University Nyenrode

Group assignment 1

Foundations of Finance
PDP5, group 10

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Problem 1.   On power within the company

According to corporate finance theorists, the objective of the firm should be to maximize value or wealth. This means for stockholders to maximize stock prices. By focusing on maximizing stockholder wealth, the firm exposes itself to the risk that managers, who are hired to operate the firm for stockholders, may have their own objectives. This can lead to conflicts between both parties.
Stockholders have the power to discipline and replace managers who do not attempt to maximize their wealth. For managers there are several techniques to protect themselves for these actions.

In other words: stock price maximization is the most important goal of most corporations. Stockholders own the firm and elect the board of directors, who then appoint the management team. Management is supposed to operate in the best interests of the stockholders. We know, however, that because the stock of most large firms is widely held, the managers of large corporations have a great deal of autonomy. This means that managers might pursue goals other than stock price maximization. Therefore managers run the risk of being removed from their jobs, either by the firm's board of directors or by outside forces.
Hostile takeovers (when management does not want the firm to be taken over) are most likely to occur when a firm's stock is undervalued relative to its potential because of poor management. In a hostile takeover, the managers of the acquired firm are generally fired, and any who are able to stay on, lose the autonomy they had prior to the acquisition.

A potential agency conflict arises whenever the manager of a firm owns less than a substantial percentage of the firm's common stock. In most large corporations, agency conflicts are quite important, because large firms' managers generally own only a small percentage of the stock.

Questions:

At whom is the hostility directed by a takeover?
The hostilility is directed to the management of the company. Because the stockholders want to have more control over the company they might want to replace management of whom they think are not doing their best to maximize stock prices. Usually management own none or only a small part of the shares so a hostile take-over by stock-holders with a bigger stake is easy to do.

And how could that party protect itself?
Management can protect itself from a hostile take-over using one off the four following Possibilities:
- Greenmail: This possibility refers to the purchase of a potential hostile acquirer's stake in a business at a premium over the price for that stake by the target company.
- Golden Parachute: A golden parachute refers to a contractual clause in a management contract that allows the manager to be paid a specified sum of money in the event control of the firm changes, usually in the context of a hostile takeover.
- Poison Pill: A poison pill is a security or a provision that is triggered by the hostile acquisition of the firm, resulting in a large cost to the acquirer.
- Antitakeover amendments: have the same objective as greenmail and poison pill but differ on one very important count. They require the assent of stockholders to be instituted. Several types are: super-majority requirement, fair price amendments and staggered elections to boards of directors.

Practical examples?
In reaction to the existing agency conflicts the Dutch Government installed in April 1996 the Commission Corporate Governance (Commissie Peters). In June 1997 the commission came up with her report "*Corporate Governance in Nederland; de 40 aanbevelingen*".

Corporate Governance is defined by Moerland as "*het geheel van structuren, regelingen en conventies dat bepalend is voor de wijze waarop de effectiviteit waarmede een vennootschap door middel van een door prikkels en tucht geregeerde interactie tussen stakeholders wordt bestuurd en gecontroleerd*" all of the structures, procedures and conventions that are relevant for the way in which the effectiveness of a company is controlled by means of interactions (incentives and punishments) between stakeholders (i.e. stockholders and management).

Corporate Governance actually has two key-issues, being transparency and power. Especially in bigger companies it is difficult for stockholders (who own (part) of the company) to get informed about the way the management runs the company. In other words they do have some power but there is no transparency (they are not that well informed) to do something with their "power". The only accountability moment for the management is the annual report discussion during the stockholders meeting. Especially recommendations 26 and 29 of the report are important for this case. In those recommendations is stated that there should be a proportional division between capital placed and say (one share - one vote) and that there should be a clear and transparent accountability of the management for running the business in the last year.

A practical example of a hostile take-over is the Baan Company. Due to a delayed publishing of the annual report of 1997, bad results in the first half of 1998, and the complicated (not transparent) structure of the Baan-company and interrelations between Baan Company, Baan Investment and Vanenburg Ventures, many stockholders claim that Jan Baan, the former CEO, leaves the company. From that moment on Tom Tinsley will be chairman, ceo and president of the Baan Company. The 40 recommendations of the Commission Peters would have helped both Jan Baan and the other stockholders, but the Baan Company didn't take over the recommendations and was left to go down the drain.

Another practical example is C&A. This company is owned by the Brenninckmeijer-family and has no other stockholders than family-members. Despite some internal family-affairs no hostile takeover can be done. They protect themselves from that by having no third-parties involved.

An example of an unsuccessful takeover attempt: The Stockholm Stock Exchange initiated a $1.19 billion hostile takeover bid of the London Stock Exchange. The attempt, even if unsuccessful, could complicate the LSE's planned merger with Germany's Deutsche Boerse.

And almost everybody, it seems, is doing it. Mainstays of the Fortune 500 like Johnson & Johnson and IBM began their first hostile takeovers in 1995. In January, the Hilton Hotels Corp. made a $10.5 billion hostile bid for the ITT Corporation, and a month later H.F. Ahmanson & Ahmanson Co., a large savings and loan company on the West Coast, made a $5.9 billion hostile offer for the Great Western Financial Corp. in an attempt to shift toward retail banking.

Problem 2. On cashflow and the time value of money

The E-commerce implementation project will be undertaken according to the net-present-value rule in case the return on the capital invested in the project will be higher than the minimum acceptable rate of return, the hurdlerate. This hurdle rate is, given the current borrowing rate (before tax), the tax rate, the risk-free rate, the market risk rate and the equity β, calculated as follows:

Cost of Capital (hurdle rate)   =

   Cost of equity   +   Cost of debt

30% / (30% + 70%) x (4.8% + 1.2 x 11.3%) + 70% / (30% + 70%) x (7% x (1 -/- 35%) =

      = 14.217%

By using the found hurdlerate as the discount rate the net-present-value of the project can be calculated. The following table (table 2.1) summarizes the cashflows from the project each year for the five year life of the project.

	NPV	2002 (t=0)	2002 (t=1)	2003 (t=2)	2004 (t=3)	2005 (t=4)	2006 (t=5)
Buildings & Equipment investment		(10,000)					
Hardware – and software investment		(6,000)					
Revenues			8,000	16,000	19,200	23,040	27,648
COGS			(5,600)	(11,200)	(13,440)	(16,128)	(19,354)
Additions to the Net Working Capital			(1,200)	(1,200)	(480)	(576)	(691)
Cash-in of Buildings & Equipment							5,000
Cash-in of Net working capital							4,147
Tax				(512)	(848)	(1,952)	(2,435)
Total cash flows	381	(16,000)	1,200	3,088	4,432	4,384	14,315

Table 2.1

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Conclusion is that the net-present-value of the project, using the hurdlerate as discountrate, is positive (EUR 381,000). Therefore the expected return on the project is a higher one than the minimum acceptable return to take on the project. Based on these calculations the project will be executed.

The taxpayment cashflows shown in the table 2.1 are calculated as stated in table 2.2 below. Assumed is that the interest on the debt related to the project will be paid at the end of each year of the five year period.

	2002	2003	2004	2005	2006
Sales	8,000	16,000	19,200	23,040	27,648
COGS	(5,600)	(11,200)	(13,440)	(16,128)	(19,354)
Depreciation expense on buildings & Equipment	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
Depreciation expense on Hardware & Software	(2,000)	(2,000)	(2,000)	0	0
Interest expense	(336)	(336)	(336)	(336)	(336)
Income before tax	(936)	1,464	2,424	5,576	6,958
Tax (35% - Losses are compensated)	0	(512)	(848)	(1,952)	(2,435)

Table 2.2

Problem 3. On portfolio theory and diversification

a1)   Expected rate of return on the portfolio is calculated as follows:

$$E(rp) = Wa \cdot E(ra) + (1-Wa) \cdot E(rb)$$
$$= 0,5 \cdot 6 + (1-0,5) \cdot 10$$
$$= 8\%$$

a2)   The risk of return on a portfolio is calculated using the following formula:

$$\sigma p^2 = Wa^2 \cdot \sigma a^2 + (1-Wa)^2 \cdot \sigma b^2 + 2 \cdot Wa \cdot (1-Wa) \cdot \sigma ab$$
$$= 0,5^2 \cdot 2^2 + (1-0,5)^2 \cdot 3^2 + 2 \cdot 0,5 \cdot (1-0,5) \cdot 2 \cdot 3 \cdot \rho$$

When: $\rho = + 1,0$ => $\sigma p = 2,50$
        $\rho = + 0,5$ => $\sigma p = 2,18$
        $\rho = 0,0$ => $\sigma p = 1,80$
        $\rho = - 0,5$ => $\sigma p = 1,32$
        $\rho = - 1,0$ => $\sigma p = 0,50$

b)   Now the minimum variance portfolio can be calculated as follows:

$$Wa = \frac{(\sigma b^2 - \sigma ab)}{(\sigma a^2 + \sigma b^2 - 2 \cdot \sigma ab)}$$

$$= \frac{(3^2 - \sigma ab)}{(2^2 + 3^2 - 2 \cdot (2 \cdot 3 \cdot \rho a,b))}$$

Calculated weights of each minimum variance portfolio (calculated with a.m. formula)

P	Covariance (ρa,b)	Minimum variance portfolio	
		Gives Wa =	**Wb =**
+1,0	2 . 3 . + 1,0 = +6%	~~300,00%~~	~~-200,00%~~
+0,5	2 . 3 . + 0,5 = +3%	85,70%	14,30%
0,0	2 . 3 . 0,0 = 0%	69,20%	30,80%
-0,5	2 . 3 . − 0,5 = -3%	63,15%	36,85%
-1,0	2 . 3 . − 1,0 = -6%	60,00%	40,00%

Expected return and risks of each minimum variance portfolio (calculated with formula as at a2)

P	Wa	Wb	E(ra)	E(rb)	E(rp)	σp2	σ
+1,0	100,00%	0,00%	6%	10%	6,000%	4,00	2,000
+0,5	85,70%	14,30%	6%	10%	6,572%	3,86	1,964
0,0	69,20%	30,80%	6%	10%	7,232%	2,77	1,664
-0,5	63,15%	36,85%	6%	10%	7,474%	1,42	1,192
-1,0	60,00%	40,00%	6%	10%	7,600%	0,00	0,000

We notice the elimination of risk at ρ = -1,0 and Wa = 60% at Wb = 40%.

c)

Expected return & risk are calculated as in answer 3b but now for ρ = -0,5.

ρ	Wa	Wb	E(ra)	E(rb)	E(rp)	σp2	σ
-0,5	100,00%	00,00%	6%	10%	6,000%	2,0000	Error
-0,5	75,00%	25,00%	6%	10%	7,000%	1,6875	1,30
-0,5	50,00%	50,00%	6%	10%	8,000%	1,7500	1,32
-0,5	25,00%	75,00%	6%	10%	9,000%	4,1875	2,05
-0,5	00,00%	100,00%	6%	10%	10,000%	9,0000	3,00
-0,5	63,15%	36,85%	6%	10%	7,474%	1,4200	1,19
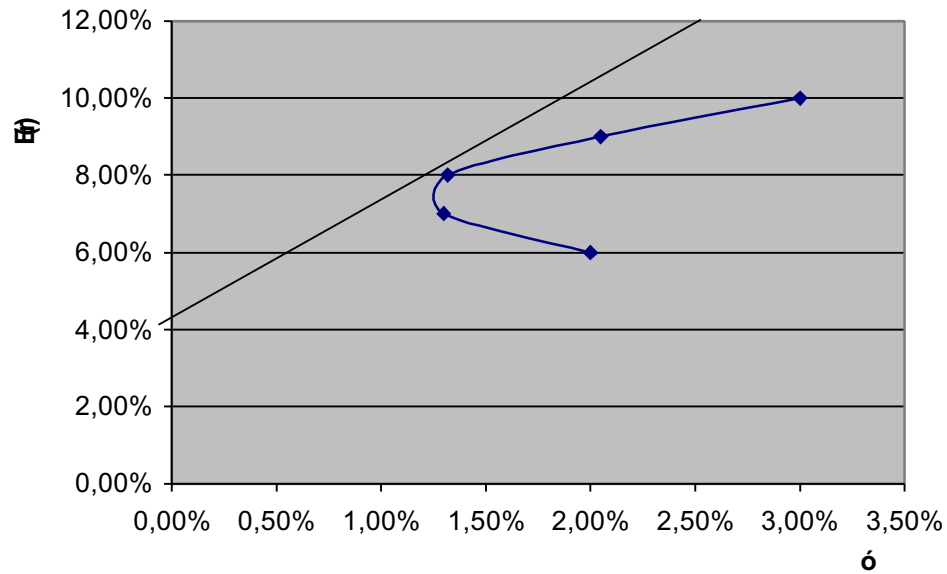
3d)   Risk optimum portfolio is where both lines engage (approxemately 8% return at a risk of approxemately 1,30%). This point yields the highest return at the lowest risk.

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Problem 4.   A bit of your own research

The Beta coefficients of four listed companies of the AEX index are investigated: Shell Royal Oil, ABN-Amro, DSM, Ahold. The source of the data is www.nedkoers.nl (1994-06/2001) and www.brehs.nl (07-08/2001), which give daily prices of the stocks (opening, lowest, highest and closing values which are used). We have made a spreadsheet in such way that monthly observations at a chosen fixed monthly day (e.g. second Tuesday; we have chosen the Wednesday of the 3rd week), a starting and ending date can be chosen (see subsections below). The different companies are scaled according to their mean value with respect to the mean value of the AEX.

Period 010194-present
If the available full period of the series is chosen (1994-present) most of the Betas are close to 1 because over this period there is a strong trend upward which most of the companies follow. Only the trend of DSM is less strong, which gives a smaller Beta (less variation).

	kon olie s	abn s	dsm s	ahold s
β:	0.854185	0.970824	0.483751	1.023111

Last two years
According to the given exercise also a period of the last two years is used. The scaled series are given at the bottom of this page. There is a lot of difference in betas with the previous one's. In the graph it can be seen that DSM and Ahold are negatively correlated with the AEX. This is reflected in negative Betas.

	kon olie s	abn s	dsm s	ahold s
β:	0.393883	0.826601	-0.63065	-0.58192

According to these numbers ABN is the most risky stock in our example, although it is still a 'defensive' stock. As expected Shell is the most defensive one with a beta of 0.39.

Finally we compared the calculated Betas with those in the NRC Handelsblad (of Saturday September 1, 2001), which are calculated over the last three years too (monthly numbers are averages of highest and lowest daily prices).

	kon olie s	abn s	dsm s	ahold s
β:	0.33	1.21	0.40	0.46

The Betas listed in the NRC differ also from the calculated one's; so the way constructing the monthly data and the longer period influence the Betas significantly. Because we were surprised by the difference with the NRC (but we think we are sure that we used the right method to calculate the Betas), we also evaluated a stock of which we expect really to have a larger Beta, namely KPN (technology; high risk). The calculated Beta was indeed much higher than 1: 5.07, which was expected, but the NRC value was much lower (1.31).

Overall conclusion: The period over which the Betas are calculated and the way of constructing the data have a big influence on the outcome.