Internet Appendix for The real effects of ratings actions: Evidence from corporate asset sales

Dion Bongaerts Frederik P. Schlingemann

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†Rotterdam School of Management, Erasmus University. Address: Burgemeester Oudlaan 50, 3062 PA Rotterdam, The Netherlands. Email: dbongaerts@rsm.nl. Phone: +31 10 408 2520.

‡Katz Graduate School of Business, University of Pittsburgh and the European Corporate Governance Institute (ECGI). Address: 368A Mervis Hall, Pittsburgh, PA 15260, USA. Email: schlinge@katz.pitt.edu. Phone: +1 412 648 1847.

A. A simple model

In this section, we introduce a simple agency model in the context of the classic tradeoff theory to derive real effects of rating actions on asset allocation and capital structure decisions (proofs in Appendix A.5). This framework yields testable implications that largely align with the more informal implications obtained in Section 2.1, which steer our subsequent empirical analysis.

A.1. Model setup

Consider a multi-segment firm with a core and a non-core segment, indexed by c and nc, respectively. We also assume that the risk of both segments is identical, for expositional purposes. Finally, we assume that the firm is fully proficient in its core activity, but receives a discount $\delta \in (0,1)$ on the profits of its non-core activities, such that $IRR_c = \delta IRR_{nc}$, where IRR_x refers to the internal rate of returns for a segment x. The (expected) internal rate of return for the company (IRR) is given by

$$IRR = \frac{IC_c}{IC} IRR_c + \frac{IC_{nc}}{IC} IRR_{nc}, \tag{2}$$

where IC_x refers to segment-specific invested capital and $IC = IC_c + IC_{nc}$. The cost of capital r is defined as

$$r = r_a - \frac{D}{V} T r_d + \gamma \left(a \frac{D}{V} + bCR \right)^2, \tag{3}$$

where T is the corporate tax rate, r_a is the cost of capital for an unlevered firm, $\frac{D}{V}$ is the leverage ratio, CR is the rating level (where a higher value for CR corresponds to a worse rating), r_d is the pre-tax cost of debt, γ is a weighting parameter on financial distress costs, and a and b are weight parameters that determine the contribution of leverage and rating levels to financial distress costs, respectively. The second term in Eq. (3) refers to the tax shield and the third to financial distress costs. The firm creates economic value

$$EVA = (IRR - r)IC \tag{4}$$

per annum. We assume the following expected utility function of the CEO:

$$U_m = \beta IC_{nc} + EVA, \tag{5}$$

where β reflects private benefits of non-core operations (e.g., empire building). The EVA term reflects performance-based CEO incentives (normalized to 1 without loss of generality). For the moment, we assume transaction costs to be zero for asset sales and to be strictly positive for any other means of adjusting leverage.

A.2. CEO private value maximization

We derive the (privately) optimal financing structure as well as conditions under which the CEO invests in the non-core segment. Investing in the non-core segment may be privately optimal if private benefits from doing so exceed the associated loss in EVA.

Lemma 1. *Given a rating, the optimal leverage ratio is given by*

$$\left(\frac{D}{V} \right)^* = \frac{-2abCR + \gamma^{-1} T r_d}{2a^2}. \tag{6}$$

The CEO optimally holds on to the non-core segment if

$$r^* \leq IRR_{nc} + \beta, \tag{7}$$

where r^* is given by Eq. (3) evaluated at $\left(\frac{D}{V}\right)^*$.

Now assume that $IRR_{nc} < r^*$, but that the CEO holds on to segment nc (Eq. (7) is satisfied). Moreover, assume that owning segment nc would initially be irrelevant for the credit rating due to rating coarseness (see Goel and Thakor, 2015). Now exogenous economic adversity causes the rating to deteriorate to $CR' > CR$. Moreover, assume that this shock just puts the firm over a rating threshold, such that the negative rating action can be undone by selling segment nc to a better user. We can now derive whether the CEO optimally sells the non-core segment or reduces leverage in response of the changed rating.

Proposition 1. *In response to the rating deterioration, the CEO lowers leverage to*

$$\left(\frac{D}{V}\right)^{*'} = \frac{-2abCR' + \gamma^{-1}Tr_d}{2a^2}, \tag{8}$$

if

$$r^{*'} \leq \frac{(\beta + IRR_{nc})IC_{nc} + IC_c r^*}{IC_{nc} + IC'_c}, \tag{9}$$

where $r^{*'}$ is given by Eq. (3) evaluated at $\left(\frac{D}{V}\right)^{*'}$ and CR', and IC'_c is the invested capital of segments c after the leverage reduction. Otherwise the CEO sells segment nc and leaves leverage unchanged.

Proposition 1 shows that if Condition (9) is satisfied (i.e., the financial constraints channel dominates), negative rating actions lead to leverage reductions, which in this case are funded by asset sales.[1] Proposition 1 also shows that the negative rating action increases pressure to sell segment nc in two ways. Even if financial constraints are partially alleviated by reducing leverage, the reduced tax-deductability further impairs the profitability of segment nc, thereby tightening Condition (9). The reduced tax-deductability also gives rise to an intra-firm spillover effect by making segment c less profitable. These effects are broadly consistent with Boot et al. (2005), who shows theoretically that ratings can act as coordination mechanisms and that negative watch lists of CRAs serve as implicit monitoring contracts. By assumption, transaction costs are zero for asset sales and strictly positive for other ways of reducing leverage. Therefore, we get the following testable implications:

Implication 1. *Negative rating actions increase the likelihood of asset sales, irrespective of whether the financial constraints or discipline channel is at work.*

Implication 2. *Under the discipline channel, non-core, and poorly performing segments are more likely to be sold following negative rating actions.*

Under the assumption that companies truthfully report the purpose of their asset sales we immediately get another implication:

Implication 3. *Negative rating actions primarily induce asset sales with restructuring purpose when the discipline channel dominates and primarily induce asset sales with leverage reduction purpose when the financial constraints channel dominates.*

Naturally, selling segment nc to a better user is a net welfare improvement since the buyer can generate more economic surplus from it. If corporate taxes are distortive, tax shields reduce the distortion imposed by taxes. Selling segment nc therefore also positively contributes to welfare as it prevents the need to delever, which is associated with increased tax-based distortions.

[1] Empirically, Lang et al. (1995) show that asset sales are an important source of financing when firms are otherwise financially constrained and Officer (2007) show that firms who announce asset sales have lower bond ratings and are financially more constrained than firms that do not.

A.3. Transaction costs and other ways of reducing leverage

Now assume that there are two core segments, $c1$ and $c2$. Denote the asset liquidity of segments x by l_x. Liquidity l_x is defined as the proportional secondary market value (relative to true value), such that proportional transaction cost are given by $1 - l_x$. For tractability, assume that segments are infinitely divisible, such that the desired reduction in leverage can be exactly achieved. Also assume that there is an outside option to reduce leverage, such as a Seasoned Equity Offering (SEO), denoted by s with proportional transaction cost $1 - l_s$.

We now derive the main proposition of this section.

Proposition 2. *In response to the rating deterioration, the CEO lowers leverage to*

$$\left(\frac{D}{V}\right)^{**} = \min\left(\frac{D^*}{V}, \frac{-2abCR' + \gamma^{-1}(Tr_d + l_{k^*}^{-1} r_f V)}{2a^2}\right), \tag{10}$$

if

$$r^{**} \leq \frac{(\beta + IRR_{nc})IC_{nc} + r^* IC_c + IRR_c(IC_c' - IC_c) + (1 - l_{nc})IC_{nc} r_f}{IC_{nc} + IC_c'}, \tag{11}$$

where

$$r^{**} = r_a - \frac{D^{**}}{V} Tr_d + \frac{V r_f |\frac{D^{**}}{V} - \frac{D^*}{V}|}{l_x} + \gamma\left(a\frac{D^{**}}{V} + bCR'\right)^2, \tag{12}$$

$$k^* = \arg\max_{k \in \{c1, c2, nc, s\}} l_k, \tag{13}$$

V is firm value, r_f is the risk-free rate, and IC_c' is the invested capital of segments $c1$ and $c2$ together after the leverage reduction. Otherwise the CEO sells segment nc and leaves leverage unchanged.

Proposition 2 shows that if Condition (11) is violated, the non-core segment is sold and leverage is unaffected. An efficient way to achieve this is by doing a spinoff.

Implication 4. *The likelihood of spinoffs following negative rating actions is higher only under the discipline channel.*

Proposition 2 accounts for other ways to reduce leverage than asset sales. Hence, our focus on asset sales may only allow us to capture part of the real effect of rating changes. This leads to the following robustness result.

Robustness Result 1. *Transaction costs would prevent some assets sales from happening. This works against finding empirical evidence for Implication 1.*

A.4. Incorporating other characteristics

Now assume that financial distress costs are not only driven by ratings and leverage, but also by another characteristic X. To focus on the effect of X, we assume markets to be perfectly liquid and no outside options to be available. We have that

$$r = r_a - \frac{D}{V} Tr_d + \gamma\left(a\frac{D}{V} + bCR + cX\right)^2, \tag{14}$$

$$= r_a - \frac{D}{V} Tr_d + \gamma\left(\left(a\frac{D}{V}\right)^2 + b^2CR^2 + c^2X^2 + 2ab\frac{D}{V}CR + 2ac\frac{D}{V}X + 2bcCRX\right). \tag{15}$$

We derive the optimal leverage and the condition keep the non-core asset as before.

Lemma 2. *Given a rating, the optimal leverage ratio is given by*

$$\left(\frac{D}{V}\right)^{***} = \frac{-2a(bCR + cX) + \gamma^{-1}Tr_d}{2a^2}. \tag{16}$$

In this setting, the CEO optimally holds on to the non-core segment if

$$r^{***} \leq IRR_{nc} + \beta, \tag{17}$$

where r^{***} is given by (14) evaluated at $\left(\frac{D}{V}\right)^{***}$.

Other characteristics may be important as these could give rise to omitted variables concerns or interfere with the predictions derived before (confounding characteristics effects). We first address the omitted variable concern. Because ratings are coarse, a deterioration in X to a level X' affects the credit rating with strictly positive probability. It follows from (16) that under the financial constraints channel, the optimal leverage adjustment is larger if X' results in a rating deterioration. It follows from (17) that under the discipline channel, the sale of the under-performing segment is also more likely if X' results in a rating deterioration (as selling the non-core asset offsets a larger negative utility effect).

Proposition 3. *In response to the rating deterioration induced by X', the CEO lowers leverage to*

$$\left(\frac{D}{V}\right)^{***'} = \frac{-2a(b(CR + \Delta CRI_{ch}) + cX') + \gamma^{-1}Tr_d}{2a^2}, \tag{18}$$

if

$$r^{***'}_{I_{ch}=1} \leq \frac{(\beta + IRR_{nc})IC_{nc} + IC_c r^{***'}_{I_{ch}=0}}{IC_{nc} + IC'_c}, \tag{19}$$

where I_{ch} is an indicator function that equals 1 in case of a rating change and 0 otherwise, $\Delta CR = CR' - CR$, and $r^{***'}_{I_{ch}}$ is given by Eq. (14) evaluated at $\left(\frac{D}{V}\right)^{***'}$, X' and I_{ch}.

Hence, even if a rating change is induced by a change in credit quality that matters by itself for financial distress costs, there is an incremental effect on the likelihood of asset sales under both channels caused by the rating change.

Robustness Result 2. *Rating changes driven by deteriorations in credit risk induce asset sales over and above the effect of credit risk deteriorations on their own, irrespective of the channel at work.*

Next, we address the confounding characteristics effect. We show the effect of confounding characteristics for both the discipline channel and the financial constraints channel. In the financial distress component of Eq. (15), there is an interaction term with leverage, which influences leverage choices. As a result, asset sales that attenuate financial distress by improving other firm characteristics require smaller leverage decreases than asset sales that worsen financial distress through their effect on firm characteristics. Since leverage reductions are costly due to the loss of tax shields, the financial constraints channel predicts that assets are sold that aggravate financial distress and that assets are kept that mitigate it. Yet, the sale of the non-core segment involves similar effects (it may require an additional leverage reduction with associated costs). Yet, Eq. (15) also contains the interaction term $2bcCRX$. Under the financial constraints hypothesis, the rating is likely to stay poor, so the effect of this interaction term is large. By contrast, under the discipline channel the asset sale is likely to improve the rating, and hence, these characteristics are likely to matter less. We work this out formally below.

Proposition 4. *Assume that selling (from) segment k induces X to change to X_{-k}. In response to the rating deterioration, the CEO lowers leverage to*

$$\left(\frac{D}{V}\right)^{***"} = \frac{-2ab(CR + \Delta CRI_{ch} + cX_{-k^*}) + \gamma^{-1}Tr_d}{2a^2}, \tag{20}$$

if

$$r^{***"} \leq \frac{(\beta + IRR_{nc})IC_{nc} + r^{***}_{-nc}IC_c + IRR_c(IC'_c - IC_c)}{IC_{nc} + IC'_c}, \tag{21}$$

where $r^{***"}$ is given by Eq. (14) evaluated at $\left(\frac{D}{V}\right)^{***"}$ and X_{-k^*}, r^{***}_{-nc} is given by (14) evaluated at $\left(\frac{D}{V}\right)^{***"}$ with $k = nc$ and $I_{ch} = 0$, and

$$k^* = \arg \min_{k \in \{c1, c2, nc, s\}} X_{-k}. \tag{22}$$

Otherwise the CEO sells segment nc and changes leverage to a level that incorporates X_{-nc}.

Implication 5. *Confounding characteristics matter more for leverage-reducing assets sales than for asset sales aimed at improving asset configurations.*

In summary, our model predicts that negative rating actions lead to an increase in asset sales. It also generates several robustness results that mitigate concerns about omitted variables and alternative responses to negative rating actions in our subsequent empirical estimations. Finally, the model generates several predictions that can help us delineate between a discipline channel and a tightening of financial constraints channel.

A.5. Proofs

Proof of Lemma 1. Minimizing the discount rate r with respect to $\frac{D}{V}$ yields the first-order condition

$$0 = \gamma \left(2a^2 \frac{D}{V} + 2abCR\right) - Tr_d. \tag{23}$$

Solving w.r.t. $\frac{D}{V}$ yields Eq. (6).

Now we denote Eq. (3) evaluated at $\left(\frac{D}{V}\right)^*$ as r^*. We can write the utility function of the CEO as

$$U_m = \beta IC_{nc} + (IRR_{nc} - r^*)IC_{nc} + (IRR_c - r^*)IC_c, \tag{24}$$
$$= (\beta + (IRR_{nc} - r^*))IC_{nc} + (IRR_c - r^*)IC_c. \tag{25}$$

This is maximized by holding on to segment nc when

$$(\beta + (IRR_{nc} - r^*)) \geq 0, \tag{26}$$
$$r^* \leq IRR_{nc} + \beta. \tag{27}$$

□

Proof of Proposition 1. If segment nc is held on to, Lemma 1 provides the new optimal leverage ratio in Eq. (8). If segment nc is sold, optimal leverage is unchanged as the rating

is reverted to level CR in that case. To find the optimal solution, we need to compare CEO utility when selling with keeping segment nc. We have that keeping nc is optimal when

$$(IRR_c - r^*)IC_c \leq (\beta + IRR_{nc} - r^{*'})IC_{nc} + (IRR_c - r^{*'})IC'_c, \Rightarrow \tag{28}$$

$$r^{*'}(IC_{nc} + IC'_c) \leq (\beta + IRR_{nc})IC_{nc} + r^*IC_c, \Rightarrow \tag{29}$$

$$r^{*'} \leq \frac{(\beta + IRR_{nc})IC_{nc} + IC_c r^*}{IC_{nc} + IC'_c}. \tag{30}$$

□

Proof of Proposition 2. We can transform one-off transaction costs to a perpetuity. Since there is no uncertainty about these costs, the discount rate is the risk-free rate. We have that

$$\frac{(D^{**} - D^*)}{l_x} = \frac{r_f(D^{**} - D^*)}{l_x r_f} = \frac{V r_f(\frac{D^{**}}{V} - \frac{D^*}{V})}{l_x r_f}, \tag{31}$$

$$(1 - l_{nc})IC_{nc} = \frac{(1 - l_{nc})r_f IC_{nc}}{r_f}. \tag{32}$$

Hence, per period transaction costs for reducing leverage are $\frac{V r_f(\frac{D^{**}}{V} - \frac{D^*}{V})}{l_x}$ and for selling segment nc they equal $(1 - l_{nc})r_f IC_{nc}$. We now have that the cost of capital accounting for transaction costs of adjusting leverage is given as a function of leverage by

$$r = r_a - \frac{D}{V}Tr_d + \frac{V r_f|\frac{D}{V} - \frac{D^*}{V}|}{l_x} + \gamma\left(a\frac{D}{V} + bCR'\right)^2. \tag{33}$$

Imposing a first-order condition and minimizing w.r.t. $\frac{D}{V}$ yields Eq. (10) for a given l_x. Since r is decreasing in l_x, r is minimized by maximizing l_x, giving rise to Eq. (13). It is optimal for the CEO to keep segment nc when

$$(IRR_c - r^*)IC_c - (1 - l_{nc})r_f IC_{nc} \leq (\beta + IRR_{nc} - r^{**})IC_{nc} + (IRR_c - r^{**})IC'_c. \tag{34}$$

Re-writing yields Eq. (11). □

Proof of Lemma 2. Minimizing the discount rate r with respect to $\frac{D}{V}$ yields the first-order condition

$$0 = \gamma\left(2a^2\frac{D}{V} + 2a(bCR + cX)\right) - Tr_d. \tag{35}$$

Solving w.r.t. $\frac{D}{V}$ yields Eq. (16).

Now we denote Eq. (14) evaluated at $\left(\frac{D}{V}\right)^{***}$ as r^{***}. The utility function of the CEO is given by

$$U_m = \beta IC_{nc} + (IRR_{nc} - r^{***})IC_{nc} + (IRR_c - r^{***})IC_c, \tag{36}$$

$$= (\beta + (IRR_{nc} - r^{***}))IC_{nc} + (IRR_c - r^{***})IC_c. \tag{37}$$

This is maximized by holding on to segment nc when

$$(\beta + (IRR_{nc} - r^{***})) \geq 0, \tag{38}$$

$$r^{***} \leq IRR_{nc} + \beta. \tag{39}$$

□

Proof of Proposition 3. If segment nc is held on to, Lemma 2 provides the new optimal leverage ratio in Eq. (16) given rating level CR'. If segment nc is sold, optimal leverage Lemma 2 provides the new optimal leverage ratio in Eq. (16) with rating level CR as the rating is reverted to level CR in that case. To find the optimal action for the CEO, we need to compare CEO utility when selling with keeping segment nc. We have that keeping segment nc is optimal when

$$(IRR_c - r^{***'}_{I_{ch}=0})IC_c \leq (\beta + IRR_{nc} - r^{***'}_{I_{ch}=1})IC_{nc} + (IRR_c - r^{***'}_{I_{ch}=1})IC'_c, \Rightarrow \tag{40}$$

$$r^{***'}_{I_{ch}=1}(IC_{nc} + IC'_c) \leq (\beta + IRR_{nc})IC_{nc} + r^{***'}_{I_{ch}=0}IC_c, \Rightarrow \tag{41}$$

$$r^{***'}_{I_{ch}=1} \leq \frac{(\beta + IRR_{nc})IC_{nc} + IC_c r^{***'}_{I_{ch}=0}}{IC_{nc} + IC'_c}. \tag{42}$$

□

Proof of Proposition 4. The optimal leverage with characteristics X_{-k} is given by Lemma 2. Since a smaller X_{-k} leads to a lower discount rate and therefore higher EVA, this is optimized by choosing the k that minimizes X_{-k}. This gives rise to Eq. (22). When segment nc is sold, the optimal new leverage is given by Lemma 2.

It is then optimal for the CEO to keep segment nc when

$$(IRR_c - r^{***}_{-nc})IC_c \leq (\beta + IRR_{nc} - r^{***"})IC_{nc} + (IRR_c - r^{***"})IC'_c. \tag{43}$$

Re-writing yields Eq. (11). □

B. Supplementary Tables

Table B.1: Cox hazard regressions using distance-weighted credit rating downgrades
The table presents coefficient estimates for the hazard rates of asset sale events using Cox proportional hazard regressions on a monthly basis over the entire sample. In each specification, we weigh all observations of a firm by the sample-period average of the absolute inverse distance of that firm's rating relative to the IG-HY boundary (in notches). Non-rated firms receive the minimum weight among the rated firms. We re-scale all weights to get a sample average weight of 1. In specifications (1) and (2) this is done symmetrically. In specifications (3) and (4), weights on the HY side of the spectrum are multiplied by 2 and in specifications (5) and (6) these are multiplied by 5. The same covariates are included as in Table 4. We cluster standard errors by firm and report t-statistics in brackets. Respectively, *, **, and *** denote statistical significance at the 10%, 5%, and 1% level.

	(1)	(2)	(3)	(4)	(5)	(6)
Rating downgrade (0,1)	0.433***	0.393***	0.436***	0.402***	0.435***	0.410***
	[11.16]	[9.91]	[11.28]	[10.17]	[11.31]	[10.38]
Rating upgrade (0,1)	-0.220***	-0.175***	-0.240***	-0.185***	-0.257***	-0.195***
	[-4.11]	[-3.22]	[-4.45]	[-3.40]	[-4.77]	[-3.58]
Other Covariates	Yes	Yes	Yes	Yes	Yes	Yes
Industry FEs	No	Yes	No	Yes	No	Yes
Time FEs	No	Yes	No	Yes	No	Yes
Industry covariates	No	Yes	No	Yes	No	Yes
Ratio HY vs IG weights	1	1	2	2	5	5
Number of observations	634,319	624,012	640,069	629,820	646,724	636,542
Pseudo R^2	0.038	0.076	0.036	0.076	0.034	0.077

Table B.2: Hazard rate regressions by purpose including watchlist placements
The table presents coefficient estimates for the hazard rates of asset sale events by self-reported purposes: Relaxing credit constraints (Relax), Discipline, Ambiguous, or spinoff. Specification (1) to (4) are Cox proportional hazard regressions on a monthly basis over the entire sample. These specifications assume that multiple events can happen to a subject and that hazard rates are unaffected by such events. Specifications (5) to (8) present sub-hazard estimates for asset sales using the competing risk model by Fine and Gray (1999), where subjects leave the sample after the first event takes place. The same covariates are included as in Table 4. We cluster standard errors by firm and report t-statistics in brackets. Respectively, *, **, and *** denote statistical significance at the 10%, 5%, and 1% level.

	Multiple events with others as censored				Competing risk (1st only) subhazard			
	Relax	Disicpline	Ambiguous	Spinoff	Relax	Discipline	Ambiguous	Spinoff
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Rating downgrade (0, 1)	0.333*	0.311*	0.280***	0.123	0.655	-0.312	0.335***	-0.864
	[1.71]	[1.78]	[3.82]	[0.41]	[1.60]	[-0.76]	[2.84]	[-1.15]
Rating upgrade (0, 1)	-0.167	-0.579*	-0.206**	-0.710*	0.716	-0.888	0.0751	-0.725
	[-0.51]	[-1.94]	[-2.29]	[-1.90]	[1.12]	[-1.19]	[0.50]	[-1.30]
Negative watchlist (0,1)	0.779***	0.422**	0.322***	0.275	0.831**	0.458	0.193	-0.913
	[3.81]	[2.00]	[3.58]	[0.81]	[2.13]	[1.08]	[1.27]	[-0.86]
Positive watchlist (0,1)	-0.357	-0.0644	0.284*	-1.133	-13.00***	-0.168	0.393	-0.0239
	[-0.71]	[-0.14]	[1.88]	[-1.16]	[-35.59]	[-0.16]	[1.57]	[-0.02]
Other covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FEs	No	No	No	No	No	No	No	No
Time FEs	No	No	No	No	No	No	No	No
Industry covariates	No	No	No	No	No	No	No	No
Number of observations	606,503	606,503	606,503	606,503	470,476	470,476	470,476	470,476
Pseudo R^2	0.119	0.045	0.054	0.058	-	-	-	-
Number of clusters	6,550	6,550	6,550	6,550	6,482	6,482	6,482	6,482

Table B.3: Inter-firm segment performance analysis including watchlist placements
The table presents average marginal effects of logit regressions of dummy variables equal to 1 for inter-firm segment underperformance and 0 otherwise, in comparison to medians of peer segments in other multi-segment firms with matching 2-digit SIC codes for Profitability, Profit Margin, Asset Turnover, Operating Cash Flow, and Net CF using the Segment Sale sample. Negative (Positive) watchlist (0,1) refers to a dummy variable that equals 1 in case the firm was put on negative (positive) watch during the 12 months preceding the observation. t-statistics are in brackets. Respectively, *, **, and *** denote statistical significance at the 10%, 5%, and 1% level. Variable descriptions are in Table 1.

	Profitability	Profit Margin	Asset Turnover	Operating CF	Net CF
VARIABLES	(1)	(2)	(3)	(4)	(5)
Rating downgrade (0, 1) = 1	-0.00894	-0.0383	0.0468	0.0315	0.0556
	[-0.195]	[-0.861]	[1.005]	[0.662]	[1.138]
Rating upgrade (0, 1) = 1	-0.170**	-0.110	0.00760	-0.103	-0.128*
	[-2.522]	[-1.616]	[0.099]	[-1.336]	[-1.819]
Negative watchlist (0,1)	0.0338	0.0384	-0.0784	-0.0273	-0.0530
	[0.665]	[0.761]	[-1.597]	[-0.537]	[-1.013]
Positive watchlist (0,1)	0.0785	-0.00547	0.116	-0.0410	0.0569
	[0.790]	[-0.056]	[1.342]	[-0.407]	[0.603]
Other covariates	Yes	Yes	Yes	Yes	Yes
Rating FEs	Yes	Yes	Yes	Yes	Yes
Time FEs	Yes	Yes	Yes	Yes	Yes
Number of observations	874	978	1,113	853	801
Pseudo R^2	0.125	0.109	0.0859	0.150	0.162

Table B.4: Intra-firm segment performance analysis including watchlist placements
The table presents average marginal effects of logit regressions of dummy variables indicating intra-firm segment under- or over-performance on covariates described in Table 1 using the Segment Sale sample. In specification (4) we include a variable indicating the fraction of segments that are core segments to correct for mechanical effects. The same covariates are included as in Table B.3. t-statistics are in brackets. Respectively, *, **, and *** denote statistical significance at the 10%, 5%, and 1% level.

VARIABLES	Low Operating Cash flow (1)	Highest Tobin's q (2)	Non-Core Segment (3)	Low Profitability (4)	Low Profit Margin (5)	Low Asset Turnover (6)
Rating downgrade (0, 1) = 1	0.139***	0.112***	0.0345	0.0766	-0.0174	0.0845**
	[2.861]	[2.817]	[0.697]	[1.545]	[-0.350]	[1.982]
Rating upgrade (0, 1) = 1	0.204***	-0.0484	-0.0318	0.136*	0.00593	-0.0900
	[2.754]	[-0.712]	[-0.430]	[1.790]	[0.074]	[-1.270]
Negative watchlist (0,1)	-0.118**	-0.0419	-0.0240	-0.0917	0.0823	-0.0373
	[-2.011]	[-0.931]	[-0.471]	[-1.602]	[1.493]	[-0.774]
Positive watchlist (0,1)	-0.281**	-0.00996	0.100	-0.214*	-0.206*	0.0486
	[-2.413]	[-0.124]	[1.106]	[-1.912]	[-1.953]	[0.542]
Other covariates	Yes	Yes	Yes	Yes	Yes	Yes
Rating FEs	Yes	Yes	Yes	Yes	Yes	Yes
Time FEs	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	908	1,308	989	957	1,046	1,185
Pseudo R^2	0.0554	0.0993	0.165	0.0430	0.0468	0.0497

Table B.5: Hazard rate regressions by purpose for firms with young CEOs and CEOs with short tenures
The table presents coefficient estimates for the hazard rates of asset sale events by self-reported purposes: Relaxing credit constraints (Relax) or Discipline on a monthly basis over the entire sample. These specifications assume that multiple events can happen to a subject and that hazard rates are unaffected by such events. Columns (1) and (3) are restricted to firms with young CEOs (below the median of 56 years old). Columns (2) and (4) are restricted to firms with short tenures (below the median of 5.91 years). The same covariates are included as in Table 4. We cluster standard errors by firm and report t-statistics in brackets. Respectively, *, **, and *** denote statistical significance at the 10%, 5%, and 1% level.

	Relax		Discipline	
	Young (1)	Short tenure (2)	Young (3)	Short tenure (4)
Rating downgrade (0, 1)	0.310	0.486*	0.139	0.356
	[0.92]	[1.67]	[0.54]	[1.56]
Rating upgrade (0, 1)	0.0619	-0.491	-0.321	-0.505
	[0.15]	[-0.87]	[-0.77]	[-1.32]
Other covariates	Yes	Yes	Yes	Yes
Industry FEs	No	No	No	No
Time FEs	No	No	No	No
Industry covariates	No	No	No	No
Number of observations	135,819	135,819	135,819	147,467
Pseudo R^2	0.169	0.11	0.077	0.065
Number of clusters	2,057	2,057	2,057	2,082

Table B.6: Payout regressions
The table presents average marginal effects logit regressions of reductions in total payout to equity holders on all explanatory variables in Bliss et al. (2015) as well as same year and previous year rating actions at the firm/year level. See the Appendix of Bliss et al. (2015) for variable definitions. t-statistics are in brackets. Respectively, *, **, and *** denote statistical significance at the 10%, 5%, and 1% level.

Dependent variable	Payout reduction	
	(1)	(2)
Rating downgrade (0,1)	0.0575***	0.0566***
	[9.066]	[8.899]
Rating downgrade (t-1)	0.0446***	0.0455***
	[6.623]	[6.739]
Rating upgrade (0,1)		-0.0184*
		[-1.827]
Rating upgrade (t-1)		0.0123
		[1.429]
Age (t-1)	0.000142	0.000142
	[0.881]	[0.884]
Log assets (t-1)	-0.00588***	-0.00583***
	[-3.587]	[-3.532]
Loss making (t-1)	-0.0127***	-0.0127***
	[-7.349]	[-7.300]
Investment ratio (t-1)	0.0228	0.0217
	[0.836]	[0.796]
Market Leverage (t-1)	-0.000456	-0.000430
	[-0.421]	[-0.397]
Cash flow ratio	-0.330***	-0.329***
	[-14.201]	[-14.151]
CashRatio (t-1)	-0.128***	-0.127***
	[-7.365]	[-7.361]
Tobin's q	-0.109***	-0.109***
	[-18.842]	[-18.802]
Volatility (t-1)	-0.0635**	-0.0622**
	[-2.089]	[-2.046]
Cash flow volatility	-0.102***	-0.101***
	[-3.081]	[-3.074]
Payout Ratio (t-1)	3.956***	3.952***
	[49.832]	[49.727]
Payout Reduction (t-1)	0.0444***	0.0444***
	[11.250]	[11.256]
Industry FEs	Yes	Yes
Year FEs	Yes	Yes
Number of observations	40,420	40,420
Pseudo R^2	0.286	0.286
Number of clusters	5,157	5,157

Table B.7: Post Regulation FD removal sample
The table presents coefficient estimates for the hazard rates of asset sale events using Cox proportional hazard regressions on a monthly basis over the sample period starting from September 2010 (after which CRAs were not exempted from Regulation FD anymore). The same covariates are included as in Table 4. We cluster standard errors by firm and report t-statistics in brackets. Respectively, *, **, and *** denote statistical significance at the 10%, 5%, and 1% level.

	(1)	(2)	(3)	(4)	(5)
Rating downgrade (0,1)	0.470***	0.284*	0.292*	0.294**	0.310**
	[3.06]	[1.87]	[1.92]	[1.99]	[2.05]
Rating upgrade (0,1)	-0.592***	-0.443**	-0.443**	-0.417*	-0.353
	[-2.95]	[-2.01]	[-2.00]	[-1.87]	[-1.62]
Other covariates	No	Yes	Yes	Yes	Yes
Industry FEs	No	No	No	Yes	Yes
Time FEs	No	No	Yes	No	Yes
Industry covariates	No	No	No	No	Yes
Number of observations	132,674	97,123	97,123	97,100	94,944
Pseudo R^2	0.042	0.074	0.082	0.098	0.109
Number of clusters	3,241	2,469	2,469	2,468	2,437

Table B.8: Cox hazard regressions and acquisition activity
The table presents coefficient estimates for the hazard rates of asset sale events using Cox proportional hazard regressions on a monthly basis over the entire sample. Acquisition spending is the monthly ratio of aggregated deal values for firm i from month t–24 to t–6 to the most recent book value of assets prior to month t. Acquisition activity is an indicator variable equal to one if Acquisition spending > 0 and zero otherwise. We define Cash (equity) acquisition spending as the aggregate dollars spent with cash (equity) on acquisitions for firm i from month t–24 to t–6 to the most recent book value of assets prior to month t. All acquisition activity and spending is from SDC. Models (1) to (5) utilize the full sample of observations. Model (6) is for the sub-sample where Acquisition activity equals one and model (7) is for the sub-sample where Acquisition activity equals zero. The same covariates are included as in Table 4. We cluster standard errors by firm and report t-statistics in brackets. Respectively, *, **, and *** denote statistical significance at the 10%, 5%, and 1% level.

						Acquisition Activity	
						Yes	No
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Rating downgrade (0,1)	0.360***	0.335***	0.352***	0.352***	0.344***	0.333***	0.317***
	[5.61]	[5.18]	[5.52]	[5.48]	[5.40]	[3.78]	[3.76]
Rating upgrade (0,1)	-0.161*	-0.190**	-0.158*	-0.167**	-0.163**	-0.231**	-0.115
	[-1.95]	[-2.27]	[-1.91]	[-2.03]	[-1.98]	[-1.97]	[-1.02]
Recent M&A Activity	0.926***		0.866***	0.878***	0.817***		
	[19.27]		[15.38]	[17.81]	[14.37]		
Aggregate value Recent M&A Activity		2.476***					
		[16.95]					
Aggregate cash in Recent M&A Activity			0.747**		0.751**		
			[2.49]		[2.56]		
Aggregate stock in Recent M&A Activity				1.534***	1.540***		
				[4.26]	[4.34]		
Other covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FEs	No	No	No	No	No	No	No
Time FEs	No	No	No	No	No	No	No
Industry covariates	No	No	No	No	No	No	No
Number of observations	587,043	587,043	587,043	587,043	587,043	134,596	452,447
Pseudo R^2	0.066	0.061	0.067	0.067	0.067	0.083	0.053
Number of clusters	6,406	6,406	6,406	6,406	6,406	3,305	6,087

Table B.9: Cox hazard regressions excluding LBOs
The table presents coefficient estimates for the hazard rates of asset sale events using Cox proportional hazard regressions on a monthly basis over the entire sample. We exclude asset sale events that are LBO deals (model (1)), where the seller is an LBO firm (model (2)), where the seller parent is an LBO firm (model (3)), and where the acquirer is an LBO firm (model (4)). The same covariates are included as in Table 4. We cluster standard errors by firm and report t-statistics in brackets. Respectively, *, **, and *** denote statistical significance at the 10%, 5%, and 1% level.

	No LBO	Target no LBO	Target parent no LBO	Acquirer no LBO
	(1)	(2)	(3)	(4)
Rating downgrade (0, 1)	0.391***	0.392***	0.396***	0.399***
	[5.71]	[5.92]	[5.97]	[5.94]
Rating upgrade (0, 1)	-0.252***	-0.207**	-0.216**	-0.209**
	[-2.83]	[-2.46]	[-2.54]	[-2.44]
Other covariates	Yes	Yes	Yes	Yes
Industry FEs	No	No	No	No
Time FEs	No	No	No	No
Industry covariates	No	No	No	No
Number of observations	587,043	587,043	587,043	587,043
Pseudo R^2	0.055	0.055	0.055	0.056
Number of clusters	6,406	6,406	6,406	6,406

Table B.10: Cox hazard regressions for failed asset sales and asset sales by purpose
The table presents coefficient estimates for the hazard rates of failed asset sale events by self-reported purposes: Relaxing credit constraints (Relax), Discipline, or Ambiguous. Specification (1) presents Cox proportional hazard regressions on a monthly basis over the entire sample for never completed deals that were rumored, intended, pending, were seeking a buyer or only partially completed (failed deals). This specification implicitly assumes that multiple events can happen to a subject and that hazard rates are unaffected by past events. Specifications (2) to (5) present sub-hazard estimates for failed deals and asset sales by purpose using the competing risk model by Fine and Gray (1999). The same covariates are included as in Table 4. We cluster standard errors by firm and report t-statistics in brackets. Respectively, *, **, and *** denote statistical significance at the 10%, 5%, and 1% level.

		Competing risk (1st only) subhazard			
	Failed asset sale	Relax	Discipline	Ambiguous	Failed asset sale
	(1)	(2)	(3)	(4)	(5)
Rating downgrade (0, 1)	0.301***	0.830	-0.336	0.381***	0.223
	[3.03]	[1.56]	[-0.70]	[3.02]	[1.26]
Rating upgrade (0, 1)	-0.313**	0.998	-0.777	0.204	-0.0639
	[-2.23]	[1.49]	[-1.07]	[1.32]	[-0.27]
Other covariates	Yes	Yes	Yes	Yes	Yes
Industry FEs	No	No	No	No	No
Time FEs	No	No	No	No	No
Industry covariates	No	No	No	No	No
Number of observations	606,620	444,579	444,579	444,579	444,579
Pseudo R^2	0.036	-	-	-	-
Number of clusters	6,550	6,467	6,467	6,467	6,467

Table B.11: Cox hazard regression excluding anticipated deals
The table presents coefficient estimates for the hazard rates of asset sale events using Cox proportional hazard regressions on a monthly basis over the entire sample. We exclude asset sale events that were rumored before completion (model (1)), that had announced that they were seeking a buyer prior to completion (model (2)), and both (model (3)). The same covariates are included as in Table 4. We cluster standard errors by firm and report t-statistics in brackets. Respectively, *, **, and *** denote statistical significance at the 10%, 5%, and 1% level.

	(1)	(2)	(3)
	Excluding Rumors	Excluding seeking buyer	Excluding both
Rating downgrade (0, 1)	0.379***	0.357***	0.355***
	[5.81]	[5.32]	[5.23]
Rating upgrade (0, 1)	-0.188**	-0.145	-0.158*
	[-2.19]	[-1.63]	[-1.76]
Other covariates	Yes	Yes	Yes
Industry FEs	Yes	Yes	Yes
Time FEs	Yes	Yes	Yes
Industry covariates	Yes	Yes	Yes
Number of observations	578,306	578,306	578,306
Pseudo R^2	0.084	0.082	0.081
Number of clusters	6,364	6,364	6,364