risk exposure (β_2)	0.498	0.262	*0.05*	–0.473	0.064	*0.00*
Number of observations	58			97		

Table 4. Cross-border deals and currency risk management: Difference-in-differences estimator

This table presents the estimation results of Equation 4 obtained using ordinary least square estimator with asymptotic standard error. The dependent variable is β_2, the exposure coefficient to the target currency. *TP* is a dummy variable, which identifies the treatment period (1 = β_2 is estimated over the treatment period [+1, +52], 0 = β_2 is estimated over the pre-treatment period [–52, –1]). *TG* is a dummy variable, which identifies the treated group (1 = if the firm undertakes a cross-border transaction, 0 otherwise).

	Net importers ($\beta_2 > 0$)		Net exporters ($\beta_2 < 0$)	
	Coef.	*p*-value	Coef.	*p*-value
TP	–0.018	*0.12*	0.026	*0.00*
TG	0.451	*0.00*	–0.449	*0.00*
TP × *TG*	–0.301	*0.06*	0.546	*0.00*
Firm fixed effect	yes		yes	
Year fixed effect	yes		yes	
F-statistic	6.87	*0.00*	6.84	*0.00*
Adjusted R^2	7.60%		4.90%	
Number of observations	22,094		39,103	

Table 5. Operational hedging and value effects

The dependent variables are the 3-day market adjusted abnormal returns estimated around the announcement day of the M&A deal. The currency risk exposure is measured using the estimate of β_2 from Equation 2. *Delta* indicates the change between the post-treatment period and pre-treatment period. *Exporters* and *Importers* are two dummy variables identifying net exporters and net exporters, respectively. *Deal size* is the natural log of the deal value, defined by SDC as the total value of consideration paid by the acquirer, excluding fees and expenses. *Relative size* is the ratio of the deal value to the acquirer market value. *Stock* is a dummy variable that takes a value of 1 for purely stock-financed deals, and 0 otherwise. *Related* is a dummy variable that takes a value of 1 when the acquirer and the target are from the same industry (two-digit standard industrial classification code), and 0 otherwise. *U.S. target* and *Private target* are dummy variables identifying U.S. targets and private targets, respectively. Standard errors are obtained using the procedure described in Subsection 2.4.2. R^2 and *F*-statistic denote the *r*-square and the Fisher statistic for the regression, respectively. *N* denotes the number of observations.

	(1)		(2)		(3)		(4)	
Variable	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value
Variable of interest								
Delta $\lvert\beta_2\rvert$	–0.0168	*0.05*	–0.0158	*0.05*				
Exporters			0.0272	*0.15*	0.0203	*0.00*	0.0226	*0.21*
Importers			0.0081	*0.43*	–0.0018	*0.34*	0.0104	*0.40*
Exporters × Delta β_2							0.0170	*0.00*
Importers × Delta β_2							–0.0029	*0.27*
Control variable								
Deal size	0.0004	*0.33*	–0.0024	*0.34*	–0.0015	*0.18*	–0.0037	*0.24*
Relative size	0.0390	*0.10*	0.0408	*0.09*	0.0419	*0.08*	0.0433	*0.09*
Stock	–0.0326	0.09	–0.0370	*0.05*	–0.0318	*0.09*	–0.0334	*0.07*
Related	0.0023	0.39	–0.0016	*0.46*	0.0053	*0.27*	0.0014	*0.43*
U.S. target	0.0143	0.08	0.0109	*0.12*	0.0188	*0.03*	0.0150	*0.06*
Private target	–0.0249	0.02	–0.0295	*0.01*	–0.0245	*0.02*	–0.0285	*0.02*
F-statistic	1.88	*0.08*	2.05	*0.04*	2.38	0.02	2.13	*0.03*
Adjusted R^2	6.50%		9.10%		10.40%		10.60%	
Number of observations	105		105		105		105	