Non-Competition Covenants in Acquisition Deals

Alcino Azevedo[†], *Paulo J. Pereira*[‡] *and Artur Rodrigues*[§]

[†]*Hull University Business School, University of Hulll*

[‡]*CEF.UP and Faculdade de Economia, Universidade do Porto.*

[§]*NIPE and School of Economics and Management, University of Minho.*

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Abstract

We investigate the aggregate wealth change associated with acquisition deals where there is a non-competition covenant forbidding the *seller* from re-entering the market over a given time period. We model two scenarios: (i) where the *seller* is in a monopoly market and the *buyer* is idle contemplating the acquisition of the seller and (ii) where the *seller* is in a duopoly market facing competition from the *buyer* which is yet idle but contemplating entering the market either through the acquisition of the seller or by investing as a follower, depending on which of these choices is the best. Our findings show that, from a central planner's perspective, scenario (i) leads to an aggregate wealth destruction, which decreases with the time to maturity of the non-competition covenant and increases with the profits, and scenario (ii) may lead to either aggregate wealth creation, if the buyer enters the market through the acquisition, or aggregate wealth destruction, if before the acquisition the buyer enters the market as a follower and then acquires the incumbent leader. We also find that lower profits uncertainty enhances both the aggregate wealth creation, if before the acquisition the *buyer* enters the market as a follower, and the aggregate wealth destruction if the seller is not facing competition from the buyer at the time of the acquisition.

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1 Introduction

Firms often consider the use of non-competition agreements in business acquisitions in order to protect the acquired business from future competition from the seller. A non-competition agreement is a covenant associated with the acquisition agreement which restricts the seller from competing with the buyer within a specific geographic area over a given time period. The covenant also benefits the seller since it gives the buyer more confidence that the anticipated earnings from the acquisition will materialize, which enhances the acquisition price. There are very few studies in the finance literature examining the effect of competition and the usage of non-competition convenants on the value creation associated with acquisition deals (see, e.g., Gallo (1997), Bitė (2011)).

Non-competition covenants are also considered in employment agreements to protect firms' confidential information from their former employees whose departure raises the threat of unfair competition. The law literature on non-competition covenants in employee contracts is very extensive (e.g., Getty (1986), Kräkel and Sliwka (2009), Bishara and Orozco (2012), Starr (2015)). Non-competition agreements in employment agreements can play an important role on the economic development. For instance, Gilson (1999) and Hyde (2003) suggest that the main reason for the success of the high technology industrial district in Silicon Valley and the failure of the one in Massachusetts' Route 128 was the differential enforcement of covenants not to compete, i.e., the different legal environments led to higher employee turnover and therefore more firms in California (see, e.g., Getty (1986), Gallo (1997), Bishara and Orozco (2012), Buente (2012)).

Restrictive covenants in acquisition deals should be tailored according to the specificities of the business that is going to be acquired, and the scope of the business that is going to be protected by the covenant must be defined carefully. Yet firms should be aware that courts may limit the time span for which restraints could be justified (Gaby Hardwicke Solicitors 2011).[1]

We study the aggregate wealth creation/destruction associated with a business acquisition, where the *buyer* faces competition from the *seller* after the acquisition. More specifically, we examine two scenarios: (i) where, ex-ante, the *seller* is active in a monopoly market and the *buyer* is idle contemplating the acquisition of the *seller*, using a non-competition covenant with a given maturity, and (ii) where, ex-ante, the *seller* is active in a duopoly market and the *buyer* is idle contemplating entering the market either through

[1] Most courts in the U.S. inquire whether these contracts are "reasonable" and because there is not yet a consensual theoretical framework to objectively identify and assess the "legitimacy" of the competing interests between firms, the trial courts decisions are not fully predictable (see, e.g., Gallo (1997), Bitė (2011)).

the acquisition of the incumbent, using a non-competition covenant, or by investing as a follower. In the former scenario, after the acquisition, the *buyer* will be in a monopoly market, in the latter, after entering the market, the follower (seller) will compete with the *buyer* in a duopoly market.

Our findings show that, from a central planner's perspective, scenario (i) leads to an aggregate wealth destruction, which decreases with the time to maturity of the non-competition covenant and increases with the profits, and scenario ((ii) may lead to either aggregate wealth creation, if the buyer enters the market through the acquisition, or aggregate wealth destruction, if before the acquisition the buyer enters the market as a follower and then acquires the incumbent leader. Additionally, we conclude that lower profits uncertainty enhances both the aggregate wealth creation, if the buyer enters the market as a follower, and the aggregate wealth destruction, if the buyer enters the market through the acquisition. Finally, we show that when the buyer enters the market as a follower, the aggregate wealth creation associated with the acquisition decreases with its market share.

The rest of the paper is organized as follows. Sections 2 and 3, state the model settings for the monopoly and the duopoly markets, respectively, and show our most relevant results and sensitivity analysis. Section 4 concludes and offers some guidelines for further research.

2 Monopoly Market

Consider an acquisition deal which takes place at time t and where, ex-ante, there are two firms, $i \in S, B$ where S stands for the (*seller*) and B for the (*buyer*). Firm i has been active in a monopoly market, enjoying a profit flow stream (x) that follows a geometric Brownian motion (gBm) process given by Equation (1), and firm j is yet idle but contemplating the acquisition of firm i.

$$dx = \alpha x dt + \sigma x dz \tag{1}$$

where α is the risk neutral profit growth rate (drift), and σ is the instantaneous profit volatility.

The *buyer* firm is, however, afraid that the *seller* may re-enter the market after the acquisition. Therefore, it makes a non-competition agreement with the *seller* that forbids it from re-entering the market over a given time period, $\Delta t = T$.[2] The value of the *seller* at time t is equal to the present value of its expected future cash flows, which is given by:

$$V(x) = \int_0^\infty x e^{-(r-\alpha)} = \frac{x}{r-\alpha} \tag{2}$$

[2]Acquisition deals without non-competition covenants are particularly risky for acquirers when, for instance, the target is a startup and the founders and the top employees leave the company after the acquisition.

where r is the risk-free rate.

Following standard real options analytical procedures we can easily show that, without the non-competition covenant, the optimal time for the *seller* to re-enter the market is given by:

$$x_S = \frac{\beta_1}{\beta_1 - 1} \frac{r - \alpha}{\phi_S} K \tag{3}$$

where x_S is the *seller*'s re-entry trigger, K is the investment sunk cost, $\phi_S \in (0, 1]$ is the market share of the *seller* after re-entering the market as a follower, and β_1 is the positive root of the characteristic quadratic function of the ordinary differential equation (ode) that describes the value of the *seller* for the time period after the acquisition where its re-entry threshold had not yet been reached.

$$\beta_1 = \frac{1}{2} - \frac{\alpha}{\sigma^2} + \sqrt{\left(-\frac{1}{2} + \frac{\alpha}{\sigma^2}\right)^2 + \frac{2r}{\sigma^2}} \tag{4}$$

In the above conditions, the *buyer* should not value the *seller* at $V(x)$ because, after the acquision, it will face competition from the *seller* which will re-enter the market after $t \geq T$ if its profit flow threshold to invest as a follower is reached. An appropriate valuation for this acquisition deal should, therefore, take into account the effect of competition from the *seller* over the time period where there is not a non-competition agreement, which is given by:[3]

$$V_B(x) = V(x) - \frac{x\phi_S}{r - \alpha} e^{-(r-\alpha)T} N\left(d_1(x)\right) - \frac{\beta_1}{\beta_1 - 1} K \left(\frac{x}{x_S}\right)^{\beta_1} N\left(-d_3(x)\right) \tag{5}$$

where $N(.)$ is the cumulative normal integral, and

$$d_1(x) = \frac{\ln\left(\frac{x}{x_S}\right) + \left(\alpha + \frac{1}{2}\sigma^2\right) T}{\sigma\sqrt{T}} \tag{6}$$

$$d_3(x) = d_1(x) + (\beta_1 - 1)\,\sigma\sqrt{T} \tag{7}$$

In the right-hand side of Equation (5), the first term represents the value of the *seller* if it is not allowed to re-enter the market in future (Eq. 2). The last two terms represent the loss in value for the *buyer* due to the fact that the seller can re-enter the market any time after the covenant has expired if its profit flow threshold to invest as a follower is reached - the second term represents the loss in value for the *buyer* if the *seller* re-enters at the time where the covenant expires (T), and the last term represents the loss in value

[3] See Pereira and Rodrigues (2014).

for the *buyer* if at the time where the covenant expires the *seller*'s re-entry threshold has not yet been reached (i.e., if $t \geq T$ and $x(t) < x_S$).

The *seller* receives the price of the acquisition plus a *forward start option* with a given maturity (T), and its value function is given by:[4]

$$V_S(x) = \frac{x\phi_S}{r-\alpha} e^{-(r-\alpha)T} N\left(d_1(x)\right) - Ke^{-rT} N\left(d_2(x)\right) + \frac{K}{\beta_1 - 1}\left(\frac{x}{x_F}\right)^{\beta_1} N\left(-d_3(x)\right) \quad (8)$$

where

$$d_2(x) = d_1(x) - \sigma\sqrt{T} \quad (9)$$

$N(.)$ is the cumulative normal integral and $d_1(x)$ and $d_3(x)$ are defined as for Equation (5)

In the right-hand side of Equation (8), the first two terms represent the European option pricing formula for a dividend paying asset with maturity T, which is exercised at T if $x(T) \geq x_S$. The last term captures the option value after T given that, at T, $x(T)$ may not have yet reached x_S.

Consequently, the acquisition deal leads to the following value change for the *buyer*, ΔW_B:

$$\Delta W_B = V_B(x) - P \quad (10)$$

where $V_B(x)$ is value of the buyer after the acquisition and P is the acquisition price, and the following value change for the *seller*, ΔW_S:

$$\Delta W_S = V_S(x) + P - V(x) \quad (11)$$

where $V_S(x)$ is the value of the seller after the acquisition, P is the acquisition price. and $V(x)$ is the value of the seller before the acquisition.

Proposition 1. *From the perspective of a central planner, the aggregate wealth change due to the acquisition deal, ΔW, is given by:*

$$\begin{aligned} \Delta W &= \Delta W_B + \Delta W_S = V_B(x) + V_S(x) - V(x) \\ &= -K\left[e^{-rT} N(d2(x)) + N(-d3(x))\left(\frac{x}{x_S}\right)^{\beta_1}\right] \leqslant 0 \end{aligned} \quad (12)$$

From Equation (12), we conclude that acquisitions where there is a finite-lived non-competition agreement leads to aggregate wealth destruction. This happens because, ex-ante, the *seller* is in a monopoly market, whereas, ex-post, after the non-competition agreement has expired, the *buyer* will be in a duopoly market, and the competition from the *seller* after the covenant has expired reduces the (ex-ante) value of the *seller*'s assets.[5]

[4] See Shackleton and Wojakowski (2007) and Pereira and Rodrigues (2014)

[5] Note that aggregate wealth creation is possible if we assume that the *buyer* is in a better position than

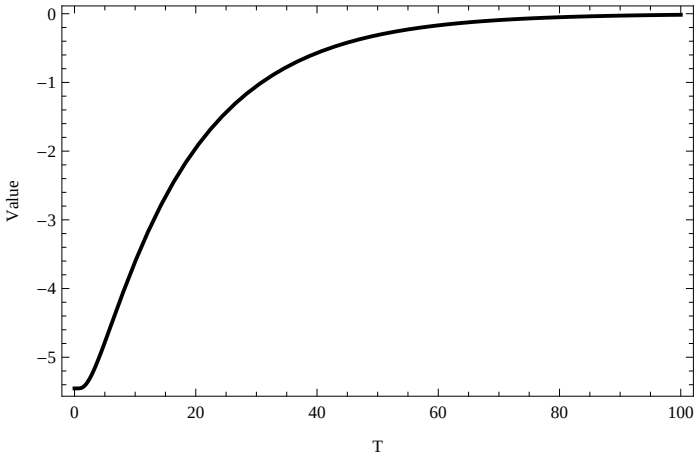
Corollary 1. *In the limiting cases, where* $T \to \infty$ *or* $\phi_S \to 0$, $\Delta W \to 0$.

Proof. For analyzing the effect of T notice that $e^{-rT}N(d2(x)) \to 0$ and $N(-d3(x)) \to 0$ as $T \to \infty$. Additionally, as $\phi_S \to 0$, $x_S \to 0$, which in turn makes that $N(d2(x)) \to 0$ and $\left(\frac{x}{x_S}\right)^{\beta} \to 0$. □

2.1 Sensitivity Analysis

Figure 1 shows the effect on the aggregate wealth destruction of changes in the time to maturity of the non-competition covenant, and Figure 2 shows the effect on the aggregate wealth destruction of changes in both the profit flow and the time to maturity of the non-competition covenant.

The results show that the aggregate wealth destruction decreases with the time to maturity of the non-competition covenant and increases with the profit flows.



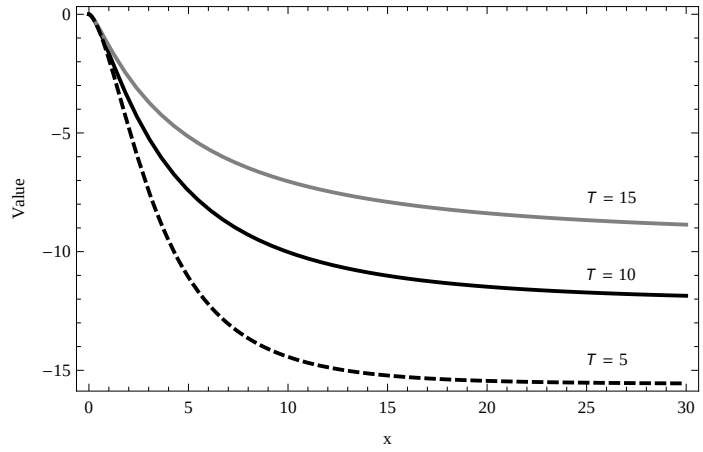
$\sigma = 0.3$, $r = 0.05$, $\alpha = 0.01$, $K = 20$, $x = 2$, $\phi_S = 0.5$.

Figure 1: Monopoly: effect of the time-to-maturity of the non-competition covenant on the aggregate wealth.

3 Duopoly Market

In this section we assume that the *buyer* and the *seller* are both in a duopoly market. The *buyer* is idle and can enter the market either through the acquisition of the *seller* or by investing as a follower. For the latter case, once in the market as a follower, the *buyer* can acquire the *seller*, being henceforth in a finite-lived monopoly. If the acquisition takes

the *seller* to run the (new) business. In this paper we assume, however, that the two firms are symmetric.



$\sigma = 0.3$, $r = 0.05$, $\alpha = 0.01$, $K = 20$, $\phi_S = 0.5$.

Figure 2: Monopoly: effect of changes in the time-to-maturity of the non-competition covenant on the aggregate wealth.

place at time t, with $x(t) < x_F$, there is the following wealth change for the *buyer*, ΔW_B^D: [6]

$$\Delta W_B^D = V_B(x) - F(x) - P \tag{13}$$

where $V_B(x)$ is value of the buyer after the acquisition, $F(x)$ is the *buyer*'s option value to enter as a follower (Eq. 14), and P is the acquisition price:

$$F(x) = \frac{K}{\beta_1 - 1}\left(\frac{x}{x_F}\right)^{\beta_1} \tag{14}$$

where

$$x_F = \frac{\beta_1}{\beta_1 - 1}\frac{r - \alpha}{\phi}K \tag{15}$$

x_F is the *buyer*'s threshold to re-enter the market as a follower, and $\phi \in (0, 1]$ is the market share of the *buyer* once in the duopoly market as a follower.

The wealth change for the *seller*, ΔW_S^D, is:

$$\Delta W_S^D = P + V_S(x) - L(x) \tag{16}$$

where P is the acquisition price, $V(x)$ is the value of the seller before x_F has been reached, and $L(x)$ is the incumbent's loss in value due to the threat of competition from the follower

[6] Note that the *buyer* will invest K, entering the duopoly market as a follower, if its profit threshold (x_F) is reached the first time before the acquisition has been closed.

(Smets 1993, Dixit and Pindyck 1994):

$$L(x) = \frac{x}{r-\alpha} - \frac{\beta_1}{\beta_1 - 1} K \left(\frac{x}{x_F}\right)^{\beta_1} \tag{17}$$

Proposition 2. *From a central planner perspective, the aggregate wealth change, ΔW^D, is given by:*

$$\begin{aligned} \Delta W^D &= \Delta W_B^D + \Delta W_S^D = V_B(x) + V_S(x) - (L(x) + F(x)) \\ &= K \left[-e^{-rT} N\left(d_2(x)\right) - \left(\frac{x}{x_F}\right)^{\beta_1} N\left(-d_3(x)\right) + \left(\frac{x}{x_F}\right)^{\beta_1} \right] \gtreqless 0 \end{aligned} \tag{18}$$

Corollary 2. *For any given market context, the aggregate wealth creation that is associated with acquisitions where the seller is facing duopoly competition from the buyer is equal or greater than the aggregate wealth destruction that is associated with acquisitions where the seller is in a monopoly market:*

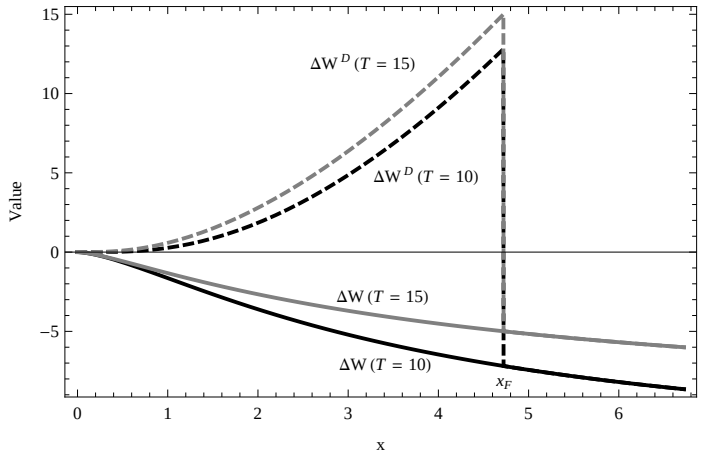
$$\Delta W^D - \Delta W = V(x) - (L(x) + F(x)) = K \left(\frac{x}{x_F}\right)^{\beta_1} \geqslant 0 \tag{19}$$

3.1 Sensitivity Analysis

Below we provide our results and some sensitivity analysis. Figure 3 shows the effect on the aggregate wealth creation (destruction) of both the time to maturity of the non-competition covenant and the profit flow. Figure 4 shows the effect on the aggregate wealth creation (destruction) of the market share of the seller if it re-enters the market as a follower, for both the monopoly and the duopoly cases - ϕ_S and ϕ, respectively.

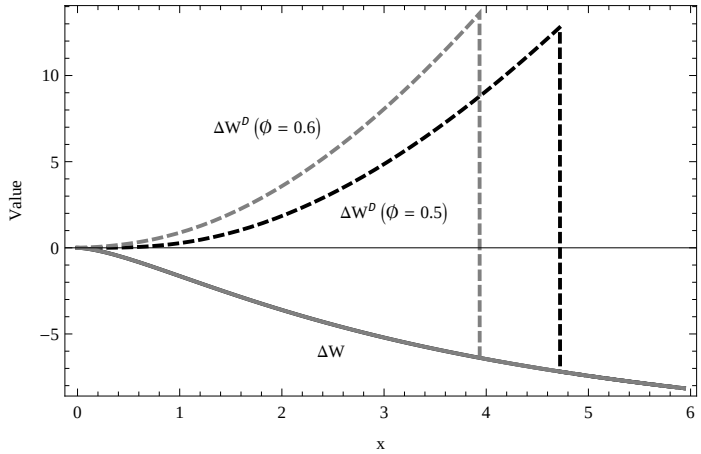
From Figure 3 we conclude that ΔW^D (duopoly) increases with the time to maturity of the covenant and with the profit flow, and ΔW (monopoly) increases with the time to maturity of the covenant and decreases with the profit flow. Figure 4 shows that the investment threshold of the *seller* to re-enter the market as a follower decreases with its market share (ϕ) and ΔW^D increases with the market share that the *seller* attains if it re-enters the market as a follower. We also find that, at the time where the *seller's* threshold to re-enter the market as a follower is reached the first time, the ΔW^D drops to a level where ΔW^D=ΔW (see vertical dotted lines in both Figures 3 and 4).

Figures 5 shows the effect on the aggregate wealth associated with acquisitions deals of changes in the profit flow and the seller's market share if it re-enters the market as a follower. Figures 6 shows the effect of the profit flow and the profit flow uncertainty on the aggregate wealth change associated with acquisition deals for both the monopoly and the duopoly markets.



$\sigma = 0.3$, $r = 0.05$, $\alpha = 0.01$, $K = 20$, $x = 2$, $\phi_S = 0.5$, $\phi = 0.5$.

Figure 3: Aggregate wealth change associated with changes in the profit flow and the time to maturity of the non-competition covenant.

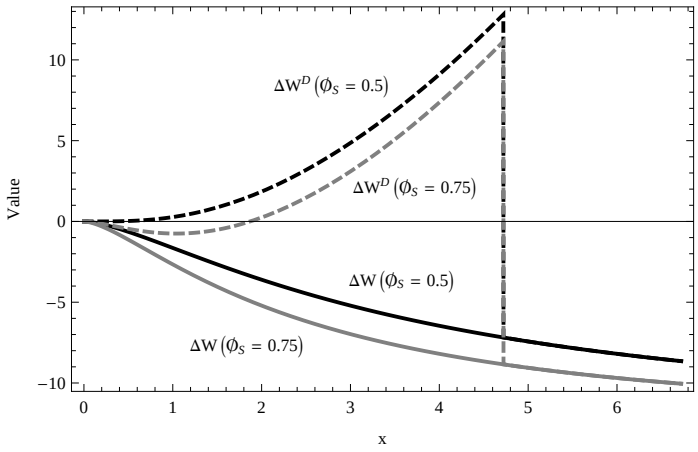


$\sigma = 0.3$, $r = 0.05$, $\alpha = 0.01$, $K = 20$, $x = 2$, $\phi_S = 0.5$, $T = 10$.

Figure 4: Aggregate wealth change associated with changes in the profit flow and the market share that the *buyer* attains if, before the acquisition, it enters the market as a follower.

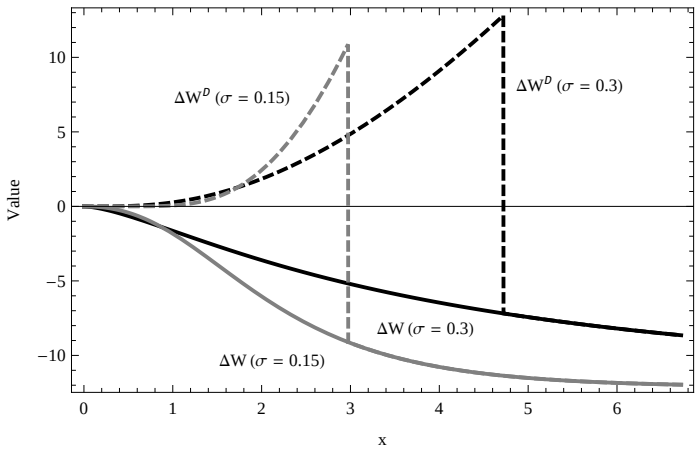
4 Conclusions

Our results show that when the seller is in a monopoly the acquisition leads to aggregate wealth destruction. This happens because the buyer is never fully confident that the seller will not re-enter the market after the acquisition, and this threat of competition erodes the ex-post value of the seller's assets. This erosion in the seller's asset value can, however, be mitigated through the usage of a non-competition agreement with the seller that forbids



$\sigma = 0.3$, $r = 0.05$, $\alpha = 0.01$, $K = 20$, $x = 2$, $\phi = 0.5$, $T = 10$.

Figure 5: Aggregate wealth change associated with changes in the profit flow and the market share that the *buyer* attains if, before the acquisition, it enters the market as a follower.



$r = 0.05$, $\alpha = 0.01$, $K = 20$, $x = 2$, $\phi = 0.5$, $\phi_S = 0.5$, $T = 10$.

Figure 6: Effect of profits uncertainty.

it from re-entering the market over a given time period. For the case where the seller is facing duopoly competition from the buyer, our results show that the acquisition may lead to aggregate wealth creation, which increases with both the profit flow and the market share of the buyer while in the market as a follower.

Additionally, we conclude that lower profits uncertainty enhances both the wealth creation associated with acquisitions where the the seller faces duopoly competition from the buyer, and the wealth destruction associated with acquisitions where the seller is in a monopoly market. For the case where the buyer is in the market as a follower the

aggregate wealth creation associated with the acquisition decreases with the its market share.

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