

Question 1

- Addresses concerns that the seller has inside information (the selling price will be based partially on future information) "sunshine trading"
- The market maker will be more comfortable that private information will likely be priced into the shares when the sell takes place
- Addresses concerns about stock price manipulation (that the trust can buy shares in the open market to bid up the price, etc.)
- Addresses concerns that the company's excess cash will be spent prudently (not just buying back shares at any price) by creating a min and max
- Addresses liquidity concerns to ensure shareholders that the transaction will not directly influence the share price (as it is privately negotiated)

Question 2

Project	Depression	Prosperity
A	75	130
B	50	140
Project Cost	=	100

a) Entrepreneur's profitability

FV of debt	=	60
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Payoff for Entrepreneur

Project	Depression	Prosperity	Payout	Cost	Payoff
A	15	70	42.5	40	<u>2.5</u>
B	0	80	40	40	0

Entrepreneur will choose project A

Payoff for Investor

Project	Depression	Prosperity	Payout	Cost	Payoff
A	60	60	60	60	<u>0</u>
B	50	60	55	60	-5

Investor will want the entrepreneur to choose project A

Therefore the project will get funded and the Entrepreneur will make profit on his investment

b) Can the Entrepreneur raise more money by raising the FV to 70?

FV of debt	=	70
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Payoff for Entrepreneur

Project	Depression	Prosperity	Payout	Cost	Payoff
A	5	60	32.5	30	2.5
B	0	70	35	30	<u>5</u>

Entrepreneur will choose project B since it is more profitable

Payoff for Investor

Project	Depression	Prosperity	Payout	Cost	Payoff
A	70	70	70	70	<u>0</u>
B	50	70	60	70	-10

Investor will want the entrepreneur to choose project A

Since the Investor expects the Entrepreneur to choose project B, he/she won't contribute to the Entrepreneur's project!!

c) Convertible debt is offered to the Investor

FV of debt = 60

Payoff for Investor

Project	Depression	Prosperity	Payout	Cost	Payoff
A	60	65	62.5	60	<u>2.5</u>
B	50	70	60	60	0

Note here that the Investor will choose 1/2 the equity over the debt in the case of Prosperity
 The Investor would want the Entrepreneur to choose Project A

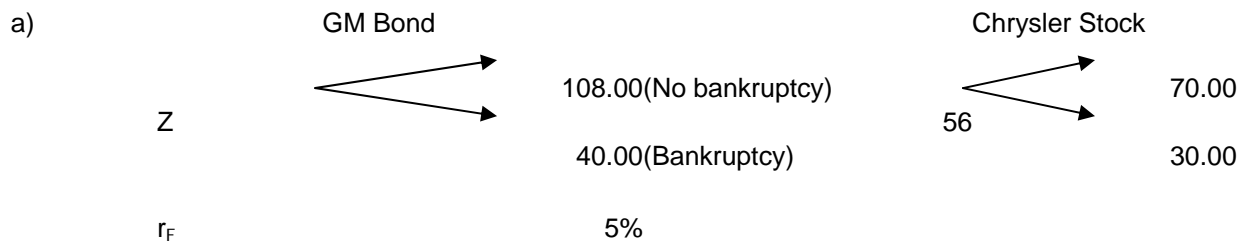
Payoff for Entrepreneur

Project	Depression	Prosperity	Payout	Cost	Payoff
A	15	65	40	37.5	<u>2.5</u>
B	0	70	35	40	-5

Entrepreneur will choose project A since he will make a profit of 2.5

Therefore the project will get funded for 62.5

Question 3



Create a Portfolio of B risk-free Bonds and S Chrysler shares

Solve for X and Y Using Simultaneous Equations:

$$\begin{aligned} 108 &= 70.00S + 1.05B \\ 40 &= 30.00S + 1.05B \\ 68 &= S^* 40.00 \end{aligned}$$

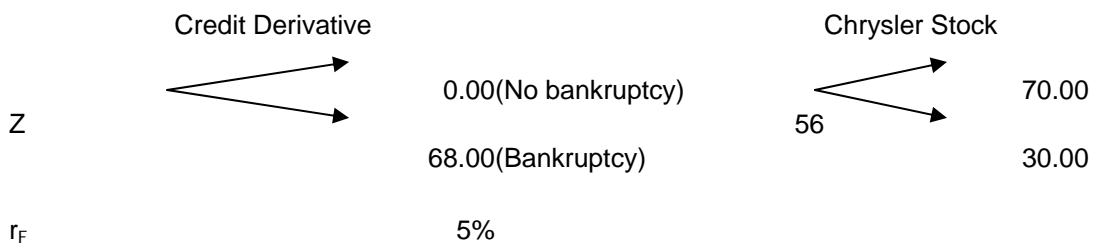
$$\begin{aligned} S &= 1.7 \\ B &= -10.47619 \end{aligned} \quad \text{Check: } X = 1.7$$

Cost of Portfolio:

$$\text{Total Cost} = (S * \text{Price}_S) + (B * \text{Price}_B)$$

$$\text{Total Cost} = 84.724$$

b)



Create a Portfolio of B risk-free Bonds and S Chrysler shares

Solve for X and Y Using Simultaneous Equations:

$$\begin{aligned} 0.00 &= 70.00S + 1.05B \\ 68.00 &= 30.00S + 1.05B \\ -68 &= S^* 40.00 \end{aligned}$$

$$\begin{aligned} S &= -1.7 \\ B &= 113.33333 \end{aligned} \quad \text{Check: } X = -1.7$$

Cost of Portfolio:

$$\text{Total Cost} = (S * \text{Price}_S) + (B * \text{Price}_B)$$

$$\text{Total Cost} = 18.133$$

Question 4

Part a. (2 points) Yes. Reasons:

- Likely to receive more from the tender offer than through forcing legal action / bankruptcy.
- The tender offer removes restrictive covenants

Part b. (4 points)

- Existence of a consent payment
- Accepting offer votes away restrictive covenants
- The consent payment is designed to be a fixed pie payment for Navistar

- The consenting bondholders are better off if a small proportion tender. The more bondholders who consent, the less each bondholder receives as a payment (but the total payment by Navistar is fixed)
- Consent payment creates an incentive to agree to the tender earlier

Part c. (4 points)

- Defeasance must be equal to today's value of principal and accrued interest
- $F = \text{Principal} + \text{accrued interest due at maturity}$
 $= \$393\text{mm} (1 + 0.5 * 9.375\%)$
 $= \$411.422\text{mm}$
- $\text{Cost to defease} = F * [1 - r * n / 360]$
- Note, r must be the "ask" discount rate
- $\text{Cost} = \$411.422 * [1 - 0.0447 * 93 / 360] = \406.671mm

Question 5

- The exclusivity period allows management to come up with its own plan for restructuring the company before creditors, etc. come up with competing plans
- Management initially has a 180 day exclusivity period, but it can be extended by a judge; under new laws, the exclusivity period may not be extended beyond 18 months
- The limits to these exclusivity periods put pressure on management to come up with a plan in a timely matter and reduce their leverage over creditors

Question 6

Bid price = 99:13 = $99 + 13/32 = 99.40625$

Ask price = 99:13+ = $99 + 13.5/32 = 99.421875$

In order to short the bond we enter into a reverse repo at the bid price. At 0% margin, the amount is $(99.40625) * (10 \text{ mm}) = \$9,940,625$. Since we are the reverse repo side, we receive repo interest on the bond of 0.8% instead of the general market repo rate of 4.5%. This means that the effect of the specialness on our trade is a **negative**

$$(0.8\% - 4.5\%) * \$9,940,625 * (3 \text{ days}/360 \text{ days}) = - \$3,065.03$$

Grading guide:

- 3 points for using the bid price
- 3 points for identifying the effect as negative
- 4 points for calculating the result correctly (2 if using the correct formula, 2 for arriving at the correct result)

Question 7

Replication as follows:

Bond	Price	CF1	...	CF - Final
9 ¼% '16	(ASK) $P2 = 136:12 = 136.3750$	4.625	...	104.625
0% '16	(ASK) $P3 = 63:03 = 63.09375$	0.000	...	100.000
4 ½% '16	(BID) $P1 = 99:13 = 99.40625$	2.250	...	102.250
Synthetic	(ASK) $P4 = (2.250/4.625)*(P2-P3)+P3 = 98.7441$	2.250	...	102.250

To take advantage of arbitrage, sell the 4 ½% at 99.40625 and buy the synthetic at 98.7441 for an immediate inflow of 0.6622. However, the difference in prices may not be pure arbitrage:

- The 4 ½% is on-the-run and so it may be highly “special”
- The 9 ¼% may be deeply illiquid. In that case we can't expect to put on a big position quickly – we could end up paying above “fair value” if we wanted to buy a lot of it while we short the 4 ½%.

Grading Guide:

- 6 points for creating the synthetic (2 for identifying the correct bid or ask to use for the 9 ¼% and the STRIP, 4 for calculating the synthetic correctly)
- 2 points for comparing the correct prices (synthetic ASK and 4 ½% '16 BID)
- 2 points for intuition

Question 8

A good solution does NOT need to be this verbose / descriptive, as long as KEY IDEAS are expressed CLEARLY.

(1-2 points) Background: If management always maximizes expected value, there is no positive role for covenants. They can only reduce expected value by constraining management (i.e. they don't create value but only shift it from equity to debt). Covenants are therefore intended to defend against management's bad incentives (particularly its willingness to take negative NPV actions that move value from debt to equity)

(5-6 points) Core Idea: The difference between maximizing equity value and maximizing NPV is greater when the firm is closer to financial distress, so the problem that covenants address is less important when the bond rating is better. Meanwhile, the problem they create, i.e. prohibiting some positive NPV activities, is likely to be about the same. So when the bond rating is good, covenants are more likely to be costly than beneficial, so it can make sense to remove them in this situation.

(1-2 points each) Caveats: (*note: you do NOT need to include all of these, but would instead receive marks for any that you did include, in addition to the core solution):

- An increase in rating to investment grade does not guarantee an absolute default rate, but rather communicates information regarding the relative default rate.

- Ratings also capture recovery-rate variation; bonds with higher ratings are, on average, worth more conditional upon default than are other bonds. (Specifically, ratings capture recovery variation due to seniority, but only some of the recovery variation due to other factors)
- Rating agencies can be much slower to react (than banks or investors) to changes in a firm or industry's economic situation.
- A corporate family rating does not reference an obligation or class of debt and thus does not reflect priority of claim. (It matters whether the rating is for the bonds themselves or for the firm, as a whole)
- Ratings are paid for by the issuer however and typically involve granting the rating agency very good access to the issuer's private information about its competitive situation and future prospects, whereby upgrades and downgrades often contain new information. Therefore, even if ratings didn't contain any information that the investors didn't already know, they at least provide an economically more efficient means to research and disseminate information; i.e. the agency can do it, on behalf of all bondholders simultaneously and is being paid to do so, anyways.