Make-Whole Clauses as Skin in the Game

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April 1, 2026

Make-whole clause example (GM, SEC filing 333-268704)

Optional Redemption

Prior to the applicable Par Call Date, we may redeem the 2030 Notes and the 2035 Notes at our option, in whole or in part, at any time and from time to time, at a redemption price (expressed as a percentage of principal amount and rounded to three decimal places) equal to the greater of:

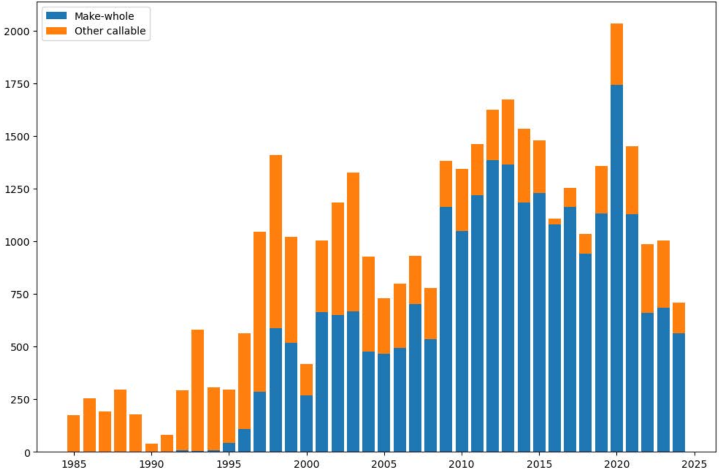
(i) 100% of the principal amount of the Notes to be redeemed; and

(ii) (a) the sum of the **present values of the remaining scheduled payments** of principal and interest on the Notes being redeemed, **discounted** to the date of redemption (assuming the applicable series of Notes matured on the applicable Par Call Date) on a semi-annual basis **at the Treasury Rate** (as defined below) **plus 15 basis points**, in the case of the 2030 Notes, **or 25 basis points**, in the case of the 2035 Notes, *less* (b) interest accrued to the date of redemption,

plus, in either case, accrued and unpaid interest thereon to the redemption date.

On or after the applicable Par Call Date, we may redeem the 2030 Notes and the 2035 Notes, in whole or in part, at any time and from time to time, at a redemption price equal to 100% of the principal amount of the Notes being redeemed, plus accrued and unpaid interest thereon to, but excluding, the applicable redemption date.

The rise of make-whole clauses



Source: Mergent FISD, data include all fixed-rate, callable bonds issued by non financial firms.

Other markets

Make-whole clauses are almost always out of the money

- Given remaining payment sequence m and treasury rate r^F, the value of redemption is:

$$PV(m, ytm) - PV(m, r_{mw}) = PV\left(m, r^F + \text{G-spread}\right) - PV\left(m, r^F + \text{MW premium}\right)$$

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- So the make-whole option is in the money if G-spread $<$ MW premium

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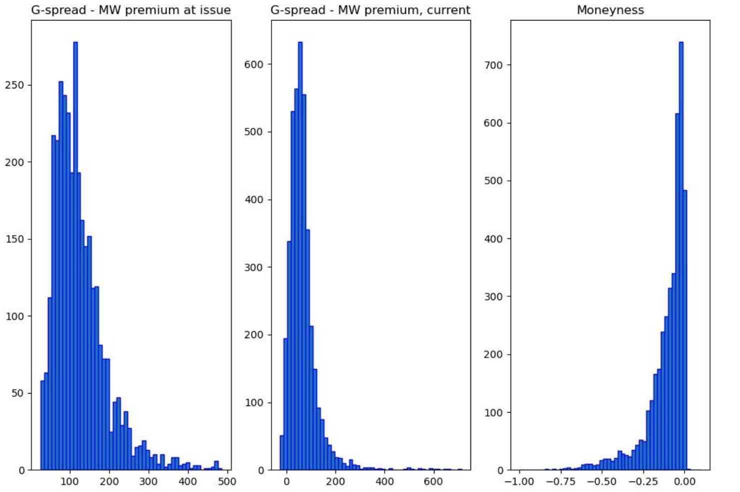

Source: Bloomberg, 2/3/2025, all bonds with make-whole clauses issued by non financial firms.

Other markets

Determinants of make-whole moneyness

	(1)	(2)	(3)
Maturity at origination	0.00460***	0.00421***	-0.00069***
Current G-spread		0.00017***	0.00016***
Remaining maturity			0.00652***
Industry controls	*Yes*	*Yes*	*Yes*
Issuer/Issue characteristics	*Yes*	*Yes*	*Yes*
Observations	*3113*	*3113*	*3113*
R-squared	*0.38*	*0.43*	*0.54*

Notes: dependent variable is $\ln \frac{MV - MWP}{MV}$*, positive effect means more negative moneyness*

In summary

1. Make-whole clauses are now ubiquitous
2. They are almost always deeply out of the money
3. Moneyness improves mechanically as time to maturity declines or credit quality improves

“In contrast to fixed price callable bonds, make whole bonds are largely incapable of mitigating bondholder-shareholder conflicts.”

Alderson, Fang, and Stock (2017)

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"Since these options are virtually never in the money, their value would remain close to zero over the life of the bond and even revelations of positive information are not likely to change that. As such, equity-holders will receive very little compensation for their private information."

Elsaify and Roussanov (2016)

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- When it is costly to condition debt payments on the arrival and quality of outside options, make-whole options play an essential role
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What we do

- When it is costly to condition debt payments on the arrival and quality of outside options, make-whole options play an essential role
- Fixed-price calls distort the exercise of those options
- In addition, call prices designed to be above market value mitigate both moral hazard and adverse selection ...
- ... because they constitute skin in the game
- This view also provides natural explanations for the main empirical features of make-whole clauses

Static environment (1)

- $t \in \{0, 1\}$
- Borrowers born with no resources other than a project of type $\theta \sim \mu$
- Project requires $I > 0$ at date 0 . . .
- . . . and yields $y > 0$ with probability θ at the end of the period
- After capital is installed, with probability $\lambda > 0$, borrowers privately draw an outside option of value $V \geq 0$, from a distribution with density f

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- Lenders have deep pockets and can store funds at stochastic return $R \geq 0$, with $E(R) = 1$
- R is drawn publicly before borrowers learn V

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- Captures, e.g.:
  - lack of expertise;
  - lack of ability to enforce payments in the new venture;
  - geographical or sector mandates;
  - covenant violation;
  - underwriting constraints;
  - ...

Contracts

- A contract is, for all possible realizations of R, a payment $m(R) \leq y$ if the project is continued to maturity and successful and a payment $c(R) \geq 0$ if they choose to exercise the outside option

Timing

$t = 0$:

– Borrower offers contract $\mathcal{C} = \{m(R), c(R)\}$ to the lender

– Lender invests I in exchange for contract

– Common storage rate R is realized

– Value V/R of outside option arrives with probability λ

– The borrower pays $c(R)$ to lender if he takes the option

$t = 1$:

– If project is continued, it generates cash flow y with probability θ;

– Borrower makes payment $m(R)$ to the lender if the project is successful.

Outside option exercise

Given a contract, upon learning V, borrowers exercise the outside option if

$$\left(\frac{V}{R} - c(R)\right) R = V - c(R)R \geq \theta[y - m(R)]$$

Optimal contracts when project type is known

Borrowers seeks to maximize:

$$\int \theta(y - m(R))g(R)dR + \lambda \int \left\{ \int_{\theta[y-m(R)]+c(R)R}^{+\infty} [V - c(R)R - \theta(y - m(R))]f(V)dV \right\} g(R)dR$$

subject to:

$$\int \theta m(R)g(R)dR + \lambda \int \left\{ \int_{\theta[y-m(R)]+c(R)R}^{+\infty} [c(R)R - \theta m(R)]f(V)dV \right\} g(R)dR \geq I$$

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Any contract with

$$c(R)R \neq \theta m(R)$$
$$\iff c(R) \neq \frac{\theta m(R)}{R}$$

destroys surplus by distorting the exercise of the outside option

Optimal prepayment clauses when type is known

Proposition

When project types are publicly known, an optimal contract exists if and only if

$$\theta y + \lambda \int_{c}^{+\infty} (c - \theta y) f(V) dV \geq I,$$

for some $c \geq \theta y$. Furthermore, all optimal contracts satisfy

$$c(R) \geq \frac{\theta \cdot m(R)}{R},$$

with equality for all R if and only if $\theta y \geq I$.

Implementation

Corollary

When project types are public,

1. *All optimal contracts can be implemented with a fixed payment contract m and a make-whole clause that stipulates*

$$c(R) = \frac{\theta \cdot m}{R} + \tau \text{ for all } R$$

   with $\tau \geq 0$;

2. *The make-whole clause features a strictly positive premium $\tau > 0$ if and only if $\theta y < I$;*
3. *Some optimal contracts can also be implemented with a fixed call price $c > 0$ and floating payments $m(R) = \frac{cR - \tau}{\theta}$.*

Hidden effort

- Borrowers exert effort $e \in [0, 1]$ privately before observing R or V
- Effort disutility is $\frac{h}{2}e^2$ with $h > 0$
- Project succeeds with probability $\theta(e) = \theta + e$

Incentive-feasible effort choice

Given a contract $\mathcal{C}$ borrower chooses e to maximize

$$B(\mathcal{C}, e) = (1-\lambda)(\theta + e)(y - m) + \lambda E \max\{(\theta + e)(y - m),\ V - cR\} - \frac{h}{2}e^2$$

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$$h \cdot e^* = (y - m) \cdot [1 - \lambda + \lambda \cdot F((\theta + e^*)y + cR - (\theta + e^*)m)]. \tag{1}$$

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This is a supermodular objective, increasing c boosts effort

Making make-whole options out-of-the-money is essential

Proposition

Suppose the arrival of the liquidation opportunity λ is sufficiently low. There exists a unique optimal contract featuring a fixed rate debt $m < y$, and a make-whole prepayment penalty

$$c(R) = \frac{(\theta + e) \cdot m}{R \cdot (1 - \tau)}. \tag{3}$$

The make-whole premium τ is strictly positive if and only if $I > 0$.

Comparative statics

Corollary

The make-whole premium τ is increasing in investment cost I, expected interest rate R, the firm's baseline credit risk $1-\theta$, and the marginal private effort cost h.

Dynamic extension

- Repeat the above problem in infinite, discrete time
- Project death is an absorbing state
- Borrowers discount future flows at the same rate β
- Intra-period loans are available to finance prepayment cost c at rate $R = \beta^{-1}$
- Give the problem a recursive formulation, with the state of the game summarized by promises $B \geq 0$ to the borrower
- At a particular history, a contract stipulates:
  1. A payment $m \in [0, y]$ if the project is succesfully continued
  2. A prepayment penalty c if the outside option is taken
  3. A continuation promise B_y to the borrower if the project succeeds
  4. A continuation promise B_0 to the borrower if the project fails

Optimal contracts

- Call a sequential contract optimal if it maximizes total surplus $Y(B_0)$
- Lender is willing to participate if a value B_0 exists such that $Y(B_0) \geq B_0 + I$
- Assume full commitment on the part of the lender, including to negative transfers

Contracts, a recursive approach

$$\hat{Y}(B) = \max_{e\in[0,1], m\in[0,y], B_y\geq 0, B_0\geq 0, c\geq 0} \int_0^{e(y-m+\beta B_y)+(1-e)\beta B_0+cR} e(y+\beta Y(B_y))f(V)dV + \int_{e(y-m+\beta B_y)+(1-e)\beta B_0+cR}^{+\infty} Vf(V)dV - Ae^2$$

subject to:

$$\int_0^{e(y-m+\beta B_y)+(1-e)\beta B_0+cR} [y-m+\beta(B_y-B_0)]f(V)dV - 2Ae \begin{cases} \leq 0 & \text{if } e=0 \\ = 0 & \text{if } e\in(0,1) \\ \geq 0 & \text{if } e=1 \end{cases}$$

and:

$$B = \int_0^{e(y-m+\beta B_y)+(1-e)\beta B_0+cR} [e(y-m+\beta B_y)+(1-e)\beta B_0]f(V)dV + \int_{e(y-m+\beta B_y)+(1-e)\beta B_0+cR}^{+\infty} (V-cR)f(V)dV - Ae^2.$$

Promise lotteries

$$Y(B) = \max_{\{(B_L, B_H) \in R^2_+, \alpha \in [0,1]\}} \alpha \hat{Y}(B_L) + (1-\alpha)\hat{Y}(B_H),$$

subject to:

$$\alpha B_L + (1-\alpha) B_H = B.$$

Existence of an optimal contract

Lemma

The above functional equation defines a contraction mapping operator T on the space of bounded real functions equipped with the supnorm, so that Y is well defined. Furthermore, Y is continuous, weakly increasing, and concave in B.

First best

Define (recursively):

$$Y^* = \max_{e \in [0,1]} \int_0^{e(y+\beta Y^*)} e(y+\beta Y^*) f(V) dV + \int_{e(y+\beta Y^*)}^{+\infty} V f(V) dV - Ae^2.$$

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1. $Y^* = Y(Y^*)$
2. Can be implemented by $m = 0$ while $B_y = Y^*$ and $B_0 = 0$ at all histories (aka an all equity firm)
3. There exists $B^* = \inf\{B \geq 0 : Y(B) = Y^*\}$
4. Y increases strictly on $[0, B^*)$ and is constant thereafter

Front-loading payments is optimal

Lemma

Optimal contracts are such that, at all histories, either $m = y$ *or* $B_y \geq B^*$.

Make-whole clauses are essential

Given a history at which the borrowers expects B, define $L \equiv Y(B) - B$.

Lemma

At any history and optimal contract with post-lottery lender promise $L > 0$,

1. $e > 0$
2. $B_y > B_0$ *as long as* $B_y < B^*$
3. $cR \geq e(m + \beta L_y) + (1 - e)\beta L_0$

Out-of-the-money make-whole clauses are essential

Proposition

As long as $e^* < 1$ and $L > 0$, a necessary condition for a contract to be incentive-feasible is

$$cR > e(m + \beta L_y) + (1 - e)\beta L_0.$$

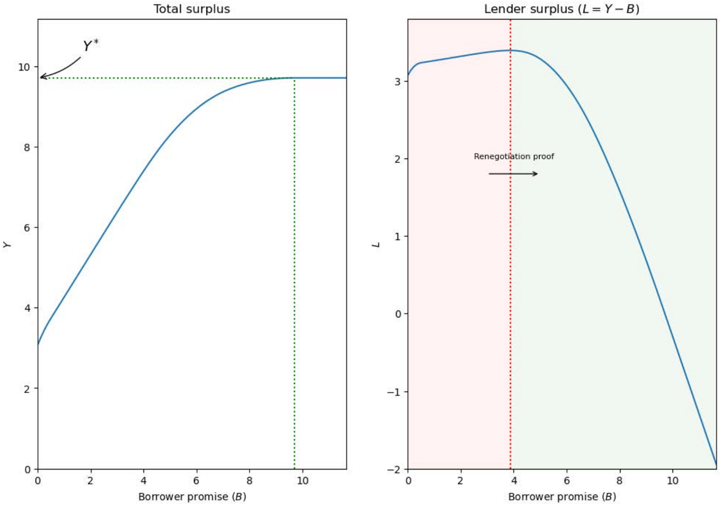
Dynamic implications

- Evolution of equity summarized by:

$$B = \int_0^{\bar{V}} \beta(eB_y + (1-e)B_0)f(V)dV + \int_{\bar{V}}^{+\infty}(V - cR)f(V)dV.$$

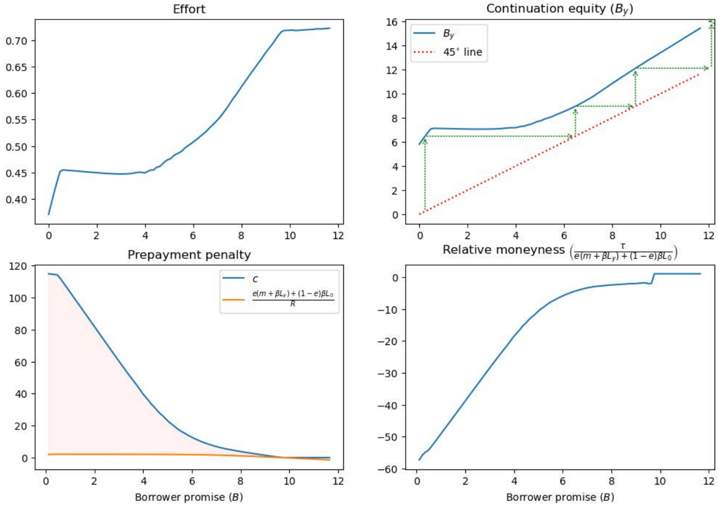
- B has a tendency to rise conditional on survival so, as long as the contract is renegotiation proof (i.e. $Y'(B) < B$) L has a tendency to fall
- We expect this to mean that τ tends to fall with time
- Let's explore this numerically

Value functions



Parametrization: $A = 7$, $y = 3$, $\beta = 0.9$, *V is lognormal with location 0 and dispersion parameter 2.*

Policy functions



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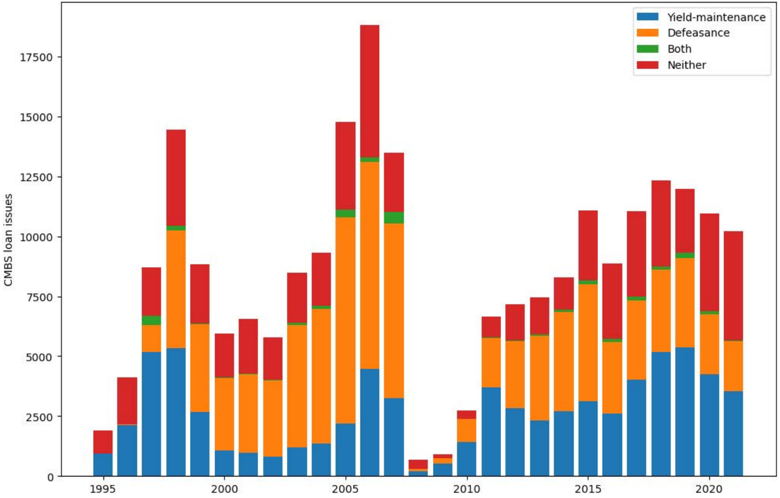
Adverse selection case

- Two types of borrowers with project quality $\theta^H > \theta^L$
- Prepayment penalties help safe borrowers convey their type
- Same idea

Summary

- We rationalize the facts that make-whole clauses are ubiquitous and almost always out of the money
- They alleviate the distortions fixed-price clauses would cause to the exercise of outside options ...
- ...and constitute skin in the game
- So, in fact, make-whole clauses are quite effective at mitigating agency costs

MW clauses on securitized mortgages



go back