M&As under Overlapping Ownership*

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Abstract

This paper studies the effects the overlapping ownership in acquisition deals. Different structures (controlling or non-controlling) for the common shareholder are considered. Furthermore, we analyze the acquisition dynamics both when the synergy only depends on controlling the target, as well as when full integration is required.

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1 Introduction

In this paper we study the effects of overlapping ownership on the dynamics of acquisition deals. M&As with overlapping ownership occur when the bidder and the target are, at least, partially owned by the same investor (typically, an institutional investor). When this happens, a common owner stays in both sides of the deal, which has important implications in the strategic choices of firms, as well as in the involved equity parties (common and non-common shareholders).

The share of institutional investors (typically mutual or pension funds) in publicly traded firms is being increasing over the past decades. In fact, according to Azar et al. (2018) mutual funds and other institutional investors currently hold a considerably high (70% to 80%) share of U.S. publicly traded firms. This level of importance also pointed out by Backus et al. (2019) and Ben-David et al. (2021).

With this lever of involvement on equity markets, the common ownership phenomena becomes quite natural. In fact, there is a growing sense among academics that overlapping ownership is increasing among US firms (Gilje et al., 2020). As He and Huang (2017) reveal, investors that simultaneously hold at least 5% of more than one firm in the same industry increased from less than 10% in 1980 to about 60% in 2014.

Some previous works study the effects of overlapping ownership in several domains: from a corporate governance perspective, Goranova et al. (2010) address the agency problems associated with owner overlaps; Azar et al. (2018) present evidence of large anticompetitive incentives resulting from common ownership; Gilje et al. (2020) study how common ownership shifts managerial incentives to internalize externalities; and Shy and Stenbacka (2019) show its impact on consumption and investments. The impact of overlapping ownership affects investments in a preemption leader-follower race is analyzed by Zormpas and Ruble (2021).

None of these studies, however, address the impact common ownership on the dynamics of M&As, namely on the timing of the deal and on the sharing rule. By incorporating common ownership, we depart from the literature on dynamic M&As, which assumes that shareholders of the bidder and those of the target act, each of them, as a uniform entity with homogeneous interests. When overlapping and non-overlapping shareholders coexist, this uniform and homogeneous reality no longer exists, as they do not share the same interests. As we will see, when a common shareholder is present, the acquisition dynamics differs from the previous models, and a new equilibria (namely, in terms of timing and value-transfer) arises.

The rest of this paper unforlds as follows. In Section 2 the model is derived, in Section 3 we present a sensitivity analysis, and Section 4 concludes.

2 Model

Assume a setting with two firms: B is the bidder, and T is the target. These firms have two types of shareholders: non-overlapping shareholders that only own shares of each of the firms (denoted by S_B and S_T), and a common shareholder that holds a stake in both firms (denoted by C). Let λ_B and λ_T represent the shares that C holds in firms B and T. Therefore, the remaining $(1-\lambda_B)$ and $(1-\lambda_T)$ are owned by S_B and S_T, respectively. Figure 1 summarizes shareholder structure of the firms:

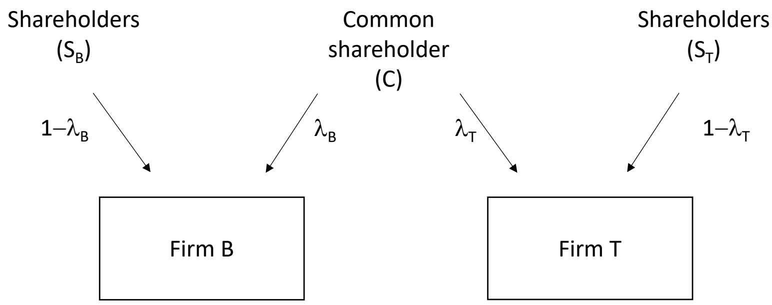

Figure 1: Shareholder structure of firms B and T.

The stakes that C holds in B and T can give him either a minority or majority position, i.e., C can simply hold a non-controlling position in both firms ($\lambda_B < 0.5$ and $\lambda_T < 0.5$), or, instead, can control one of the firms ($\lambda_B > 0.5$ or $\lambda_T > 0.5$) while owning a minority stake in the other. For the reason we will explain later on, we rule out the case where C controls both firms.

Before the acquisition takes place, the stand-alone value of the stakes owned by each shareholder is as follows:

$$F_{S_B} = (1-\lambda_B)V_B \tag{1}$$

$$F_{S_T} = (1-\lambda_T)V_T \tag{2}$$

$$F_C = \lambda_B V_B + \lambda_T V_T \tag{3}$$

where V_B and V_T are, respectively, the stand-alone values of firms B and T.

Let us assume that V_T evolves scholastically[1], following a geometric Brownian

[1]For our modelling the possible stochastic behavior of V_B is not relevant.

motion:

$$dV_T = \alpha V_T dt + \sigma V_T dz \tag{4}$$

where α stands for the (risk-neutral) instantaneous drift, σ stands for the instantaneous volatility, dz denotes the standard Wiener increment. Additionally, $\alpha < r$ where r is the risk-free rate.

Assume a potential (latent) synergy, embedded in the assets of firm T, that can be exploited. For simplicity we assume that the value of the synergy is proportional to the value of T and is expressed as $(\omega - 1)V_T$, where $\omega > 1$ captures the value increment of the firm after the synergy being released. Firm B realizing this potential benefit moves towards firm T engaging in an acquisition process. Two situations are considered in our analysis: (i) the potential synergy is released by simply controlling the target (consider the case where the management of firm T is under-performing and firm B has the possibility to substitute by a new management team); or (ii) the synergy can only be produced if the full integration occurs (this is the case, for instance, in the context of operational synergies). In the former situation, a controlling position sufficient, while in the later a full acquisition is required.

Generically, the acquisition game unfolds as follows: the bidder (firm B) offers a premium, ψ (where $0 < \psi < \omega$) and the target (firm T) reacts by accepting the deal in its optimal trigger (i.e., by defining $V_T^*(\psi)$). Naturally, B is able to anticipate the rational behavior of T and announces the bid in the moment when the target accepts. Solutions for similar games appear, for instance, in Lukas and Welling (2012) and Lukas et al. (2019), and follows a backwards procedure. We start by defining the reaction function of the target (which defines the trigger dependent on the premium offered by the bidder), and then the bidder incorporates it and maximizes its own position, determining the premium to be offered. Both parties account for the transaction costs that arise from undertaking deal, ϵY for the bidder and $(1 - \epsilon)Y$ for the target, where Y is the transaction costs total amount and ϵ (where $0 < \epsilon < 1$) stands for a fraction of those costs.

However, in our common ownership setting, the shareholders of the target (as well as those of the bidder) do not constitute a uniform entity (as in Lukas and Welling, 2012; Lukas et al., 2019, among others), but rather overlapping and non-overlapping shareholders (i.e., C and S_T) coexist. Following their own interests, the shareholders of the target will react differently to the premium offered by the bidder, which differs from what appears in the related models.

In order to study the dynamics of the acquisition game when overlapping ownership is present, we need to define the standpoint from which the offer is made. We start by considering that the deal takes place following the interests of the controlling party of the bidder, either C (if $\lambda_B > 0.5$), or S_B (if $(1 - \lambda_B) > 0.5$). Accordingly, we account for the possibility of agency conflicts between the majority shareholder(s) and the entity(ies) owning the minority position[2]. Furthermore, we start our analysis by considering the case where the synergy is attainable simply by controlling the target firm, which means that B only needs to acquire a majority stake in the target (either owned by C or S_T). Furthermore, we analyze how the minority shareholder reacts to the offer. The dynamics of the deal when a full acquisition is necessary for releasing the synergy is also analyzed.

2.1 Synergy is attainable with a partial acquisition

Under this setting we have to consider three possible situations: (i) C holds a non-controlling position in both firms (in this case S_B sets the premium and S_T defines the timing), (ii) C controls the bidder while S_T controls the target (in this case the premium is set from C's point of view), and, finally, (iii) C controls the target and so is him who commands the trigger. As we said, we do not consider case where the common shareholder C controls both firms, as it is expected that the synergy, in such case, should have been released already (for instance, it is not conceivable that C maintains an under-performing management team in firm T, because he would have enough power to substitute the managers, and, consequently, to release the synergy, without being necessary to undertake any acquisition).

Our approach has the following general characteristics. On the one hand, from the side of the bidder, the active role of defining the premium to be offered is held by the controlling position, whereas no decision has to be taken from the minority shareholder (he passively observes the wealth change that arises from the acquisition). On the other hand, from the side of the target, the majority shareholder is the one entitled to decide upon the timing (incorporating the premium offered by the bidder and maximizing the value of his position), whereas the minority shareholder simply decides to accept or not the offer, choosing the alternative in which he stays better-off. In fact, the minority shareholder either accepts the offer, sells the shares and profits the premium, or, alternatively, remains with his minority stake and benefit from the synergy being released.

[2]Even if S_B is constituted by several shareholders, since they have the same interests we assume that they act as a (uniform) single shareholder.

Next we analyze in detail all the three possible situations presented above, each of them in the following sequence: first, we define what is the best choice for the shareholder with the minority stake in firm T, them we move our attention to T's majority shareholder (the one who decides the trigger), and then we go back to beginning of the game setting the optimal decision for the controlling shareholder of the bidding firm (the one who decides the premium).

2.1.1 Common shareholder has minority positions in both firms

In the first case to be considered, C holds minority positions in both firms ($\lambda_B < 0.5$ and $\lambda_T < 0.5$). Let us start by the decision of C regarding an offer made by S_B. Two possible situation need to be considered. If C he accepts the deal, his *ex post* value is as follows:

$$\lambda_B(V_B + (\omega - \psi)V_T - \epsilon Y) + \lambda_T(\psi V_T - (1 - \epsilon)Y) \tag{5}$$

whereas, in the case of a rejection, the *ex post* value becomes:

$$\lambda_B(V_B + (1 - \lambda_T)(\omega - \psi)V_T - \epsilon Y) + \lambda_T(\omega V_T - (1 - \epsilon)Y) \tag{6}$$

The incremental value for accepting the deal is given by the difference between equations (5) and (6), i.e.:

$$(1 - \lambda_B)\lambda_T(\psi - \omega)V_T \tag{7}$$

It is easy to conclude that C only accepts the offer if the premium happens to be larger than the synergy (i.e., if $\psi > \omega$) which is, of course, not acceptable for the bidder, as it would lead to a negative payoff for him.

Proposition 1. *In a setting where C has a minority stake in both firms, and considering that $\psi < \omega$, he is always better-off by rejecting the offer.*

Let us move now to the controlling shareholder. As previously said, S_T decides upon the trigger incorporating the premium offered by the bidder. This problem resembles a call type of option, generically defined as $f(V_T) = AV_T^{\beta_1}$ (see, for instance, Dixit and Pindyck (1994) for details), with the following payoff:

$$(1 - \lambda_T)\left((\psi - 1)V_T - (1 - \epsilon)Y\right) \tag{8}$$

Applying the standard value-matching and smooth-pasting conditions we define the optimal trigger for shareholder S_T:

$$V_T^*(\psi) = \frac{\beta_1}{\beta_1 - 1}\frac{1-\epsilon}{\psi - 1}Y \tag{9}$$

where β is the positive root of the fundamental quadratic equation $\frac{1}{2}\sigma^2\beta(\beta-1) + \alpha\beta - r = 0$, i.e.:

$$\beta_1 = \frac{1}{2} - \frac{\alpha}{\sigma^2} + \left(\left(\frac{\alpha}{\sigma^2} - \frac{1}{2}\right)^2 + \frac{2r}{\sigma^2}\right)^{\frac{1}{2}} \tag{10}$$

Being a rational agent, S_B is able to choose the premium ψ^* that maximizes its own expected payoff:

$$\max_{\psi}\left[(1-\lambda_B)((1-\lambda_T)(\omega-\psi)V_T^*(\psi) - \epsilon Y)\left(\frac{V_T}{V_T^*(\psi)}\right)^{\beta_1}\right] \tag{11}$$

After solving (11) and substituting ψ^* in equation (9) we get the following complete solution:

Proposition 2. *In a setting where C is a minority shareholder in both firms, S_B drives the deal offering the premium:*

$$\psi^* = 1 + \frac{(\beta_1 - 1)(1-\lambda_T)(1-\epsilon)}{(\beta_1 - 1)\epsilon + \beta_1(1-\lambda_T)(1-\epsilon)}(\omega - 1) \tag{12}$$

and S_T reacts accepting the deal at the trigger:

$$V_T^*(\psi^*) = \frac{\beta_1}{(\beta_1 - 1)^2}\frac{(\beta_1 - 1)\epsilon + \beta_1(1-\lambda_T)(1-\epsilon)}{1-\lambda_T}\frac{Y}{\omega - 1} \tag{13}$$

2.1.2 Common shareholder controls the target

Let us consider now the case where the common shareholder control the target ($\lambda_T > 0.5$) but has a minority stake in the bidder ($\lambda_B < 0.5$). As before, we start analyzing the position of the minority shareholder, S_T. If the offer is accepted, the value of S_T is:

$$(1-\lambda_T)(\psi V_T - (1-\epsilon)Y) \tag{14}$$

however, by rejecting the offer S_T remains a shareholder of T and his value is as follows:

$$(1-\lambda_T)(\omega V_T - (1-\epsilon)Y) \tag{15}$$

The minority shareholder accepts the offer only if $(1-\lambda_T)((\psi-\omega)V_T > 0$, or, equivalently, if $\psi > \omega$. Since this would imply a negative payoff for the bidder, the condition for accepting the offer does not occur.

Proposition 3. *In a setting where S_T has a minority stake in firm T, and considering that $\psi < \omega$, the non-controlling shareholder is always better-off by rejecting the offer.*

As before, T's controlling party (i.e., the common shareholder C) decides the timing of the deal by optimally exercising a call option $f(V_T) = AV_T^{\beta_1}$ with the payoff:

$$\lambda_B(\lambda_T(\omega-\psi)V_T - \epsilon Y) + \lambda_T((\psi-1)V_T - (1-\epsilon)Y) \tag{16}$$

the trigger comes:

$$V_T^*(\psi) = \frac{\beta_1}{\beta_1 - 1}\frac{\epsilon\lambda_B + (1-\epsilon)\lambda_T}{\lambda_T((1-\lambda_B)\psi + \lambda_B\omega - 1)}Y \tag{17}$$

Then, S_B is able to choose the premium ψ^* that maximizes its own expected payoff:

$$\max_{\psi}\left[(1-\lambda_B)(\lambda_T(\omega-\psi)V_T^*(\psi) - \epsilon Y)\left(\frac{V_T}{V_T^*(\psi)}\right)^{\beta_1}\right] \tag{18}$$

Solving (18) and incorporating the solution into (17) the complete solution is obtained:

Proposition 4. *In a setting where C is the controlling shareholder of the target, S_B offers the premium:*

$$\psi^* = 1 + \frac{(1-\lambda_T)(\beta_1-1)\lambda_T(1-\epsilon) - \lambda_B(\lambda_B\epsilon + \lambda_T(1-\epsilon))}{(1-\lambda_B)(\beta_1 - (1-\lambda_B)\epsilon + \beta_1\lambda_T(1-\epsilon))}(\omega-1) \tag{19}$$

and, in turn, C reacts accepting the deal at the trigger:

$$V_T^*(\psi^*) = \frac{\beta_1}{(\beta_1-1)^2}\frac{(\beta_1-(1-\lambda_B))\epsilon + \beta_1\lambda_T(1-\epsilon)}{\lambda_T}\frac{Y}{\omega-1} \tag{20}$$

2.1.3 Common shareholder controls the bidder

As previously, we start with the entity with the minority position in T (i.e., shareholder C). Under this setting, accepting the offer produces the incremental payoff as expressed by equation (7). This allows us to state that:

Proposition 5. *When C has a minority stake in the target firm, and considering that $\psi < \omega$, he stays better-off by rejecting his (own) offer.*

Notice that C in his bidding position has no incentive to offer a premium larger than the synergy (even staying in the other side of the deal) because it would largely benefit the party with the majority stake.

Shareholder S_T, based on the payoff defined in equation (8), sets the trigger presented in equation (9). In turn, the C drives the offer maximizing the value of his bidding position:

$$\max_{\psi}\left[\left(\lambda_B((\omega-\psi)V_T^*(\psi)-\epsilon Y)+\lambda_T((\psi-1)V_T^*(\psi)-(1-\epsilon)Y)\right)\left(\frac{V_T}{V_T^*(\psi)}\right)^{\beta_1}\right] \tag{21}$$

Solving (21) and incorporating the solution into (17) we get:

Proposition 6. *In a setting where S_T is the controlling shareholder of the target, C offers the premium:*

$$\psi^* = 1 + \frac{\lambda_B(\beta_1-1)(1-\epsilon)}{\lambda_B(\beta_1-\epsilon)-\lambda_T(1-\epsilon)}(\omega-1) \tag{22}$$

and, in turn, C reacts accepting the deal at the trigger:

$$V_T^*(\psi^*) = \frac{\beta_1}{(\beta_1-1)^2}\frac{\lambda_B(\beta_1-\epsilon)-\lambda_T(1-\epsilon)}{\lambda_B}\frac{Y}{\omega-1} \tag{23}$$

2.1.4 General overview of the acquisition game

TO BE ADDED.

2.2 Synergy is attainable only with a full acquisition

TO BE ADDED.

3 Sensitivity Analysis

TO BE ADDED.

4 Conclusions

This paper studies the effects the overlapping ownership in acquisition deals. Different structures (controlling or non-controlling) for the common shareholder are considered. Furthermore, we analyze the acquisition dynamics both when the synergy only depends on controlling the target, as well as when full integration is required.

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