Internet Appendix for

"The Value of Control and the Costs of Illiquidity"*

Rui Albuquerque and Enrique Schroth

This internet appendix contains supplemental material to the paper "The Value of Control and the Costs of Illiquidity." It shows derivations and results not reported in the main text due to space constraints. We present the results in the order in which they are mentioned in the main text. All variables not defined here are defined in Table I of the paper.

Internet Appendix A. Proofs and derivations

1. Model-predicted CAR variation

When $\eta = 0$, and all the trades are due to liquidity shocks, we can easily derive the solution for $p(\pi)$ for two special cases: (i) fully persistent cash flows and (ii) i.i.d. cash flows. Consider Equations (6) and (7) in the main text, repeated here for convenience:

$$p(\pi_i) = \pi_i + \delta \left[(1-\theta) \sum_j q_{ij} \tilde{p}_i(\pi_j) + \theta L_i^p \right], \tag{1}$$

$$\tilde{p}_i(\pi_j) = p(\pi_j) + \eta \sum_l q_{il} \max\left[p(\pi_l) - p(\pi_j), 0 \right],$$

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where the liquidation value is $L_i^p = \sum_k q_{ik} p(\pi_k)$.

Setting $\eta = 0$, $\tilde{p}_i(\pi_j) = p(\pi_j)$, so we may rewrite Equation (1) as

$$p(\pi_i) = \pi_i + \delta \left[(1-\theta) \sum_j q_{ij} p(\pi_j) + \theta \sum_k q_{ik} p(\pi_k) \right].$$

If π is iid then $q_{ij} = q_j$ and

$$p(\pi_i) = \pi_i + \delta \sum_j q_j p(\pi_j).$$

Therefore, integrating in both sides and solving for $\sum_j q_j p(\pi_j)$ we get

$$\sum_i q_i p(\pi_i) = \frac{1}{1-\delta} \sum_i q_i \pi_i.$$

Substituting back into $p(\pi)$ gives

$$p(\pi_i) = \pi_i + \frac{\delta}{1-\delta} \sum_j q_j \pi_j.$$

If π is fully persistent, then $q_{ij} = 1$ if and only if $i = j$, except when a liquidity shock occurs in which case we use the unconditional probability of being in a given state, and

$$p(\pi_i) = \pi_i + \delta \left[(1-\theta) p(\pi_i) + \theta \sum_j q_j p(\pi_j) \right].$$

Repeating the same steps as above, we get

$$\sum_i q_i p(\pi_i) = \frac{1}{1-\delta} \sum_i q_i \pi_i,$$

and

$$(1 - \delta(1-\theta)) p(\pi_i) = \pi_i + \theta \frac{\delta}{1-\delta} \sum_i q_i \pi_i.$$

The implied expressions for CAR are

$$\begin{aligned} CAR\left(\pi_j^I, \pi_l^R\right) &\equiv \frac{p\left(\pi_l^R\right)}{p\left(\pi_j^I\right)} - 1 \\ &= \frac{\pi_l^R + \frac{\delta}{1-\delta} l \sum_j q_j \pi_j}{\pi_j^I + \frac{\delta}{1-\delta} l \sum_j q_j \pi_j} - 1. \end{aligned} \tag{2}$$

In the case of fully persistent cash flows, we have that $l = \theta$. In the case of i.i.d. cash flows, then $l = 1$. Equation (2) shows that variation in CAR is due to variation in π and variation in the persistence of cash flows.

Consider first the effect of variation in π. Values of π lie in a grid bounded by $\pi^{\min}$ and $\pi^{\max}$. Therefore, maximum CAR is attained at

$$\max CAR = \frac{\pi^{\max} + \frac{\delta}{1-\delta} l \sum_j q_j \pi_j}{\pi^{\min} + \frac{\delta}{1-\delta} l \sum_j q_j \pi_j} - 1 < \frac{\pi^{\max}}{\pi^{\min}} - 1,$$

where the inequality assumes that $\pi^{\min} > 0$. Maximum CAR is bounded by the maximum change in cash flows allowed by the grid.

Now consider the effect of persistence of cash flows. Given a range for the cash flow grid, maximum CAR is smallest when $l = 1$ and cash flows are iid.

2. Differences between block prices in Burkart, Gromb and Panunzi (2000) and Dyck and Zingales (2004)

Let P^{bgp} and P^{dz} denote the negotiated block prices in the models of Burkart, Gromb and Panunzi (2000) (BGP) and Dyck and Zingales (2004) (DZ) respectively. In BGP, the block is priced as if the default option to negotiate is to acquire the block via a tender offer. In DZ, there is no alternative way of acquiring control, and the price is obtained from the standard Nash-bargaining solution. Using BGP's notation, under effective competition, we have

$$P^{bgp} = v_I + \psi \left(\left(1 - \phi_R^{\alpha}\right) v_R + \frac{d_R^{\alpha}}{\alpha} v_R - v_I - \frac{d_R^{\beta}}{\alpha} v_R \right)$$

and

$$P^{dz} = \psi \left(\left(1 - \phi_R^{\alpha}\right) v_R + \frac{d_R^{\alpha}}{\alpha} v_R \right) + (1 - \psi) \left(\left(1 - \phi_I^{\alpha}\right) v_I + \frac{d_I^{\alpha}}{\alpha} v_I \right).$$

Combining them, we have

$$
\begin{aligned}
P^{bgp} &= v_I + \psi \left(\left(1 - \phi_R^{\alpha}\right) v_R + \frac{d_R^{\alpha}}{\alpha} v_R - v_I - \frac{d_R^{\beta}}{\alpha} v_R \right) \\
&= (1 - \psi) \left(\left(1 - \phi_I^{\alpha}\right) v_I + \frac{d_I^{\alpha}}{\alpha} v_I \right) + v_I + \psi \left(\left(1 - \phi_R^{\alpha}\right) v_R + \frac{d_R^{\alpha}}{\alpha} v_R - v_I - \frac{d_R^{\beta}}{\alpha} v_R \right) \\
&- (1 - \psi) \left(\left(1 - \phi_I^{\alpha}\right) v_I + \frac{d_I^{\alpha}}{\alpha} v_I \right) \\
&= P^{dz} + v_I - \psi \left(v_I + \frac{d_R^{\beta}}{\alpha} v_R \right) - (1 - \psi) \left(\left(1 - \phi_I^{\alpha}\right) v_I + \frac{d_I^{\alpha}}{\alpha} v_I \right).
\end{aligned}
$$

Given that the equilibrium tender offer bid satisfies

$$
v_I = \left(1 - \phi_R^{\beta}\right) v_R,
$$

we can simplify to obtain

$$
\begin{aligned}
P^{bgp} &= P^{dz} + v_I - \psi \left(\left(1 - \phi_R^{\beta}\right) v_R + \frac{d_R^{\beta}}{\alpha} v_R \right) - (1 - \psi) \left(\left(1 - \phi_I^{\alpha}\right) v_I + \frac{d_I^{\alpha}}{\alpha} v_I \right) \\
&= P^{dz} - \psi \frac{d_R^{\beta}}{\alpha} v_R - (1 - \psi) \left(-\phi_I^{\alpha} v_I + \frac{d_I^{\alpha}}{\alpha} v_I \right)
\end{aligned}
$$

Therefore, the difference between these two prices is given by

$$
\Delta P \equiv \psi \frac{d_R^{\beta}}{\alpha} v_R + (1 - \psi) \left(-\phi_I^{\alpha} v_I + \frac{d_I^{\alpha}}{\alpha} v_I \right).
$$

Clearly, if $\phi = 0$ then $\Delta P = 0$ and $P^{bgp} = P^{dz}$. Using the estimates of the BGP model in Albuquerque and Schroth (2010) (Table 4, Specification 3), the median value of ϕ is 0.0062 for the full sample, and 0.0036 for the subsample of trades where block size exceeds 35%. The median value of ΔP for the same subsample, expressed as a percentage of security benefits, v_R is 2.27%.

Internet Appendix B. Results from additional empirical tests

1. Index of Tables

- Table IA.I defines the new variables used here and not in the main text.
- Table IA.II presents the summary statistics for these variables.
- Table IA.III displays the robustness of Table III in the paper to using different discount factors for the blockholder and the dispersed shareholders (specification (1)) and to dropping the 12 observations where $CAR < 0$ and $BP > 0$.
- Tables IA.IV to IA.VII display the robustness of Table III in the paper to changing the specification of the probability of liquidity shocks (θ) and the block's fire sale value (ϕ).
- Tables IA.VIII to IA.IX summarize the data from deals with block sizes between 10% and 35%, which were incorporated to the sample as a robustness check. The full results, including parameter estimates and moment-by-moment matching are included in Tables IA.X, IA.XI and XIII.
- Tables IA.X and IA.XII show the full set of results from setting private benefits to zero.
- Table IA.XIV summarizes the earnings management measure of the traded target firms, in-sample and within subsamples.
- Tables IA.XV to IA.XXVI present the full results for estimating specification (2) in Table III using gradually smaller subsamples, dropping first the trades with $BP > 0 > CAR$, and then the five trades at a time: those with the five lowest CAR values among the surviving deals with $BP > 0$ and $CAR > 0$.
- Table IA.XXVII display the robustness of Table III in the paper to changing the including determinants of the probability of liquidity shocks (θ) to the specification of the block's fire sale value (ϕ), and vice versa.

Table IA. I: Description of additional variables used in this appendix and their sources

Type	Variable name	Variable description	Source
Determinants of aggregate liquidity (**x**)	*Pástor-Stambaugh*	Pástor and Stambaugh's (2003) measure of innovations to monthly aggregate liquidity: the higher the index, the higher the increase in the stock market liquidity.	Robert Stambaugh's webpage
	TED Spread	Difference between the interest rate on the 3-month LIBOR contract the 3-month Treasury bill (%).	FED Board of Governors
	Industry Liquidity	Total value of corporate control transactions in the last year before the deal in the same 2-digit SIC Code as the deal's target divided by the total book value of assets of all firms in the same 2-digit SIC code, as in Schlingemann et al. (2002).	Compustat, Thomson One Banker
Determinants of liquidation values (**z**)	*Target Alpha*	Liquidity-adjusted CAPM alpha for the target, estimated using daily returns from day t-252 up to t-21 of the block trade announcement.	CRSP
	Target Beta	Liquidity-adjusted CAPM beta for the target, estimated using daily returns from day t-252 up to t-21 of the block trade announcement.	CRSP

Table IA. II: Sample summary statistics

This table summarizes the characteristics of the 114 blocks traded in our sample, as well as all the potential determinants of aggregate illiquidity and liquidation costs. The sample consists of all US privately negotiated block trades in the Thomson One Banker's Acquisitions data (formerly SDC) between 1/1/1990 and 31/12/2010, where the block represents between 35% and 90% of the target's outstanding stock.

Variable	Mean	Standard deviation	5th percentile	First quartile	Median	Third quartile	95th percentile
Pástor-Stambaugh	0.011	0.050	−0.082	−0.007	0.003	0.039	0.100
TED Spread	0.45%	0.36%	0.12%	0.24%	0.42%	0.58%	0.79%
Industry Liquidity	0.052	0.263	0.000	0.000	0.001	0.005	0.131
Target Alpha	−0.44%	3.56%	−4.99%	−2.12%	−0.09%	1.06%	3.49%
Target Beta	1.222	1.115	−0.214	0.466	1.118	1.831	3.111

Table IA. III: Robustness to alternative specifications of the blockholders discount rate and to the exclusion of trades likely motivated by private benefits

This table shows the estimates of the matching probability, η, the block seller's bargaining power, ψ, the controlling shareholder's private benefits of control per share, B_i, and the sensitivities, β and γ, of the liquidity shock probability, θ, and the block's liquidation value, ϕ, to $\mathbf{x}$ and $\mathbf{z}$, respectively. For each deal i, θ_i, ϕ_i and B_i are given by

$$\theta_i = \frac{\exp(\mathbf{x}_i'\beta + \beta_0)}{1 + \exp(\mathbf{x}_i'\beta + \beta_0)}, \quad \phi_i = \frac{\exp(\mathbf{z}_i'\gamma + \gamma_0)}{1 + \exp(\mathbf{z}_i'\gamma + \gamma_0)},$$
$$\text{and} \quad B_i = b_0 + b_1 \times E(v_i) + b_2 \times E(p_i) \times \frac{1 - \alpha_i}{\alpha_i},$$

where $E(v_i)$ is the expected private value of the block, $E(p_i)$ is the expected dispersed shareholders valuation of the shares and α_i is the block size. The parameters are estimated using the Simulated Method of Moments, matching the actual moments, $\mathbf{M}$, of the joint distribution of the percentage block premium, BP, and the cumulative abnormal returns, CAR, to those simulated by the theoretical search model, $\mathbf{m}(\psi, \eta, b_0, b_1, b_2, \beta, \gamma)$. The baseline discount for dispersed shareholders is set to 10%. In specification (1), the blockholder's discount rate has an additional 5% if the block size exceeds 65% of the common stock. In specification (2), the 12 block trades wher $CAR < 0$ and $BP >$ are excluded. The data is for a sample of 114 US negotiated block trades in the Thomson One Banker's Acquisitions data between 1/1/1990 and 31/12/2010. Blocks are larger than 35% and smaller than 90% of the outstanding stock. Standard errors are shown in parenthesis next to the coefficient estimates[a]. The economic significance of each coefficient is the change in θ_i or ϕ_i associated with a one sample standard deviation change in each variable in $\mathbf{x}$ and $\mathbf{z}$, respectively.

Panel A: Model fit

	(1)				(2)			
	BP		**CAR**		**BP**		**CAR**	
	Actual	*Predicted*	*Actual*	*Predicted*	*Actual*	*Predicted*	*Actual*	*Predicted*
Mean	0.067	0.089	0.096	0.021	0.010	0.092	0.118	0.021
Std. deviation	0.584	0.353	0.319	0.085	0.552	0.538	0.330	0.078
Median	0.035	0.381	0.050	0.020	−0.040	0.073	0.085	0.021
Proportion of negatives	0.465	0.439	0.421	0.421	0.520	0.363	0.353	0.373
corr(*Actual*, *Predicted*)		0.238		0.381		0.167		0.356
	Over-identifying restrictions test[b]		Joint significance test[c]		Over-identifying restrictions test[b]		Joint significance test[c]	
	χ^2	p value	χ^2	p value	χ^2	p value	χ^2	p value
	30.64	0.43	585.14	0.00	42.55	0.07	1,033.54	0.00

(continues)

Table IA.III: continued

Panel B: Parameter estimates

	(1)				(2)			
	Coefficient				Coefficient			
η	0.57***	(0.13)			0.51***	(0.04)		
ψ	0.28*	(0.15)			0.47***	(0.11)		
Liquidity shock determinants (x)								
	Coefficient		Economic significance		Coefficient		Economic significance	
GDP growth	−12.14	(9.71)	−0.01	(0.01)	−11.77**	(5.88)	−0.02**	(0.01)
Market Return	−21.38***	(2.23)	−0.11***	(0.01)	−21.60***	(3.26)	−0.19***	(0.03)
Market Volatility	26.28***	(9.04)	0.04***	(0.02)	−42.52***	(5.93)	−0.12***	(0.02)
Fontaine-Garcia	2.38***	(0.70)	0.04***	(0.01)	1.24***	(0.17)	0.03***	(0.00)
Yield curve slope	1.17***	(0.12)	0.04***	(0.00)	2.40***	(0.32)	0.15***	(0.02)
× *GDP growth*					19.91**	(8.70)	0.07**	(0.03)
× *Market Return*					8.92***	(1.04)	0.16***	(0.02)
Constant (β_0)	−9.18	(9.08)			−0.66	(34.33)		
Liquidation value determinants (z)								
	Coefficient		Economic significance		Coefficient		Economic significance	
Block-to-Industry Size	1.06	(3.01)	0.00	(0.01)	−0.12	(6.47)	0.00	(0.02)
Industry's M&A Activity	0.18***	(0.03)	0.08***	(0.01)	0.37***	(0.09)	0.12***	(0.03)
Target - Industry Leverage	−2.02***	(0.44)	−0.06***	(0.01)	−1.28**	(0.63)	−0.03**	(0.01)
Industry Specificity	2.77***	(0.66)	0.06***	(0.01)	1.48**	(0.59)	0.02**	(0.01)
Industry Market-to-Book	0.74***	(0.26)	0.04***	(0.01)	1.95*	(1.10)	0.08*	(0.04)
Target Volatility	−1.17**	(0.52)	−0.05**	(0.02)	−0.02*	(0.01)	0.00*	(0.00)
Constant (γ_0)	1.55***	(0.25)			−0.03***	(0.00)		
Private benefits of control								
	Coefficient		Sample mean (Std. deviation)		Coefficient		Sample mean (Std. deviation)	
b_0	0.06***	(0.01)	0.27	(0.08)	0.09***	(0.02)	0.14	(0.12)
b_1	0.43***	(0.12)			0.11*	(0.06)		
b_2	0.12	(0.08)			0.08*	(0.04)		

[a] Estimates followed by ***, ** and * are statistically different from zero with 0.01, 0.05 and 0.1 significance levels, respectively.

[b] The null hypothesis is that the optimally weighted distance between the actual and simulated moments vector is zero.

[c] The null hypothesis is that all model parameters are zero.

Table IA. IV: Robustness of the estimates of the model's parameters with deal-specific random effects

This table shows the estimates of the matching probability, η, the block seller's bargaining power, ψ, the controlling shareholder's private benefits of control per share, B_i, and the sensitivities, β and γ, of the liquidity shock probability, θ, and the block's liquidation value, ϕ, to $\mathbf{x}$ and $\mathbf{z}$, respectively. A deal-specific random effect, ξ_i, is added to θ_i (specification (1)) or ϕ_i (specification (2)). For example, specification (1) is

$$\theta_i = \frac{\exp(\mathbf{x}_i'\beta + \beta_0 + \xi_i)}{1 + \exp(\mathbf{x}_i'\beta + \beta_0 + \xi_i)},$$

where $\xi_i \sim N(0, \sigma_\xi^2)$. The parameters are estimated using the Simulated Method of Moments, matching the actual moments, $\mathbf{M}$, of the joint distribution of the percentage block premium, BP, and the cumulative abnormal returns, CAR, to those simulated by the theoretical search model, $\mathbf{m}(\psi, \eta, b_0, b_1, b_2, \beta, \gamma, \sigma_\xi)$. The data is for a sample of 114 US negotiated block trades in the Thomson One Banker's Acquisitions data between 1/1/1990 and 31/12/2010. Blocks are larger than 35% and smaller than 90% of the outstanding stock. Standard errors are shown in parenthesis next to the coefficient estimates[a]. The economic significance of each coefficient is the change in θ_i or ϕ_i associated with a one sample standard deviation change in each variable in $\mathbf{x}$ and $\mathbf{z}$, respectively. The economic significance of the random effect is the ratio of σ_ξ^2 to $var(\mathbf{x}_i'\beta)$ (specification (1)) or to $var(\mathbf{z}_i'\gamma)$ (specification (2)).

Panel A: Model fit

	(1)				(2)			
	BP		**CAR**		**BP**		**CAR**	
	Actual	*Predicted*	*Actual*	*Predicted*	*Actual*	*Predicted*	*Actual*	*Predicted*
Mean	0.067	0.063	0.096	0.020	0.067	0.147	0.096	0.020
Std. deviation	0.584	0.270	0.319	0.077	0.584	0.591	0.319	0.079
Median	0.035	0.044	0.050	0.016	0.035	0.205	0.050	0.016
Proportion of negatives	0.465	0.351	0.421	0.421	0.465	0.447	0.421	0.421
corr(*Actual*, *Predicted*)		0.110		0.406		0.187		0.405
	Over-identifying restrictions test[b]		Joint significance test[c]		Over-identifying restrictions test[b]		Joint significance test[c]	
	χ^2	p value	χ^2	p value	χ^2	p value	χ^2	p value
	37.62	0.13	1,781.43	0.00	38.26	0.12	1,846.08	0.00

(continues)

Table IA.IV: continued

Panel B: Parameter estimates

	(1)				(2)			
	Coefficient				Coefficient			
η	0.66*	(0.38)			0.42	(0.64)		
ψ	0.54*	(0.29)			0.49	(0.49)		
Liquidity shock determinants (x)								
	Coefficient		Economic significance		Coefficient		Economic significance	
GDP growth	−12.00	(13.75)	−0.03	(0.03)	−11.90	(12.47)	−0.02	(0.03)
Market Return	−27.39**	(12.21)	−0.31**	(0.14)	−24.16*	(13.72)	−0.36*	(0.20)
Market Volatility	−14.03	(12.33)	−0.05	(0.05)	−13.67	(18.82)	−0.07	(0.09)
Fontaine-Garcia	1.10	(1.03)	0.03	(0.03)	0.56	(0.48)	0.03	(0.02)
Yield curve slope	1.93***	(0.55)	0.12***	(0.03)	0.54*	(0.28)	0.06*	(0.03)
× *GDP growth*	50.64	(38.48)	0.24	(0.18)	38.40	(41.58)	0.24	(0.26)
× *Market Return*	5.68**	(2.50)	0.13**	(0.06)	5.21	(4.75)	0.16	(0.15)
σ_ξ	4.49	(3.04)	0.07					
Constant (β_0)	0.75	(1.71)			−4.52	(3.79)		
Liquidation value determinants (z)								
	Coefficient		Economic significance		Coefficient		Economic significance	
Block-to-Industry Size	−0.17	(1.08)	0.00	(0.00)	−0.13	(4.93)	0.00	(0.03)
Industry's M&A Activity	0.47***	(0.15)	0.12***	(0.04)	−0.01	(0.01)	−0.01	(0.01)
Target - Industry Leverage	−2.40**	(1.05)	−0.04**	(0.02)	−2.27	(1.67)	−0.12	(0.09)
Industry Specificity	−1.83*	(0.96)	−0.02*	(0.01)	−1.38	(1.89)	−0.05	(0.07)
Industry Market-to-Book	3.80	(5.19)	0.12	(0.16)	1.61	(1.35)	0.14	(0.12)
Target Volatility	1.08	(0.90)	0.03	(0.02)	1.00	(0.89)	0.07	(0.07)
σ_ξ					3.34	(12.35)	0.33	
Constant (γ_0)	−2.52	(1.64)			−1.00*	(0.56)		
Private benefits of control								
	Coefficient		Sample mean (Std. deviation)		Coefficient		Sample mean (Std. deviation)	
b_0	0.05**	(0.02)	0.09	(0.10)	0.09***	(0.02)	0.25	(0.11)
b_1	0.05	(0.04)			0.22***	(0.08)		
b_2	0.06	(0.08)			0.20	(0.60)		

[a] Estimates followed by ***, ** and * are statistically different from zero with 0.01, 0.05 and 0.1 significance levels, respectively.

[b] The null hypothesis is that the optimally weighted distance between the actual and simulated moments vector is zero.

[c] The null hypothesis is that all model parameters are zero.

Table IA. V: Robustness of the estimates of the model's parameters to different specifications of the liquidity shock probability

This table shows the estimates of the matching probability, η, the block seller's bargaining power, ψ, the controlling shareholder's private benefits of control per share, B_i, and the sensitivities, β and γ, of the liquidity shock probability, θ, and the block's liquidation value, ϕ, to $\mathbf{x}$ and $\mathbf{z}$, respectively. For each deal i, θ_i, ϕ_i and B_i are given by

$$\theta_i = \frac{\exp(\mathbf{x}_i'\beta + \beta_0)}{1 + \exp(\mathbf{x}_i'\beta + \beta_0)}, \quad \phi_i = \frac{\exp(\mathbf{z}_i'\gamma + \gamma_0)}{1 + \exp(\mathbf{z}_i'\gamma + \gamma_0)},$$
$$\text{and} \quad B_i = b_0 + b_1 \times E(v_i) + b_2 \times E(p_i) \times \frac{1 - \alpha_i}{\alpha_i},$$

where $E(v_i)$ is the expected private value of the block, $E(p_i)$ is the expected dispersed shareholders valuation of the shares and α_i is the block size. The parameters are estimated using the Simulated Method of Moments, matching the actual moments, $\mathbf{M}$, of the joint distribution of the percentage block premium, BP, and the cumulative abnormal returns, CAR, to those simulated by the theoretical search model, $\mathbf{m}(\psi, \eta, b_0, b_1, b_2, \beta, \gamma)$. The baseline discount for dispersed shareholders is set to 10%. The data is for a sample of 114 US negotiated block trades in the Thomson One Banker's Acquisitions data between 1/1/1990 and 31/12/2010. Blocks are larger than 35% and smaller than 90% of the outstanding stock. Standard errors are shown in parenthesis next to the coefficient estimates[a]. The economic significance of each coefficient is the change in θ_i or ϕ_i associated with a one sample standard deviation change in each variable in $\mathbf{x}$ and $\mathbf{z}$, respectively.

Panel A: Model fit

	(1)				(2)			
	BP		**CAR**		**BP**		**CAR**	
	Actual	*Predicted*	*Actual*	*Predicted*	*Actual*	*Predicted*	*Actual*	*Predicted*
Mean	0.067	0.078	0.096	0.020	0.067	0.083	0.096	0.020
Std. deviation	0.584	0.506	0.319	0.079	0.584	0.450	0.319	0.077
Median	0.035	0.097	0.050	0.015	0.035	0.140	0.050	0.016
Proportion of negatives	0.465	0.447	0.421	0.430	0.465	0.404	0.421	0.421
corr(*Actual*, *Predicted*)		0.159		0.406		0.174		0.406
	Over-identifying restrictions test[b]		Joint significance test[c]		Over-identifying restrictions test[b]		Joint significance test[c]	
	χ^2	p value	χ^2	p value	χ^2	p value	χ^2	p value
	36.12	0.01	1,286.31	0.00	41.14	0.00	477.59	0.00

(continues)

Table IA.V: continued

Panel B: Parameter estimates

	(1)				(2)			
	Coefficient				Coefficient			
η	0.43	(0.26)			0.60**	(0.28)		
ψ	0.42	(0.32)			0.48	(0.32)		
Liquidity shock determinants (x)								
	Coefficient		Economic significance		Coefficient		Economic significance	
GDP growth	−5.37*	(2.74)	−0.01*	(0.00)	83.50	(115.82)	0.03	(0.04)
Market Return	−21.31**	(7.94)	−0.13**	(0.05)	14.89	(53.80)	0.03	(0.09)
Market Volatility	−44.69	(84.70)	−0.09	(0.17)	−27.83	(32.04)	−0.02	(0.02)
Pástor-Stambaugh	2.85	(5.79)	0.00	(0.00)	5.47	(9.46)	0.03	(0.05)
TED Spread	2.87	(1.95)	0.04	(0.02)	−0.59	(1.04)	0.00	(0.00)
Fontaine-Garcia					0.79***	(0.22)	0.05***	(0.01)
Yield curve slope	0.11	(0.09)	0.05	(0.04)	1.41*	(0.78)	0.02*	(0.01)
× *GDP growth*	32.84	(20.11)	0.17	(0.10)	50.47	(41.43)	0.04	(0.03)
× *Market Return*	6.12***	(1.94)	0.13***	(0.04)	2.00	(1.22)	0.01	(0.00)
Constant (β_0)	−0.88	(3.02)			−11.35	(72.40)		
Liquidation value determinants (z)								
	Coefficient		Economic significance		Coefficient		Economic significance	
Block-to-Industry Size	0.02	(8.28)	0.00	(0.04)	0.01	(0.90)	0.00	(0.00)
Industry's M&A Activity	0.21	(0.26)	0.12	(0.15)	0.28**	(0.11)	0.15**	(0.06)
Target - Industry Leverage	−3.75***	(1.30)	−0.17***	(0.06)	−1.25	(1.10)	−0.05	(0.05)
Industry Specificity	−0.45*	(0.26)	−0.01*	(0.01)	−0.52	(0.82)	−0.01	(0.02)
Industry Market-to-Book	0.21	(0.20)	0.02	(0.02)	2.30	(2.03)	0.16	(0.14)
Target Volatility	−0.73	(0.80)	−0.05	(0.05)	1.19**	(0.54)	0.07**	(0.03)
Constant (γ_0)	0.35	(0.64)			−2.45	(2.34)		
Private benefits of control								
	Coefficient		Sample mean (Std. deviation)		Coefficient		Sample mean (Std. deviation)	
b_0	0.09*	(0.04)	0.02	(0.03)	0.07	(0.05)	0.02	(0.03)
b_1	0.13	(0.08)			0.13	(0.60)		
b_2	0.13	(0.71)			0.12	(0.53)		

[a] Estimates followed by ***, ** and * are statistically different from zero with 0.01, 0.05 and 0.1 significance levels, respectively.

[b] The null hypothesis is that the optimally weighted distance between the actual and simulated moments vector is zero.

[c] The null hypothesis is that all model parameters are zero.

Table IA. VI: Robustness of the estimates of the model's parameters to different specifications of the fire sale discount

This table shows the estimates of the matching probability, η, the block seller's bargaining power, ψ, the controlling shareholder's private benefits of control per share, B_i, and the sensitivities, β and γ, of the liquidity shock probability, θ, and the block's liquidation value, ϕ, to $\mathbf{x}$ and $\mathbf{z}$, respectively. For each deal i, θ_i, ϕ_i and B_i are given by

$$\theta_i = \frac{\exp(\mathbf{x}_i'\beta + \beta_0)}{1 + \exp(\mathbf{x}_i'\beta + \beta_0)}, \quad \phi_i = \frac{\exp(\mathbf{z}_i'\gamma + \gamma_0)}{1 + \exp(\mathbf{z}_i'\gamma + \gamma_0)},$$
$$\text{and} \quad B_i = b_0 + b_1 \times E(v_i) + b_2 \times E(p_i) \times \frac{1 - \alpha_i}{\alpha_i},$$

where $E(v_i)$ is the expected private value of the block, $E(p_i)$ is the expected dispersed shareholders valuation of the shares and α_i is the block size. The parameters are estimated using the Simulated Method of Moments, matching the actual moments, $\mathbf{M}$, of the joint distribution of the percentage block premium, BP, and the cumulative abnormal returns, CAR, to those simulated by the theoretical search model, $\mathbf{m}(\psi, \eta, b_0, b_1, b_2, \beta, \gamma)$. The baseline discount for dispersed shareholders is set to 10%. The data is for a sample of 114 US negotiated block trades in the Thomson One Banker's Acquisitions data between 1/1/1990 and 31/12/2010. Blocks are larger than 35% and smaller than 90% of the outstanding stock. Standard errors are shown in parenthesis next to the coefficient estimates[a]. The economic significance of each coefficient is the change in θ_i or ϕ_i associated with a one sample standard deviation change in each variable in $\mathbf{x}$ and $\mathbf{z}$, respectively.

Panel A: Model fit

	(1)				(2)			
	BP		**CAR**		**BP**		**CAR**	
	Actual	*Predicted*	*Actual*	*Predicted*	*Actual*	*Predicted*	*Actual*	*Predicted*
Mean	0.067	0.085	0.096	0.022	0.067	0.043	0.096	0.020
Std. deviation	0.584	0.641	0.319	0.078	0.584	0.494	0.319	0.078
Median	0.035	0.218	0.050	0.016	0.035	0.121	0.050	0.015
Proportion of negatives	0.465	0.395	0.421	0.421	0.465	0.395	0.421	0.430
corr(*Actual*, *Predicted*)		0.204		0.402		0.225		0.406
	Over-identifying restrictions test[b]		Joint significance test[c]		Over-identifying restrictions test[b]		Joint significance test[c]	
	χ^2	p value	χ^2	p value	χ^2	p value	χ^2	p value
	36.74	0.12	1,813.08	0.00	38.50	0.36	1,686.25	0.00

(continues)

Table IA.VI: continued

Panel B: Parameter estimates

	(1)				(2)			
	Coefficient				Coefficient			
η	0.34	(0.47)			0.45	(0.35)		
ψ	0.43*	(0.25)			0.45***	(0.14)		
Liquidity shock determinants (x)								
	Coefficient		Economic significance		Coefficient		Economic significance	
GDP growth	−55.51	(48.38)	−0.01	(0.01)	−23.78	(44.44)	−0.01	(0.01)
Market Return	−24.32	(16.68)	−0.01	(0.01)	−13.39*	(6.91)	−0.02*	(0.01)
Market Volatility	−41.94**	(16.86)	−0.01**	(0.00)	−44.05	(45.37)	−0.03	(0.03)
Fontaine-Garcia	1.51*	(0.80)	0.00*	(0.00)	2.32**	(0.93)	0.01**	(0.01)
Yield curve slope	2.30***	(0.72)	0.01***	(0.00)	1.77*	(0.98)	0.02*	(0.01)
× *GDP growth*	49.11	(40.32)	0.02	(0.01)	21.62	(41.24)	0.02	(0.03)
× *Market Return*	2.45	(1.49)	0.01	(0.01)	3.40	(4.90)	0.01	(0.02)
Industry Liquidity	1.92	(2.81)	0.00	(0.00)				
Constant (β_0)	0.71	(1.12)			−1.14***	(0.32)		
Liquidation value determinants (z)								
	Coefficient		Economic significance		Coefficient		Economic significance	
Logarithm of block size					0.90	(9.09)	0.21	(2.13)
Block-to-Industry Size	−0.02	(0.03)	0.00	(0.00)	0.34	(1.47)	0.00	(0.01)
Industry's M&A Activity	0.40***	(0.15)	0.24***	(0.09)	0.40**	(0.16)	0.16**	(0.06)
Target - Industry Leverage	−1.82**	(0.85)	−0.08**	(0.04)	−0.57	(0.69)	−0.02	(0.02)
Industry Specificity	−1.54	(1.06)	−0.05	(0.03)	−0.60**	(0.28)	−0.01**	(0.01)
Industry Market-to-Book	2.49	(6.30)	0.19	(0.49)	1.94**	(0.98)	0.10**	(0.05)
Target Volatility	0.55	(0.61)	0.04	(0.04)	−0.77	(19.05)	−0.03	(0.85)
Target Alpha					0.20	(4.99)	0.00	(0.02)
Target Beta					−0.39**	(0.16)	−0.05**	(0.02)
Constant (γ_0)	−3.76***	(1.33)			−3.60	(2.80)		
Private benefits of control								
	Coefficient		Sample mean (Std. deviation)		Coefficient		Sample mean (Std. deviation)	
b_0	0.09	(0.08)	0.22	(0.12)	0.07***	(0.01)	0.13	(0.11)
b_1	0.17	(0.31)			0.09***	(0.03)		
b_2	0.17*	(0.09)			0.08**	(0.03)		

Table IA. VII: Robustness of the estimates of the model's parameters to different specifications of θ and ϕ

This table shows the estimates of the matching probability, η, the block seller's bargaining power, ψ, the controlling shareholder's private benefits of control per share, B_i, and the sensitivities, β and γ, of the liquidity shock probability, θ, and the block's liquidation value, ϕ, to $\mathbf{x}$ and $\mathbf{z}$, respectively. For each deal i, θ_i, ϕ_i and B_i are given by

$$\theta_i = \frac{\exp(\mathbf{x}_i'\beta + \beta_0)}{1 + \exp(\mathbf{x}_i'\beta + \beta_0)}, \quad \phi_i = \frac{\exp(\mathbf{z}_i'\gamma + \gamma_0)}{1 + \exp(\mathbf{z}_i'\gamma + \gamma_0)},$$
$$\text{and} \quad B_i = b_0 + b_1 \times E(v_i) + b_2 \times E(p_i) \times \frac{1 - \alpha_i}{\alpha_i},$$

where $E(v_i)$ is the expected private value of the block, $E(p_i)$ is the expected dispersed shareholders valuation of the shares and α_i is the block size. The parameters are estimated using the Simulated Method of Moments, matching the actual moments, $\mathbf{M}$, of the joint distribution of the percentage block premium, BP, and the cumulative abnormal returns, CAR, to those simulated by the theoretical search model, $\mathbf{m}(\psi, \eta, b_0, b_1, b_2, \beta, \gamma)$. The baseline discount for dispersed shareholders is set to 10%. The data is for a sample of 114 US negotiated block trades in the Thomson One Banker's Acquisitions data between 1/1/1990 and 31/12/2010. Blocks are larger than 35% and smaller than 90% of the outstanding stock. Standard errors are shown in parenthesis next to the coefficient estimates[a]. The economic significance of each coefficient is the change in θ_i or ϕ_i associated with a one sample standard deviation change in each variable in $\mathbf{x}$ and $\mathbf{z}$, respectively.

Panel A: Model fit

	(1)				(2)			
	BP		**CAR**		**BP**		**CAR**	
	Actual	*Predicted*	*Actual*	*Predicted*	*Actual*	*Predicted*	*Actual*	*Predicted*
Mean	0.067	−0.535	0.096	0.016	0.067	−0.289	0.096	0.020
Std. deviation	0.584	0.408	0.319	0.078	0.584	0.388	0.319	0.078
Median	0.035	−0.678	0.050	0.015	0.035	−0.061	0.050	0.015
Proportion of negatives	0.465	0.904	0.421	0.430	0.465	0.754	0.421	0.430
corr(*Actual*, *Predicted*)		0.033		0.334		0.102		0.324
	Over-identifying restrictions test[b]		Joint significance test[c]		Over-identifying restrictions test[b]		Joint significance test[c]	
	χ^2	p value	χ^2	p value	χ^2	p value	χ^2	p value
	359.34	0.00	406.15	0.00	316.98	0.00	583.39	0.00

(continues)

Table IA.VII: continued

Panel B: Parameter estimates

	(1)		(2)	
	Coefficient		Coefficient	
η	0.50***	(0.13)	0.35	(0.33)
ψ	0.48***	(0.05)	0.50***	(0.18)
Liquidity shock determinants (x)				
	Coefficient	Economic significance	Coefficient	Economic significance
GDP growth	0.05 (0.16)	0.00 (0.00)		
Market Return	−0.25 (0.67)	−0.01 (0.02)		
Market Volatility	0.01 (0.02)	0.00 (0.00)		
Fontaine-Garcia	0.97*** (0.30)	0.07*** (0.02)		
Pastor-Stambaugh	0.17 (0.62)	0.00 (0.00)		
Yield curve slope	1.13*** (0.24)	0.06*** (0.01)		
TED Spread	−1.19 (1.31)	−0.20 (0.22)		
Block-to-Industry Size	22.48 (28.74)	0.02 (0.02)	48.05 (281.04)	0.03 (0.19)
Industry's M&A Activity	0.18*** (0.06)	0.09*** (0.03)	−0.15 (0.49)	−0.01 (0.04)
Target - Industry Leverage	1.41 (0.87)	0.06 (0.03)	11.79 (132.73)	0.07 (0.77)
Industry Specificity	−0.80 (0.72)	−0.02 (0.02)	−6.42 (86.22)	−0.03 (0.34)
Industry Market-to-Book	1.22 (0.91)	0.08 (0.06)	0.53** (0.22)	0.01** (0.00)
Target Volatility	0.98 (0.62)	0.01 (0.01)	1.61*** (0.61)	0.01*** (0.01)
Constant (β_0)	−0.95 (5.71)		−7.26 (581.51)	
Liquidation value determinants (z)				
	Coefficient	Economic significance	Coefficient	Economic significance
Block-to-Industry Size	0.04 (0.18)	0.00 (0.00)		
Industry's M&A Activity	−0.11 (0.22)	−0.04 (0.09)		
Target - Industry Leverage	−0.03* (0.02)	0.00* (0.00)		
Industry Specificity	−0.73** (0.29)	0.02** (0.01)		
Industry Market-to-Book	−0.94*** (0.30)	−0.05*** (0.02)		
Target Volatility	1.00 (1.91)	0.04 (0.09)		
GDP growth	−0.01 (0.01)	0.00 (0.00)	−0.11 (9.16)	0.00 (0.04)
Market Return	0.02 (0.04)	0.00 (0.00)	−0.30 (0.81)	−0.01 (0.02)
Market Volatility	−0.42 (0.36)	0.00 (0.00)	−0.68 (1.51)	0.00 (0.01)
Fontaine-Garcia	−0.75 (0.73)	−0.18 (0.17)	−0.97*** (0.27)	−0.07*** (0.02)
Pastor-Stambaugh	0.15* (0.09)	0.00* (0.00)	0.63 (1.67)	0.21 (0.51)
Yield curve slope	2.11 (7.03)	0.27 (0.92)	1.34 (3.27)	0.01 (0.01)
TED Spread	−0.65 (0.92)	−0.03 (0.04)	1.98*** (0.59)	0.09*** (0.03)
Constant (γ_0)	−1.75*** (0.49)		−2.16 (2.15)	
Private benefits of control				
	Coefficient	Sample mean (Std. deviation)	Coefficient	Sample mean (Std. deviation)
b_0	0.01 (0.01)	0.02 (0.03)	0.01 (0.03)	0.02 (0.03)
b_1	0.01 (0.01)		0.01 (0.06)	
b_2	0.01 (0.01)		0.01 (0.03)	

Table IA.VIII : Proportion of deals in each region of BP and CAR

This table shows the proportion of deals in each region of values of BP and CAR for the subsamples of deals where block size, α, is between 35% and 90%, and between 10% and 35% of the target firm's outstanding stock. Panel A uses the joint distribution, and Panel B uses the distributions conditional of whether BP or CAR are negative. The data used are for all US negotiated block trades in the Thomson One Banker's Acquisitions data between 1/1/1990 and 31/12/2010.

Panel A: Joint distribution of BP and CAR

	$35\% \leq \alpha \leq 90\%$ $n = 114$	
	$BP < 0$	$BP > 0$
$CAR > 0$	0.149	0.430
$CAR < 0$	0.316	0.105

	$10\% \leq \alpha < 35\%$ $n = 94$	
	$BP < 0$	$BP > 0$
$CAR > 0$	0.181	0.468
$CAR < 0$	0.149	0.202

Panel B: Conditional distributions

	$35\% \leq \alpha \leq 90\%$ $n = 114$	
	$CAR < 0$	$CAR > 0$
$BP < 0$ $(n = 53)$	0.679	0.321
	$BP < 0$	$BP > 0$
$CAR < 0$ $(n = 48)$	0.750	0.250

	$10\% \leq \alpha < 35\%$ $n = 94$	
	$CAR < 0$	$CAR > 0$
$BP < 0$ $(n = 31)$	0.452	0.548
	$BP < 0$	$BP > 0$
$CAR < 0$ $(n = 33)$	0.424	0.576

Table IA.IX: Sample summary statistics

This table summarizes the characteristics of the 94 observations that have been added to our sample. The variables on this table correspond to those on Table II in the paper. The sample consists of all US privately negotiated block trades in the Thomson One Banker's Acquisitions data (formerly SDC) between 1/1/1990 and 31/12/2010, where the block represents between 10% and 35% of the target's outstanding stock.

Variable	Mean	Standard deviation	5th percentile	First quartile	Median	Third quartile	95th percentile
α	25.70%	5.41%	17.16%	21.30%	25.00%	30.00%	34.40%
Block value	53.30	81.01	1.69	6.00	15.00	54.82	203.20
BP	24.45%	61.13%	−45.41%	−7.65%	10.63%	39.56%	136.49%
CAR	11.47%	27.07%	−25.40%	−4.69%	7.84%	20.24%	65.02%
GDP growth	3.19%	2.96%	−3.98%	2.29%	3.26%	4.97%	6.80%
Market Return	12.56%	14.21%	−19.94%	9.18%	15.26%	20.70%	30.54%
Market Volatility	13.25%	5.12%	8.28%	9.17%	10.94%	16.12%	22.89%
Fontaine-Garcia	0.807	0.449	−0.089	0.470	0.899	1.130	1.340
Yield curve slope	1.86%	1.15%	0.28%	0.80%	1.81%	2.82%	3.47%
Block-to-Industry Size	0.012	0.033	0.002	0.003	0.005	0.007	0.031
Industry's M&A Activity	3.088	3.530	0.090	0.147	1.581	5.255	10.704
Industry Leverage	0.456	0.092	0.338	0.383	0.432	0.534	0.600
Industry Specificity	0.239	0.149	0.000	0.157	0.229	0.305	0.469
Industry Market-to-Book	1.509	0.538	1.000	1.260	1.279	1.515	2.839
Target Leverage	0.583	0.261	0.160	0.394	0.577	0.807	0.964
Target minus Industry Leverage	0.117	0.269	−0.392	−0.079	0.089	0.352	0.568
Target Volatility	44.46%	45.57%	6.00%	9.36%	30.95%	59.22%	136.34%

Table IA.X: Further robustness tests

This table shows the estimates of the matching probability, η, the block seller's bargaining power, ψ, the controlling shareholder's private benefits of control per share, B_i, and the sensitivities, β and γ, of the liquidity shock probability, θ, and the block's liquidation value, ϕ, to $\mathbf{x}$ and $\mathbf{z}$, respectively. For each deal i, θ_i, ϕ_i and B_i are given by

$$\theta_i = \frac{\exp(\mathbf{x}_i'\beta + \beta_0)}{1 + \exp(\mathbf{x}_i'\beta + \beta_0)}, \quad \phi_i = \frac{\exp(\mathbf{z}_i'\gamma + \gamma_0)}{1 + \exp(\mathbf{z}_i'\gamma + \gamma_0)},$$
$$\text{and} \quad B_i = b_0 + b_1 \times E(v_i) + b_2 \times E(p_i) \times \frac{1 - \alpha_i}{\alpha_i},$$

where $E(v_i)$ is the expected private value of the block, $E(p_i)$ is the expected dispersed shareholders valuation of the shares and α_i is the block size. For specification (2), $B_i = 0 \forall i$. The parameters are estimated using the Simulated Method of Moments, matching the actual moments, $\mathbf{M}$, of the joint distribution of the percentage block premium, BP, and the cumulative abnormal returns, CAR, to those simulated by the theoretical search model, $\mathbf{m}(\psi, \eta, b_0, b_1, b_2, \beta, \gamma)$. For specification (1), the data is for a sample of 208 US negotiated block trades in the Thomson One Banker's Acquisitions data between 1/1/1990 and 31/12/2010. Blocks are larger than 10% and smaller than 90% of the outstanding stock. Specification (2) uses the same sample as in the paper, where blocks are larger than 35% and the number of observations is 114. Standard errors are shown in parenthesis next to the coefficient estimates.[a] The economic significance of each coefficient is the change in θ_i or ϕ_i associated with a one sample standard deviation change in each variable in $\mathbf{x}$ and $\mathbf{z}$, respectively.

Panel A: Model fit

	(1)				(2)			
	BP		**CAR**		**BP**		**CAR**	
	Actual	*Predicted*	*Actual*	*Predicted*	*Actual*	*Predicted*	*Actual*	*Predicted*
Mean	0.139	0.214	0.105	0.019	0.067	−0.191	0.096	0.020
Std. deviation	0.568	0.559	0.298	0.105	0.584	0.261	0.319	0.079
Median	0.078	0.247	0.059	0.013	0.035	−0.030	0.050	0.015
Proportion of negatives	0.404	0.399	0.389	0.447	0.465	0.982	0.421	0.430
corr(*Actual*, *Predicted*)		0.160		0.154		0.187		0.405
	Over-identifying restrictions test[b]		Joint significance test[c]		Over-identifying restrictions test[b]		Joint significance test[c]	
	χ^2	p value	χ^2	p value	χ^2	p value	χ^2	p value
	52.00	0.01	2,542.12	0.00	61.19	0.00	1,660.41	0.00

(continues)

Table IA.X: continued

Panel B: Parameter estimates

	(1)		(2)	
	Coefficient		Coefficient	
η	0.59***	(0.04)	0.50	(2.92)
ψ	0.44***	(0.07)	0.12**	(0.05)
Liquidity shock determinants (x)				
	Coefficient	Economic significance	Coefficient	Economic significance
GDP growth	−54.71*** (5.79)	−0.01*** (0.00)	−12.36 (8.74)	−0.02 (0.01)
Market Return	−19.22*** (3.46)	−0.02*** (0.00)	−26.66** (12.09)	−0.02** (0.01)
Market Volatility	4.99*** (0.49)	0.00*** (0.00)	28.62*** (10.39)	0.01*** (0.00)
Fontaine-Garcia	−1.93*** (0.27)	−0.01*** (0.00)	1.81*** (0.22)	0.00*** (0.00)
Yield curve slope	−2.95*** (0.28)	−0.02*** (0.00)	1.92*** (0.65)	0.01*** (0.00)
× *GDP growth*	49.11 (54.14)	0.02 (0.02)	−32.48** (13.00)	−0.01** (0.00)
× *Market Return*	−11.74*** (0.74)	−0.02*** (0.00)	−0.52*** (0.13)	0.00*** (0.00)
Constant (β_0)	−6.54 (13.33)		−9.28 (191.95)	
Liquidation value determinants (z)				
	Coefficient	Economic significance	Coefficient	Economic significance
Block-to-Industry Size	−0.12 (2.53)	0.00 (0.01)	0.33 (6.92)	0.00 (0.04)
Industry's M&A Activity	0.11*** (0.01)	0.06*** (0.01)	0.53* (0.27)	0.33* (0.17)
Target - Industry Leverage	2.57** (1.06)	0.10** (0.04)	−1.37*** (0.22)	−0.06*** (0.01)
Industry Specificity	−0.37** (0.15)	−0.01** (0.00)	−3.75*** (0.65)	−0.12*** (0.02)
Industry Market-to-Book	0.01 (0.01)	0.00 (0.00)	−1.04*** (0.38)	−0.08*** (0.03)
Target Volatility	0.51 (0.43)	0.03 (0.03)	0.75*** (0.25)	0.05*** (0.02)
Constant (γ_0)	0.81*** (0.06)		0.66 (0.58)	
Private benefits of control				
	Coefficient	Sample mean (Std. deviation)	Coefficient	Sample mean (Std. deviation)
b_0	0.05*** (0.00)	0.18 (0.07)	0.00 *NA*	0.00 *NA*
b_1	0.20*** (0.04)		0.00 *NA*	
b_2	0.12*** (0.02)		0.00 *NA*	

[a] Estimates followed by ***, ** and * are statistically different from zero with 0.01, 0.05 and 0.1 significance levels, respectively.

[b] The null hypothesis is that the optimally weighted distance between the actual and simulated moments vector is zero.

[c] The null hypothesis is that all model parameters are zero.

Table IA.XI: Actual and simulated moments for Specification (1) of Table IA.X

This table shows the moments used in the SMM estimation. The moments are simulated from the theoretical search model using the parameter estimates for specification (1) in Table IA.X. The moment condition t-statistic is for the test that the simulated moment equals the actual data moment. The data used are for a sample of 208 US negotiated block trades in the Thomson One Banker's Acquisitions data between 1/1/1990 and 31/12/2010. Blocks are larger than 10% and smaller than 90% of the outstanding stock. For comparison, the first two columns show the actual moments of the sample used in the paper, where blocks are larger than 35% and $n = 114$.

Conditional moments

	For $\alpha > 35\%$ ($n = 114$)		For $\alpha > 10\%$ ($n = 208$)		(1) ($n = 208$)	
	Actual	Std. Error	Actual	Std. Error	Simulated	t-statistic
$E[BP - CAR \vert BP > CAR > 0]$	0.271	0.110	0.356	0.092	0.470	−1.239
$E[(BP - CAR) \times x_k \vert$ $BP > CAR > 0]$						
GDP growth	0.008	0.003	0.012	0.003	0.016	−1.315
Market Return	0.022	0.021	0.040	0.015	0.046	−0.431
Market Volatility	0.038	0.018	0.054	0.014	0.066	−0.864
Fontaine-Garcia	−0.149	0.066	0.268	0.074	0.379	−1.504
Yield curve slope	−0.503	0.288	0.569	0.253	0.947	−1.490
× *GDP growth*	−0.012	0.005	0.016	0.008	0.030	−1.803
× *Market Return*	−0.013	0.045	0.039	0.030	0.080	−1.381
$E[BP \vert CAR < 0, BP < 0]$	−0.368	0.077	−0.363	0.058	−0.225	−2.383
$E[BP \times z_k \vert CAR < 0, BP < 0]$						
Block-to-Industry Size	−0.004	0.004	−0.003	0.003	−0.003	−0.252
Industry's M&A Activity	−1.593	0.401	−1.532	0.318	−0.772	−2.386
Target - Industry Leverage	−0.039	0.027	−0.032	0.021	0.008	−1.939
Industry Specificity	−0.115	0.030	−0.108	0.022	−0.064	−1.967
Industry Market-to-Book	−0.483	0.112	−0.466	0.086	−0.277	−2.190
Target Volatility	−0.148	0.040	−0.152	0.029	−0.101	−1.733

Second order moments

	For $\alpha > 35\%$ ($n = 114$)		For $\alpha > 10\%$ ($n = 208$)		(1) ($n = 208$)	
	Actual	Std. Error	Actual	Std. Error	Simulated	t-statistic
$Var[BP \vert BP > CAR > 0]$	0.417	0.368	0.480	0.281	0.737	−0.918
$Var[CAR \vert BP > CAR > 0]$	0.126	0.046	0.110	0.030	0.009	3.410
$E[BP \times CAR \vert BP > CAR > 0]$	0.227	0.070	0.203	0.047	0.012	4.097
$Var[(BP - CAR) \vert BP > CAR > 0]$	0.181	0.343	0.271	0.277	0.730	−1.656
$Var[BP \vert CAR < 0, BP < 0]$	0.196	0.050	0.188	0.042	0.061	3.014
$Var[CAR \vert CAR < 0, BP < 0]$	0.040	0.012	0.041	0.015	0.022	1.264
$E[BP \times CAR \vert CAR < 0, BP < 0]$	0.080	0.022	0.076	0.027	−0.015	3.326

(continues)

Table IA.XI: continued

	Unconditional moments					
	For $\alpha > 35\%$ ($n = 114$)		For $\alpha > 10\%$ ($n = 208$)		(1) ($n = 208$)	
	Actual	Std. Error	Actual	Std. Error	Simulated	t-statistic
$E(BP)$	0.067	0.077	0.139	0.050	0.207	−1.380
$E[BP \times z_k]$						
Block-to-Industry Size	−0.001	0.002	0.000	0.001	0.002	−2.089
Industry's M&A Activity	0.183	0.337	0.482	0.231	0.840	−1.550
Target - Industry Leverage	0.002	0.028	0.014	0.016	0.045	−1.915
Industry Specificity	0.000	0.019	0.021	0.014	0.040	−1.348
Industry Market-to-Book	0.094	0.102	0.174	0.065	0.258	−1.307
Target Volatility	−0.013	0.054	0.048	0.028	0.084	−1.288
$E[BP \times x_k]$						
GDP growth	0.001	0.004	0.004	0.002	0.008	−2.222
Market Return	−0.009	0.015	0.007	0.009	0.024	−1.854
Market Volatility	0.013	0.012	0.024	0.008	0.029	−0.601
Fontaine-Garcia	−0.003	0.061	0.077	0.042	0.161	−1.986
Yield curve slope	−0.132	0.149	0.239	0.114	0.397	−1.381
× *GDP growth*	−0.002	0.006	0.006	0.004	0.013	−1.993
× *Market Return*	−0.026	0.022	0.001	0.018	0.038	−2.060
$E(CAR)$	0.096	0.029	0.105	0.022	0.026	3.643
$E[CAR \times z_k]$						
Block-to-Industry Size	0.000	0.000	0.001	0.000	0.000	0.599
Industry's M&A Activity	0.293	0.118	0.364	0.093	0.133	2.478
Target - Industry Leverage	−0.005	0.009	0.005	0.007	0.001	0.497
Industry Specificity	0.023	0.008	0.023	0.005	0.005	3.295
Industry Market-to-Book	0.118	0.037	0.145	0.030	0.036	3.577
Target Volatility	0.034	0.011	0.033	0.010	0.014	1.907
$E[CAR \times x_k]$						
GDP growth	0.002	0.001	0.003	0.001	0.000	3.076
Market Return	0.003	0.005	0.004	0.004	0.002	0.677
Market Volatility	0.016	0.005	0.016	0.003	0.003	3.671
Fontaine-Garcia	0.056	0.027	0.068	0.021	0.024	2.069
Yield curve slope	0.205	0.066	0.209	0.047	0.050	3.376
× *GDP growth*	0.005	0.002	0.005	0.002	0.001	2.658
× *Market Return*	0.001	0.013	0.002	0.009	0.004	−0.234

Table IA.XII: Actual and simulated moments for Specification (2) of Table IA.X

This table shows the moments used in the SMM estimation. The moments are simulated from the theoretical search model using the parameter estimates for specification (2) in Table IA.X. The moment condition t-statistic is for the test that the simulated moment equals the actual data moment. The data used are for a sample of 208 US negotiated block trades in the Thomson One Banker's Acquisitions data between 1/1/1990 and 31/12/2010. Blocks are larger than 35% and smaller than 90% of the outstanding stock. For comparison, the third and fourth columns show the simulated moments for specification (2) in Table III of the paper, where private benefits are not set to 0.

Conditional moments

			Spec. (2) in Table III		(2)	
	Actual	Std. Error	Simulated	t-statistic	Simulated	t-statistic
$E[BP - CAR \vert BP > CAR > 0]$	0.271	0.110	0.132	1.268	−0.084	3.079
$E[(BP - CAR) \times x_k \vert$						
$BP > CAR > 0]$						
GDP growth	0.008	0.003	−0.005	3.589	0.000	2.187
Market Return	0.022	0.021	−0.022	2.076	0.003	0.925
Market Volatility	0.038	0.018	0.008	1.681	−0.015	2.594
Fontaine-Garcia	−0.149	0.066	−0.100	−0.753	−0.024	−1.642
Yield curve slope	−0.503	0.288	−0.140	−1.259	−0.165	−1.230
× *GDP growth*	−0.012	0.005	−0.010	−0.355	−0.001	−2.120
× *Market Return*	−0.013	0.045	−0.056	0.952	0.006	−0.389
$E[BP \vert CAR < 0, BP < 0]$	−0.368	0.077	−0.317	−0.660	−0.392	0.298
$E[BP \times z_k \vert CAR < 0, BP < 0]$						
Block-to-Industry Size	−0.004	0.004	−0.004	−0.026	−0.008	0.777
Industry's M&A Activity	−1.593	0.401	−0.217	−3.434	−0.955	−1.666
Target - Industry Leverage	−0.039	0.027	−0.018	−0.776	−0.010	−1.087
Industry Specificity	−0.115	0.030	−0.096	−0.624	−0.136	0.678
Industry Market-to-Book	−0.483	0.112	−0.338	−1.294	−0.458	−0.219
Target Volatility	−0.148	0.040	−0.061	−2.167	−0.148	0.005

Second order moments

			Spec. (2) in Table III		(2)	
	Actual	Std. Error	Simulated	t-statistic	Simulated	t-statistic
$Var[BP \vert BP > CAR > 0]$	0.417	0.368	0.142	0.745	0.015	3.218
$Var[CAR \vert BP > CAR > 0]$	0.126	0.046	0.005	2.654	0.008	2.580
$E[BP \times CAR \vert BP > CAR > 0]$	0.227	0.070	0.147	1.142	−0.001	3.136
$Var[(BP - CAR) \vert BP > CAR > 0]$	0.181	0.343	0.140	0.119	0.024	1.697
$Var[BP \vert CAR < 0, BP < 0]$	0.196	0.050	0.102	1.881	0.181	0.286
$Var[CAR \vert CAR < 0, BP < 0]$	0.040	0.012	0.003	3.059	0.003	3.046
$E[BP \times CAR \vert CAR < 0, BP < 0]$	0.080	0.022	0.003	3.464	0.011	3.135

(continues)

Table IA.XII: continued

	Unconditional moments					
			Spec. (2) in Table III		(2)	
	Actual	Std. Error	Simulated	t-statistic	Simulated	t-statistic
$E(BP)$	0.067	0.077	0.062	0.059	−0.191	3.829
$E[BP \times z_k]$						
Block-to-Industry Size	−0.001	0.002	−0.001	0.523	−0.003	1.401
Industry's M&A Activity	0.183	0.337	0.102	0.240	−0.489	2.376
Target - Industry Leverage	0.002	0.028	0.015	−0.452	−0.008	0.487
Industry Specificity	0.000	0.019	−0.030	1.612	−0.061	3.201
Industry Market-to-Book	0.094	0.102	−0.039	1.295	−0.228	3.572
Target Volatility	−0.013	0.054	−0.017	0.074	−0.074	1.825
$E[BP \times x_k]$						
GDP growth	0.001	0.004	−0.003	0.798	−0.004	1.913
Market Return	−0.009	0.015	−0.009	0.036	−0.017	0.718
Market Volatility	0.013	0.012	−0.001	1.108	−0.027	3.382
Fontaine-Garcia	−0.003	0.061	−0.075	1.195	−0.125	2.247
Yield curve slope	−0.132	0.149	−0.179	0.315	−0.380	1.700
× *GDP growth*	−0.002	0.006	−0.010	1.393	−0.007	1.178
× *Market Return*	−0.026	0.022	−0.032	0.251	−0.027	0.056
$E(CAR)$	0.096	0.029	0.023	2.515	0.020	2.616
$E[CAR \times z_k]$						
Block-to-Industry Size	0.000	0.000	0.000	−0.653	0.000	−0.641
Industry's M&A Activity	0.293	0.118	0.132	1.365	0.147	1.259
Target - Industry Leverage	−0.005	0.009	0.000	−0.473	−0.002	−0.349
Industry Specificity	0.023	0.008	0.029	−0.874	0.003	2.565
Industry Market-to-Book	0.118	0.037	0.029	2.421	0.035	2.263
Target Volatility	0.034	0.011	0.013	1.923	0.013	1.965
$E[CAR \times x_k]$						
GDP growth	0.002	0.001	0.001	1.635	0.000	2.027
Market Return	0.003	0.005	0.002	0.190	0.000	0.408
Market Volatility	0.016	0.005	0.024	−1.739	0.004	2.451
Fontaine-Garcia	0.056	0.027	0.017	1.451	0.016	1.498
Yield curve slope	0.205	0.066	0.041	2.478	0.045	2.427
× *GDP growth*	0.005	0.002	0.001	1.774	0.000	2.103
× *Market Return*	0.001	0.013	0.001	0.004	−0.001	0.151

Table IA.XIII : In-sample estimates of the costs of illiquidity

This table summarizes the sample distribution of the main variables in the theoretical search model, predicted using the estimates of the parameters reported in Table IA.X. The data used are for a samples of 208 (Specification (1)) or 114 (Specification (2)) US negotiated block trades in the Thomson One Banker's Acquisitions data between 1/1/1990 and 31/12/2010. Blocks are larger than 10% (Specification (1)) or 35% (Specification (2)) and smaller than 90% of the outstanding stock.

	Specification (1)						
	Sample mean	Standard deviation	Min	First quartile	Median	Third quartile	Max
Liquidity shock probability (θ)	0.022	0.123	0.000	0.000	0.000	0.000	0.919
Shares' liquidation value (ϕ)	0.799	0.121	0.452	0.719	0.828	0.895	0.981
Marketability discount $(1 - \frac{v(\theta,\phi,\eta,.)}{v(\theta=0,\phi,\eta=1,.)})$	0.022	0.080	0.001	0.003	0.004	0.007	0.680
Illiquidity spillover discount $(1 - \frac{p(\theta,\phi,\eta,.)}{p(\theta=0,\phi,\eta=1,.)})$	0.013	0.017	0.002	0.006	0.009	0.014	0.168
Control discount $(1 - \frac{v(\theta,\phi,\eta,.)}{p(\theta,\phi,\eta,.)})$	0.026	0.079	0.001	0.005	0.008	0.013	0.676
Search frictions discount $(1 - \frac{v(\theta,\phi,\eta,.)}{v(\theta,\phi,\eta=1,.)})$	0.006	0.009	0.000	0.003	0.004	0.006	0.097
Liquidity risk discount $(1 - \frac{v(\theta,\phi,\eta,.)}{v(\theta=0,\phi,\eta,.)})$	0.016	0.080	0.000	0.000	0.000	0.000	0.678
	Specification (2)						
	Sample mean	Standard deviation	Min	First quartile	Median	Third quartile	Max
Liquidity shock probability (θ)	0.060	0.229	0.000	0.000	0.000	0.000	1.000
Shares' liquidation value (ϕ)	0.588	0.278	0.072	0.366	0.585	0.810	1.000
Marketability discount $(1 - \frac{v(\theta,\phi,\eta,.)}{v(\theta=0,\phi,\eta=1,.)})$	0.033	0.128	0.000	0.001	0.002	0.003	0.775
Illiquidity spillover discount $(1 - \frac{p(\theta,\phi,\eta,.)}{p(\theta=0,\phi,\eta=1,.)})$	0.015	0.014	0.002	0.008	0.012	0.019	0.127
Control discount $(1 - \frac{v(\theta,\phi,\eta,.)}{p(\theta,\phi,\eta,.)})$	0.043	0.126	0.002	0.008	0.011	0.019	0.775
Search frictions discount $(1 - \frac{v(\theta,\phi,\eta,.)}{v(\theta,\phi,\eta=1,.)})$	0.002	0.001	0.000	0.001	0.001	0.002	0.010
Liquidity risk discount $(1 - \frac{v(\theta,\phi,\eta,.)}{v(\theta=0,\phi,\eta,.)})$	0.031	0.129	0.000	0.000	0.000	0.000	0.775

Table IA.XIV: Earnings management analysis

This table summarizes the earnings management measure based on the adjusted Jones model (Dechow, et al., 1995), for the universe of Compustat firms between 1990 and 2010, as well as for the target firms in our sample. The same measure is also summarized for different subsamples of our data set, as indicated. The earnings management index is defined as the different between the target firm's ratio of actual accruals to assets and the predicted ratio of accruals to assets in the last December before the block trade, using a modified Jones model for accruals. The modified Jones model of accruals for firm i in year t is given by

$$\frac{TA_{it}}{A_{it-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{it-1}} + \alpha_2 \left(\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}} \right) + \alpha_2 \frac{PPE_{it}}{A_{it-1}} + \varepsilon_{it},$$

where A_{it-1} is the value of total assets in year $t-1$, ΔREV_{it} is the change in total revenue from year $t-1$ to t, ΔREC_{it} is the change in receivables, PPE_{it} is the total value of Property, plant and equipment, and total accruals in year t, TA_{it}, are defined as

$$TA_{it} = \Delta CA_{it} - \Delta CL_{it} - \Delta Cash_{it} + \Delta STDebt_{it} - Dep_{it},$$

where ΔCA_{it} is the change in current assets from year $t-$ to t, ΔCL_{it} is the change in current liabilities, $\Delta Cash_{it}$ is the change in the cash account, $\Delta STDebt_{it}$ is the change in short-term debt, and Dep_{it} is the total depreciation and amortization expense during period t. For each firm-year, the model is estimated using a panel of all firms in the same 2-digit SIC code and the last five years of accounting data. The sample consists of all US publicly target firms whose majority controlling blocks were traded via private negotiation and reported in the Thomson One Banker's Acquisitions data (formerly SDC) between 1/1/1990 and 31/12/2010, where the block represents between 35% and 90% of the target's outstanding stock.

Sample	Observations	Mean	Standard deviation	5th percentile	First quartile	Median	Third quartile	95th percentile
Compustat universe (1990 to 2010)	158,446	0.146	0.207	0.005	0.029	0.072	0.164	0.583
Full estimation sample	114	0.157	0.166	0.009	0.044	0.149	0.198	0.560
Subsamples								
$BP > 0$, $CAR > 0$	49	0.133	0.133	0.005	0.043	0.106	0.186	0.309
$BP > CAR > 0$	34	0.142	0.152	0.005	0.043	0.099	0.195	0.524
$BP > 0$, $CAR < 0$	12	0.141	0.087	0.021	0.067	0.156	0.186	0.303
$BP < 0$, $CAR < 0$	17	0.166	0.187	0.005	0.033	0.147	0.198	0.641
$BP < 0$, $CAR > 0$	36	0.192	0.209	0.013	0.062	0.168	0.215	0.875

Table IA.XV : Summary of the estimated costs of illiquidity using parameters estimated using different subsamples of the data

This table summarizes the sample distribution of the main variables in the theoretical search model, predicted using the estimates of the parameters reported in Tables IA.XVI, IA.XVIII, and IA.XXI below. The data used are for a samples of 114 (Specification (1)), 102 (Specification (2)), 97 (Specification (3)), 92 (Specification (4)), 87 (Specification (5)) and 82 (Specification (6)) US negotiated block trades in the Thomson One Banker's Acquisitions data between 1/1/1990 and 31/12/2010. Blocks are larger than 35% and smaller than 90% of the outstanding stock.Specification (1) uses the full sample, while specification (2) excludes all deals where $BP > 0 > CAR$. The next four subsamples result from progressively excluding the deals with the five lowest CAR values among the surviving deals, such that $BP > 0$ and $CAR > 0$.)

	Mean	Std. Dev.	Min	First quartile	Median	Third quartile	Max
(1) Full sample ($n = 114$)							
Liquidity shock probability (θ)	0.198	0.297	0.000	0.008	0.045	0.244	0.999
Shares' liquidation value (ϕ)	0.921	0.097	0.587	0.889	0.966	0.995	1.000
(2) Excluding $BP > 0 > CAR$ deals ($n = 102$)							
Liquidity shock probability (θ)	0.158	0.281	0.000	0.000	0.002	0.158	0.944
Shares' liquidation value (ϕ)	0.898	0.084	0.673	0.837	0.910	0.975	1.000
(3) Excluding $BP > 0 > CAR$ and $BP > 0, CAR < p_{10}$ deals ($n = 97$)							
Liquidity shock probability (θ)	0.180	0.331	0.000	0.000	0.006	0.122	1.000
Shares' liquidation value (ϕ)	0.811	0.148	0.509	0.673	0.820	0.953	1.000
(4) Excluding $BP > 0 > CAR$ and $BP > 0, CAR < p_{20}$ deals ($n = 92$)							
Liquidity shock probability (θ)	0.162	0.304	0.000	0.000	0.007	0.144	0.997
Shares' liquidation value (ϕ)	0.744	0.319	0.003	0.592	0.895	0.985	1.000
(5) Excluding $BP > 0 > CAR$ and $BP > 0, CAR < p_{30}$ deals ($n = 87$)							
Liquidity shock probability (θ)	0.164	0.327	0.000	0.000	0.000	0.076	1.000
Shares' liquidation value (ϕ)	0.699	0.219	0.015	0.595	0.750	0.847	0.996
(6) Excluding $BP > 0 > CAR$ and $BP > 0, CAR < p_{40}$ deals ($n = 82$)							
Liquidity shock probability (θ)	0.126	0.290	0.000	0.000	0.000	0.004	0.990
Shares' liquidation value (ϕ)	0.421	0.301	0.045	0.194	0.289	0.652	0.995

Table IA.XVI: Robustness tests

This table shows the estimates of the matching probability, η, the block seller's bargaining power, ψ, the controlling shareholder's private benefits of control per share, B_i, and the sensitivities, β and γ, of the liquidity shock probability, θ, and the block's liquidation value, ϕ, to $\mathbf{x}$ and $\mathbf{z}$, respectively. For each deal i, θ_i, ϕ_i and B_i are given by

$$\theta_i = \frac{\exp(\mathbf{x}_i'\beta + \beta_0)}{1 + \exp(\mathbf{x}_i'\beta + \beta_0)}, \quad \phi_i = \frac{\exp(\mathbf{z}_i'\gamma + \gamma_0)}{1 + \exp(\mathbf{z}_i'\gamma + \gamma_0)},$$
$$\text{and} \quad B_i = b_0 + b_1 \times E(v_i) + b_2 \times E(p_i) \times \frac{1 - \alpha_i}{\alpha_i},$$

where $E(v_i)$ is the expected private value of the block, $E(p_i)$ is the expected dispersed shareholders valuation of the shares and α_i is the block size. The parameters are estimated using the Simulated Method of Moments, matching the actual moments, $\mathbf{M}$, of the joint distribution of the percentage block premium, BP, and the cumulative abnormal returns, CAR, to those simulated by the theoretical search model, $\mathbf{m}(\psi, \eta, b_0, b_1, b_2, \beta, \gamma)$. The data is for a sample of US negotiated block trades in the Thomson One Banker's Acquisitions data between 1/1/1990 and 31/12/2010. Blocks are larger than 35% and smaller than 90% of the outstanding stock. Specification (1) shows the full sample estimates reported in Table III in the paper (specification (2)). Specification (2) excludes all trades where $BP > 0 > CAR$, resulting in sample of 102 trades. Standard errors are shown in parenthesis next to the coefficient estimates.[a] The economic significance of each coefficient is the change in θ_i or ϕ_i associated with a one sample standard deviation change in each variable in $\mathbf{x}$ and $\mathbf{z}$, respectively.

Panel A: Model fit

	(1)				(2)			
	BP		**CAR**		**BP**		**CAR**	
	Actual	*Predicted*	*Actual*	*Predicted*	*Actual*	*Predicted*	*Actual*	*Predicted*
Mean	0.067	0.062	0.096	0.023	0.010	0.092	0.118	0.021
Std. deviation	0.584	0.269	0.319	0.078	0.552	0.538	0.330	0.078
Median	0.035	0.043	0.050	0.017	−0.040	0.073	0.085	0.021
Proportion of negatives	0.465	0.404	0.421	0.412	0.520	0.363	0.353	0.373
corr(*Actual*, *Predicted*)		0.111		0.396		0.167		0.356
	Over-identifying restrictions test[b]		Joint significance test[c]		Over-identifying restrictions test[b]		Joint significance test[c]	
	χ^2	p value	χ^2	p value	χ^2	p value	χ^2	p value
	41.93	0.07	1,953.21	0.00	42.55	0.07	1,033.54	0.00

(continues)

Table IA.XVI: continued

Panel B: Parameter estimates

	(1)		(2)	
	Coefficient		Coefficient	
η	0.43***	(0.10)	0.51***	(0.04)
ψ	0.54***	(0.14)	0.47***	(0.11)
Liquidity shock determinants (x)				
	Coefficient	Economic significance	Coefficient	Economic significance
GDP growth	−12.00** (6.02)	−0.03** (0.01)	−11.77** (5.88)	−0.02** (0.01)
Market Return	−27.31* (15.31)	−0.31* (0.17)	−21.60*** (3.26)	−0.19*** (0.03)
Market Volatility	−14.30** (6.33)	−0.05** (0.02)	−42.52*** (5.93)	−0.12*** (0.02)
Fontaine-Garcia	0.96** (0.47)	0.03** (0.02)	1.24*** (0.17)	0.03*** (0.00)
Yield curve slope	1.44*** (0.49)	0.12*** (0.04)	2.40*** (0.32)	0.15*** (0.02)
× *GDP growth*	50.68*** (10.86)	0.24*** (0.05)	19.91** (8.70)	0.07** (0.03)
× *Market Return*	5.62*** (1.80)	0.13*** (0.04)	8.92*** (1.04)	0.16*** (0.02)
Constant (β_0)	1.37 (2.41)		−0.66 (34.33)	
Liquidation value determinants (z)				
	Coefficient	Economic significance	Coefficient	Economic significance
Block-to-Industry Size	−0.17 (0.67)	0.00 (0.00)	−0.12 (6.47)	0.00 (0.02)
Industry's M&A Activity	0.51 (0.40)	0.12 (0.09)	0.37*** (0.09)	0.12*** (0.03)
Target - Industry Leverage	−2.40*** (0.64)	−0.04*** (0.01)	−1.28** (0.63)	−0.03** (0.01)
Industry Specificity	−1.83*** (0.45)	−0.02*** (0.01)	1.48** (0.59)	0.02** (0.01)
Industry Market-to-Book	3.85 (2.36)	0.12 (0.07)	1.95* (1.10)	0.08* (0.04)
Target Volatility	1.08 (0.91)	0.03 (0.02)	−0.02* (0.01)	0.00* (0.00)
Constant (γ_0)	−2.53** (1.09)		−0.03*** (0.00)	
Private benefits of control				
	Coefficient	Sample mean (Std. deviation)	Coefficient	Sample mean (Std. deviation)
b_0	0.05** (0.03)	0.08 (0.10)	0.09*** (0.02)	0.14 (0.12)
b_1	0.04 (0.04)		0.11* (0.06)	
b_2	0.05 (0.05)		0.08* (0.04)	

[a] Estimates followed by ***, ** and * are statistically different from zero with 0.01, 0.05 and 0.1 significance levels, respectively.

[b] The null hypothesis is that the optimally weighted distance between the actual and simulated moments vector is zero.

[c] The null hypothesis is that all model parameters are zero.

Table IA.XVII: Actual and simulated moments for Specification (2) of Table IA.XVI

This table shows the moments used in the SMM estimation. The moments are simulated from the theoretical search model using the parameter estimates for specification (2) in Table IA.XVI. The moment condition t-statistic is for the test that the simulated moment equals the actual data moment. The data used are for a sample of 102 US negotiated block trades in the Thomson One Banker's Acquisitions data between 1/1/1990 and 31/12/2010. Blocks are larger than 35% and smaller than 90% of the outstanding stock. For comparison, the first two columns show the actual moments of the sample used in the paper, where $n = 114$.

Conditional moments

	Full sample		Dropped $BP > 0 > CAR$ ($n = 102$)			
	Actual	Std. Error	Actual	Std. Error	Simulated	t-statistic
$E[BP - CAR \vert BP > CAR > 0]$	0.271	0.110	0.271	0.105	0.187	0.799
$E[(BP - CAR) \times x_k \vert$						
$BP > CAR > 0]$						
GDP growth	0.008	0.003	0.008	0.003	−0.003	3.043
Market Return	0.022	0.021	0.022	0.021	−0.021	2.014
Market Volatility	0.038	0.018	0.038	0.018	0.036	0.100
Fontaine-Garcia	−0.149	0.066	−0.149	0.066	−0.032	−1.776
Yield curve slope	−0.503	0.288	−0.503	0.288	−0.373	−0.450
× *GDP growth*	−0.012	0.005	−0.012	0.005	−0.003	−1.732
× *Market Return*	−0.013	0.045	−0.013	0.045	−0.084	1.569
$E[BP \vert CAR < 0, BP < 0]$	−0.368	0.077	−0.368	0.088	−0.163	−2.330
$E[BP \times z_k \vert CAR < 0, BP < 0]$						
Block-to-Industry Size	−0.004	0.004	−0.004	0.004	−0.003	−0.135
Industry's M&A Activity	−1.593	0.401	−1.593	0.368	−0.279	−3.574
Target - Industry Leverage	−0.039	0.027	−0.039	0.029	−0.010	−0.993
Industry Specificity	−0.115	0.030	−0.115	0.032	−0.065	−1.553
Industry Market-to-Book	−0.483	0.112	−0.483	0.117	−0.168	−2.709
Target Volatility	−0.148	0.040	−0.148	0.041	−0.066	−2.003

Second order moments

	Full sample		Dropped $BP > 0 > CAR$ ($n = 102$)			
	Actual	Std. Error	Actual	Std. Error	Simulated	t-statistic
$Var[BP \vert BP > CAR > 0]$	0.417	0.368	0.406	0.369	0.320	0.232
$Var[CAR \vert BP > CAR > 0]$	0.126	0.046	0.123	0.045	0.005	2.654
$E[BP \times CAR \vert BP > CAR > 0]$	0.227	0.070	0.227	0.069	0.011	3.123
$Var[(BP - CAR) \vert BP > CAR > 0]$	0.181	0.343	0.178	0.345	0.307	−0.372
$Var[BP \vert CAR < 0, BP < 0]$	0.196	0.050	0.191	0.054	0.064	2.345
$Var[CAR \vert CAR < 0, BP < 0]$	0.040	0.012	0.039	0.012	0.003	3.055
$E[BP \times CAR \vert CAR < 0, BP < 0]$	0.080	0.022	0.080	0.022	0.002	3.540

(continues)

Table IA.XVII: continued

Unconditional moments

	Full sample		Dropped $BP > 0 > CAR$ ($n = 102$)			
	Actual	Std. Error	Actual	Std. Error	Simulated	t-statistic
$E(BP)$	0.067	0.077	0.010	0.074	0.091	−1.092
$E[BP \times z_k]$						
Block-to-Industry Size	−0.001	0.002	−0.001	0.002	0.000	−0.459
Industry's M&A Activity	0.183	0.337	−0.114	0.305	0.531	−2.116
Target - Industry Leverage	0.002	0.028	−0.005	0.027	0.018	−0.882
Industry Specificity	0.000	0.019	−0.015	0.017	−0.002	−0.792
Industry Market-to-Book	0.094	0.102	0.000	0.093	0.128	−1.383
Target Volatility	−0.013	0.054	−0.038	0.055	0.024	−1.124
$E[BP \times x_k]$						
GDP growth	0.001	0.004	0.000	0.004	0.005	−1.181
Market Return	−0.009	0.015	−0.016	0.015	0.000	−1.026
Market Volatility	0.013	0.012	0.005	0.012	0.019	−1.248
Fontaine-Garcia	−0.003	0.061	−0.055	0.058	0.043	−1.685
Yield curve slope	−0.132	0.149	0.064	0.147	0.049	0.103
× *GDP growth*	−0.002	0.006	0.001	0.006	0.002	−0.058
× *Market Return*	−0.026	0.022	−0.036	0.025	−0.038	0.105
$E(CAR)$	0.096	0.029	0.118	0.032	0.019	3.052
$E[CAR \times z_k]$						
Block-to-Industry Size	0.000	0.000	0.000	0.000	0.000	−0.274
Industry's M&A Activity	0.293	0.118	0.364	0.130	0.148	1.656
Target - Industry Leverage	−0.005	0.009	−0.004	0.010	0.001	−0.529
Industry Specificity	0.023	0.008	0.027	0.008	0.003	2.822
Industry Market-to-Book	0.118	0.037	0.144	0.041	0.033	2.744
Target Volatility	0.034	0.011	0.044	0.012	0.014	2.529
$E[CAR \times x_k]$						
GDP growth	0.002	0.001	0.003	0.001	0.001	1.939
Market Return	0.003	0.005	0.005	0.006	0.002	0.467
Market Volatility	0.016	0.005	0.019	0.005	0.003	2.924
Fontaine-Garcia	0.056	0.027	0.072	0.030	0.020	1.730
Yield curve slope	0.205	0.066	0.246	0.073	0.048	2.699
× *GDP growth*	0.005	0.002	0.006	0.002	0.001	1.959
× *Market Return*	0.001	0.013	0.004	0.014	0.002	0.109

Table IA.XVIII: Further robustness tests

This table shows the estimates of the matching probability, η, the block seller's bargaining power, ψ, the controlling shareholder's private benefits of control per share, B_i, and the sensitivities, β and γ, of the liquidity shock probability, θ, and the block's liquidation value, ϕ, to $\mathbf{x}$ and $\mathbf{z}$, respectively. For each deal i, θ_i, ϕ_i and B_i are given by

$$\theta_i = \frac{\exp(\mathbf{x}_i'\beta + \beta_0)}{1 + \exp(\mathbf{x}_i'\beta + \beta_0)}, \quad \phi_i = \frac{\exp(\mathbf{z}_i'\gamma + \gamma_0)}{1 + \exp(\mathbf{z}_i'\gamma + \gamma_0)},$$
$$\text{and} \quad B_i = b_0 + b_1 \times E(v_i) + b_2 \times E(p_i) \times \frac{1 - \alpha_i}{\alpha_i},$$

where $E(v_i)$ is the expected private value of the block, $E(p_i)$ is the expected dispersed shareholders valuation of the shares and α_i is the block size. The parameters are estimated using the Simulated Method of Moments, matching the actual moments, $\mathbf{M}$, of the joint distribution of the percentage block premium, BP, and the cumulative abnormal returns, CAR, to those simulated by the theoretical search model, $\mathbf{m}(\psi, \eta, b_0, b_1, b_2, \beta, \gamma)$. The data is for a sample of US negotiated block trades in the Thomson One Banker's Acquisitions data between 1/1/1990 and 31/12/2010. Blocks are larger than 35% and smaller than 90% of the outstanding stock. Specification (3) excludes all trades where $BP > 0 > CAR$, and the trades with the five lowest CAR values for those where $BP > 0$, resulting in sample of 97 trades. Specification (4) excludes the trades with the next five higher values. Standard errors are shown in parenthesis next to the coefficient estimates.[a] The economic significance of each coefficient is the change in θ_i or ϕ_i associated with a one sample standard deviation change in each variable in $\mathbf{x}$ and $\mathbf{z}$, respectively.

Panel A: Model fit

	(3)				(4)			
	BP		**CAR**		**BP**		**CAR**	
	Actual	*Predicted*	*Actual*	*Predicted*	*Actual*	*Predicted*	*Actual*	*Predicted*
Mean	−0.005	0.006	0.123	0.033	−0.012	−0.075	0.126	0.025
Std. deviation	0.559	0.708	0.338	0.082	0.573	0.526	0.347	0.085
Median	−0.058	−0.037	0.091	0.025	−0.065	−0.042	0.104	0.019
Proportion of negatives	0.546	0.557	0.371	0.340	0.576	0.620	0.391	0.391
corr(*Actual*, *Predicted*)		0.093		0.353		0.145		0.417
	Over-identifying restrictions test[b]		Joint significance test[c]		Over-identifying restrictions test[b]		Joint significance test[c]	
	χ^2	p value	χ^2	p value	χ^2	p value	χ^2	p value
	55.10	0.00	308.83	0.00	165.22	0.00	62.94	0.00

(continues)

Table IA.XVIII: continued

Panel B: Parameter estimates

	(3)		(4)	
	Coefficient		Coefficient	
η	0.89**	(0.37)	0.99**	(0.45)
ψ	0.55***	(0.14)	0.45***	(0.11)
Liquidity shock determinants (x)				
	Coefficient	Economic significance	Coefficient	Economic significance
GDP growth	−12.62** (4.91)	−0.02** (0.01)	10.05*** (3.07)	0.01*** (0.00)
Market Return	−15.13*** (3.90)	−0.09*** (0.02)	−5.81** (2.33)	−0.04** (0.02)
Market Volatility	26.15*** (4.44)	0.05*** (0.01)	−11.69 (9.33)	−0.03 (0.02)
Fontaine-Garcia	1.55*** (0.57)	0.03*** (0.01)	3.74*** (0.64)	0.08*** (0.01)
Yield curve slope	1.25 (0.86)	0.06 (0.04)	1.41* (0.79)	0.07* (0.04)
× *GDP growth*	25.72*** (8.35)	0.07*** (0.02)	14.46** (6.90)	0.04** (0.02)
× *Market Return*	4.00*** (0.71)	0.05*** (0.01)	−2.48** (1.02)	−0.04** (0.01)
Constant (β_0)	−2.50 (704.63)		−2.05 (169.04)	
Liquidation value determinants (z)				
	Coefficient	Economic significance	Coefficient	Economic significance
Block-to-Industry Size	−0.05 (12.76)	0.00 (0.06)	−0.16 (1.63)	0.00 (0.00)
Industry's M&A Activity	0.38*** (0.11)	0.18*** (0.05)	0.20 (0.12)	0.07 (0.04)
Target - Industry Leverage	0.82 (0.54)	0.03 (0.02)	0.99 (1.25)	0.25 (0.31)
Industry Specificity	−0.94** (0.41)	−0.02** (0.01)	−0.47*** (0.17)	−0.01*** (0.00)
Industry Market-to-Book	2.49 (2.59)	0.16 (0.16)	1.46** (0.67)	0.06** (0.03)
Target Volatility	0.07 (0.07)	0.00 (0.00)	−1.80* (0.95)	−0.06* (0.03)
Constant (γ_0)	−1.97*** (0.21)		0.05** (0.02)	
Private benefits of control				
	Coefficient	Sample mean (Std. deviation)	Coefficient	Sample mean (Std. deviation)
b_0	0.13 (0.14)	0.14 (0.12)	0.09 (0.15)	0.07 (0.12)
b_1	0.02 (0.04)		0.02 (0.06)	
b_2	0.03 (0.03)		0.02 (0.03)	

[a] Estimates followed by ***, ** and * are statistically different from zero with 0.01, 0.05 and 0.1 significance levels, respectively.

[b] The null hypothesis is that the optimally weighted distance between the actual and simulated moments vector is zero.

[c] The null hypothesis is that all model parameters are zero.

Table IA.XIX: Actual and simulated moments for Specification (3) of Table IA.XVIII

This table shows the moments used in the SMM estimation. The moments are simulated from the theoretical search model using the parameter estimates for specification (3) in Table IA.XVIII. The moment condition t-statistic is for the test that the simulated moment equals the actual data moment. The data used are for a sample of 97 US negotiated block trades in the Thomson One Banker's Acquisitions data between 1/1/1990 and 31/12/2010. Blocks are larger than 35% and smaller than 90% of the outstanding stock. For comparison, the first two columns show the actual moments of the sample used in the paper, where $n = 114$.

Conditional moments

	Full sample		Dropped $BP > 0, CAR < p_{10}$ ($n = 97$)			
	Actual	Std. Error	Actual	Std. Error	Simulated	t-statistic
$BP > CAR > 0]$						
$E[BP - CAR \vert BP > CAR > 0]$	0.271	0.110	0.268	0.141	0.024	1.730
$E[(BP - CAR) \times x_k \vert$						
$BP > CAR > 0]$						
GDP growth	0.008	0.003	0.008	0.005	0.001	1.359
Market Return	0.022	0.021	0.024	0.024	−0.024	1.979
Market Volatility	0.038	0.018	0.036	0.022	0.005	1.391
Fontaine-Garcia	−0.149	0.066	−0.149	0.099	−0.069	−0.806
Yield curve slope	−0.503	0.288	−0.478	0.387	0.150	−1.624
× *GDP growth*	−0.012	0.005	−0.012	0.010	0.002	−1.403
× *Market Return*	−0.013	0.045	−0.017	0.065	−0.078	0.943
$E[BP \vert CAR < 0, BP < 0]$	−0.368	0.077	−0.368	0.085	−0.232	−1.593
$E[BP \times z_k \vert CAR < 0, BP < 0]$						
Block-to-Industry Size	−0.004	0.004	−0.004	0.005	−0.003	−0.229
Industry's M&A Activity	−1.593	0.401	−1.593	0.322	−0.464	−3.503
Target - Industry Leverage	−0.039	0.027	−0.039	0.026	−0.005	−1.301
Industry Specificity	−0.115	0.030	−0.115	0.033	−0.075	−1.210
Industry Market-to-Book	−0.483	0.112	−0.483	0.113	−0.239	−2.162
Target Volatility	−0.148	0.040	−0.148	0.041	−0.096	−1.279

Second order moments

	Full sample		Dropped $BP > 0, CAR < p_{10}$ ($n = 97$)			
	Actual	Std. Error	Actual	Std. Error	Simulated	t-statistic
$Var[BP \vert BP > CAR > 0]$	0.417	0.368	0.462	0.387	0.617	−0.402
$Var[CAR \vert BP > CAR > 0]$	0.126	0.046	0.144	0.052	0.010	2.580
$E[BP \times CAR \vert BP > CAR > 0]$	0.227	0.070	0.264	0.083	0.011	3.055
$Var[(BP - CAR) \vert BP > CAR > 0]$	0.181	0.343	0.191	0.361	0.607	−1.151
$Var[BP \vert CAR < 0, BP < 0]$	0.196	0.050	0.189	0.055	0.080	1.955
$Var[CAR \vert CAR < 0, BP < 0]$	0.040	0.012	0.039	0.012	0.003	2.983
$E[BP \times CAR \vert CAR < 0, BP < 0]$	0.080	0.022	0.080	0.022	0.001	3.627

(continues)

Table IA.XIX: continued

	Unconditional moments					
	Full sample		Dropped $BP > 0, CAR < p_{10}$ $(n = 97)$			
	Actual	Std. Error	Actual	Std. Error	Simulated	t-statistic
$E(BP)$	0.067	0.077	−0.005	0.090	0.008	−0.143
$E[BP \times z_k]$						
Block-to-Industry Size	−0.001	0.002	−0.001	0.002	0.000	−0.427
Industry's M&A Activity	0.183	0.337	−0.192	0.362	0.279	−1.299
Target - Industry Leverage	0.002	0.028	−0.007	0.035	0.021	−0.789
Industry Specificity	0.000	0.019	−0.022	0.023	−0.027	0.213
Industry Market-to-Book	0.094	0.102	−0.019	0.113	0.033	−0.458
Target Volatility	−0.013	0.054	−0.050	0.049	0.009	−1.207
$E[BP \times x_k]$						
GDP growth	0.001	0.004	−0.001	0.005	0.006	−1.141
Market Return	−0.009	0.015	−0.017	0.018	−0.002	−0.867
Market Volatility	0.013	0.012	0.002	0.015	0.004	−0.133
Fontaine-Garcia	−0.003	0.061	−0.066	0.071	−0.015	−0.716
Yield curve slope	−0.132	0.149	−0.031	0.182	−0.068	0.203
× *GDP growth*	−0.002	0.006	0.001	0.007	0.004	−0.453
× *Market Return*	−0.026	0.022	−0.037	0.030	−0.031	−0.192
$E(CAR)$	0.096	0.029	0.123	0.034	0.031	2.729
$E[CAR \times z_k]$						
Block-to-Industry Size	0.000	0.000	0.000	0.000	0.000	−0.805
Industry's M&A Activity	0.293	0.118	0.378	0.135	0.172	1.520
Target - Industry Leverage	−0.005	0.009	−0.005	0.010	−0.002	−0.289
Industry Specificity	0.023	0.008	0.028	0.009	0.007	2.357
Industry Market-to-Book	0.118	0.037	0.151	0.042	0.045	2.476
Target Volatility	0.034	0.011	0.045	0.012	0.018	2.230
$E[CAR \times x_k]$						
GDP growth	0.002	0.001	0.003	0.001	0.001	1.953
Market Return	0.003	0.005	0.005	0.006	0.001	0.619
Market Volatility	0.016	0.005	0.020	0.006	0.005	2.575
Fontaine-Garcia	0.056	0.027	0.075	0.032	0.022	1.690
Yield curve slope	0.205	0.066	0.256	0.077	0.073	2.368
× *GDP growth*	0.005	0.002	0.006	0.002	0.001	1.940
× *Market Return*	0.001	0.013	0.004	0.015	0.001	0.237

Table IA.XX: Actual and simulated moments for Specification (4) of Table IA.XVIII

This table shows the moments used in the SMM estimation. The moments are simulated from the theoretical search model using the parameter estimates for specification (4) in Table IA.XVIII. The moment condition t-statistic is for the test that the simulated moment equals the actual data moment. The data used are for a sample of 92 US negotiated block trades in the Thomson One Banker's Acquisitions data between 1/1/1990 and 31/12/2010. Blocks are larger than 35% and smaller than 90% of the outstanding stock. For comparison, the first two columns show the actual moments of the sample used in the paper, where $n = 114$.

Conditional moments

	Full sample		Dropped $BP > 0, CAR < p_{20}$ $(n = 92)$			
	Actual	Std. Error	Actual	Std. Error	Simulated	t-statistic
$E[BP - CAR \vert BP > CAR > 0]$	0.271	0.110	0.276	0.103	0.042	2.274
$E[(BP - CAR) \times x_k \vert$						
$BP > CAR > 0]$						
GDP growth	0.008	0.003	0.008	0.004	−0.003	3.038
Market Return	0.022	0.021	0.023	0.020	−0.031	2.707
Market Volatility	0.038	0.018	0.038	0.015	0.016	1.411
Fontaine-Garcia	−0.149	0.066	−0.148	0.066	−0.096	−0.790
Yield curve slope	−0.503	0.288	−0.498	0.250	0.133	−2.522
× *GDP growth*	−0.012	0.005	−0.013	0.006	−0.007	−0.982
× *Market Return*	−0.013	0.045	−0.015	0.048	−0.088	1.519
$E[BP \vert CAR < 0, BP < 0]$	−0.368	0.077	−0.368	0.073	−0.280	−1.210
$E[BP \times z_k \vert CAR < 0, BP < 0]$						
Block-to-Industry Size	−0.004	0.004	−0.004	0.003	−0.003	−0.419
Industry's M&A Activity	−1.593	0.401	−1.593	0.385	−0.912	−1.769
Target - Industry Leverage	−0.039	0.027	−0.039	0.029	0.055	−3.271
Industry Specificity	−0.115	0.030	−0.115	0.022	−0.088	−1.210
Industry Market-to-Book	−0.483	0.112	−0.483	0.097	−0.301	−1.893
Target Volatility	−0.148	0.040	−0.148	0.035	−0.137	−0.313

Second order moments

	Full sample		Dropped $BP > 0, CAR < p_{20}$ $(n = 92)$			
	Actual	Std. Error	Actual	Std. Error	Simulated	t-statistic
$Var[BP \vert BP > CAR > 0]$	0.417	0.368	0.492	0.241	0.294	0.821
$Var[CAR \vert BP > CAR > 0]$	0.126	0.046	0.153	0.055	0.007	2.640
$E[BP \times CAR \vert BP > CAR > 0]$	0.227	0.070	0.283	0.087	0.011	3.106
$Var[(BP - CAR) \vert BP > CAR > 0]$	0.181	0.343	0.204	0.209	0.280	−0.364
$Var[BP \vert CAR < 0, BP < 0]$	0.196	0.050	0.186	0.046	0.146	0.883
$Var[CAR \vert CAR < 0, BP < 0]$	0.040	0.012	0.038	0.012	0.003	3.025
$E[BP \times CAR \vert CAR < 0, BP < 0]$	0.080	0.022	0.080	0.023	0.007	3.234

(continues)

Table IA.XX: continued

	Unconditional moments					
	Full sample		Dropped $BP > 0, CAR < p_{20}$ $(n = 92)$			
	Actual	Std. Error	Actual	Std. Error	Simulated	t-statistic
$E(BP)$	0.067	0.077	−0.012	0.070	−0.072	0.868
$E[BP \times z_k]$						
Block-to-Industry Size	−0.001	0.002	−0.001	0.002	−0.001	−0.082
Industry's M&A Activity	0.183	0.337	−0.233	0.298	−0.247	0.049
Target - Industry Leverage	0.002	0.028	−0.008	0.026	0.056	−2.434
Industry Specificity	0.000	0.019	−0.025	0.016	−0.036	0.741
Industry Market-to-Book	0.094	0.102	−0.026	0.088	−0.070	0.499
Target Volatility	−0.013	0.054	−0.054	0.047	−0.059	0.112
$E[BP \times x_k]$						
GDP growth	0.001	0.004	−0.001	0.004	−0.001	0.034
Market Return	−0.009	0.015	−0.019	0.014	−0.015	−0.328
Market Volatility	0.013	0.012	0.002	0.011	−0.006	0.658
Fontaine-Garcia	−0.003	0.061	−0.075	0.060	−0.085	0.170
Yield curve slope	−0.132	0.149	0.025	0.135	−0.222	1.824
× *GDP growth*	−0.002	0.006	0.001	0.006	−0.008	1.472
× *Market Return*	−0.026	0.022	−0.041	0.024	−0.046	0.224
$E(CAR)$	0.096	0.029	0.126	0.036	0.019	3.022
$E[CAR \times z_k]$						
Block-to-Industry Size	0.000	0.000	0.000	0.000	0.000	−0.642
Industry's M&A Activity	0.293	0.118	0.378	0.143	0.139	1.673
Target - Industry Leverage	−0.005	0.009	−0.005	0.011	0.002	−0.663
Industry Specificity	0.023	0.008	0.029	0.009	0.003	2.730
Industry Market-to-Book	0.118	0.037	0.154	0.045	0.034	2.702
Target Volatility	0.034	0.011	0.047	0.013	0.013	2.650
$E[CAR \times x_k]$						
GDP growth	0.002	0.001	0.003	0.001	0.001	1.952
Market Return	0.003	0.005	0.005	0.007	0.001	0.577
Market Volatility	0.016	0.005	0.020	0.006	0.003	2.927
Fontaine-Garcia	0.056	0.027	0.076	0.033	0.019	1.737
Yield curve slope	0.205	0.066	0.264	0.081	0.049	2.660
× *GDP growth*	0.005	0.002	0.006	0.003	0.001	1.932
× *Market Return*	0.001	0.013	0.003	0.016	0.000	0.202

Table IA.XXI: Further robustness tests

This table shows the estimates of the matching probability, η, the block seller's bargaining power, ψ, the controlling shareholder's private benefits of control per share, B_i, and the sensitivities, β and γ, of the liquidity shock probability, θ, and the block's liquidation value, ϕ, to $\mathbf{x}$ and $\mathbf{z}$, respectively. For each deal i, θ_i, ϕ_i and B_i are given by

$$\theta_i = \frac{\exp(\mathbf{x}_i'\beta + \beta_0)}{1 + \exp(\mathbf{x}_i'\beta + \beta_0)}, \quad \phi_i = \frac{\exp(\mathbf{z}_i'\gamma + \gamma_0)}{1 + \exp(\mathbf{z}_i'\gamma + \gamma_0)},$$
$$\text{and} \quad B_i = b_0 + b_1 \times E(v_i) + b_2 \times E(p_i) \times \frac{1 - \alpha_i}{\alpha_i},$$

where $E(v_i)$ is the expected private value of the block, $E(p_i)$ is the expected dispersed shareholders valuation of the shares and α_i is the block size. The parameters are estimated using the Simulated Method of Moments, matching the actual moments, $\mathbf{M}$, of the joint distribution of the percentage block premium, BP, and the cumulative abnormal returns, CAR, to those simulated by the theoretical search model, $\mathbf{m}(\psi, \eta, b_0, b_1, b_2, \beta, \gamma)$. The data is for a sample of US negotiated block trades in the Thomson One Banker's Acquisitions data between 1/1/1990 and 31/12/2010. Blocks are larger than 35% and smaller than 90% of the outstanding stock. Specification (5) excludes all trades where $BP > 0 > CAR$, and the trades with the 15 lowest CAR values for those where $BP > 0$, resulting in sample of 87 trades. Specification (6) excludes additionally the trades with the next five higher values. Standard errors are shown in parenthesis next to the coefficient estimates.[a] The economic significance of each coefficient is the change in θ_i or ϕ_i associated with a one sample standard deviation change in each variable in $\mathbf{x}$ and $\mathbf{z}$, respectively.

Panel A: Model fit

	(5)				(6)			
	BP		**CAR**		**BP**		**CAR**	
	Actual	*Predicted*	*Actual*	*Predicted*	*Actual*	*Predicted*	*Actual*	*Predicted*
Mean	−0.025	−0.008	0.128	0.017	−0.038	−0.113	0.129	0.026
Std. deviation	0.585	0.563	0.356	0.085	0.600	0.715	0.367	0.085
Median	−0.076	−0.033	0.113	0.015	−0.091	−0.033	0.091	0.013
Proportion of negatives	0.609	0.506	0.414	0.414	0.646	0.537	0.439	0.402
corr(*Actual*, *Predicted*)		0.229		0.370		0.273		0.405
	Over-identifying restrictions test[b]		Joint significance test[c]		Over-identifying restrictions test[b]		Joint significance test[c]	
	χ^2	p value	χ^2	p value	χ^2	p value	χ^2	p value
	46.98	0.03	34.01	0.03	44.37	0.04	36.55	0.01

(continues)

Table IA.XXI: continued

Panel B: Parameter estimates

	(5)				(6)			
	Coefficient				Coefficient			
η	0.77*	(0.41)			0.62	(0.52)		
ψ	0.63*	(0.37)			0.37*	(0.21)		
Liquidity shock determinants (x)								
	Coefficient		Economic significance		Coefficient		Economic significance	
GDP growth	−12.40*	(7.28)	−0.01*	(0.01)	−7.67	(5.18)	−0.06	(0.04)
Market Return	−14.18	(19.37)	−0.07	(0.10)	−16.77	(13.13)	−0.07	(0.06)
Market Volatility	3.81	(5.76)	0.01	(0.01)	−44.20	(34.77)	−0.06	(0.05)
Fontaine-Garcia	2.93**	(1.17)	0.05**	(0.02)	1.55	(1.31)	−0.02	(−0.02)
Yield curve slope	3.07**	(1.49)	0.11**	(0.05)	1.21	(1.03)	0.04	(0.03)
× *GDP growth*	39.29**	(16.02)	0.08**	(0.03)	50.63***	(9.06)	0.09***	(0.02)
× *Market Return*	−4.38	(10.94)	−0.05	(0.11)	10.75	(9.54)	0.10	(0.08)
Constant (β_0)	−10.80	(20.06)			−3.15	(4.85)		
Liquidation value determinants (z)								
	Coefficient		Economic significance		Coefficient		Economic significance	
Block-to-Industry Size	0.01	(14.64)	0.00	(0.08)	−0.13	(0.15)	0.00	(0.00)
Industry's M&A Activity	−0.33	(0.99)	−0.20	(0.59)	0.34	(0.40)	0.20	(0.23)
Target - Industry Leverage	1.02**	(0.51)	0.05**	(0.02)	3.15**	(1.27)	0.14**	(0.05)
Industry Specificity	−0.68	(0.45)	−0.02	(0.01)	−1.78**	(0.77)	−0.05**	(0.02)
Industry Market-to-Book	3.06	(1.85)	0.24	(0.14)	0.71	(0.46)	0.05	(0.03)
Target Volatility	−0.24	(0.14)	−0.02	(0.01)	0.65	(0.65)	0.04	(0.04)
Constant (γ_0)	−1.24	(1.15)			−2.31	(3.17)		
Private benefits of control								
	Coefficient		Sample mean (Std. deviation)		Coefficient		Sample mean (Std. deviation)	
b_0	0.07	(0.07)	0.22	(0.09)	0.08	(0.20)	0.17	(0.11)
b_1	0.15	(0.28)			0.11	(0.42)		
b_2	0.23	(0.38)			0.16	(0.38)		

[a] Estimates followed by ***, ** and * are statistically different from zero with 0.01, 0.05 and 0.1 significance levels, respectively.
[b] The null hypothesis is that the optimally weighted distance between the actual and simulated moments vector is zero.
[c] The null hypothesis is that all model parameters are zero.

Table IA.XXII: Actual and simulated moments for Specification (5) of Table IA.XXI

This table shows the moments used in the SMM estimation. The moments are simulated from the theoretical search model using the parameter estimates for specification (5) in Table IA.XXI. The moment condition t-statistic is for the test that the simulated moment equals the actual data moment. The data used are for a sample of 87 US negotiated block trades in the Thomson One Banker's Acquisitions data between 1/1/1990 and 31/12/2010. Blocks are larger than 35% and smaller than 90% of the outstanding stock. For comparison, the first two columns show the actual moments of the sample used in the paper, where $n = 114$.

Conditional moments

	Full sample		Dropped $BP > 0, CAR < p_{30}$ $(n = 87)$			
	Actual	Std. Error	Actual	Std. Error	Simulated	t-statistic
$E[BP - CAR \vert BP > CAR > 0]$	0.271	0.110	0.284	0.117	0.188	0.814
$E[(BP - CAR) \times x_k \vert$						
$BP > CAR > 0]$						
GDP growth	0.008	0.003	0.008	0.004	0.006	0.444
Market Return	0.022	0.021	0.023	0.022	0.023	−0.015
Market Volatility	0.038	0.018	0.040	0.018	0.029	0.590
Fontaine-Garcia	−0.149	0.066	−0.143	0.087	−0.161	0.210
Yield curve slope	−0.503	0.288	−0.500	0.288	−0.245	−0.885
× *GDP growth*	−0.012	0.005	−0.011	0.007	0.005	−2.289
× *Market Return*	−0.013	0.045	−0.010	0.053	0.024	−0.648
$E[BP \vert CAR < 0, BP < 0]$	−0.368	0.077	−0.368	0.074	−0.393	0.339
$E[BP \times z_k \vert CAR < 0, BP < 0]$						
Block-to-Industry Size	−0.004	0.004	−0.004	0.004	−0.002	−0.447
Industry's M&A Activity	−1.593	0.401	−1.593	0.367	−1.730	0.374
Target - Industry Leverage	−0.039	0.027	−0.039	0.024	0.006	−1.862
Industry Specificity	−0.115	0.030	−0.115	0.027	−0.110	−0.160
Industry Market-to-Book	−0.483	0.112	−0.483	0.112	−0.426	−0.509
Target Volatility	−0.148	0.040	−0.148	0.030	−0.197	1.640

Second order moments

	Full sample		Dropped $BP > 0, CAR < p_{30}$ $(n = 87)$			
	Actual	Std. Error	Actual	Std. Error	Simulated	t-statistic
$Var[BP \vert BP > CAR > 0]$	0.417	0.368	0.547	0.295	0.268	0.947
$Var[CAR \vert BP > CAR > 0]$	0.126	0.046	0.172	0.062	0.011	2.595
$E[BP \times CAR \vert BP > CAR > 0]$	0.227	0.070	0.314	0.098	0.008	3.112
$Var[(BP - CAR) \vert BP > CAR > 0]$	0.181	0.343	0.224	0.260	0.270	−0.176
$Var[BP \vert CAR < 0, BP < 0]$	0.196	0.050	0.183	0.042	0.153	0.707
$Var[CAR \vert CAR < 0, BP < 0]$	0.040	0.012	0.037	0.011	0.003	3.037
$E[BP \times CAR \vert CAR < 0, BP < 0]$	0.080	0.022	0.080	0.022	0.008	3.258

(continues)

Table IA.XXII: continued

	Unconditional moments					
	Full sample		Dropped $BP > 0, CAR < p_{30}$ $(n = 87)$			
	Actual	Std. Error	Actual	Std. Error	Simulated	t-statistic
$E(BP)$	0.067	0.077	−0.025	0.083	−0.008	−0.202
$E[BP \times z_k]$						
Block-to-Industry Size	−0.001	0.002	−0.001	0.002	0.000	−0.700
Industry's M&A Activity	0.183	0.337	−0.283	0.433	−0.232	−0.117
Target - Industry Leverage	0.002	0.028	−0.010	0.032	0.021	−0.974
Industry Specificity	0.000	0.019	−0.029	0.020	−0.016	−0.666
Industry Market-to-Book	0.094	0.102	−0.040	0.110	0.026	−0.610
Target Volatility	−0.013	0.054	−0.060	0.066	−0.035	−0.371
$E[BP \times x_k]$						
GDP growth	0.001	0.004	−0.002	0.005	0.002	−0.714
Market Return	−0.009	0.015	−0.022	0.017	0.007	−1.787
Market Volatility	0.013	0.012	0.001	0.014	0.000	0.002
Fontaine-Garcia	−0.003	0.061	−0.091	0.069	−0.020	−1.015
Yield curve slope	−0.132	0.149	0.002	0.158	−0.132	0.851
× *GDP growth*	−0.002	0.006	−0.001	0.007	−0.001	0.090
× *Market Return*	−0.026	0.022	−0.047	0.026	0.013	−2.240
$E(CAR)$	0.096	0.029	0.128	0.038	0.017	2.961
$E[CAR \times z_k]$						
Block-to-Industry Size	0.000	0.000	0.000	0.000	0.000	−0.607
Industry's M&A Activity	0.293	0.118	0.380	0.150	0.056	2.164
Target - Industry Leverage	−0.005	0.009	−0.006	0.012	0.000	−0.518
Industry Specificity	0.023	0.008	0.029	0.010	0.005	2.477
Industry Market-to-Book	0.118	0.037	0.158	0.047	0.022	2.882
Target Volatility	0.034	0.011	0.048	0.014	0.012	2.563
$E[CAR \times x_k]$						
GDP growth	0.002	0.001	0.003	0.001	0.000	2.105
Market Return	0.003	0.005	0.004	0.007	−0.002	0.858
Market Volatility	0.016	0.005	0.021	0.006	0.003	2.739
Fontaine-Garcia	0.056	0.027	0.076	0.035	0.008	1.924
Yield curve slope	0.205	0.066	0.271	0.086	0.042	2.668
× *GDP growth*	0.005	0.002	0.006	0.003	0.000	2.180
× *Market Return*	0.001	0.013	0.002	0.017	−0.006	0.467

Table IA.XXIII: Actual and simulated moments for Specification (6) of Table IA.XXI

This table shows the moments used in the SMM estimation. The moments are simulated from the theoretical search model using the parameter estimates for specification (6) in Table IA.XXI. The moment condition t-statistic is for the test that the simulated moment equals the actual data moment. The data used are for a sample of 82 US negotiated block trades in the Thomson One Banker's Acquisitions data between 1/1/1990 and 31/12/2010. Blocks are larger than 35% and smaller than 90% of the outstanding stock. For comparison, the first two columns show the actual moments of the sample used in the paper, where $n = 114$.

Conditional moments

	Full sample		Dropped $BP > 0, CAR < p_{40}$ $(n = 82)$			
	Actual	Std. Error	Actual	Std. Error	Simulated	t-statistic
$E[BP - CAR \vert BP > CAR > 0]$	0.271	0.110	0.339	0.160	0.278	0.375
$E[(BP - CAR) \times x_k \vert$						
$BP > CAR > 0]$						
GDP growth	0.008	0.003	0.009	0.006	0.001	1.449
Market Return	0.022	0.021	0.027	0.029	−0.037	2.172
Market Volatility	0.038	0.018	0.048	0.024	0.059	−0.479
Fontaine-Garcia	−0.149	0.066	−0.175	0.098	−0.045	−1.334
Yield curve slope	−0.503	0.288	−0.572	0.416	−0.482	−0.216
× *GDP growth*	−0.012	0.005	−0.013	0.010	−0.004	−0.918
× *Market Return*	−0.013	0.045	−0.008	0.071	−0.135	1.793
$E[BP \vert CAR < 0, BP < 0]$	−0.368	0.077	−0.368	0.099	−0.594	2.296
$E[BP \times z_k \vert CAR < 0, BP < 0]$						
Block-to-Industry Size	−0.004	0.004	−0.004	0.005	−0.008	0.695
Industry's M&A Activity	−1.593	0.401	−1.593	0.422	−1.656	0.151
Target - Industry Leverage	−0.039	0.027	−0.039	0.033	0.008	−1.455
Industry Specificity	−0.115	0.030	−0.115	0.038	−0.188	1.957
Industry Market-to-Book	−0.483	0.112	−0.483	0.130	−0.645	1.249
Target Volatility	−0.148	0.040	−0.148	0.047	−0.234	1.853

Second order moments

	Full sample		Dropped $BP > 0, CAR < p_{40}$ $(n = 82)$			
	Actual	Std. Error	Actual	Std. Error	Simulated	t-statistic
$Var[BP \vert BP > CAR > 0]$	0.417	0.368	0.690	0.374	0.543	0.394
$Var[CAR \vert BP > CAR > 0]$	0.126	0.046	0.217	0.079	0.011	2.624
$E[BP \times CAR \vert BP > CAR > 0]$	0.227	0.070	0.391	0.124	0.013	3.042
$Var[(BP - CAR) \vert BP > CAR > 0]$	0.181	0.343	0.283	0.335	0.530	−0.739
$Var[BP \vert CAR < 0, BP < 0]$	0.196	0.050	0.180	0.055	0.297	−2.133
$Var[CAR \vert CAR < 0, BP < 0]$	0.040	0.012	0.036	0.011	0.003	3.032
$E[BP \times CAR \vert CAR < 0, BP < 0]$	0.080	0.022	0.080	0.022	0.012	3.068

(continues)

Table IA.XXIII: continued

	Unconditional moments					
	Full sample		Dropped $BP > 0, CAR < p_{40}$ $(n = 82)$			
	Actual	Std. Error	Actual	Std. Error	Simulated	t-statistic
$E(BP)$	0.067	0.077	−0.038	0.084	−0.116	0.922
$E[BP \times z_k]$						
Block-to-Industry Size	−0.001	0.002	−0.002	0.002	−0.002	0.331
Industry's M&A Activity	0.183	0.337	−0.331	0.341	−0.120	−0.621
Target - Industry Leverage	0.002	0.028	−0.011	0.031	0.033	−1.444
Industry Specificity	0.000	0.019	−0.035	0.022	−0.065	1.320
Industry Market-to-Book	0.094	0.102	−0.060	0.106	−0.096	0.340
Target Volatility	−0.013	0.054	−0.068	0.047	−0.071	0.062
$E[BP \times x_k]$						
GDP growth	0.001	0.004	−0.002	0.005	−0.003	0.281
Market Return	−0.009	0.015	−0.025	0.017	−0.039	0.833
Market Volatility	0.013	0.012	−0.001	0.013	−0.004	0.214
Fontaine-Garcia	−0.003	0.061	−0.102	0.070	−0.130	0.400
Yield curve slope	−0.132	0.149	−0.032	0.170	−0.365	1.965
× *GDP growth*	−0.002	0.006	−0.002	0.007	−0.014	1.961
× *Market Return*	−0.026	0.022	−0.053	0.028	−0.101	1.666
$E(CAR)$	0.096	0.029	0.129	0.040	0.019	2.727
$E[CAR \times z_k]$						
Block-to-Industry Size	0.000	0.000	0.000	0.000	0.000	−1.205
Industry's M&A Activity	0.293	0.118	0.384	0.162	0.159	1.392
Target - Industry Leverage	−0.005	0.009	−0.006	0.012	0.002	−0.721
Industry Specificity	0.023	0.008	0.028	0.010	0.004	2.409
Industry Market-to-Book	0.118	0.037	0.156	0.050	0.033	2.449
Target Volatility	0.034	0.011	0.047	0.015	0.014	2.269
$E[CAR \times x_k]$						
GDP growth	0.002	0.001	0.003	0.001	0.001	1.489
Market Return	0.003	0.005	0.003	0.007	0.002	0.144
Market Volatility	0.016	0.005	0.021	0.007	0.003	2.686
Fontaine-Garcia	0.056	0.027	0.076	0.037	0.022	1.461
Yield curve slope	0.205	0.066	0.267	0.091	0.047	2.433
× *GDP growth*	0.005	0.002	0.006	0.003	0.001	1.632
× *Market Return*	0.001	0.013	−0.001	0.018	0.000	−0.066
$E[BP - CAR \vert BP > CAR > 0]$	0.271	0.110	0.339	0.160	0.278	0.375
$E[(BP - CAR) \times x_k \vert$						
$BP > CAR > 0]$						
GDP growth	0.008	0.003	0.009	0.006	0.001	1.449
Market Return	0.022	0.021	0.027	0.029	−0.037	2.172
Market Volatility	0.038	0.018	0.048	0.024	0.059	−0.479
Fontaine-Garcia	−0.149	0.066	−0.175	0.098	−0.045	−1.334
Yield curve slope	−0.503	0.288	−0.572	0.416	−0.482	−0.216
× *GDP growth*	−0.012	0.005	−0.013	0.010	−0.004	−0.918
× *Market Return*	−0.013	0.045	−0.008	0.071	−0.135	1.793

Table IA.XXIV : In-sample estimates of the costs of illiquidity

This table summarizes the sample distribution of the main variables in the theoretical search model, predicted using the estimates of the parameters reported in Table III in the paper (reproduced above in Table IA.XVI, Spec(1)), and in Specification (2) in Table IA.XVI above. The data used are for a samples of 114 (Specification (1)) or 102 (Specification (2)) US negotiated block trades in the Thomson One Banker's Acquisitions data between 1/1/1990 and 31/12/2010. Blocks are larger than 35% and smaller than 90% of the outstanding stock. Specification (2) excludes the trades where $BP > 0 > CAR$.

	Specification (1)						
	Sample mean	Standard deviation	Min	First quartile	Median	Third quartile	Max
Liquidity shock probability (θ)	0.198	0.297	0.000	0.008	0.045	0.244	0.999
Shares' liquidation value (ϕ)	0.921	0.097	0.587	0.889	0.966	0.995	1.000
Marketability discount $(1 - \frac{v(\theta,\phi,\eta,.)}{v(\theta=0,\phi,\eta=1,.)})$	0.131	0.222	0.002	0.010	0.024	0.125	0.887
Illiquidity spillover discount $(1 - \frac{p(\theta,\phi,\eta,.)}{p(\theta=0,\phi,\eta=1,.)})$	0.021	0.015	0.003	0.012	0.017	0.027	0.097
Control discount $(1 - \frac{v(\theta,\phi,\eta,.)}{p(\theta,\phi,\eta,.)})$	0.125	0.223	0.001	0.005	0.016	0.110	0.886
Search frictions discount $(1 - \frac{v(\theta,\phi,\eta,.)}{v(\theta,\phi,\eta=1,.)})$	0.008	0.008	0.000	0.004	0.006	0.010	0.053
Liquidity risk discount $(1 - \frac{v(\theta,\phi,\eta,.)}{v(\theta=0,\phi,\eta,.)})$	0.122	0.224	0.000	0.001	0.011	0.115	0.886
	Specification (2)						
	Sample mean	Standard deviation	Min	First quartile	Median	Third quartile	Max
Liquidity shock probability (θ)	0.158	0.281	0.000	0.000	0.002	0.158	0.944
Shares' liquidation value (ϕ)	0.898	0.084	0.673	0.837	0.910	0.975	1.000
Marketability discount $(1 - \frac{v(\theta,\phi,\eta,.)}{v(\theta=0,\phi,\eta=1,.)})$	0.127	0.218	0.002	0.005	0.011	0.148	0.789
Illiquidity spillover discount $(1 - \frac{p(\theta,\phi,\eta,.)}{p(\theta=0,\phi,\eta=1,.)})$	0.017	0.013	0.003	0.009	0.014	0.022	0.062
Control discount $(1 - \frac{v(\theta,\phi,\eta,.)}{p(\theta,\phi,\eta,.)})$	0.127	0.217	0.003	0.006	0.012	0.148	0.787
Search frictions discount $(1 - \frac{v(\theta,\phi,\eta,.)}{v(\theta,\phi,\eta=1,.)})$	0.006	0.005	0.001	0.003	0.004	0.007	0.032
Liquidity risk discount $(1 - \frac{v(\theta,\phi,\eta,.)}{v(\theta=0,\phi,\eta,.)})$	0.121	0.220	0.000	0.000	0.002	0.143	0.787

Table IA.XXV : In-sample estimates of the costs of illiquidity

This table summarizes the sample distribution of the main variables in the theoretical search model, predicted using the estimates of the parameters reported in Table IA.XVIII above. The data used are for a samples of 97 (Specification (3)) or 92 (Specification (4)) US negotiated block trades in the Thomson One Banker's Acquisitions data between 1/1/1990 and 31/12/2010. Blocks are larger than 35% and smaller than 90% of the outstanding stock.

	Specification (3)						
	Sample mean	Standard deviation	Min	First quartile	Median	Third quartile	Max
Liquidity shock probability (θ)	0.180	0.331	0.000	0.000	0.006	0.122	1.000
Shares' liquidation value (ϕ)	0.811	0.148	0.509	0.673	0.820	0.953	1.000
Marketability discount $(1 - \frac{v(\theta,\phi,\eta,.)}{v(\theta=0,\phi,\eta=1,.)})$	0.120	0.207	0.001	0.002	0.008	0.111	0.763
Illiquidity spillover discount $(1 - \frac{p(\theta,\phi,\eta,.)}{p(\theta=0,\phi,\eta=1,.)})$	0.009	0.016	0.001	0.002	0.003	0.007	0.128
Control discount $(1 - \frac{v(\theta,\phi,\eta,.)}{p(\theta,\phi,\eta,.)})$	0.125	0.203	0.003	0.011	0.021	0.116	0.757
Search frictions discount $(1 - \frac{v(\theta,\phi,\eta,.)}{v(\theta,\phi,\eta=1,.)})$	0.001	0.001	0.000	0.001	0.001	0.002	0.007
Liquidity risk discount $(1 - \frac{v(\theta,\phi,\eta,.)}{v(\theta=0,\phi,\eta,.)})$	0.118	0.207	0.000	0.001	0.007	0.109	0.762
	Specification (4)						
	Sample mean	Standard deviation	Min	First quartile	Median	Third quartile	Max
Liquidity shock probability (θ)	0.162	0.304	0.000	0.000	0.007	0.144	0.997
Shares' liquidation value (ϕ)	0.744	0.319	0.003	0.592	0.895	0.985	1.000
Marketability discount $(1 - \frac{v(\theta,\phi,\eta,.)}{v(\theta=0,\phi,\eta=1,.)})$	0.109	0.221	0.000	0.000	0.008	0.107	0.896
Illiquidity spillover discount $(1 - \frac{p(\theta,\phi,\eta,.)}{p(\theta=0,\phi,\eta=1,.)})$	0.006	0.012	0.000	0.000	0.000	0.003	0.054
Control discount $(1 - \frac{v(\theta,\phi,\eta,.)}{p(\theta,\phi,\eta,.)})$	0.120	0.217	0.005	0.013	0.024	0.100	0.896
Search frictions discount $(1 - \frac{v(\theta,\phi,\eta,.)}{v(\theta,\phi,\eta=1,.)})$	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Liquidity risk discount $(1 - \frac{v(\theta,\phi,\eta,.)}{v(\theta=0,\phi,\eta,.)})$	0.109	0.221	0.000	0.000	0.008	0.107	0.896

Table IA.XXVI : In-sample estimates of the costs of illiquidity

This table summarizes the sample distribution of the main variables in the theoretical search model, predicted using the estimates of the parameters reported in TableIA.XXI above. The data used are for a samples of 87 (Specification (5)) or 82 (Specification (6)) US negotiated block trades in the Thomson One Banker's Acquisitions data between 1/1/1990 and 31/12/2010. Blocks are larger than 35% and smaller than 90% of the outstanding stock.

	Specification (5)						
	Sample mean	Standard deviation	Min	First quartile	Median	Third quartile	Max
Liquidity shock probability (θ)	0.164	0.327	0.000	0.000	0.000	0.076	1.000
Shares' liquidation value (ϕ)	0.699	0.219	0.015	0.595	0.750	0.847	0.996
Marketability discount $(1 - \frac{v(\theta,\phi,\eta,.)}{v(\theta=0,\phi,\eta=1,.)})$	0.154	0.262	0.001	0.003	0.007	0.195	0.859
Illiquidity spillover discount $(1 - \frac{p(\theta,\phi,\eta,.)}{p(\theta=0,\phi,\eta=1,.)})$	0.011	0.015	0.002	0.004	0.006	0.013	0.091
Control discount $(1 - \frac{v(\theta,\phi,\eta,.)}{p(\theta,\phi,\eta,.)})$	0.155	0.259	0.002	0.006	0.012	0.182	0.858
Search frictions discount $(1 - \frac{v(\theta,\phi,\eta,.)}{v(\theta,\phi,\eta=1,.)})$	0.003	0.003	0.000	0.002	0.003	0.004	0.017
Liquidity risk discount $(1 - \frac{v(\theta,\phi,\eta,.)}{v(\theta=0,\phi,\eta,.)})$	0.150	0.263	0.000	0.000	0.001	0.183	0.859
	Specification (6)						
	Sample mean	Standard deviation	Min	First quartile	Median	Third quartile	Max
Liquidity shock probability (θ)	0.126	0.290	0.000	0.000	0.000	0.004	0.990
Shares' liquidation value (ϕ)	0.421	0.301	0.045	0.194	0.289	0.652	0.995
Marketability discount $(1 - \frac{v(\theta,\phi,\eta,.)}{v(\theta=0,\phi,\eta=1,.)})$	0.162	0.317	0.001	0.003	0.005	0.038	0.951
Illiquidity spillover discount $(1 - \frac{p(\theta,\phi,\eta,.)}{p(\theta=0,\phi,\eta=1,.)})$	0.014	0.012	0.002	0.007	0.010	0.016	0.057
Control discount $(1 - \frac{v(\theta,\phi,\eta,.)}{p(\theta,\phi,\eta,.)})$	0.168	0.314	0.003	0.008	0.013	0.062	0.950
Search frictions discount $(1 - \frac{v(\theta,\phi,\eta,.)}{v(\theta,\phi,\eta=1,.)})$	0.004	0.004	0.000	0.002	0.003	0.004	0.023
Liquidity risk discount $(1 - \frac{v(\theta,\phi,\eta,.)}{v(\theta=0,\phi,\eta,.)})$	0.159	0.319	0.000	0.000	0.000	0.036	0.951

Table IA.XXVII: Alternative specifications for liquidity shocks and block liquidation values

This table shows the estimates of the matching probability, η, the block seller's bargaining power, ψ, the controlling shareholder's private benefits of control per share, B_i, and the sensitivities, β and γ, of the liquidity shock probability, θ, and the block's liquidation value, ϕ, to $\mathbf{x}$ and $\mathbf{z}$, respectively. For each deal i, θ_i, ϕ_i and B_i are given by

$$\theta_i = \frac{\exp(\mathbf{x}_i'\beta + \beta_0)}{1 + \exp(\mathbf{x}_i'\beta + \beta_0)}, \quad \phi_i = \frac{\exp(\mathbf{z}_i'\gamma + \gamma_0)}{1 + \exp(\mathbf{z}_i'\gamma + \gamma_0)},$$
$$\text{and} \quad B_i = b_0 + b_1 \times E(v_i) + b_2 \times E(p_i) \times \frac{1 - \alpha_i}{\alpha_i},$$

where $E(v_i)$ is the expected private value of the block, $E(p_i)$ is the expected dispersed shareholders valuation of the shares and α_i is the block size. The parameters are estimated using the Simulated Method of Moments, matching the actual moments, $\mathbf{M}$, of the joint distribution of the percentage block premium, BP, and the cumulative abnormal returns, CAR, to those simulated by the theoretical search model, $\mathbf{m}(\psi, \eta, b_0, b_1, b_2, \beta, \gamma)$. The data is for a sample of 114 US negotiated block trades in the Thomson One Banker's Acquisitions data between 1/1/1990 and 31/12/2010. Blocks are larger than 35% and smaller than 90% of the outstanding stock. Standard errors are shown in parenthesis next to the coefficient estimates.[a] The economic significance of each coefficient is the change in θ_i or ϕ_i associated with a one sample standard deviation change in each variable in $\mathbf{x}$ and $\mathbf{z}$, respectively.

Panel A: Model fit

	(1)				(2)			
	BP		**CAR**		**BP**		**CAR**	
	Actual	*Predicted*	*Actual*	*Predicted*	*Actual*	*Predicted*	*Actual*	*Predicted*
Mean	0.067	−0.573	0.096	0.016	0.067	−0.597	0.096	0.021
Std. deviation	0.584	0.330	0.319	0.073	0.584	0.274	0.319	0.078
Median	0.035	−0.644	0.050	0.015	0.035	−0.648	0.050	0.016
Proportion of negatives	0.465	0.947	0.421	0.421	0.465	0.991	0.421	0.430
corr(*Actual*, *Predicted*)		0.105		0.364		0.042		0.401
	Over-identifying restrictions test[b]		Joint significance test[c]		Over-identifying restrictions test[b]		Joint significance test[c]	
	χ^2	p value	χ^2	p value	χ^2	p value	χ^2	p value
	249.31	0.00	1,185.82	0.00	654.56	0.00	2,079.91	0.00

(continues)

Table IA.XXVII: continued

Panel B: Parameter estimates

	(1)				(2)			
	Coefficient				Coefficient			
η	0.50***	(0.18)			0.50	(0.58)		
ψ	0.50	(0.59)			0.51	(0.71)		
Liquidity shock determinants (x)								
	Coefficient		Economic significance		Coefficient		Economic significance	
GDP growth	0.06	(0.27)	0.00	(0.00)	−9.61	(7.21)	−0.03	(0.02)
Market Return	0.05	(0.46)	0.00	(0.01)	−27.90**	(13.72)	−0.47**	(0.23)
Market Volatility	0.07	(0.20)	0.00	(0.00)	−0.31	(0.29)	−0.02	(0.02)
Fontaine-Garcia	0.89***	(0.19)	0.07***	(0.01)	0.91***	(0.20)	0.05***	(0.01)
Yield curve slope	1.21***	(0.34)	0.21***	(0.06)	2.31**	(1.09)	0.29**	(0.13)
× *GDP growth*	35.92	(22.50)	0.17	(0.11)	29.27*	(17.19)	0.20*	(0.12)
× *Market Return*	5.52**	(2.45)	0.13**	(0.06)	7.35	(5.01)	0.05	(0.03)
Target - Industry Leverage	0.97**	(0.45)	0.04**	(0.02)				
Industry Market-to-Book	1.32	(1.63)	0.10	(0.12)				
Industry Specificity	−0.41	(0.51)	−0.01	(0.01)				
Industry's M&A Activity	0.08	(0.05)	0.04	(0.03)				
Constant (β_0)	4.00	(7.41)			2.87	(2.37)		
Liquidation value determinants (z)								
	Coefficient		Economic significance		Coefficient		Economic significance	
Block-to-Industry Size	−0.04	(0.54)	0.00	(0.00)	0.08	(0.07)	0.00	(0.00)
Industry's M&A Activity	0.51***	(0.05)	0.26***	(0.03)	−0.13	(0.17)	−0.07	(0.09)
Target - Industry Leverage	−2.08***	(0.26)	−0.08***	(0.01)	−0.83**	(0.32)	−0.03**	(0.01)
Industry Specificity	−2.12***	(0.36)	−0.05***	(0.01)	0.14	(0.30)	0.00	(0.01)
Industry Market-to-Book	3.11	(3.72)	0.20	(0.24)	−0.22**	(0.10)	−0.02**	(0.01)
Target Volatility	0.15	(0.17)	0.01	(0.01)	0.63**	(0.25)	0.04**	(0.01)
Market Return					0.14	(0.50)	0.00	(0.00)
Fontaine-Garcia					0.14	(0.86)	0.01	(0.05)
Yield curve slope					1.51***	(0.56)	0.26***	(0.09)
Constant (γ_0)	−4.91	(3.80)			−1.65***	(0.37)		
Private benefits of control								
	Coefficient		Sample mean (Std. deviation)		Coefficient		Sample mean (Std. deviation)	
b_0	0.01	(0.02)	0.02	(0.03)	0.01	(0.02)	0.02	(0.03)
b_1	0.01	(0.02)			0.01	(0.15)		
b_2	0.01***	(0.00)			0.01	(0.01)		

[a] Estimates followed by ***, ** and * are statistically different from zero with 0.01, 0.05 and 0.1 significance levels, respectively.
[b] The null hypothesis is that the optimally weighted distance between the actual and simulated moments vector is zero.
[c] The null hypothesis is that all model parameters are zero.

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