Takeover Regulations and the Medium of Exchange

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Abstract

This paper examine the determinants that affect payment method decisions in mergers and acquisitions in the aspect of takeover regulation differences between US and UK. The two hypotheses are tested: first, whether the likelihood of stock financing is high, when the level of target-side uncertainty is high in US deals; second, the relation predicted for US deal is less pronounced for transactions involving UK target. The findings are as follows. In US, when the extent of target-side uncertainty is high, the probability of stock acquisitions is larger. In UK, the evidence is weaker, which lends support to the predicion; this is because target shareholders in UK deals are allow to choose the medium of exchange. In summary, the takeover regulation does affect payment method decisions.

Keywords: Takeover regulation, Merger and acquisition / Determinant / The medium of exchange / Uncertainty / The United States / The United Kingdom

Introduction

Existing insights on the payment method decision in mergers and acquisitions are established, and drawn from the US setting. Despite the apparent lack of supporting scientific evidence, these insights have been taken as explanations for payment method decisions outside of the US market. Due to regulatory differences between US and non-US markets, it remains unclear whether US insights generalize to non-US transactions. Though sharing several institutional features, US and UK markets differ markedly in terms of takeover regulation.

Objective of the Study

Owing to the divergent in takeover regulations between the US and the UK, the US acquirer is the ones who choose the medium of exchange, but the UK target shareholders are allowed to do so. This means that the hypotheses of risk sharing might not be broad enough to explain other financial markets,

the UK in this case. For example, under the risk sharing hypothesis, the UK target shareholders might not choose to accept stock financing from the bidder as they can require cash straight away. Thus, this study aims to investigate whether and how determinants differ between the US and the UK on the dimensions of risk sharing.

Scope of the Study

This empirical study investigates how the differences in takeover regulations between the US and the UK affect the determinants that motivate the choice of payment method in mergers and acquisitions. The data of this paper will be the US and the UK firms that involved in mergers and acquisitions in the periods of 1990 to 2014.

Literature Review

An Information Asymmetry and the Medium of Exchange

Under perfect capital markets, the medium of exchange in mergers and acquisitions is irrelevant. However, several researchers prove theoretically that information asymmetry affects the acquirers' choice of payment method. Hansen (1987) was one of the first who offers the risk sharing hypothesis. In his model, the acquiring firm chooses stock transaction when the target has high uncertainty, as the bidder expects that they could gain more than without any acquisitions, so they are better off. The implication of a lemons problem is that due to a stock contingent function, an uncertainty in target valuation is a key determinant, which influences the mean of payment in acquisitions. Given an acquirer's uncertainty, the greater (lower) the level of target's uncertainty, the higher the likelihood of stock (cash) trade. Chemmanur, Paeglis, & Simonyan (2009) examine risk sharing hypothesis empirically The number of analysts following the target (bidder), the standard deviation of analyst forecasts about the target (bidder), the analyst forecast error about the target (bidder) and the degree of relatedness between the target and the bidder are used as proxies to measure the level of asymmetric information. After running regressions, the results are consistent with the prediction, that is, when the bidder faces a higher level of information asymmetry (i.e. the target's valuation is more difficult to evaluate and an uncertainty of the target is high) result in the greater the probability of stock deal.

Takeover Regulations and the Mean of Payment

The US takeover regulation has both at the federal and state levels; the federal laws administer the procedure of a tender offer and the disclosure of information to shareholders, while the state laws supervise originally the target board's response to an offer. The Securities Exchange Act of 1934 is the foremost securities law for mergers and acquisitions, which is mainly amended by the Williams Act. The Williams Act is designed to regulate tender offers. Moreover, there are two distinct types in the US offer, merger and tender offer. A merger (i.e. friendly deal) occurs when there is an achievement in negotiations between the management of two firms, acquirer and target. Conversely, in a tender offer, the bidder makes an offer directly to target shareholders. Prior evidence from Betton, Eckbo, & Thorburn (2008) have confirmed that the majority of payment methods of mergers and tender offer are obviously different; pure stock is commonly used by mergers, whereas cash or other mixed method are more preferred from tender offers.

The conduct of the UK takeovers and mergers is subjected to the principles and rules of the City Code; the Takeover Panel is an independent body, which is also a major function that governs the City Code. When the bidder holds 30% or more of the target shares (i.e. these will enable the acquirer to have effective control), the City Code will be applied to acquisitions. This also triggered a mandatory offer (Rule 9), which is specially designed to protect minority shareholders. According to General Principle 1, General Principle 3, Rule 11, and Rule 14, the UK City Code emphasizes target shareholders' rights in the sense that they are the ones who choose the payment method for acquisitions and decide whether to accept the deal. Meaning that, if the bidder wants the deal to be accomplished, they have to negotiate with target shareholders and do as target shareholders' requirements.

The US acquirer chooses the method of payment in takeovers (i.e. pure cash, pure securities, or a mixed payment), whereas the UK target shareholders are the ones who elect the medium of exchange. In other words, the US Williams Act gives more power in making a decision to the bidder, whereas the UK target shareholders have more bargaining power than the acquiring firm.

Hypotheses Development

In the US, the bidder chooses the medium of exchange, then offers the acquisition's deal to the target. The bidder offers stock financing to the target when the target's value is difficult in evaluating (i.e. an uncertainty of the target firm is high). This is because stock has contingent pricing mechanism, which

means that the target has to share the risk of overpayment post-merger. Hence, an uncertainty of the target firm is an important issue that influences the bidder's choice of payment method. This analysis leads to H1; in the US, the probability of stock financing increases with the level of the target's uncertainty.

In the UK, the City Code heavily emphasizes on target shareholders' rights. Target shareholders have more bargaining power than the acquirer, as target shareholders are the ones who choose the medium of exchange. Thus, an uncertainty of the target firm should be less important, which leads to H2; the relation predicted in H1 should be less pronounced for transactions involving the UK target.

Data

The initial sample of the US and UK takeover bids is obtained between publicly traded bidders and targets listed on the Mergers and Acquisitions Database of the Securities Data Company (SDC) between January 1990 and December 2014. This sample includes both completed and withdrawn offers from domestic takeovers and intra-US and intra-UK cross-border acquisitions.

Owing to a mandatory offer (Rule 9) in the City Code, when the bidder holds 30% or more of the target shares, it will enable the acquirer to have effective control. As a result, the acquirer will negotiate with target shareholders about the premium and the mean of payment. Target shareholders can then choose the method of payment. To have a majority control, the acquirer commonly held 51% of shares. Thus, the data in this study covers corporate transactions involving acquisition of at least 30% ownership of the target, and the bidder must hold less than 50% of equity before acquisition. To remain in the final sample, a firm must subjects to the following requirements: 1) SDC is used to collect the two M&A partners' identities, country, and industry (2-digit SIC Code) and determine whether their stocks are publicly traded, the initial announcement date, payment method, dollar value, and whether it is friendly or hostile deal, 2) World scope identifies the bidder's and the target's financial statements for the last month of the fiscal year prior to the bid announcement, 3) the data of bidder's and target's stock prices for a year ending one-month preceding the bid announcement must be reported in DataStream, 4) the sample of analyst forecasts and actual earnings data are reported on the Institution Brokers Estimate System (IBES) for the last month of the fiscal year before the bid announcement, 5) all M&A deals have to finance with cash, stock, or a combination between cash and stock, 6) the value of the transaction is $5 million or more.

Methodology

Proxies for Information Asymmetry

There is no consensus on which variable is the best proxy for information asymmetry. Thus, I choose five variables as proxies: the number of analysts following, the standard deviation of analyst forecasts, the degree of relatedness between the target and the bidder, and the volatility of stock returns. This is also for robustness checks; the results should be consistent across proxies if the evidence is strong. The first proxy is the number of analysts following, which will be available in IBES for the last month of the fiscal year prior to the bid announcement. To measure the level of information asymmetry faced by the acquirer when evaluating the target, the measure of the number of analysts following the target (NUMA) will be used. The higher (lower) number of analysts following, the lower (greater) the degree of information asymmetry will be. The second one is the analyst coverage about the target (COVER). The more the analyst coverage, the more transparent the firm will be. The third measure is the standard deviation of analyst forecasts about the target (STDFOR). The greater standard deviation means the higher disagreement among analyst forecasts, so the extent of information asymmetry will be larger. The forth measure is the volatility of target stock returns (VOLA). The higher (lower) return volatility indicates the greater (lower) level of uncertainty about the firm, also the larger (lower) level of information asymmetry among investors. The return volatility is measured by the standard deviation of the daily returns for a year ending one-month preceding the bid announcement. The last one proxy is the degree of relatedness between the target and the acquirer (DIVER). When the bidder has to evaluate unrelated target, there will be a larger level of information asymmetry in evaluating the target. It takes a value of one when the target and the bidder have different 2-digit SIC code (this data can be obtained from SDC), and zero otherwise.

When the target makes the decision on whether to accept the offer from the bidder, it depends on the level of information asymmetry it faces when evaluating the bidder. Thus, I have to control for the level of information asymmetry on the bidder side by using: the number of analysts following the acquirer (ANUMA), the analyst coverage about the acquirer (ACOVER), the standard deviation of analyst forecasts about the acquirer (ASTDFOR), and the volatility of acquirer stock returns (AVOLA).

Analysis of the Target-side Uncertainty

Logit regression; the logit regression is used since this section is an analysis for binary data. Meaning that, there will be only two outcomes for dependent variable. The OLS cannot be chosen because

the OLS estimation cannot guarantee that the conditional probability of y will lie between 0 and 1. Thus, the logit model is used and can be estimated as follows:

$$\log\left[\frac{P(y=1)}{1-P(y=1)}\right] = \beta_0 + \beta_1 \text{UNCER}_{T,i} + \beta_2 \text{UNCER}_{B,i} + \sum_{j=3}^{5} \beta_j X_{j,i} + \varepsilon_i \quad (1)$$

where i is takeover i. j is the order of control variables. The dependent variable is equal to one for stock financing, and zero for cash transaction. UNCER_T is the target-side uncertainty, and UNCER_B is the bidder-side uncertainty. X is a vector of control variables. For UNCER_T and UNCER_B, I adopt several proxies of information asymmetry as mentioned in proxies for information asymmetry. This is for robustness checks; there is still no evidence, which one is the best proxy. Additionally, there are three control variables (X) in the regression: the leverage constraint of the acquirer (LEVERAGE), premium (i.e. the price paid to obtain the target shares) (PREMIUM), and the relative deal size (RELSIZE). The acquirer with a high leverage is constrained in its ability to issue debt, so the bidder will use stock financing more frequently (DeAngelo & Masulis, 1980). It is clear that leverage can influence the acquirer behavior in choosing the payment method. The acquirer's financial leverage is calculated by the sum of the bidder's face value of debt at the end of the fiscal year prior to the bid announcement plus the deal value (including assumed liabilities) divided by the sum of the book value of total asset at the end of the fiscal year prior to the bid announcement plus the deal value (including assumed liabilities). Another control variable is premium, which is measured by the ratio of the offer price to the target's share price at two months prior to the bid announcement. The last control variable is the relative size, the empirical evidence has confirmed that relative size of the target influences the bidder's choice of payment method (Faccio & Masulis, 2005; Martynova & Renneboog, 2009). The relative size is computed as the log of the ratio of the acquirer market value of equity to the target market value of equity.

Tobit regression; the dependent variable in the logit regression is discrete, which takes on only two values. I also employ a continuous measurement (i.e. the tobit regression). The interest of using the tobit model is in finding out the amount of stock that the acquirer pays for obtaining the target's share in relation to independent variables. The dependent variable in the regression is censored; some information is missing for the dependent variable. However, the corresponding information for the independent variables is present. If both the dependent and independent variables are missing, the dependent variable is described as truncated. Also, both the acquirer and the target preferences are expected to affect the stock

price and the mean of payment, thus I use Tobit regression to capture the preferences between these two parties. The dependent variable is the stock portion of the M&A consideration, which must be in the interval [0, 100]. I use two-boundary Tobit estimator as in Faccio & Masulis (2005). The general Tobit formula is as follows:

$$y_i^* = \beta_0 + \beta_1 \text{UNCER}_{T,i} + \beta_2 \text{UNCER}_{B,i} + \sum_{j=3}^{5} \beta_j X_i + \varepsilon_i \quad (2)$$

where ε_i is an independently distributed error term assumed to be normal with zero mean and variance σ^2. The independent and control variables will be the same as Eq. (1). For the dependent variable, it has both left and right censoring, which leads to the following:

$$y_i^* = \begin{cases} 0 & \text{if } y_i^* \leq 0 \\ y_i^* & \text{if } 0 < y_i^* < 100 \\ 100 & \text{if } 100 \leq y_i^* \end{cases} \quad (3)$$

where 0 and 100 are the censoring points. $y_i^* \leq 0$ when the level of target's uncertainty is extremely low, meaning that, the bidder prefers to pay negative amount of stock (i.e. the bidder prefers cash financing), but the amount of stock cannot be negative. Hence, I assume that $y_i^* = 0$ in this case. For $0 < y_i^* < 100$, the portion of stock is expected to reflect the preferences of the acquirer and the target, which is line in the range of 0 to 100. $100 \leq y_i^*$ when the level of target's uncertainty is extremely high. The acquirer prefers to offer pure stock or more than pure stock, however, the amount of stock cannot be more than 100. Thus, y_i^* is assumed to be 100 in this case.

The expected signs of the coefficient are as follows. For H1 (i.e. the US target-side uncertainty), I expect the coefficients of NUMA, COVER, and DIVER to be negative. STDFOR, FORER, and VOLA are expected to be positive. This reflects a positive relationship between the level of the target-side uncertainty and the probability of a stock deal. If H2 (i.e. the UK target-side uncertainty) is true, the coefficients as mentioned in H1A would be weaker in the case of the UK.

Table 1 Logistic Regressions for Risk Sharing (Target-side Uncertainty)

Explanatory variables	Dependent variable (= 1 if stock, 0 otherwise)									
	(1)		(2)		(3)		(4)		(5)	
	US	UK	US	UK	US	UK	US	UK	US	UK
NUMA	-0.176	-0.074								
	(0.099)	(0.776)								
ANUMA	-0.156	-0.199								
	(0.107)	(0.363)								
COVER			-0.703	-0.347						
			(0.001)	(0.397)						
ACOVER			0.188	0.022						
			(0.469)	(0.964)						
STDFOR					-0.234	0.161				
					(0.206)	(0.407)				
ASTDFOR					-0.796	0.190				
					(0.004)	(0.169)				
VOLA							-3.163	16.923		
							(0.289)	(0.028)		
AVOLA							-28.521	20.667		
							(0.019)	(0.070)		
DIVER									-0.215	-0.394
									(0.057)	(0.086)
LEVERAGE	-0.041	-0.042	-0.041	-0.040	-0.204	-0.058	-0.004	-0.011	-0.039	-0.038
	(0.503)	(0.027)	(0.520)	(0.029)	(0.000)	(0.755)	(0.000)	(0.454)	(0.571)	(0.028)
PREMIUM	-10.470	-16.045	-10.250	-15.664	-18.590	-34.104	-12.283	-15.354	-10.598	-17.448
	(0.004)	(0.068)	(0.004)	(0.081)	(0.020)	(0.024)	(0.001)	(0.076)	(0.004)	(0.048)
RELSIZE	-0.966	-1.135	-1.003	-1.184	-1.120	-1.803	-0.699	-1.051	-0.963	-1.122
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-0.037	-14.153	0.006	-14.132	0.814	-15.561	-0.720	-13.757	-0.139	-14.077
	(0.948)	(0.000)	(0.991)	(0.000)	(0.274)	(0.000)	(0.195)	(0.000)	(0.810)	(0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2 (%)	25.53	19.35	25.45	19.17	34.63	31.96	15.85	16.56	25.29	19.49
No. Obs.	2482	527	2482	527	1452	230	2242	501	2482	527

Empirical Evidence

The final US (UK) sample includes 3,499 (739) transactions, which contains 44.33% (54.13%) pure cash offers, 32.12% (26.11%) pure stock transactions, and 23.55% (19.76%) mixed payment between cash and stock financing. The sample size for each test is different because the availability of the data.

Table 2 Tobit Regressions for Risk Sharing (Target-side Uncertainty)

Explanatory	(1)		(2)		(3)		(4)		(5)	
variables	US	UK	US	UK	US	UK	US	UK	US	UK
NUMA	-0.033	0.024								
	(0.081)	(0.658)								
ANUMA	-0.030	-0.067								
	(0.100)	(0.173)								
COVER			-0.191	-0.037						
			(0.000)	(0.690)						
ACOVER			0.076	-0.013						
			(0.100)	(0.011)						
STDFOR					-0.053	0.081				
					(0.054)	(0.142)				
ASTDFOR					-0.103	0.004				
					(0.000)	(0.943)				
VOLA							0.200	3.250		
							(0.703)	(0.054)		
AVOLA							-4.065	1.444		
							(0.085)	(0.188)		
DIVER									-0.049	-0.083
									(0.018)	(0.104)
LEVERAGE	-0.000	-0.011	-0.001	-0.011	-0.023	-0.010	-0.001	-0.009	-0.001	-0.011
	(0.000)	(0.019)	(0.000)	(0.021)	(0.032)	(0.026)	(0.000)	(0.057)	(0.000)	(0.022)
PREMIUM	-1.201	-1.195	-1.192	-1.222	-2.456	-1.494	-1.022	-1.111	-1.143	-1.458
	(0.026)	(0.481)	(0.026)	(0.478)	(0.019)	(0.532)	(0.064)	(0.546)	(0.035)	(0.388)
RELSIZE	-0.224	-0.329	-0.232	-0.342	-0.241	-0.358	-0.212	-0.337	-0.223	-0.333
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.197	0.112	0.206	0.119	0.280	0.125	0.052	0.059	0.177	0.106
	(0.092)	(0.765)	(0.078)	(0.752)	(0.057)	(0.755)	(0.685)	(0.873)	(0.133)	(0.778)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2 (%)	19.93	15.09	20.05	14.91	27.16	22.67	20.95	15.69	19.69	15.14
No. Obs.	3273	681	3273	681	1909	353	2935	627	3273	681

Table 1 presents the results of the logistic regression. In the US, I find the negative coefficient of COVER and some weak evidence from NUMA in support of hypothesis, implying that the lower the level of information asymmetry, the greater the likelihood of cash transactions. The results also show the negative coefficient of DIVER. This means that when the bidder and the target are not in the same industry, the extent of information asymmetry facing by the bidder is greater, which resulting in the higher probability of stock offer. This support the hypothesis that the probability of stock financing increases with the level of the target-side uncertainty (H1).

In the UK, I expect that the coefficient of the US's VOLA is positive and significant, while the coefficient of the UK's VOLA is insignificant. The US evidence of the target-side uncertainty should be stronger, but the results in Table 2 show that the coefficient of the UK's VOLA is positive and significant at 5% level, whereas the US's result is insignificant. Implying that, there is also some mixed evidence in the UK, when the level of target-side uncertainty is high, target shareholders are more likely to choose stock instead of cash financing. However, others UK proxies indicate insignificant results, which are consistent with H2; the UK results are less pronounced since target shareholders can choose the medium of exchange and they have random preference on the payment method.

The coefficients of RELSIZE in both countries present the higher likelihood of cash financing when the bidder's size is higher relative to the target, which lend support to the evidence from Faccio & Masulis (2005) and Martynova and Renneboog (2009).

I, then, check the robustness of the results by running tobit regression. The dependent variable of this tobit regression is the amount of stock that the bidder pays to acquire the target's share, so mixed deals are included in the test. As a result, the sample size of the tobit regression is larger than the logistic test. Table 2 show similar results with Table 1, the statistical significances of COVER, NUMA, and DIVER are stronger in the US sample. Nonetheless, the evidence of the UK's VOLA from the tobit regression is slightly weaker.[1]

Conclusion

This paper investigates the determinants that influence the medium of exchange in mergers and acquisitions in the aspect of takeover regulation differences between US and UK. In the US, given the

[1] After running the tobit and the logistic regressions, I test the difference between the US and the UK by adding the interaction term in the logistic regression. As I expected, the results are significantly different among these two countries.

bidder-side uncertainty, when the level of target-side uncertainty is high, the likelihood of stock transactions is greater. These results are also robust to an alternative model: the tobit regression. The bidder's payment method decision has a strong pattern, since they have more bargaining power when compared to target shareholders. In the UK, the results show that the payment method patterns are weaker. This lends support to the prediction since the UK City Code allows target shareholders to choose the method of payment. Overall, takeover regulation does affect patterns of the decision-making about the medium of exchange.

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