Internet Appendix to

“Legal Investor Protection and Takeovers”

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This Internet Appendix contains i) the analysis associated with the model of asset tangibility in Section IV.C in the main text and ii) the analysis associated with the model of sales of controlling blocks in Section V.B in the main text assuming the bidder is subject to the equal opportunity rule (EOR) instead of the market rule (MR).

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I. Asset Tangibility (Section IV.C)

This section contains the analysis associated with the model of asset tangibility in Section IV.C of the main text.

A. Single-Bidder Case

The analysis is similar to the basic model, except that the bidder's budget constraint is replaced by

$$A + \psi v + (1 - \psi)\bar{\phi} v \geq b + c. \tag{IA.1}$$

Because asset tangibility affects the fraction of the target value that cannot be expropriated, it also affects the free-rider condition. In this regard, the analysis of asset tangibility is different from, say, our previous analyses of margin requirements and costly internal funds. More precisely, the free-rider condition becomes

$$b \geq \psi v + (1 - \psi)\bar{\phi} v. \tag{IA.2}$$

Inserting the binding free-rider condition into (IA.1), we obtain the familiar budget constraint

$$A \geq c, \tag{IA.3}$$

while the bidder's participation constraints becomes

$$(1 - \psi)(1 - \bar{\phi}) v \geq c. \tag{IA.4}$$

Thus, irrespective of the quality of investor protection, an increase in asset tangibility tightens the bidder's participation constraint but has no effect on his budget constraint.

LEMMA IA.1: *The bidder takes over the target if and only if*

$$\min\{(1-\psi)(1-\overline{\phi})v, A\} \geq c. \tag{IA.5}$$

Note that the cross-derivative of the left-hand side with respect to ψ and $\overline{\phi}$ is positive, implying that legal investor protection and asset tangibility are subtitutes: a higher value of one dampens the negative effect of the other.

B. Bidding Competition

Again, the main change relative to the basic model is that bidder i's budget constraint is now

$$A_i + \psi v_i + (1-\psi)\bar{\phi} v_i \geq b_i + c. \tag{IA.6}$$

Together with his participation constraint, condition (9) in the main text, this implies that the highest offer that bidder i is willing and able to make is

$$\widehat{b_i} = v_i(\bar{\phi} + (1-\overline{\phi})\psi) + \min\left\{(1-\psi)(1-\overline{\phi})v_i, A_i\right\} - c. \tag{IA.7}$$

Accordingly, we have the following result.

LEMMA IA.2: *Bidder 1 wins the takeover contest if and only if*

$$A_1 \geq \min\left\{(1-\psi)(1-\overline{\phi})v_2, A_2\right\} - (v_1 - v_2)(\bar{\phi} + (1-\overline{\phi})\psi). \tag{IA.8}$$

As one might expect, asset tangibility and legal investor protection both have a positive effect on the takeover outcome: the right-hand side is decreasing in both ψ and $\overline{\phi}$. More interestingly, the cross-derivative with respect to $\overline{\phi}$ and ψ is positive, implying that legal investor protection and asset tangibility are subtitutes.

PROPOSITION IA.1: *Under effective competition for the target, the takeover outcome is more likely to be efficient if legal investor protection is strong and asset tangibility is high. Furthermore, the positive effect of asset tangibility is weaker when legal investor protection is strong while the positive effect of legal investor protection is weaker when asset tangibility is high.*

Finally, the winning bid, $b_i^* = \max\left\{\widehat{b}_j, \psi v_i + (1-\psi)\overline{\phi} v_i\right\}$ for $j \neq i$, is increasing in ψ. Hence, our model predicts that takeover premia are higher when asset tangibility is high.

II. Sales of Controlling Blocks Under the EOR/MBR (Section V.B)

This section analyzes the model of sales of controlling blocks in Section V.B in the main text assuming the bidder is subject to the equal opportunity rule (EOR)—also known as the mandatory bid rule (MBR)—instead of the market rule (MR).

As in our main analysis, the question is whether a bid equal to the incumbent's valuation, $b_1 = b_0 = \overline{\phi} v_0 + \frac{(1-\overline{\phi})}{\beta} v_0$, is feasible, that is, whether such a bid satisfies the bidder's participation and budget constraints. (Recall that we express the incumbent's valuation in terms of a measure one of shares, b_0; see equation (37) in the main text, which depicts the incumbent's valuation for his controlling block, βb_0.) If it does, then the sale of control will take place, albeit possibly at a higher price (depending on relative bargaining powers). If it does not, then the sale of control will fail, as raising the bid price only tightens the bidder's constraints.

Under the EOR/MBR, the bidder is obliged to extend his offer to minority shareholders on the same terms as his offer to the incumbent blockholder. However, this does not mean that minority shareholders will tender. Indeed, if the bidder's offer does not satisfy the free-rider condition, minority shareholders will optimally not tender (yet the control transfer may take place). This implies that we must distinguish between two cases.

Case 1: $b_1 = \overline{\phi} v_0 + \frac{(1-\overline{\phi})v_0}{\beta} < \overline{\phi} v_1$. In this case, the incumbent's valuation lies below that of minority shareholders. Consequently, none of the minority shareholders tender, implying the sale of control succeeds if and only if

$$\beta \bar{\phi} v_1 + (1 - \overline{\phi}) v_1 \geq \beta \overline{\phi} v_0 + (1 - \overline{\phi}) v_0 \tag{IA.9}$$

and

$$A_1 + \beta \bar{\phi} v_1 \geq \beta \overline{\phi} v_0 + (1 - \overline{\phi}) v_0 \tag{IA.10}$$

are both satisfied. Note that (IA.9) is always satisfied as $v_1 > v_0$, whereas (IA.10) is satisfied if and only if $\beta \geq \frac{(1-\overline{\phi})v_0 - A_1}{\overline{\phi}(v_1 - v_0)}$, which is true given that Case 1 implies that $\beta > \frac{(1-\overline{\phi})v_0}{\overline{\phi}(v_1 - v_0)}$. Hence, in Case 1, the sale of control always takes place.

Case 2: $b_1 = \overline{\phi} v_0 + \frac{(1-\overline{\phi})v_0}{\beta} \geq \overline{\phi} v_1$. In this case, all of the minority shareholders tender, implying that the sale of control succeeds if and only if

$$v_1 \geq \overline{\phi} v_0 + \frac{(1-\overline{\phi})v_0}{\beta} \tag{IA.11}$$

and

$$A_1 + \bar{\phi} v_1 \geq \overline{\phi} v_0 + \frac{(1-\overline{\phi})v_0}{\beta} \tag{IA.12}$$

are both satisfied. Hence, the sale of control takes place if and only if

$$\beta \geq \max\left\{\frac{(1-\overline{\phi})v_0}{v_1 - \overline{\phi} v_0}, \frac{(1-\overline{\phi})v_0}{A_1 + \overline{\phi}(v_1 - v_0)}\right\}. \tag{IA.13}$$

Rearranging (IA.13) (and noting that the right-hand side is strictly less than $\frac{(1-\overline{\phi})v_0}{\overline{\phi}(v_1-v_0)}$), we obtain the following result.

LEMMA IA.3: *Under the EOR/MBR, the bidder gains control of the target if and only if*

$$\beta \geq \frac{(1-\overline{\phi})v_0}{\overline{\phi}(v_1 - v_0) + \min\left\{(1-\overline{\phi})v_1, A_1\right\}}. \tag{IA.14}$$

Condition (IA.14), which characterizes the takeover outcome under the EOR/MBR, is the counterpart of condition (38) in our main analysis, which characterizes the outcome under the MR. Importantly, condition (IA.14) is stricter than condition (38). To see this, we can rewrite condition (IA.14) as

$$\beta \cdot \min\left\{(1-\overline{\phi})v_1, A_1\right\} \geq (1-\overline{\phi})v_0 - \beta\overline{\phi}(v_1 - v_0), \tag{IA.15}$$

where the right-hand side is the same as in (38) but the left-hand side is strictly smaller. Thus, efficient sales of control are less likely to succeed under the EOR/MBR. As we explain in the main text, this is because also paying a control premium to minority shareholders tightens both the bidder's participation constraint and his budget constraint.

PROPOSITION IA.2: *Efficient sales of control are less likely to succeed under the EOR/MBR than under the MR.*

In spite of Proposition IA.2, however, all *qualitative* results from our main analysis remain unchanged. For instance, as in Proposition 6, the likelihood that the sale of control takes place increases with β.

PROPOSITION IA.3: *Under the EOR/MBR, efficient sales of control are more likely to succeed when the controlling block is large (as a fraction of the total equity value).*

Moreover, as in Corollary 2, efficient sales of control are more likely to take place when legal investor protection is strong: if $A_1 < (1-\overline{\phi})v_1$, the right-hand side in (IA.14) is evidently decreasing in $\overline{\phi}$. Likewise, if $A_1 \geq (1-\overline{\phi})v_1$, the derivative of the right-hand side in (IA.14) with respect to ϕ is

$$\frac{\partial}{\partial \overline{\phi}} \frac{(1-\overline{\phi})v_0}{v_1 - \overline{\phi} v_0} = \frac{v_0(v_0 - v_1)}{(v_1 - \overline{\phi} v_0)^2} < 0. \tag{IA.16}$$

COROLLARY IA.1: *Under the EOR/MBR, stronger legal investor protection makes it more likely that efficient sales of control succeed.*

As in the our main analysis, we can finally endogenize the size of the incumbent's controlling block. Based on the two cases discussed above, the minority shareholders' payoff in the control transfer is

$$(1-\beta)\cdot\max\left\{\overline{\phi}v_0+\frac{(1-\overline{\phi})v_0}{\beta},\overline{\phi}v_1\right\}, \tag{IA.17}$$

which implies that, at the initial stage, dispersed investors are willing to pay up to this amount for the minority stake, $1-\beta$. Overall, and as long as condition (IA.14) holds, the incumbent's total payoff at the initial stage is thus

$$\beta\overline{\phi}v_0+(1-\overline{\phi})v_0+(1-\beta)\cdot\max\left\{\overline{\phi}v_0+\frac{(1-\overline{\phi})v_0}{\beta},\overline{\phi}v_1\right\}, \tag{IA.18}$$

which is decreasing in β. On the other hand, condition (IA.14) becomes tighter as β decreases. Thus, and analogous to our main analysis, the incumbent chooses the smallest value of $\beta\geq 0.5$ that is compatible with condition (IA.14):

PROPOSITION A4: *Under the EOR/MBR, the incumbent's optimal controlling block is*

$$\beta^*=\max\left\{\frac{(1-\overline{\phi})v_0}{\overline{\phi}(v_1-v_0)+\min\left\{(1-\overline{\phi})v_1,A_1\right\}},0.5\right\}. \tag{IA.19}$$

Given that condition (IA.14) is stricter than condition (38) (see above), the optimal controlling block under the EOR/MBR is either equal to (if $\beta^*=0.5$) or larger than (if $\beta^*>0.5$) the corresponding optimal controlling block under the MR in our main analysis.

COROLLARY A2: *The optimal controlling block is larger under the EOR/MBR than under the MR.*

Finally, based on the calculations preceding Corollary IA.1, the right-hand side in (IA.14) (and therefore also the right-hand side in (IA.19)) decreases with $\overline{\phi}$. Thus, as in Corollary 3, we obtain a negative correlation between ownership concentration and the quality of legal investor protection.

COROLLARY IA.3: *Under the EOR/MBR, the optimal controlling block is larger when legal investor protection is weak.*