Strategic Level Real Options in Corporate Acquisitions

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Abstract. In this paper we present strategic level real options that acquiring companies have in the corporate acquisitions process. The real options presented are such that exist on the strategic level and are different from the real options that reside within the acquisition candidate companies as stand-alone. We present acquisition synergies as real options and strategy level real options created in the acquisition as sequential real options to acquisition timing. Evaluation of target companies that includes the aforementioned real options is discussed. In: Sheibani K (ed). Proceedings of the 1st International Conference on Applied Operational Research – ICAOR (2008), pp 168–177. Lecture Notes in Management Science Vol. 1. ISSN 2008-0050.

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1 Introduction

Corporate acquisitions are a common and a popular form of corporate development. With an overall yearly value of hundreds of billions of dollars and numbering in tens of thousands [1] acquisitions are also the most important form of foreign direct investment [2, 3], with about 75% of FDI being in the form of acquisitions [4]. Even if acquisitions are very common, research results on their effect on company profitability and performance are mixed, and there is no clear wisdom on wealth transfers between the acquiring and target company shareholders [1, 5, 6]. It seems that when done under the right circumstances and executed well, acquisitions can be highly profitable and win-win for shareholders of both the acquiring and the target companies. For reaching a win-win result from corporate acquisitions valuation issues play a major role.

For valuation of companies (e.g., acquisition targets), we believe in the total value concept. In the total value concept the value of a company does not only include the cash-flow generating active assets, i.e., the economic capital, but also the strategic capital, including the intellectual and human capital that includes the
plans and the know-how of turning the plans into economically viable operations. This concept is presented well, e.g., in [7], see Figure 1. The idea of the concept acknowledges the value of real options as a part of the value of a company. What this means is that when companies are targets for acquisition, their stand-alone value should include the strategic capital that the company has as a separate entity, i.e., including the real options that exist for the target company without the acquiring company. When we reflect this with the notion that possible synergies caused by, or created in, the acquisition can be understood as added real options and increase in the (value of) strategic capital that the involvement of the acquiring company adds to the equation, we can see that synergies are not the same thing as the strategic capital that already exists in the target company. Put in other words, if the synergies were real options and other strategic capital already existing for the stand-alone company, then they would, and should, already be included in the value (acquisition price) of the company, i.e., they would not be synergies at all, and acquisitions made at a fair prices could never be wealth creating (NPV positive).

Fig. 1. Total value of a company includes the value of the economic capital and the value of the strategic capital. Adopted from (Boer, 2002)

As we view it, if synergies are the additional new real options (the possibility to create synergies) brought to the table by the acquiring company, then acquisitions can be NPV positive, even if fair price (even with premium) is paid for the target company, and win-win. This means that when acquisition synergies are priced they should be valued as the real options that the acquiring company brings to the acquisition process plus the added value of strategic capital. Viewing synergies as options is in line with reality, as synergy benefits are not given (do not autogenerate), but most often require investments, and their size is uncertain. Similar thinking can be applied, also to the other types of strategy level real options that are generated in a corporate acquisition, by the involvement of the acquiring company.

In this paper we are interested in the real options that the acquiring company has on the strategic level, including the possible synergies as real options, as discussed above and the inverse to synergies as options, splitting the business as an option. Other strategic acquisition related real options of interest to this research are the postponement (timing) of the acquisition, staging of the acquisition, and the abandonment of the acquisition (partly or fully), and the timing of the possible abandonment. We shortly discuss ex-ante evaluation of corporate acquisitions as a system that includes the value of the discussed strategic level real options.
In the next section of this paper we present some selected literature on real options and real options within the domain of corporate acquisitions. Then we will look at acquisition process level real options of interest to us as a whole, followed by analysis of each one of them separately, and followed by a discussion of a framework for evaluation of corporate acquisitions taking into consideration the discussed real options. We close the paper with a summary and conclusions.

2 Literature on Real Options in Corporate Acquisitions

The idea of real options is an old one, but the term “real options” was introduced in [8]. Since the coining of the term, using option valuation models to frame analogous real investment problems has been growing and real options are a subject of increasing attention among academics and practitioners. Real options literature can be divided roughly into two categories, general theory and application. Some topics on the general theory side have been, e.g., entry and exit decisions, growth options, and the valuation of interrelated projects. Real option valuation has been applied notably to some specific types of industries and situations, e.g., to petroleum, mining, natural resources in general, information technology, and corporate strategy. Real options have also been found to be useful, when framing problems found within the realm of corporate acquisitions and mergers. Below we present a selection of literature on applying real options in corporate acquisitions in more detail. According to [8] growth opportunities can be viewed as real options, whose value depends on future investment by the firm. This suggests that the value of a firm can be decomposed into the value of assets in place and the value of growth options. [9] takes a similar approach stating that the difference between the total value of a firm’s equity and the capitalized value of its current earnings stream estimates the value of its growth options. [10] consider the option to postpone investment, i.e., timing, this is also relevant to corporate acquisitions. [11] discuss strategic acquisitions that create real options able to increase upside potential, while truncating downside risk. They argue that synergies have an effect on the growth options that an acquirer has on an acquired firm. We see the synergies as real options on top of the stand-alone value (with real options); they see synergies as positively affecting the, after acquisition, total value of companies – two sides of the same coin.

Option value in acquisition and timing of acquisition entry are discussed in [12]. The authors start by discussing the opportunity cost of moving from having the option to invest (acquire) to investing (acquiring), the authors call this the incremental value of moving from an option position to a sunk investment. The paper presents the discussion with a formula and solves for the optimal time of exercise. Three major areas that affect the value of waiting are discussed: threat of preemption, whether the option is simple or compound, and whether the option is shared or proprietary. [13] study tender offers and acquisitions with a real option point of view (looking at acquisitions of a controlling / majority stake of a firm as a sequential, rather than a one-time purchase), and looking at the control premium
value as valued as a real option. The impact of real options on practice in M&As is discussed in [14], [15] research the distribution of value gains in acquisitions with a real-options game model that examines the bidding process, the likelihood of a bidding contest (war) and the expected value distribution for the acquirer. [16] investigate, in their empirical paper how, in an industry where formal standards are important (for example IT), companies that develop technology are acquired to enter, or stay present in the industry. [17] discuss the different types of real options available in corporate M&A including the option to divest parts of the acquired company. The paper refers to [18] observation that both successful acquisitions, as well as, divestures will have positive effects on the acting firm. [17] present a compound real options model that considers the different phases of acquisition: divestment, synergy, consolidation, and takeover. The model is useful for calculation of optimal timing and price of acquisitions. We acknowledge that in addition to the literature presented above there are a number of articles, not presented here that research real options in the context of corporate acquisitions.

In the following we present the different types of strategic level real options connected to acquisitions and of interest to this research, and continue by closer illustration of the same.

3 Different Types of Strategic Level Real Options Connected to Acquisitions and Ex-Ante Evaluation of Corporate Acquisitions

An acquisition presents the acquiring company with a number of strategic level real options. Figure 2 depicts the different strategic acquisition process level real options of interest to this paper. We can see that of the five available real options four are contingent on the acquisition and the option to divest sequential to the option to split the company. Value of the option to postpone the acquisition depends on all the options that come after it. This means that ex-ante analysis of acquisitions should include an analysis of the whole “system” instead of looking at the available real options separately.

Fig. 2. Acquisition related strategic level real options available for the acquiring company and of interest to this research
In the following we present the five strategy level options in more detail, starting with the option to postpone and to stage acquisition, continued by discussing synergies as real options, and followed by the option to split the existing business into parts. We close with the option to abandon (non-core) parts of a company and a discussion about the ex-ante evaluation of acquisitions.

3.1 Options to Postpone and to Stage Acquisition (\(\Theta\) in figure 2.)

The possibility to postpone an acquisition is born when the possibility to acquire a target company becomes available. We can say that for a “rational” company this would mean at the minimum after a screening and a short analysis of the target, and definitively after a comprehensive due diligence. These both are investments and constitute the price of the option to acquire that comes with the option to postpone. Similar is presented, e.g., in [15]. The decision to postpone an acquisition is most often driven by a cost-benefit assessment of value lost during the time of waiting and the positive effect of waiting. In this analysis the factors that contribute the total value of the target company should be taken into consideration, i.e., the stand-alone value of the target plus the potential acquisition synergies. The options that are sequential to the acquisition may also gain or lose in value if the acquisition is postponed, for a complete analysis these changes in value should also be considered.

Interestingly, our discussions with senior managers involved in acquisitions, have revealed that in the case of non public companies the analysis on the option to postpone is often simplified by the fact that the acquisition cost often remains constant over time. Indeed, the seller will sell at a certain price that does not change during the time the possible acquisition is on the table. In such cases the problem of analyzing postponement becomes simpler.

3.2 Synergies as Real Options (\(\Theta\) in figure 2.)

We view synergies as the potential value, i.e., real options that are created in an acquisition on top of the stand-alone value of the target company. The potential added value can be realized in the acquired company by the acquirer, by exercising the real options. This differs from [11] who discuss synergies as a factor affecting growth options within a firm, in the way that we propose synergies to be added value over and above the growth options that already exist in the target firm. Put in another way we do not consider “the option to be acquired” something that is in the hands of the target, but something that is in the control of the acquirer – hence we see the added value caused by the acquisition as separate from the growth options within the stand-alone target company. That is, if such possibilities are already identified by the target and valued as “low value, far out of the money” and there is a change in the perception due to, e.g., the resources of the acquirer, then the dramatic shift in RO value (be it growth options or something else) will be attributed as synergies. This also means that the synergies can be seen as such
existing real options that the acquirer can turn to cash flows, i.e., RO that can be turned from strategic to operational capital, and the additional new RO that are generated through the acquisition. We observe that the real options world is one of incomplete markets, which cause the possibility of finding synergies. The synergies (as real options) are sequential options on the option to acquire, i.e., they will not be available before the acquisition option is executed.

The sources of synergies are numerous, but they can be roughly divided into three major categories: revenue (increasing) synergies, cost (reduction) synergies, and balance-sheet synergies. These categories can all be divided into more precise sources of synergies and are presented in more detail for specific domains, e.g., in [19] (bank mergers) and in [20] (marketing synergies). When we consider synergies as real options we must accept that for the different kinds of synergies to be analyzed, we may have to perform a separate analysis for each of them, because the risks related to each one of them may be different (and the most often used RO valuation models assume only one risk level).

3.3 Option to Split the Existing Business into Parts (\(\Phi\) in figure 2.)

We present the option to split an existing business into parts, because in cases where the target company is composed of parts, which are partly non-core for the acquirer the acquirer may want to divest these. In such situations the possibility to do so, the option to split the existing business into parts, is valuable – this possibility, however, may not always be available. Also the possibility to split is a prerequisite for a divestment, if a non-core business cannot be split to a business it can be quit as a business – split or quit. The issue is nothing more than that of business restructuring viewed as an option.

In a simple situation a target is already divided into separate businesses with separate leaderships, this, however, is most often not the case. In cases where the target has parts that are not of interest to the acquirer, and the acquirer wishes to separate the target into two (or more) parts there is an analysis to be made about the uncertain costs and the uncertain revenues. The option to split an existing business to parts may be a prelude to a divestment, however, it can also be an action done to enhance efficiency in the company; if the parts are more profitable separately than as a whole, then such moves are justifiable.

3.4 Option to Abandon a Non-Core Part(s) of a Company and the Timing (\(\Theta\) and \(\Phi\) in figure 2.)

The abandonment option is a right to sell, or stop the operations of the (acquired) business, fully or partly. When a company is acquired the acquiring company receives an option to abandon, however, the actions of the acquiring company affect its availability, e.g., total integration of the target with the acquiring company will destroy the option to abandon. In such cases the option to split will have to be exercised first to restore the option to abandon.
Option to abandon gives the acquiring company protection against an unsuccessful acquisition and a possibility to get rid of unwanted assets. Using the abandonment option may depend on a number of reasons, but the reason, of most interest to us is the want to concentrate on core-business and to abandon non-core assets. Alternative ways to abandon a business (or a part of a business) include, e.g., IPO, MBO, LBO, direct sale, and asset liquidation & shut-down. Each type of abandonment requires different actions and carries different revenues and costs.

If the abandonment possibility (of non-core assets) has been considered already, before an acquisition, it has made possible the ex-ante analysis of the availability of (the different types of) options to abandon, which will be important benefit in decreasing the risks involved in the abandonment.

As discussed above with option value of timing the acquisition, similar timing possibilities exist for the timing of the abandonment of (non-core) parts of the business (θ in figure 2.). Delaying abandonment may be beneficial if the question is about a sale of, e.g., a non-core business part of a company and market conditions make the expected sales price fluctuate over time [11]. The optimal type of the abandonment may be different under different market conditions, e.g., IPOs are likely to be successful during high general market valuations and the likelihood of LBOs is affected by the liquidity in the markets. Price received through MBOs, or asset liquidations may also depend on market factors.

3.4 Ex-Ante Evaluation & Optimization of Corporate Acquisitions

Above we have identified five strategy level real options connected to corporate acquisitions; as a whole they build a system of real options, the value of which a smart acquirer will attempt to maximize. As the value of each one of the options is connected to the other options in the system, analysis of the identified options separately is less meaningful. This observation, that is also shared by [17], indicates that acquiring companies that have ex-ante planned and analyzed an acquisition, with regards to the real options are likely to gain a, ceteris paribus, better understanding of the total value of the acquisition targets. Having a clear understanding of the business reason for the acquisition and about the target company will enable the acquiring company to ex-ante plan actions that will take place after the deal. This will work to reduce the involved risks by way of giving a possibility to, beforehand, research the markets for the real options that are generated by the acquisition. The optimization problems of the systems that are the future strategies of the acquiring companies are interesting from the point of view of option pricing, i.e., optimization of sequential options with uncertain inputs. The above means that the strategy of acquisition can be understood as a system of real options. If the management wants to assign numerical values for the different variables in the system, a numerical optimization and valuation can be performed.
4 Summary and Conclusions

This paper has focused on strategy level real options in corporate acquisitions that are available for the acquiring companies. We have discussed the total value concept for valuing companies, in our case the acquisition targets, and shortly reviewed selected literature on real options applied to corporate acquisitions. We have presented five strategic level real options in acquisitions with focus on the process level options available to the acquirer, we have then shortly presented each of the real options in more detail. We have then shortly discussed ex-ante evaluation of corporate acquisitions. We note that of the presented strategic level options, synergies and the possibility to split a business are issues that have seldom been discussed within the options framework, and these interestingly seem to be mirror images of one another – this is, to our knowledge, a novel approach. Real options is a growing field of research, and there also seems to be a growing interest in modeling and analyzing real options connected to corporate mergers and acquisitions. The research has, so far, mostly concentrated on the single real options connected to M&A and we believe to be among the first to present a holistic view on the strategic process level real options available in corporate acquisitions.

This research is limited to discussing the strategic level real options in the acquisitions process and does not present new models for valuation of real options. However, we note that there are a number of general option valuation approaches available to choose from, e.g., the methods based on the Black-Scholes option valuation formula [21], binomial methods based on the work by [22], and numerical methods including methods based on parameter value simulation, e.g., Monte Carlo [23]. There are also methods available for using fuzzy numbers as inputs into real option valuation by using the Black-Scholes method [24], the binomial method [25], and also some methods for valuation of real investments that are based on novel fuzzy real option valuation constructs [26], or constructs that to a very large extent resemble real options valuation [27]. To the best of our knowledge, methods based on the binomial lattice and on the Black-Scholes formula are the most often used methods for valuation of real options. The presented framework can be operationalized by using, e.g., a combination of the aforementioned valuation approaches.

All in all, it seems that when planning corporate acquisitions it may be very relevant to think about and analyze the strategic acquisition process level real options available, because understanding the options and the value that they may bring to the acquisition can enhance the potential benefit from corporate acquisitions. Smart and resolute managers can optimize value by timing of acquisitions, plan ahead and maximize value of divestment, and create value by selecting acquisition targets that bring synergies, as they are defined in this paper.

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References


Short Paper