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Mergers and acquisitions' survival dynamics and the drivers of deal completion in emerging economies

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ABSTRACT

This study examines the duration of pre-acquisition processes in corporate mergers and acquisitions conducted by acquiring firms listed in emerging economies, as well as the determinants of their completion. Previous studies typically analyze deal duration and deal completion separately, often excluding unresolved transactions and relying on methods that are not designed for time-to-event data. Consequently, the determinants of acquisition survival and completion remain understudied, particularly in emerging economies. In emerging economies, institutional voids, information asymmetries, and higher transaction costs may increase the overall duration of negotiations and the likelihood of deal failure. Despite being a remarkable problem, studies dedicating special attention to the analysis of deal duration and completion are still scarce. Methodologically, this study integrates completed, pending, and abandoned transactions into the same analytical framework, overcoming recurring limitations of the empirical literature in corporate finance. Kaplan-Meier estimators were first employed to provide a descriptive assessment of merger and acquisition (M&A) duration patterns. Subsequently, survival analysis models were applied to estimate the hazard function of acquisition completion, treating abandoned and pending deals as censored data. The analysis is based on 15,376 M&A transactions announced by firms headquartered in nine emerging economies from 2002 to 2021. The results reveal negative duration dependence in M&A transactions, indicating that the probability of deal completion decreases as negotiations remain unresolved. Acquiring firms' efficiencies, deal characteristics, macroeconomic conditions, and institutional quality significantly affect completion dynamics. The application of such framework also fosters new perspectives on the interpretation of theoretical relationships, encompassing the role of capital market development, broader pro-market institutions, and monetary conditions during the interim period, as well as deal characteristics, such as the role of structure (merger or acquisition) and deal regulation. The study contributes to the literature by applying survival analysis to jointly examine deal duration, completion, and abandonment, by providing an exploratory assessment of M&A duration data, and by offering evidence from a large multi-country sample of emerging economies. Thus, the results offer significant implications for decision-makers and academic literature.

Keywords: mergers and acquisitions, censored regression models, duration analysis, deal abandonment, emerging markets.

1. INTRODUCTION

1.1 Context and Motivations

Corporate merger and acquisition (M&A) transactions are intricate processes involving numerous stages and stakeholders. They serve as a growth mechanism in which an acquirer absorbs another firm's assets or forms a new entity. These combinations have far-reaching impacts, increasing industry competition and the merged firm's bargaining power over pricing. Consequently, this regulated process requires significant time to complete, meaning various factors can hinder its expeditiousness or even lead to deal

abandonment (Chang et al., 2016; Croci et al., 2017; Dikova et al., 2010; Ferreira et al., 2017; Kim & Song, 2017; Lawrence et al., 2021).

The time required to complete a transaction between sellers and buyers is an indicator of how well a market functions (Khanna & Palepu, 2010). Hence, notable differences in the average duration of economic transactions can be observed between developed and emerging markets. In the latter, the so-called “institutional voids” contribute to market failures, increasing transaction costs and causing specific transaction steps to take longer to be completed than usual (Kim & Song, 2017). Table 1 provides examples of how transaction costs in emerging markets lead to extended average durations for various economic transactions.

Table 1*Comparing the average time required to complete transactions in emerging and developed markets*

Country\time (days)	Dealing with construction permits	Getting electricity	Registering property	Starting a business	Enforcing contracts	Exporting	Importing	Closing an M&A deal
Emerging markets (average)	175	86	27	26	609	16	19	91
Brazil	338	125	31	62	801	13	17	97
Russia	198	103	16	10	327	21	19	79
India	152	74	62	26	1,445	17	21	112
China	221	106	19	21	496	21	24	127
South Africa	155	124	23	44	600	16	21	71
Indonesia	200	53	29	31	437	17	26	124
Turkey	100	53	6	9	585	13	14	64
Mexico	88	103	48	8	357	12	11	59
Thailand	120	33	9	18	430	14	13	86
Developed markets (average)	125	78	16	6	484	8	8	58
United States of America	81	90	15	5	444	6	5	51
Germany	126	28	52	10	489	9	7	54
Japan	108	81	13	11	360	11	11	55
Canada	249	138	4	2	858	8	10	67
Australia	118	75	4	2	402	9	8	83
United Kingdom	86	69	22	5	437	8	6	34
Norway	110	66	3	4	400	8	7	59

Note: The table presents the average of values reported by the respective databases from 2015 to 2020 for the listed countries. The year 2020 is the last year of availability for the World Bank's Doing Business report. The corporate merger and acquisition (M&A) duration is the time interval between its official announcement date and the date of its completion.

Source: The World Bank Doing Business; Refinitiv (Securities Data Company).

The relatively longer transactions in emerging markets deserve our attention because they harm economic agents who must wait longer to achieve their goals. Since M&As are often socially beneficial, delays in their consolidation imply social costs (Ekelund & Thornton, 1999). Moreover, extended durations are associated with poor post-M&A performance and failure to create synergies (Thompson & Kim, 2020). The costs of keeping the deal open can lead to its abandonment by the acquirer, and other negative side effects include weakening the reputation of the acquiring firm, managerial frustration, and losses to shareholders (Dikova et al., 2010; Lawrence et al., 2021; Luypaert & De Maeseneire, 2015). Furthermore, the delays bring uncertainty to employees, customers, and shareholders who are speculating about the closing of the deal, and offer the opportunity for a competing bidder to contest the deal (Luypaert & De Maeseneire, 2015; Meglio et al., 2017).

This problem is likely to be more prevalent in emerging markets because, due to the institutional voids (Khanna & Palepu, 2010), the average time to complete an M&A is longer than in developed countries. However, very few studies focus on the analysis of the duration and/or conclusion of M&A processes in emerging markets (Al-Sabri et al., 2022; Kim & Song, 2017).

Therefore, we provide a more detailed analysis of M&A process duration by addressing this gap in the literature. Our primary research question examines how the prolonged duration of the pre-acquisition process influences the likelihood of deal completion in emerging economies. This study proposes that extended duration and deal abandonment are integrated aspects of the M&A process rather than isolated events. Furthermore, we investigated a secondary research question: how do factors such as acquiring firm efficiencies, macroeconomic conditions, deal characteristics, and institutional quality influence the likelihood of M&A completion in these markets? By mapping these determinants, we aim to offer a better understanding of the dynamic relationship between time and transactional resolution.

Because M&A duration is influenced by factors operating at multiple levels of analysis, this study does not rely on a single theoretical perspective. Thus, several underlying theories can be used to explain different determinants of M&A survival. Acquiring firms' financial attributes are primarily grounded in the resource-based view (Barney, 1991; Kalsie & Singh, 2026). The deal characteristics can be interpreted through theories of information asymmetry (Boeh, 2011; Howe & Morillon, 2020; Luypaert & Van Caneghem, 2017; Meglio et al., 2023), auction theory (Eckbo, 2014), transaction costs (Williamson, 1985), synergy theory (Kalsie & Singh, 2026; Lukas et al., 2023), and the distress resolution perspective (Iwasaki et al., 2021). Macroeconomic conditions are supported by neoclassical and behavioral explanations of M&A activity (Harford, 2005; Shleifer & Vishny, 2003), whereas institutional determinants are rooted in the new institutional economics (North, 1990; Peng, 2003).

We employed a survival analysis model to estimate the hazard function of acquisition completion for each unit of time, utilizing a sample of 15,376 deals announced by 5,521 listed acquiring firms headquartered in nine emerging countries from 2002 to 2021. By applying this methodology, we mapped the key determinants of the hazard function, identifying the underlying drivers that accelerate or decelerate deal completion. This approach, taken from the acquirer's perspective, considers a comprehensive sample that includes not only completed deals but also abandoned and pending deals as right-censored observations.

Descriptive analysis using the Kaplan-Meier (KM) estimator reveals that relying solely on the median duration of completed deals (59 days) systematically underestimates the true timeline of M&A processes. Furthermore, the parametric method findings,

considering that survival time is conditional on covariates, indicate a negative duration dependence, implying that the likelihood of completion decreases for each additional day the deal remains pending. The application of survival analysis also enables a detailed exploratory assessment of M&A duration data, revealing potential limitations in the classification and reporting of deal status, an issue that received limited attention in prior studies.

With survival analysis, this proposal integrates the perspectives of completion and duration of deals in the pre-acquisition stage, providing a solution for other studies that analyze these aspects separately and/or with sub-samples (Chang et al., 2016; Dikova et al., 2010; Ekelund et al., 2001; Ferreira et al., 2017; Luypaert & De Maeseneire, 2015; Nguyen & Phan, 2017). In this way, we have made direct contributions to the M&A literature in three ways: (1) by proposing and applying a survival model, highlighting important data-quality and duration-measurement issues; (2) by analyzing the determinants; and (3) by conducting a study involving multiple emerging countries.

2. LITERATURE REVIEW

2.1 Duration and Deal Completion

The M&A process itself unfolds into two general stages: the pre-acquisition stage and the post-acquisition stage (Meglio et al., 2017). The pre-acquisition stage extends from the official announcement of the acquisition to its completion date. The post-acquisition stage, once the deal is closed, involves strategies for initiating the integration of resources, processes, and responsibilities of the combined companies (Lajoux, 2019). Until the latter is achieved, buyers and sellers have already been through the phases of the first stage, which involves defining the deal's form and legal structure, valuation, risk assessment, negotiation, choice of payment method, and deal closure, among others (Gaughan, 2017; Meglio et al., 2017; Very & Schweiger, 2001).

In this sense, the pre-acquisition stage is crucial because it is during this stage that the deal is closed or may not be if the involved parties do not reach a consensus (Dikova et al., 2010). The costs of this stage, directly related to time, can erode potential synergy gains, and the complexities of the transaction can extend the time gap between the official announcement and the deal completion (Ferreira et al., 2017; Luypaert & De Maeseneire, 2015).

Hence, many factors can affect the duration of such a stage and even prevent its completion by making it more or less complex (Luypaert & De Maeseneire, 2015). Despite the significant implications of these factors for deals' outcomes, relevant studies related to the duration of M&A processes are scarce compared to the investigation of other aspects of these transactions (Agrawal et al., 2013; Al-Sabri et al., 2022; Chang et al., 2016; Croci et al., 2017; Dikova et al., 2010; Ferreira et al., 2017; Lawrence et al., 2021; Li et al., 2017; Luypaert & De Maeseneire, 2015; Meglio et al., 2017; Muehlfeld et al., 2012; Nguyen & Phan, 2017; Park et al., 2016; Renneboog & Zhao, 2014; Soleimani & Yang, 2022).

2.2 Acquirer Attributes and Transactional Efficiency

Acquiring firms' efficiencies are grounded in the resource-based view (Barney, 1991). The literature establishes that acquiring firms undergo financial adjustments prior to a deal announcement, distinguishing them from firms without announced transactions in a given period (Erel et al., 2021). According to Kalsie and Singh (2026, p. 2), "the

ability of the acquirer to locate, acquire, and incorporate uncommon, invaluable, distinctive and irreplaceable resources is essential to the success of M&A transactions.” Factors such as firm size, performance, cash, and market returns reflect a firm’s transactional efficiency, thereby shaping the overall duration of the pre-acquisition process (Al-Sabri et al., 2022; Chang et al., 2016; Croci et al., 2017; Ferreira et al., 2017; Luypaert & De Maeseneire, 2015; Nguyen et al., 2020; Nguyen & Phan, 2017).

2.3 Macroeconomic Conditions

At the aggregate level, two complementary frameworks explain M&A activity. Shleifer and Vishny (2003) propose a behavioral perspective driven by stock market misvaluations, while Harford (2005) advances a neoclassical explanation, attributing M&A waves to industry-specific shocks and capital liquidity. The latter emphasizes that high liquidity reduces transaction costs, indicating economic motivations as primary drivers. Aligned with these theoretical predictions, empirical evidence confirms that macroeconomic variables, such as total market capitalization and real interest rates, significantly influence deal duration and completion (Adra et al., 2020; Kim & Song, 2017).

2.4 Deal Characteristics

Among the factors analyzed in the literature, the specific characteristics of the deals are regarded as the most important. Thus, many factors can shape their format and duration.

2.4.1 Information asymmetry

Information asymmetry theory suggests that transactions may become more complex and costly because effective integration requires a deep understanding of the target firm. Adverse selection and moral hazard problems may hinder the realization of expected synergies. Consequently, bidders may act strategically during the pre-acquisition phase to mitigate informational disadvantages or exploit informational advantages in negotiations, thereby influencing the structure and format of the deal (Boeh, 2011; Howe & Morillon, 2020; Luypaert & Van Caneghem, 2017; Meglio et al., 2023).

Evidence shows that cross-border deals may have their duration reduced compared to domestic ones (Al-Sabri et al., 2022) due to the additional investments in mechanisms to reduce information asymmetry, even though they are more costly (Boeh, 2011). M&A involving firms from unrelated industries (diversification) generates greater uncertainty due to different regulations and information levels between the parties (Al-Sabri et al., 2022; Ferreira et al., 2017), which can positively affect the duration.

The payment method (cash or stock) may also affect deal duration. Cash payments are often used when bidders seek to reduce information asymmetry concerns (Luypaert & Van Caneghem, 2017). Moreover, cash offers are generally more straightforward for target managers to evaluate, as they eliminate the need to assess the bidder’s shares and future performance. In contrast, payment in stocks, or mixed payment, requires more administration and permission for issuing new securities (Al-Sabri et al., 2022; Eckbo, 2014; Luypaert & De Maeseneire, 2015).

2.4.2 Transaction costs

Regulatory scrutiny varies across industries with strategic sectors, such as natural resources and health, typically facing more complex approval processes and greater intervention from regulatory agencies (Ferreira et al., 2017). From a transaction costs perspective (Williamson, 1985), intervention is necessary to ensure that the parties fulfill their contractual obligations. Consequently, the duration is also strongly affected by the time spent by regulatory agencies reviewing the terms of the deal, whose completion depends on prior regulatory approval (Ekelund et al., 2001; Ferreira et al., 2017).

2.4.3 Auctions and takeover bidding

Auction theory provides the theoretical foundation for public target acquisitions, challenged bids, and privatizations (Al-Sabri et al., 2022; Eckbo, 2014). These deals often involve formal auction procedures, transactions initiated by targets, competitive bidding environments, multiple potential acquirers, and strategic interactions among bidders. As a result, auction dynamics may influence both the duration and the likelihood of deal completion.

The acquisition of a publicly listed company has greater visibility and tends to be more complex because it is subject to securities laws, disclosure requirements, and shareholder approval (Al-Sabri et al., 2022; Dikova et al., 2010; Lajoux, 2019; Lawrence et al., 2021). Targets can act strategically to delay an acquisition to force a higher bid premium.

Practical delays resulting from the legal and transparency requirements of those deals, in particular, provide an opportunity for a competing acquirer to challenge the deal, leading to a dispute that reduces the likelihood of completion and further extends the whole process (Croci et al., 2017; Lajoux, 2019; Luypaert & De Maeseneire, 2015; Nguyen & Phan, 2017).

Privatization acquisitions frequently involve multiple interested stakeholders, sequential bidding rounds, predefined rules, and a winner selection mechanism. As a result, their duration may differ from conventional acquisitions (Meyer, 2002).

2.4.4 Synergies

As shown, no single theory fully explains the takeover method (Al-Sabri et al., 2022). However, bidders may structure deals as a merger or a tender offer based on how they plan to capture synergies (Kalsie & Singh, 2026; Lukas et al., 2023). Friendly mergers become more likely in a context of intermediate volatility values and can also occur earlier, involve lower transaction costs, and avoid competitive frictions (Lukas et al., 2023).

However, practical evidence shows that, in general, the merger strategy has no significant impact on synergy realization (Kalsie & Singh, 2026) and tends to last longer than tender offers, mainly because they typically have a more complex legal structure and bring more changes to the target firm's structure, which requires more detailed discussions (Al-Sabri et al., 2022; Lajoux, 2019; Luypaert & De Maeseneire, 2015).

2.4.5 Distress resolution

According to Iwasaki et al. (2021, p. 962), “a takeover may serve as an emergency-resolution mechanism instead of bankruptcy.” In this view, an M&A led by a stronger

buyer can rescue a target firm from bankruptcy, with legal incentives depending on the country's legislation. This can present significant opportunities for the parties involved and expedite negotiations in such cases (Iwasaki et al., 2021; Lajoux, 2019), while making the distressed takeover a practical substitute for a formal insolvency process in emerging markets.

2.5 Institutional Quality

It is expected that institutional change in a country, aimed at improving its quality, plays a crucial role in regulatory simplification and environmental clearance, thereby altering transaction costs (North, 1990), which can lead to more efficient deals. This is especially relevant for emerging markets, which inherently contend with high transaction costs (Peng, 2003). In addition to the evidence presented in Table 1 previously, a comparison between empirical studies in developed markets (Dikova et al., 2010) and emerging markets (Al-Sabri et al., 2022) also reveals that the average time to close a deal is longer in the latter.

In accordance with Khanna and Palepu (2010, p. 17), “well-functioning markets tend to have relatively lower transaction costs and high liquidity, as well as greater degrees of transparency and shorter time periods to complete transactions.” Therefore, the literature suggests that improvements in institutional quality through pro-market reforms in the home country affect the duration of M&A.

2.6 Hypothesis Development

The duration of M&A processes and the outcome of their resolution are interconnected, considering that formal environmental complexities both “(1) increase the likelihood of deal abandonment and (2) produce hold-ups resulting in longer deal-completion time,” although most studies analyze each perspective separately (Dikova et al., 2010, p. 227). Renneboog and Zhao (2014, p. 220) argue that “the bidder usually prefers to have a short negotiation duration, as a longer waiting time due to target's resistance increases the transaction costs and uncertainty.” Consequently, this may lead to the announcement withdrawal. We integrate such a perspective into a single framework through survival analysis, leading to the following hypothesis:

H₁: the likelihood of deal completion decreases the longer the transaction remains pending.

3. METHODS

3.1 Data Collection and Sample

The sample includes annual observations of publicly traded acquiring firms in emerging countries. The dataset comprises announcements of completed, abandoned, or pending deals that were still in progress up to the last date of database verification. We selected firms from nine countries with significant transaction volumes, frequently used in other studies (Kim & Song, 2017; Liou et al., 2016): Brazil, China, India, Indonesia, Mexico, Russia, South Africa, Thailand, and Turkey. These nations provide accessible data on publicly traded companies and represent diverse geographic locations.

M&A records were extracted from the Refinitiv SDC database, covering 2002 to 2021, with identification of acquiring and target firms, among other deal details. To

calculate the duration in days, we measured the time from the announcement date to specific endpoints: the completion date for successful deals, the withdrawal date for abandoned transactions, and the database check date (June 30, 2022) for pending ones.

Following the literature, certain records were excluded. These included buybacks and acquisitions of remaining interest, where the acquirer already holds a majority stake in the target firm (Adra et al., 2020; Alimov & Officer, 2017; Luypaert & De Maeseneire, 2015), according to Refinitiv's classification. Acquirers from the financial sector (The Refinitiv Business Classification 2-digit industry classification: code 55) were also excluded.

The final sample comprises non-financial publicly traded acquirers involved in completed, abandoned, or pending deals. Deals of unspecified status were excluded. Observations were excluded if firm-level financial, accounting, or market data were unavailable, or if macro-level indicators for the respective countries were missing. This process yielded a sample of 5,521 acquiring firms and 15,376 unique transactions. Of these, 7,836 were completed, while the remainder were classified as abandoned or pending. Following a single-spell data approach (Wooldridge, 2010), for acquiring companies with multiple announcements within the same year, only the first transaction was included to ensure the independence of observations.

Table 2 provides a breakdown of the number of acquiring companies analyzed by country and each country's contribution to the number of observations.

Table 2*Sample of companies by country, number of observations, and completed deals*

	Brazil	Russia	India	China	Indonesia	Mexico	South Africa	Thailand	Turkey	Total
No. companies	137	146	958	3,330	208	81	182	332	147	5,521
No. observations	456	510	2,131	10,066	385	229	585	695	319	15,376
% of total	3.0	3.3	13.9	65.5	2.5	1.5	3.8	4.5	2.1	100.0
Completed deals	323	392	1,273	4,537	205	188	364	328	226	7,836
Completion rate (%)	70.8	76.9	59.7	45.1	53.2	82.1	62.2	47.2	70.8	51.0

% of total = relative contribution of each country to the number of observations; Completed deals = number of deals completed out of the total observations; Completion rate = percentage of completed deals in relation to the total observations; No. companies = number of eligible companies; No. observations = number of deals analyzed, announced by these companies (a maximum of 1 per year).

Source: *Refinitiv (Securities Data Company).*

It is important to note that Chinese acquirers account for 65.5% of the observations in the sample. While this concentration may raise concerns regarding the influence of a single country on the estimated relationships, it is consistent with previous evidence on the prominence of China in emerging-market M&A activity. For example, Liou et al. (2016) report that China accounts for approximately 11.5% of worldwide M&A transactions, whereas Russia, the second largest emerging economy in their sample, represents only 2.5%. Likewise, the completion rate observed for Chinese deals in our sample (45.1%) is remarkably close to the 44.9% reported by Kim and Song (2017), while their reported completion rate for other emerging economies (68.5%) is also consistent with the higher completion rates observed for most non-Chinese countries in Table 2.

This provides us with a comprehensive sample from different countries for analysis of deal duration.

3.2 Model Specification

The impact on survival time is examined through the hazard function, which provides the “instantaneous rate of exiting the initial state per unit of time” (Gujarati, 2014, p. 346). In other words, it gives the probability that an individual experiences the event, typically referred to as “failure” (generally death in clinical studies), at time t , given that they have survived up to that point (Su et al., 2022). It is important to note that the interpretation of “failure” depends on the context. In this study, failure (deal completion) is the desired outcome.

Survival time was defined from the date of the official announcement of the acquisition to the resolution date. Given that some observations in our sample did not reach the event of interest by the end of the study or the acquisition announcement was withdrawn at some point before the event occurred, such data were right-censored. Left censoring is not applicable here since all the official announcement dates are known. For more details on survival data censoring, Gujarati (2014), Su et al. (2022), and Wooldridge (2010) can be checked.

Our dataset encompasses a more comprehensive portion of the acquiring firm population compared to prior studies (Chang et al., 2016; Dikova et al., 2010; Ekelund et al., 2001; Ferreira et al., 2017; Nguyen & Phan, 2017). These observations represent the total “time at risk,” defined as the duration from announcement until either the event or censoring. As illustrated in Figure 1, completed deals represent those that reached the event (failure). Conversely, pending and abandoned deals are tracked until the database verification or withdrawal date, respectively, and are treated as right-censored observations.

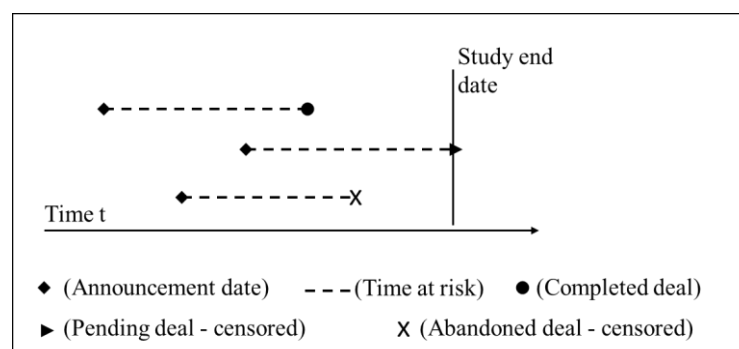


Figure 1 *Time at risk of observed merger and acquisition deals.*

Source: *Prepared by the authors.*

Survival analysis follows two approaches. The first is the non-parametric method, which involves a univariate analysis of time at risk used for descriptive purposes. In this case, the KM analysis is often used to estimate the hazard function (Hosmer et al., 2008):

$$\hat{\lambda}(t) = \frac{d_j}{n_j} \quad (1)$$

where $\hat{\lambda}(t)$ is the estimated hazard function, providing the instantaneous rate of failure at each time $t_{(j)}$ (here, in days), given that the deal has lasted until this date, d_j represents the number of deals that have experienced failure, and n_j is the number of deals at risk of failure in j periods. By sorting the time periods t in increasing order, the KM survival function can be obtained through the product of 1 minus the hazard rate for each time $t_{(j)}$, as follows (Hosmer et al., 2008):

$$\begin{aligned} \hat{S}(t) &= [1 - \hat{\lambda}(1)] \times [1 - \hat{\lambda}(2)] \times \dots \\ &\times [1 - \hat{\lambda}(\max j)] \Rightarrow \prod_{t_{(j)} \leq j} [1 - \hat{\lambda}(j)] \end{aligned} \quad (2)$$

The result of the survival function $\hat{S}(t)$ is the survival probability, meaning the probability that the deal lasts at least $t_{(j)}$ days, denoted within the interval from 0 to 1. For example, at $t_{(1)}$ in our sample, $d_1 = 2,021$, and $n_1 = 15,376$, so $\hat{\lambda}(1) = 13.14\%$, and $\hat{S}(1) = 86.86\%$. At $t_{(2)}$, $d_2 = 56$, and $n_2 = 15,376 - 2,021 - 9 = 13,346$, which is the current number of deals at risk, considering that 2,201 were completed at $t_{(1)}$, and 9 were abandoned. Therefore, $\hat{\lambda}(2) = 0.42\%$, and $\hat{S}(2) = 86.86\% \times (1 - 0.42\%) = 86.49\%$, and so on. Hence, 86.49% is the probability that the deals in the sample last for at least 2 days. The values of $\hat{S}(t)$ represented graphically result in the KM curve, which is a decreasing step function.

For convenience, if the interest lies in failure (as in our case) instead of survival, these results can be represented inversely, where $\hat{F}(t) = 1 - \hat{S}(t)$, revealing the probability of failure, or that the deals are completed within $t_{(j)}$ days. Returning to the previous example, the probability that the deals are completed within 2 days is 13.51%.

The second approach is the parametric method, which includes regression models, considering that survival time is conditional on covariates (Su et al., 2022). Given that the probability distribution of duration values is often skewed, parametric models require that this distribution be pre-specified, such as exponential, Weibull, Gompertz, log-logistic, among other possibilities, including the application of the Cox proportional hazards model, which relaxes this pre-specification (Gujarati, 2014; Su et al., 2022).

We employed a Weibull regression model, which, through testing, maximized the log-likelihood function, indicating that this distribution provided a better fit. A primary advantage of the Weibull model is its ability to explicitly account for duration dependence by estimating a special parameter (Gujarati, 2014; Wooldridge, 2010). This feature makes the model particularly suitable for testing our hypotheses regarding the dynamic nature of M&A processes. Robustness checks using alternative survival models yielded similar results, which are available from the authors upon request. The Weibull model is specified as follows (Wooldridge, 2010):

$$\lambda(t|x) = \exp(x\beta) \alpha t^{\alpha-1} \quad (3)$$

where

$$\begin{aligned}
x\beta = & \beta_0 + \beta_1 ref_{c,n} + \beta_2 size_i + \beta_3 roa_i + \beta_4 cash_i + \beta_5 return_i \\
& + \beta_7 mktcap_gdp_{c,n} + \beta_8 interest_{c,n} + \beta_9 d_deal_i \\
& + \beta_{10} d_industry_s + \beta_{11} d_country_c + \beta_{12} d_year_n
\end{aligned} \quad (4)$$

In this case, the estimated hazard function $\lambda(t|x)$ is conditional on a vector of explanatory variables x , β is a vector of estimated regression parameters, including the constant parameter, and α is a non-negative estimated parameter that indicates duration dependency. If $\alpha = 1$, there is no duration dependence. If $\alpha < 1$, the risk of failure decreases with time, indicating negative duration dependence. If $\alpha > 1$, the risk of failure increases with time, indicating positive duration dependence. The coefficients β are reported in the regression results as hazard ratios (HRs) for each covariate, calculated as e^β . These have a multiplicative effect on the hazard function. Specifically, if $HR = 1$, the covariate has no impact on the hazard function; if $0 < HR < 1$, the covariate reduces the hazard function (and has a positive effect on the time to the event); if $HR > 1$, the covariate increases the hazard function (and has a negative effect on the time to the event).

To aid in the interpretation of the estimated coefficients, these results can be reported as accelerated failure time (AFT) metrics instead of HRs (applicable to the Weibull and exponential models). In this case, the AFT model provides the time ratio (TR), offering a more explicit measure of time effects compared to HRs. This measure is obtained by the following transformation (Cleves et al., 2016):

$$b = -\beta/\alpha$$

or

$$b = -\frac{\ln(HR)}{\alpha} \quad (5)$$

In Eq. 5, b is the AFT coefficient obtained by dividing $-\beta$ by the α parameter. Next, to be interpreted as TR, it needs to be exponentiated, applying $\exp(b)$. The TR estimates can be applied directly to the average/median failure time. Statistical software can be programmed to report results in terms of AFT coefficients and TRs. In Stata®, for instance, the model specification needs to be followed by the commands “time” and/or “tratio” (Cleves et al., 2016).

The set of explanatory variables is defined in the following section. The subscripts i , s , c , and n index the firms, industries, countries, and years ($n = \{2002, \dots, 2021\}$). In particular, $\beta_9 d_deal_i$ is a vector of estimated parameters for qualitative characteristics of the deals announced by the acquiring firm i , represented by 9 dummy variables ($j = \{1, \dots, 9\}$).

The duration for each observation is calculated based on its specific official announcement date, reflecting a staggered entry approach. To ensure the explanatory variables capture the information set available at the time of the announcement, all firm-level data are lagged. For instance, financial characteristics are sourced from the fiscal year-end immediately preceding the announcement date to ensure that these variables represent the most recent publicly available information.

3.3 Variable Definition

The dependent variable in our model is the duration of the acquisition process in days, denoted by t . This variable represents the total “time at risk” until completion or censoring. It is incorporated into the hazard function $\lambda(t|x)$, which estimates the conditional probability of a deal reaching completion at time t . By analyzing this function, we can assess how specific covariates influence the hazard rate, thereby accelerating or decelerating the completion process.

We relied on the M&A literature that investigates the duration and/or the probability of deal completion to structure the model regarding its control variables, which represent characteristics of acquiring firms, country characteristics, and deal qualitative characteristics. The description of the variables is provided in detail in Table 3.

Table 3*Variables description*

Dependent variable	Meaning	Description	Expected effect	Source
<i>t</i>	Duration of the acquisition process	Duration in days of the acquisition process, starting from the official announcement date		Refinitiv
Transactional efficiency				
<i>size</i>	Acquirer size	Natural log of total assets	(+)	Refinitiv
<i>roa</i>	Performance	Operational profit to total assets	(−)	Refinitiv
<i>cash</i>	Liquidity	Cash holdings to total assets	(−)	Refinitiv
<i>return</i>	Stock returns	Cumulative stock return in year n	(−)	Refinitiv
Macro conditions				
<i>mktcap_gdp</i>	Total market capitalization	Market capitalization of listed firms relative to the country's gross domestic product (in dollars)	(−)	World Bank
<i>interest</i>	Real interest rate	Country's annual real interest rate	(+)	World Bank
Deal characteristics				
<i>cbma_d</i>	Cross-border deal dummy	1 if the target firm is headquartered in another country, 0 otherwise	(−)	Refinitiv
<i>reg_d</i>	Regulatory agency dummy	1 if the deal is subject to regulatory agency review, 0 otherwise	(+)	Refinitiv
<i>priv_d</i>	Privatization dummy	1 if the target firm is state-owned, 0 otherwise	(+)	Refinitiv
<i>tpublic_d</i>	Publicly listed target dummy	1 if the target firm is publicly listed, 0 otherwise	(+)	Refinitiv
<i>challenge_d</i>	Challenge dummy	1 if the acquirer's offer was contested by a competitor, 0 otherwise	(+)	Refinitiv
<i>divers_d</i>	Diversification dummy	1 if the target firm belongs to a different 2-digit Refinitiv Business Classification industry code, 0 otherwise	(+)	Refinitiv
<i>cashonly_d</i>	Cash payment dummy	1 if the payment consideration for the deal is cash-only, 0 otherwise	(−)	Refinitiv
<i>merger_d</i>	Merger dummy	1 if the deal format is categorized as a "merger," 0 otherwise	(+)	Refinitiv
<i>bankruptcy_d</i>	Bankruptcy dummy	1 if the target firm is bankrupt, 0 otherwise	(−)	Refinitiv
Institutional quality				
<i>ref_efw</i>	Pro-market reforms	1 if a positive change in the Economic Freedom of the World index is observed in both the current and previous year, or 0 otherwise.	(−)	Fraser Institute

Note: Control variables for firm characteristics were winsorized at the 1st and 99th percentiles.

Source: Prepared by the authors.

In line with previous studies in the field of finance and M&A, we used a discrete reform indicator rather than the original continuous measure (Alimov & Officer, 2017; Dessaint et al., 2017). This indicator was constructed using the Economic Freedom of the World index from the Fraser Institute, which is recognized as a proxy for institutional reforms and has been employed to operationalize market-oriented changes (Banalieva et al., 2018; Fuentelsaz et al., 2021; Grier & Grier, 2021; Singh et al., 2018).

Our model also includes dummy controls for the effect of industry and country characteristics of the acquiring firms. We have also included year dummy variables to control for seasonal differences in the distribution of duration (Wooldridge, 2010), considering that the durations start on different dates spread over 20 years. Furthermore, the year controls can account for the impact of regulatory shocks and changes in public policy (Ferreira et al., 2017), and other exogenous shocks such as the COVID-19 pandemic, which may conflict with our reform indicator that also captures the effect of specific shocks in the years. Therefore, the results are presented with and without year controls.

To address the potential influence of Chinese observations on the results, additional robustness analyses were conducted and are reported in the appendices. Appendix C presents a complete re-estimation of the Weibull models excluding Chinese observations, a sensitivity analysis of the estimated coefficients, and KM failure curves comparing Chinese and non-Chinese acquirers. The results indicate that although some coefficients are sensitive to the exclusion of China, the main conclusions of the study remain statistically valid and the evidence of negative duration dependence persists.

4. RESULTS

4.1 Descriptive Analysis

Table 4 describes the duration of the sample deals, subdivided into groups. Descriptive statistics for the other variables included in the models can be found in Appendix A.

Table 4

Descriptive statistics of the duration in days for observed M&A deals by group

Duration by group	n	%	Mean	SD	Median	Min.	Max.
Total	15,376	100.00	1,075	1,388	280.000	1	4,446
Completed	7,836	50.96	149.000	278.000	59.000	1	4,214
Pending	4,460	29.01	1,866	1,104	1,751	93	4,200
Abandoned	3,080	20.03	2,351	242.000	4,076	1	4,446

M&A = merger and acquisition; SD = standard deviation.

Source: Prepared by the authors.

Completed deals represented 50.96% of the observations, with an average duration of 149 days and a median of 59 days across the nine countries. This is quite similar to the average found by Al-Sabri et al. (2022) in an emerging market and, not surprisingly, it is higher than the averages reported by de Ekelund et al. (2001), Dikova et al. (2010), and Luypaert and De Maeseneire (2015) in developed markets (ranging from 90 to 112 days).

We identified situations in which the recorded status or duration of transactions may not accurately reflect their actual condition. Some pending deals present extreme duration values, occasionally spanning the entire sample period. Assuming these were effectively abandoned without status updates, we reclassified pending deals exceeding the historical maximum duration of completed deals in their respective countries. To mitigate outlier

effects, their duration was replaced with this maximum value. However, econometric modeling with the original values did not yield qualitatively distinct findings. Results with the original durations can be found in Appendix B, including descriptive and regression analysis.

We have observed that 29.01% of the sample deals were pending as of June 30, 2022, with an average duration of 1,866 days. Abandoned deals accounted for 20.03% of the total, with an average duration of 2,351 days.

In Table 5, deals are classified by group and time intervals. It is observed that 2,021 deals were concluded on the same day as the announcement date. Another 3,839 were concluded within 6 months, 1,187 within 1 year, 548 within 2 years, and 241 took longer than that to be concluded. It is noticeable that censored deals tend to be concentrated in longer time intervals.

Table 5

Description of the duration in days for the observed merger and acquisition deals by time intervals

Intervals	Completed		Pending		Abandoned	
	n	%	n	%	n	%
Same day (1 day)	2,021	25.79	0	0.00	9	0.29
Up to 180 days (6 months)	3,839	48.99	33	0.74	577	18.73
Up to 365 days (1 year)	1,187	15.15	338	7.58	323	10.49
Up to 730 days (2 years)	548	6.99	506	11.35	174	5.65
Over 730 days	241	3.08	3,583	80.34	1,997	64.84
Total	7,836	100.00	4,460	100.00	3,080	100.00

Source: Prepared by the authors.

Regarding deals completed on the same day, what can happen is that part of the M&A process occurred in the pre-announcement period, and we cannot observe the duration for these deals (Lawrence et al., 2021). However, we still consider that they were a more agile process, since they soon became known to investors.

Next is the non-parametric KM survival analysis. Figure 2 illustrates the KM failure curve, displaying an ascending step-function over time. The vertical axis of the graph represents the population's probability of failure for a given period 't', measured in days on the horizontal axis. For each point on the horizontal axis, there is a corresponding number of observations at risk of failure, which diminishes over time as deals are either completed or censored. At the initial moment, all 15,376 observations are at risk of failure. In other words, at this point, there is still an expectation that all deals will be completed. The curve increases only in the periods when observations experience failure and remains constant until another failure event is observed.

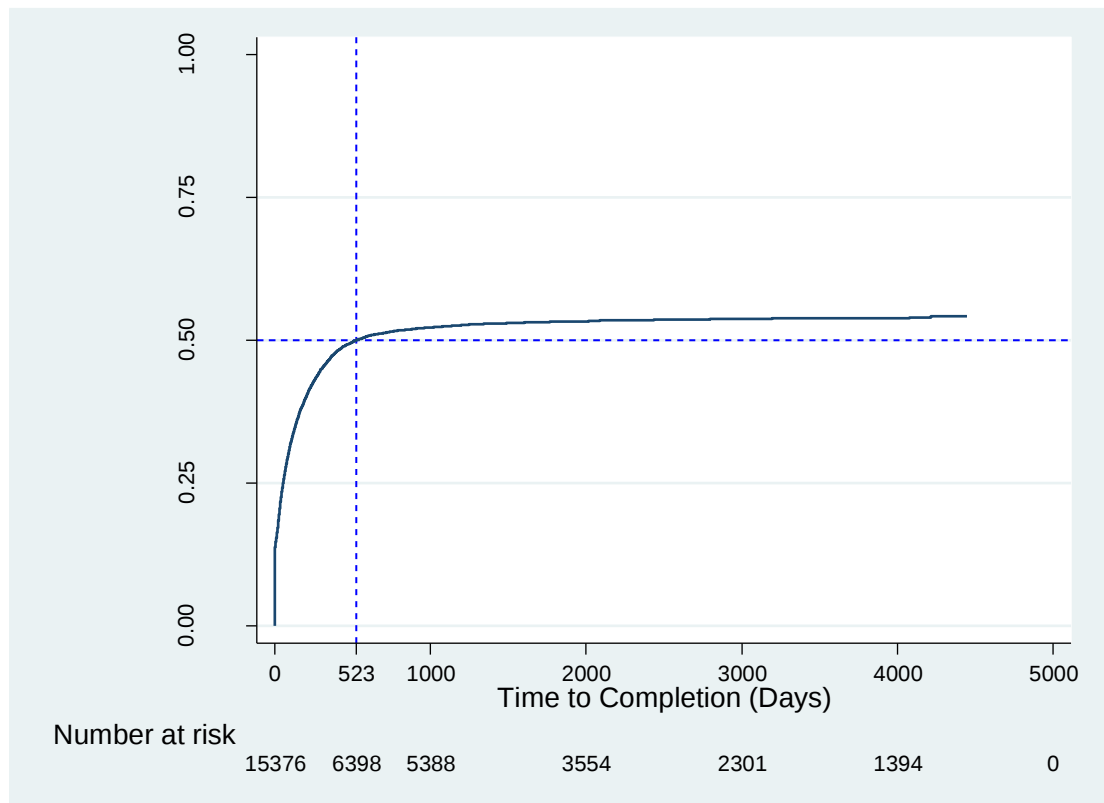


Figure 2 Kaplan-Meier (KM) failure curve estimation, median failure time, and number of deals at risk. The KM curve illustrates the cumulative probability of failure of a corporate merger and acquisition (M&A) deal over time. The dashed lines indicate the median completion time and the corresponding 50% cumulative completion probability. The table below the graph reports the number of deals remaining at risk at selected time intervals.

Source: Prepared by the authors.

The highlighted point indicates that the probability of deal completion in the sample is 50% after 523 days. This point represents the median time for the conclusion of an M&A deal, which is considered a more appropriate measure compared to traditional central tendency measures that do not account for censored data. It allows researchers to understand how long the population of interest can generally survive (Su et al., 2022). The graph shows that within 523 days, 8,978 deals left the study due to either being completed or censored, while 6,398 are still under observation. Up to this point, the curve has a sharp incline. Beyond that point, a larger proportion of the remaining observations consists of censored data. Thus, the curve stabilizes, and it can be observed that for each additional ‘t’ period, the marginal probability of failure is quite low.

A comparison of our results reveals that the median duration for completed deals shown in Table 4 (59 days), which excludes censored observations, systematically underestimates the true duration of M&A processes in our sample. In contrast, the KM estimator provides a more comprehensive population-level measure by incorporating right-censored data. By adopting a prospective approach, the KM analysis accounts for the entire cohort of transactions from the announcement date. This ensures that the estimated time to completion reflects the probabilities across the full spectrum of deals, including those still pending or eventually abandoned, rather than being biased toward only the fastest resolutions. That is, unlike simple averages, the KM method

acknowledges that all deals are initially ‘at risk’ of completion, providing a more accurate estimation of the time required to navigate the pre-acquisition phase.

It should be noted that, due to the dominance of Chinese acquirers in the sample and given the structural heterogeneity of China relative to the other emerging economies (Park et al., 2006), additional analyses are presented in Appendix C. These analyses include KM failure curves comparing Chinese and non-Chinese acquirers, Weibull survival models excluding Chinese observations, and a sensitivity assessment of the estimated coefficients.

To further improve transparency regarding deal duration patterns, we also included KM failure curves by deal characteristics in Appendix A, complementing the descriptive analysis of the duration data.

In the following section, we apply parametric survival analysis using a multivariate Weibull model to estimate the hazard function of an M&A completion.

4.2 Weibull Model Analysis and Discussion

In Table 6, the HR values reported in the columns indicate that the estimated parameters significantly affect the duration of M&A deals for acquiring firms headquartered in that country.

Table 6

Results of HR estimation using the Weibull model

Independent variables	Dependent variable: $\lambda(t x)$	
	(1) HR	(2) HR
<i>size</i>	0.988 (0.007)	0.982** (0.007)
<i>roa</i>	1.006*** (0.002)	1.007*** (0.002)
<i>cash</i>	1.002** (0.001)	1.003*** (0.001)
<i>yreturn</i>	1.000 (0.000)	1.000** (0.000)
<i>mktcap_gdp</i>	1.000 (0.001)	0.999 (0.001)
<i>interest</i>	1.016*** (0.003)	1.016*** (0.004)
<i>cbma_d</i>	1.230*** (0.039)	1.246*** (0.039)
<i>reg_d</i>	1.113*** (0.033)	1.138*** (0.034)
<i>priv_d</i>	1.090* (0.055)	1.086 (0.055)
<i>tpublic_d</i>	1.260*** (0.059)	1.271*** (0.060)
<i>challenge_d</i>	0.513*** (0.130)	0.500*** (0.127)
<i>divers_d</i>	0.954** (0.023)	0.942** (0.022)

<i>cashonly_d</i>	1.237***	1.149***
	(0.030)	(0.030)
<i>merger_d</i>	1.108***	1.074***
	(0.028)	(0.028)
<i>bankruptcy_d</i>	1.517*	1.517*
	(0.327)	(0.328)
<i>ref_efw</i>	1.111***	1.139***
	(0.028)	(0.038)
<i>constant</i>	0.063***	0.046***
	(0.010)	(0.010)
$\hat{\alpha}$	0.315***	0.319***
	(0.003)	(0.003)
<i>industry_d</i>	Yes	Yes
<i>country_d</i>	Yes	Yes
<i>year_d</i>	No	Yes
No. obs.	15,376	15,376
No. failures	7,836	7,836
Likelihood-ratio χ^2	1.412***	1.562***
Log likelihood	-28.121	- 8.046

Note: This table reports the results of estimated coefficients in the form of hazard ratios (HR), with robust standard errors in parentheses. The original coefficients can be obtained by taking the natural logarithm ($\ln$) of HR. Two models were estimated (1) without and (2) with the control of year dummies. All specifications include industry and country dummies as controls. 7,836 out of the total (15,376) observations experienced failure, and the remaining observations were censored. $\hat{\alpha}$ is the estimated special parameter that denotes duration dependence.

***, ** and * indicate significance level at 1%, 5%, and 10%, respectively.

Source: Prepared by the authors.

The parameter $\hat{\alpha}$ was less than 1 and statistically significant. Therefore, there is evidence of negative duration dependence. This means that the probability of completing a deal decreases the longer it remains pending, while holding the other factors constant.

The results indicate that acquiring firms' efficiencies significantly influence the likelihood of deal completion. We can state that acquirer size negatively impacts the hazard function ($HR \approx 0.982$), which reflects increased complexity in larger organizational structures. Specifically, an increase of one unit in the natural logarithm of the acquiring firm's total assets (size) is associated with a 1.8% reduction ($0.982 - 1$) in the hazard rate. On the other hand, increases in return on assets ($HR \approx 1.007$), cash holdings ($HR \approx 1.003$), and stock returns ($HR \approx 1.000$) are associated with higher M&A completion rates.

Regarding macroeconomic conditions, the real interest rate presents a hazard rate above one ($HR \approx 1.016$), indicating that higher rates actually accelerate deal completion. This suggests that a contractionary monetary policy contributes to faster deal completion. Empirical M&A literature shows that higher interest rates can predict a reduction in the likelihood of deal completion (Adra et al., 2020). High interest rates are also related to high transaction costs and lower M&A activity (Harford, 2005). However, more recent evidence from Brazil suggests that higher interest rates may simultaneously increase firms' propensity to engage in acquisitions, as higher discount rates reduce target valuations and create acquisition opportunities (Guzella et al., 2025). Taken together,

these findings suggest that the relationship between interest rates and M&A outcomes remains inconclusive in emerging economies.

Survival analysis focuses on the duration of deals already announced rather than on the decision to initiate a transaction, providing a different perspective on the role of monetary conditions.

One possible explanation is through the real options channel (Adra et al., 2020; Bhagwat et al., 2016). During periods of monetary tightening, managers may perceive that financing conditions are likely to deteriorate further, increasing future borrowing costs and reducing financial flexibility. As a result, the value of adopting a “wait-and-see” strategy declines, creating incentives to complete the transaction under current financing conditions rather than postponing it. In this sense, higher interest rates may accelerate deals in the pre-acquisition stage.

A complementary explanation is provided by the interim risk hypothesis (Bhagwat et al., 2016). The period between announcement and completion (interim period) exposes the parties to fluctuations in market conditions that may alter the attractiveness and feasibility of the transaction. Rising interest rates increase macroeconomic uncertainty and the risk that financing conditions, firm valuations, or expected synergies deteriorate before closing. Consequently, managers have incentives to shorten the interim period in order to preserve the originally negotiated terms and reduce the likelihood of renegotiation or abandonment. Under this interpretation, higher interest rates act not only as a financing constraint but also as a catalyst for faster execution, as firms seek to minimize their exposure to interim market risks and secure the expected benefits of the transaction before economic conditions worsen.

Meanwhile, market capitalization relative to gross domestic product did not show a statistically significant impact, despite prior evidence suggesting that it may reduce the probability of M&A abandonment (Kim & Song, 2017).

Building on the market timing framework of Shleifer and Vishny (2003), many acquisitions are motivated by capital market mispricing, whereby managers use overvalued equity during bull markets to acquire relatively undervalued real assets, thereby transferring wealth to existing shareholders. Under this logic, favorable capital market conditions should encourage managers to accelerate deal completion by strategically using stock as a means of payment. However, our findings suggest that, in emerging economies, M&A completion may be more strongly influenced by institutional and regulatory conditions than by capital market valuations, as evidenced by the positive and significant effect of pro-market reforms. Although capital market development and economic freedom are conceptually related, since both contribute to reducing transaction costs and information asymmetries (Kim & Song, 2017), the Economic Freedom of the World index captures a broader set of market-supporting institutions that have been consistently associated with positive economic outcomes (Hall & Lawson, 2014).

Furthermore, previous empirical evidence indicates that additional mechanisms may weaken the relationship between capital market development and M&A outcomes. Bonaime et al. (2018), studying the U.S. market, show that firms frequently postpone or abandon acquisitions during periods of heightened uncertainty, even after controlling for valuation effects. Another possible explanation is the prevalence of business groups. Many acquirers in our sample are affiliated with large business groups, which rely on internal capital markets, privileged information networks, political connections, and reputation as substitutes for external capital markets (Kim & Song, 2017). Consequently, capital market development may become less relevant for explaining deal completion in these settings. This relationship deserves further investigation in future research.

Transaction-specific factors provide the strongest individual impacts on the hazard. Cross-border deals and those involving regulatory agencies show higher HRs ($HR \approx 1.248$

and $HR \approx 1.143$), potentially indicating that deals reaching such stages or involving international players are backed by stronger commitment and more standardized protocols. Although cross-border acquisitions are often associated with greater informational and institutional complexity, previous evidence suggests that they may be completed more rapidly than domestic transactions (Al-Sabri et al., 2022; Boeh, 2011). Boeh (2011), for example, shows that cross-border acquisitions tend to employ transaction structures specifically designed to mitigate uncertainty, including a greater reliance on cash payments and tender offers.

In emerging economies, regulatory intervention and government involvement may create a signal of transaction legitimacy and attract additional bidders (Yang et al., 2019). Moreover, Ekelund et al. (2001) argue that regulatory agencies often possess extensive industry-specific information and accumulated expertise that can improve the efficiency of merger assessments. Nevertheless, this interpretation should be considered with caution, as the robustness analysis reported in Appendix C indicates that the estimated effect of regulatory review is sensitive to the exclusion of Chinese observations.

Privatization has shown above one hazard ratio in model 1 ($HR \approx 1.090$), meaning a positive effect. Deals in which the target firm is publicly listed ($HR \approx 1.271$), deals where the payment consideration was made in cash ($HR \approx 1.149$), deals classified as mergers ($HR \approx 1.074$), and those where the target firm is bankrupt ($HR \approx 1.517$) are associated with shorter duration, as the estimated HRs positively affect the hazard function.

Mergers naturally tend to last longer than tender offers, as shown in previous studies using simple descriptive statistics (Luypaert & De Maeseneire, 2015). However, survival analysis demonstrates that mergers are associated with a higher completion rate for each additional unit of time.

On the other hand, the observation group involving a competitor bidding contest ($HR \approx 0.500$) and diversification deals ($HR \approx 0.942$) reduce the hazard function and tend to last longer than their counterparts.

The estimated HRs for the reform indicators were greater than 1 and significant in both specifications. Based on the results in column 2, which includes year dummies, the HR of 1.139 indicates that deals announced under a positive shift toward economic freedom have a 13.9% increased chance of completion, while holding the other covariates constant. Therefore, this analysis reveals that such deals are associated with a shorter duration.

Ferreira et al. (2017, p. 410) argue that “the expected outcome of these pro-market reforms is a more transparent market, where information is more reliable, and the regulatory framework made more explicit.” In other words, they reduce transaction costs arising from the informational gap between buyers and sellers (Khanna & Palepu, 2010). Consequently, deal duration is affected, reflecting smoother functioning in the M&A market. Thus, our findings highlight institutional quality as an important determinant of M&A completion dynamics, complementing previous studies that emphasize the role of institutional and regulatory factors in shaping transactional outcomes (Croci et al., 2017; Ekelund et al., 2001; Kim & Song, 2017; Luypaert & De Maeseneire, 2015; Meglio et al., 2017). Similar arguments are made by Muehlfeld et al. (2007), who emphasize that regulatory factors are as crucial as deal-specific characteristics.

To facilitate interpretation, we calculated the TR for the estimated coefficients using the AFT framework. TR measures the proportional impact of covariates on time, using the median time to failure as a baseline. These estimates and their interpretations are summarized in Table 7.

Table 7*AFT and results interpretation*

Variables	(1) TR (%)	(2) TR (%)	Observed effect on failure time
Transactional efficiency			
<i>size</i>	-	5.70	Decelerates: larger acquiring firms take longer to conclude
<i>roa</i>	-1.84	-2.09	Accelerates: increased performance reduces duration
<i>cash</i>	-0.71	-0.90	Accelerates: increased liquidity reduces duration
<i>return</i>	-	-0.12	Accelerates: stock returns have a minor impact on deal duration
Macro conditions			
<i>mktcap_gdp</i>	-	-	Insignificant: does not significantly affect duration.
<i>interest</i>	-5.01	-5.08	Accelerates: increases in interest rates contribute to faster deal completion
Deal characteristics			
<i>cbma_d</i>	-65.67	-68.88	Accelerates: cross-border deals have shorter durations than domestic deals
<i>reg_d</i>	-33.89	-40.60	Accelerates: deals subject to regulatory review show a shorter duration
<i>priv_d</i>	-27.29	-	Accelerates: privatization status is associated with shorter duration
<i>tpublic_d</i>	-73.30	-75.10	Accelerates: publicly listed targets are associated with shorter duration
<i>challenge_d</i>	212.10	216.70	Decelerates: contested offers drastically increase duration
<i>divers_d</i>	14.87	18.68	Decelerates: diversified acquisitions tend to take longer
<i>cashonly_d</i>	-67.43	-43.59	Accelerates: cash-only considerations are completed more rapidly than other formats
<i>merger_d</i>	-32.68	-22.47	Accelerates: deals categorized specifically as “mergers” have a shorter duration
<i>bankruptcy_d</i>	-132.20	-130.40	Accelerates: bankrupt targets create urgency, leading to a faster deal
Institutional quality			
<i>ref_efw</i>	-33.40	-40.79	Accelerates: deals are associated with a shorter duration in the presence of improvement shocks in the quality of pro-market institutions

Note: Time ratios (TRs) for models 1 and 2 of the estimated coefficients were calculated by applying the accelerated failure time (AFT) model: $b = -\ln(HR)/\alpha$, which was exponentiated, and one was subsequently subtracted.

Source: Prepared by the authors.

In general, the results support our main research hypothesis and suggest that the chances of completing a deal decrease for each additional unit of time the transaction remains pending. This finding suggests that time acts as a detrimental factor, as negotiations prolong, decreasing the likelihood of a successful closing. Consequently, rather than being isolated events, extended duration and deal abandonment appear to be integrated aspects of a degrading transactional process, where the “exhaustion” of the deal significantly reduces its probability of reaching completion.

5. PRACTICAL IMPLICATIONS

The integration of deal completion and duration within the pre-acquisition stage addresses a significant fragmentation in the M&A literature. While previous research has often treated these dimensions as isolated phenomena or analyzed them using restricted sub-samples (Chang et al., 2016; Dikova et al., 2010; Ekelund et al., 2001; Ferreira et al., 2017; Luypaert & De Maeseneire, 2015; Nguyen & Phan, 2017), our approach suggests that duration and outcome are intrinsically linked.

Thus, we have made technical advancements compared to traditional studies that examine the timing of M&A processes. For example, Nguyen and Phan (2017) applied an ordinary least squares model to duration data, which have a skewed distribution and are known to potentially violate the assumptions of this model (Wooldridge, 2010). Ferreira et al. (2017) did not discuss the limitations of duration data in applying their Tobit model. The unrestricted consideration of both pending and completed acquisition processes in the sample can lead to a bias in interpreting the results, as such observations contain incomplete information about the acquisition process and should be censored. The latent dependent variable of the Tobit model does not distinguish them from observations in which the deal was actually completed because it traditionally cannot handle random right-censoring (Gong & Schaubel, 2018).

A similar issue occurs in Chang et al. (2016) when modeling “time to resolution.” Resolution can have two outcomes: a completed deal or an abandoned deal. However, the same explanatory factor included in a joint model can have opposing effects when separately analyzed for each type of resolution. The proportion of each type of resolution in the sample can also distort the results because they have different distributions, with naturally longer times to resolution for abandoned deals. Again, the model cannot distinguish between two different paths for the response variable “time,” making it challenging or impractical to interpret such results.

This study distinguishes itself from others that implement models to predict the duration of M&A deals by using survival analysis. While Dikova et al. (2010) mention it as a suitable model for such a task, we have not identified its application in this context until now, making it one of our contributions to this line of research. In the case of Balogh et al. (2022), survival analysis is used to examine the time from the initial public offering to the first M&A, not the pre-acquisition stage.

6. CONCLUSIONS

Also known as the “time-to-event” approach, the application of survival analysis has allowed us to integrate the perspective of duration and completion of deals, which is often assessed separately in other studies (Chang et al., 2016; Croci et al., 2017; Dikova et al., 2010; Luypaert & De Maeseneire, 2015; Renneboog & Zhao, 2014). With that, we have provided support for our hypothesis that the M&A process exhibits negative duration dependence. That is, holding other factors constant, the success rate of completing the deal decreases for each additional unit of time. Thus, we offer a dynamic perspective to

the study of duration-completion-abandonment, and we provide a solution to the problem together with survival analysis, which also allows for a more appropriate description of duration data compared to traditional descriptive statistics.

We contribute to a better understanding of the capacity to acquire in environments undergoing institutional frictions (Ferreira et al., 2017). As argued by Renneboog and Zhao (2014), long durations are associated with increased transaction costs and uncertainty and, therefore, contribute to an increase in the average rate of abandoned deals, as there are fewer incentives to complete them. As our results have demonstrated, a significant portion of deals in the sample were not completed, and the reasons for that are also key research questions in other studies (Dikova et al., 2010; Luypaert & De Maeseneire, 2015).

Despite the contributions and advances identified, our research is not free of limitations. Endogeneity may affect the validity of causal inferences, despite the wide range of explanatory variables. In addition, the data may not reflect the actual duration of the pre-acquisition stage (Dikova et al., 2010; Lawrence et al., 2021; Meglio et al., 2017). Even for publicly traded acquiring firms, the official announcement of an acquisition can be delayed for strategic reasons, while the process is actually on its way. Evidence about this problem is the deals completed within 1 day. Future studies may address this issue more effectively by applying parametric survival models for interval-censored data (McDonald & Triplett, 2025).

Another limitation concerns the composition of the sample. Chinese acquirers account for a substantial proportion of the observations, reflecting China's prominent role in M&A activity among emerging economies. Although the robustness analyses presented in Appendix C indicate that the overall statistical validity of the model and the evidence of negative duration dependence remain unchanged after excluding Chinese observations, the significance and, in some cases, the direction of influence of some explanatory variables are affected. This suggests that the Chinese subsample exhibits structural characteristics that differ from those of other emerging economies and, therefore, exerts a non-negligible influence on some of the estimated relationships. Consequently, caution is warranted when generalizing specific coefficient estimates to emerging markets as a whole. Furthermore, the conclusions of this study are limited to publicly traded acquiring firms in emerging countries. Therefore, some generalizations need to be made cautiously.

This study is pioneering in the use of survival analysis to model M&A process duration data (considering the time of its development), and it represents a first step. Su et al. (2022, p. 308) emphasize that “the issue of choosing an appropriate survival analysis method can be potentially complex.” In this regard, other studies can build on more advanced survival techniques (Hosmer et al., 2008; McDonald & Triplett, 2025; Su et al., 2022; Wooldridge, 2010; Zhao et al., 2016).

Another possibility is the inclusion and analysis of new variables. For example, the acquiring firm's experience with completed deals (Dikova et al., 2010), regulatory complexity of industries (Ekelund et al., 2001; Ferreira et al., 2017), political connections of the firms involved (Croci et al., 2017; Renneboog & Zhao, 2014), and the hiring of experts and financial advisors, such as major investment banks, to oversee the transaction (Chang et al., 2016; Meglio et al., 2017). Particularly, the role of financial advisors deserves further attention, as recent evidence suggests that their involvement may improve transaction outcomes by reducing information asymmetries, facilitating negotiations, and enhancing decision quality throughout the acquisition process (Oliveira et al., 2025). Future studies may therefore examine whether advisor participation also affects the duration and completion probability of M&A deals.

Furthermore, the relationship between monetary tightening, interim risk, and M&A completion speed represents a promising avenue for future research. In particular, future

studies could distinguish between the effects of monetary tightening before and after deal announcement, as these stages involve fundamentally different decision contexts. Prior to announcement, firms may exercise a “wait-and-see” option and postpone acquisitions under adverse financing conditions (Adra et al., 2020). After announcement, however, the option to wait has been abandoned, and firms instead face interim risk, creating incentives to accelerate completion and reduce exposure to unfavorable macroeconomic shocks (Bhagwat et al., 2016).

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AUTHOR CONTRIBUTIONS

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Conceptualization: lead;
Data curation: lead;
Formal analysis: equal;
Investigation: lead;
Methodology: lead;
Visualization: lead;
Writing – original draft: lead;
Writing – review and editing: equal.

Poueri do Carmo Mário

Conceptualization: supporting;
Formal analysis: equal;
Methodology: supporting;
Resources: supporting;
Supervision: lead;
Validation: lead;
Writing – review and editing: equal.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The entire dataset supporting the results of this study can be made available upon request to the authors.

DECLARAÇÃO DE USO DE INTELIGÊNCIA ARTIFICIAL

The authors declare that generative artificial intelligence was used in the following stages of the production of this manuscript:

- Text refinement: ChatGPT.
- Translation: ChatGPT.
- Data analysis: ChatGPT.

The authors declare that, regardless of the use of the tools mentioned above, all generated content was supervised, verified, and critically validated by humans. The authors assume full and exclusive responsibility for the accuracy of the data, integrity of mathematical/statistical formulas, originality of the text, and the conclusions presented in the published article.

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