6. Assuming that the ~~investment~~ initial investment could earn interest let say 4% then my initial investment would be $\frac{5000}{(1.04)^5} = 4852.95$.

Professor Hewitt - no idea how liquid he is so I would give him the 4852.95

Student - Well, since s/he is in MSISS they will get a good job in the next few years so I would happily give them the fair price

Close friend - I'd give him lower than the reduce

Bank manager: I would'd give him any of my money nor any other bank - could be trusted

7. Find its present value

$500($ or $\frac{(1-r^n)}{1-r}$

$\frac{500(1.1)(1\,@\,1-(\frac{1}{1.1})^{10})}{1-1.1}$

$= 2792.985$

Take 3200 from bank

$\frac{500(\frac{1}{x})(1-(\frac{1}{x})^{10})}{1-\frac{1}{x}} = 3200$

$\frac{5}{32} = \frac{x-1}{1-x^{-10}}$

$\frac{\frac{500}{x}(1-\frac{1}{x^{10}})}{1-\frac{1}{x}} = 3200(1-\frac{1}{x})$

$500(1-\frac{1}{x^{10}}) = \frac{3200(1-\frac{1}{x})}{x}$

$\frac{5}{32}(1-\frac{1}{x^{10}}) = \frac{1-\frac{1}{x}}{x} \times 1$

$\frac{5}{32} = \frac{x-1}{1-\frac{1}{x^{10}}}$

Management Science Tutorial 1 DAVID WELTBRECHT

22/1/12 Time value of money 1, 11 12300646

1. ~~$F = (p \times i)^n$~~

~~$2000 = (1000i)^7$~~

~~$\sqrt{2000} = 1000i$~~

~~$2.961986 = 1000i$~~

~~$i = 0.0029$~~

$2000 = p\left(1+\frac{R}{100}\right)^7$

$2000 = 1000\left(1+\frac{R}{100}\right)^7$

$2 = \left(1+\frac{R}{100}\right)^7$

$\sqrt[7]{2} = \left(1+\frac{R}{100}\right)^7$

$1.10408 = 1+\frac{R}{100}$

$.10408 = \frac{R}{100}$

$R = 10.4\%$

2. $F = p\left(1+\frac{R}{100}\right)^n$

$F = 1200\,(1.03)^{20}$

$= 2167.33$

3. $\sqrt[12]{1.14} =$

$1.0109 - 1 = 0.0109\%$

4. $-10000 + \frac{3000}{1.15} + \frac{4000}{(1.15)^2} + \frac{3000}{(1.15)^3} + \frac{3000}{(1.15)^4} + \frac{5000}{(1.15)^5}$

$-10000 + (11806.96263)$

$= +1806.96$

Assumming that the investment is today and all subsequent event happen at yearly intervals.

5. Payback project 1 occurs in year 4. = 12000

project 2 occurs in year 4 = 13100

Project 1 10% discount $\frac{2000}{1.1} + \frac{2000}{(1.1)^2} + \frac{3000}{(1.1)^3} + \frac{5000}{(1.1)^4}$ = 9140 loss of 840

Choose → Project 2 10% discount $\frac{4000}{1.1} + \frac{3500}{(1.1)^2} + \frac{1100}{(1.1)^3} + \frac{4500}{(1.1)^4}$ = 10428.93 more 428.93

Project 1 15% disc $\frac{2000}{1.15} + \frac{2000}{(1.15)^2} + \frac{3000}{(1.15)^3} + \frac{5000}{(1.15)^4}$ = 8082 loose 1917.27

Project 2 15% $\frac{4000}{1.15} + \frac{3500}{(1.15)^2} + \frac{1100}{(1.15)^3} + \frac{4500}{(1.15)^4}$ = 942092 loose 579.08

loose ↗

4 payment = $\frac{a \times r \times (1+r)^n}{[(1+r)^n - 1]}$

① $\frac{5000 \times 0.01 (1.01)^{60}}{[(1.01)^{60} - 1]} = 111.22$ per month

Total interest = 673.2

② Start of year 2 owing = 5000 − 111.22 = 4888.78

5634.13 owed at start of year 3

$\frac{5634.13 (0.01)(1.01)^{48}}{((1.01)^{48} - 1)} = 148.37$ a month

$\times 48 = 7121.76$

$-5000 =$

2121.76 interest − 673.2

= 1447.56 extra interest

5. $\frac{1000}{(1.065)^4} + \frac{1000}{(1.065)^3} + \frac{1000}{(1.065)^2} + \frac{1000}{(1.065)} = 3425.748$

= 3425.80

6 payment = $\frac{a \times r \times (1+r)^{15}}{((1+r)^{15} - 1)}$ $\frac{100000 \times 0.1 (1.1)^{15}}{((1.1)^{15} - 1} = 13147.37$

$\frac{10000 \times 0.15 (1.15)^{11}}{((1.15)^{15} - 1)} = 17101.70$ using 15%

7. $\frac{60000 \times \frac{0.009}{1.009} (1.009)^{240}}{(1.009)^{240} - 1} = 611.600$ (2dp)

$\frac{60000 \times 0.01 \times (1.01)^{240}}{(1.01)^{240} - 1} = 600 =$

Management Science
113 Tutorial: Time value of Money III

DAVID WEITBRECHT
12300606

1. Interest = $\frac{2638.02}{(1.1)^5} + \frac{2638.02}{(1.1)^4}$

~~2398.2 + 2180.78~~ capital paid off
$= 4578.38$
1638.0 + 1801.80
3439.8 paid off.

2. payment = $\frac{a \cdot r(1+r)^n}{[(1+r)^n - 1]}$

$\frac{10000 \times 0.1 (1.1)^{10}}{[(1.1)^{10} - 1)} = 1627.45$ per year
$\times 10 = 16274$
6274 interest
compared to 3175.1
you pay more interest over 10 years

3. payment = $\frac{a \times r \times (1+r)^n}{[(1+r)^n - 1)}$ $r = \sqrt[12]{1.01} = 0.4\%$
0.004

$\frac{10000 \times 0.004 (1.004)^{60}}{((1.004)^{60} - 1)} = 187.797$
$= 187.80$ per month
$\times 60 = 11268$
less interest than by pay yearly
$1268 \div 60 = 21.13$ interest per month
$= 0.002113$
$= 0.21\%$ per month
Simple int!

Management Science

1/1/13 Tutorial 3: Future

DAVID WEITBRECHT 12300600

1. $10000 \times 0.50_{aw}$ = £5000 worth now; monthly rate = 1.00246627

$5000 \times (1.00246627)^6$

$= 5074.445784$

$= £5074.45$ = fair price of 10000 Libel in 6 months

2. Total = $5000 \times 43.42 - \frac{217100}{(1.00012)^{94}} = 214665.0172$

$\div 5000$

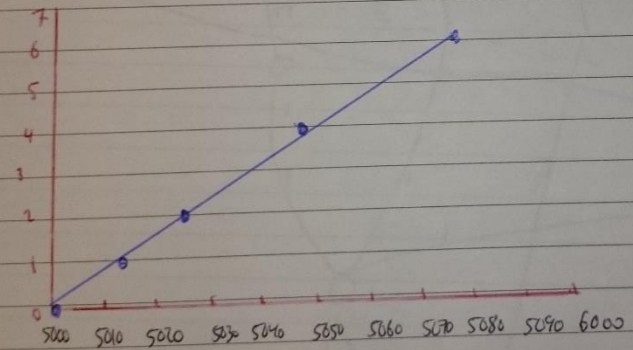
$= 42.93$ per bond.

3. a. 4 months = $5000 \times (1.00246627)^4 = 5049.51$

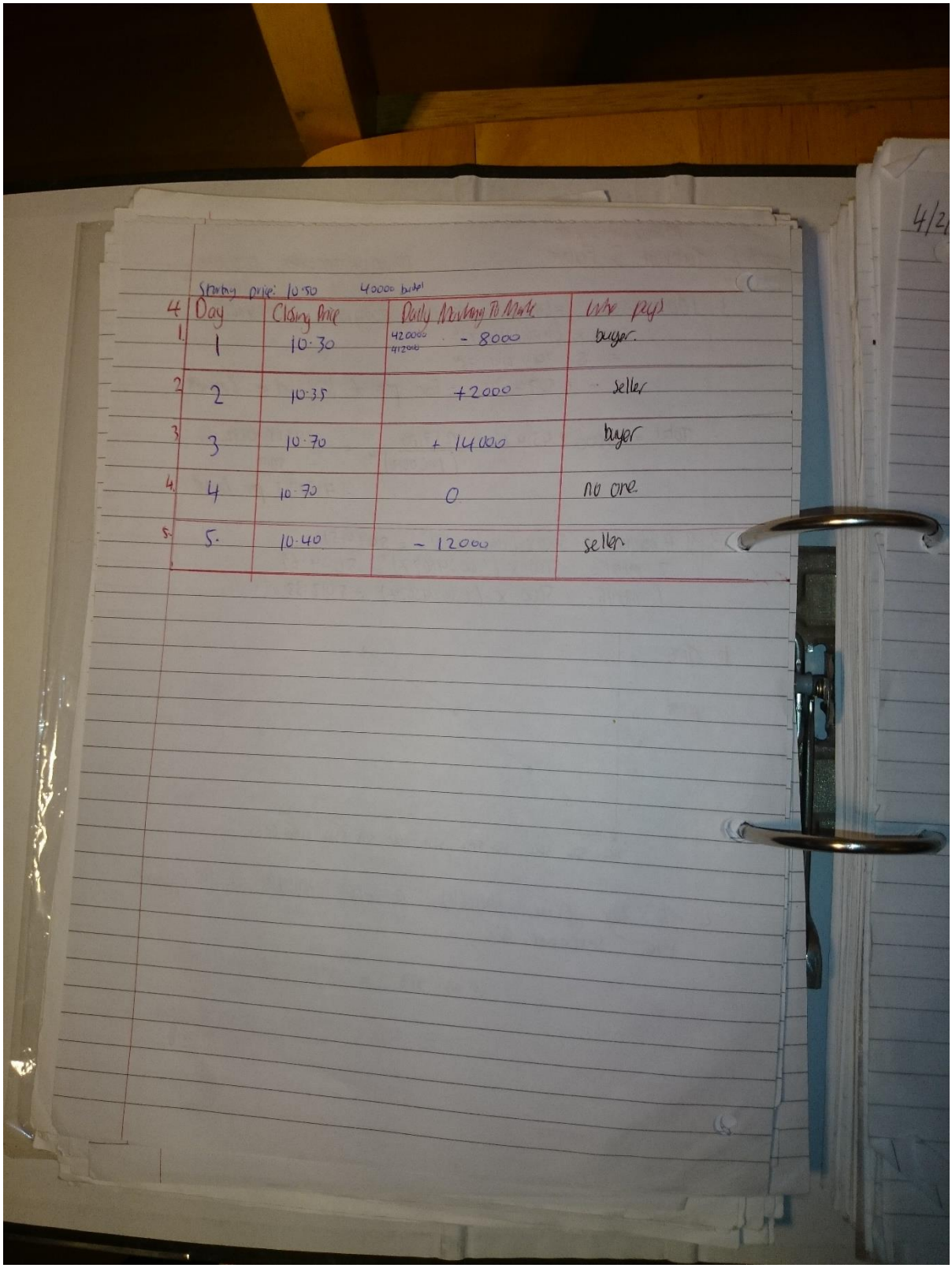
2 months = $5000 \times (1.00246627)^2 = 5024.69$

1 month = $5000 \times (1.00246627) = 5012.33$

b. Time



c. The fair price increases by each month as it approaches the settlement date.



Starting price: 10.50 40000 bids!

4	Day	Closing Price	Daily Number To Match	Who pays
1.	1	10.30	42000 ~~41200~~ - 8000	buyer.
2	2	10.35	+2000	seller
3	3	10.70	+ 14000	buyer
4	4	10.70	0	no one.
5.	5.	10.40	- 12000	seller.