

CHAPTER 21: A FRAMEWORK FOR ANALYZING DIVIDEND POLICY

21-1

a. Dividend Payout Ratio = $(2 * 50)/480 = 20.83\%$

b. Free Cash Flows to Equity this year

Net Income	\$480
- (Cap Ex - Depr) (1-DR)	\$210
- (Change in WC) (1-DR)	\$35
FCFE	\$235

Dividends as % of FCFE = $100/235 = 42.55\%$

c.

Project	Investment	Beta	IRR	Cost of Equity
A	\$190 mil	0.6	12.00%	11.80%
B	\$200 mil	0.8	12.00%	12.90%
C	\$200 mil	1	14.50%	14.00%
D	\$200 mil	1.2	15.00%	15.10%
E	\$100 mil	1.5	20.00%	16.75%

Accept projects A, C and E. The total investment is \$490 million.

d. Estimation of FCFE next year

Net Income	\$540
- (Cap Ex - Depreciation) (1 -DR)	\$168
- (Change in WC) (1 -DR)	\$35
= FCFE	\$337

e. I may not pay this amount as dividends because of my concerns that I would not be able to maintain these dividends. I would also hold back some cash for future projects, if I feel that investment needs could vary substantially over time.

f. If \$125 million is paid out as dividends, the cash balance will increase by \$212 million [\$337-\$125]

21-2

a.

Capital expenditure = \$12,000

Depreciation = \$2,400

Increase in net working capital = -\$15,000

Net income = $(20,000 - 2,400) * (1 - 40\%) = \$10,560$

then FCFE = Net Income - (Capital expenditure - Depreciation) - Increase in net working capital

$$= 10,560 - (12,000 - 2,400) - (-15,000) = \$15,960$$

b. Most of the effect will be temporary.

21-3

a. No, because there would be double taxation, i.e. both at the corporate level and at the personal level.

b. In that case, it might be preferable to increase dividends now. The alternative would be to either take a large capital gain when the business would be sold, or a large dividend just before the business is sold. Hence, unless there are other capital losses that can be offset only by capital gains, it would be preferable to take larger dividends now.

21-4

Project	Investment Requirement	After-tax return on capital
A	15	27%
B	10	20%
C	25	16%
D	20	14%
E	30	12%

The after-tax cost of debt = $12\%(1-0.5) = 6\%$

The cost of equity = $.08 + 1.25(0.055) = 14.875\%$

The market value of debt = \$500m.

The market value of equity = $15(100) = \$1500$ m.

Hence, the WACC = $(500/2000)(6\%) + (1500/2000)(14.875\%) = 12.656\%$

Assuming that the projects are as risky as the firm, all of them except E have NPV > 0. Hence, capital needed for investment = \$70m. However, 25% of this will come from debt issues. Hence free cash flow to equity = $100 - (0.75)(70) = \$47.5$ m.

a., b. Since the company has an extra \$47.5m., it should return that amount to shareholders. However, the firm should also look at estimates of future investment needs and future cash flows.

21-5

$$\text{Current WACC} = \frac{100}{100 + (50)(10)}(1 - 0.4)10\% + \frac{(50)(10)}{100 + (50)(10)}16\% = 14.33\%$$

Initial Investment	EBIT	Annual Depr.	Lifetime	Salvage	Cash flow per yr.	NPV
10	1	0.5	5	2.5	1.1	-4.97358
40	5	1	10	10	4	-16.7809
50	5	1	10	10	4	-26.7809

- a. Since all projects have NPV < 0, none of them should be accepted.
- b. The firm has free cash flow to equity equal to Net Income + (1 -) (Capital expenditures - Depreciation) = 90 + 8 = \$98m. This is the maximum that it can pay out in dividends. This assumes that some of the depreciation is used to pay back debt. Alternatively, I would add back the entire depreciation to the net income to get \$ 100 million as FCFE.

21-6

Project	IRR (to Equity)	Beta	Cost of Equity
A	21%	2	0.2
B	20%	1.5	0.17
C	12%	1	0.15

Accept projects A and B. The total capital expenditures are \$1,100.
Estimated FCFE next year

Net Income next year	\$1,000
- (Cap Ex - Depreciation) (1-.2)	480
- Change in WC (1-.2)	80
= FCFE	\$440

The firm should pay out a dividend of \$440.

21-7

	Current	Next year	in 2 yrs	in 3 yrs
EBIT	80	72	64.8	58.32
Depreciation	70	63	56.7	51.03
Working Capital	70	63	56.7	51.03
Change in WC		-7	-6.3	-5.67
Net Income	48	43.2	38.88	34.992
Dividends	24	21.6	19.44	17.496
Increase in Cash		91.6	82.44	74.196

If these funds are invested at 10%, the size of the war chest will be $91.6(1.1)^2 + 82.44(1.1) + 74.20 = \275.72m .

21-8

This strategy described in the last problem is not in the best interest of stockholders because the firm accumulates large amount of cash without good projects.

21-9

	Current	1	2	3
Net Income	\$100.00	\$110.00	\$121.00	\$133.10
+ Depreciation	\$50.00	\$54.00	\$58.32	\$62.99
- Cap Ex	\$60.00	\$60.00	\$60.00	\$60.00
- Change in WC	\$10.00	\$10.00	\$10.00	\$10.00
= FCFE	\$80.00	\$94.00	\$109.32	\$126.09
Dividends Paid		\$66.00	\$72.60	\$79.86
Cash Balance	\$50.00	\$78.00	\$114.72	\$160.95

The cash balance at the end of year 3 = 160.95 million

21-10

a.

Project	Equity Investment	CF to Equity	Return to Equity	Beta	Cost of Equity
A	100,000	12,500	12.50%	1	11.75%
B	100,000	14,000	14.00%	1.5	14.50%
C	50,000	8,000	16.00%	1.8	16.15%
D	50,000	12,000	24.00%	2	17.25%

Accept projects A and D. The capital expenditures will be \$150,000.

Estimate working capital investment:

Working Capital last year = $(1,000,000 - 500,000) = 500,000$

Revenues last year = 1,000,000

Working Capital as % of Revenues = 50%

Expected Revenue increase next year = $.10 * \$1,000,000 = \$100,000$

Working Capital Increase next year = $0.5 * \$100,000 = \$50,000$

Estimated FCFE next year:

Revenues	\$1,100,000
Expenses	\$440,000
Depreciation	\$100,000
EBIT	\$560,000
- Interest Exp	\$100,000
Taxable Income	\$460,000
Taxes	\$184,000

Net Income | \$276,000

Net Income	\$276,000
- (Cap Ex- Depreciation) (1-.4)	30,000
- (WC Increase) (1-.4)	30,000
= FCFE	\$216,000

The company is able to pay dividends in the amount of \$216,000

b. If the company pays out \$100,000 in dividends, the cash balance will increase by \$116,000 to \$266,000.

21-11

a. No. Its FCFE is negative : $FCFE = 10 - (25-5) = -10$ million

b.

	Current	1	2	3	4	5
Net Income	\$10.00	\$14.00	\$19.60	\$27.44	\$38.42	\$53.78
- (Cap Ex- Depr)	\$20.00	\$22.00	\$24.20	\$26.62	\$29.28	\$32.21
= FCFE	< 0	< 0	< 0	> 0	> 0	> 0

The company will have positive FCFE by year 4. It can start paying dividends after that year.

21-12

Year	Net Income	Cap. Exp.	Depr.	Noncash Working Capital	Change in Noncash WC	Dividends	FCFE
1991	240	314	307	35	25	70	220.8
1992	282	466	295	-110	-145	80	266.4
1993	320	566	284	215	325	95	-44.2
1994	375	490	278	175	-40	110	271.8
1995	441	494	293	250	75	124	275.4

- a. Conrail could have paid dividends each year equal to its FCFE, at least on average.
- b. The average accounting return on equity that Conrail is earning = 13.5%, compared to a required rate of return = $0.07 + 1.25(0.125-0.07) = 13.875$. Hence Conrail's projects have done badly on average. It's average dividends have been much lower than the average FCFE. Hence, it would seem that Conrail will come under pressure to pay more in dividends

21-13

Year	Net Income	(Cap Ex - Depr) (1-DR)	Ch WC (1-DR)	FCFE
1996	\$485.10	\$151.96	\$8.75	\$324.39
1997	\$533.61	\$164.11	\$9.19	\$360.31
1998	\$586.97	\$177.24	\$9.65	\$400.08
1999	\$645.67	\$191.42	\$10.13	\$444.12
2000	\$710.23	\$206.73	\$10.64	\$492.86

This is the amount that the company can afford to pay in dividends.

b. The perceived uncertainty in these cash flows will make me more conservative in paying out the entire amount in FCFE in the year in which I make it.

21-14

	Current	1	2	3	4	5
Net Income	\$66	\$77.22	\$90.35	\$105.71	\$123.68	\$144.70
+ Depreciation	\$50	\$57.50	\$66.13	\$76.04	\$87.45	\$100.57
- Capital Exp	\$150	\$165.00	\$181.50	\$199.65	\$219.62	\$241.58
- Chg in WC	NA	\$4.30	\$4.73	\$5.20	\$5.72	\$6.30
FCFE		\$(34.58)	\$(29.76)	\$(23.10)	\$(14.21)	\$(2.60)

a. Cracker Barrel cannot afford to pay a dividend.

b. If the debt ratio is changed to 25%,

	Current	1	2	3	4	5
Net Income	\$66.00	\$77.22	\$90.35	\$105.71	\$123.68	\$144.70
- (Cex-Depr) (1-.25)		80.63	86.53	92.70	99.12	105.76
- Chg in WC (1-.25)		3.23	3.55	3.90	4.29	4.72
FCFE		\$(6.63)	\$0.27	\$9.10	\$20.26	\$34.22

The company can start paying out dividends in year 2.

21-15

Assuming that we are talking about the second scenario, where the firm does borrow money, I would defend my decision by noting that I have a track record of great projects and that I am retaining the cash for future projects. My track record will probably make me credible, at least as long as I can keep my return on equity above my cost of equity.

21-16

a.

Estimated Net Income next year	\$140.80
- (Cap Ex - Depreciation) (1-.10)	\$25.74
- Change in Working Capital (1-.1)	\$45.00
= FCFE	\$70.06

This is what the company can afford to pay in dividends.

b. If the company pays of \$12 million in dividends, the cash balance will increase by \$58 million.

21-17

The company will have a negative FCFE, since it will have to generate enough cash flows to make the principal payment of \$100 million. Recalculating the FCFE,

Estimated Net Income next year	\$140.80
- (Cap Ex - Depreciation)	\$28.60
- Change in Working Capital	\$50.00
- Principal Repayment	\$100.00
FCFE	\$(37.80)

21-18

Company	Dividends vs. FCFE	ROE	Cost of Equity	Action
Alexander	<	8%	11.00%	Pressure to pay more dividends.
American Pres.	<	14.50%	13.50%	Allow to continue; ROE>COE
OMI	>	4%	13.25%	Evaluate investments; FCFE < Dividends
Overseas	<	1.50%	11.50%	Pressure to pay more dividends
Sea Containers	>	14%	12.25%	Pressure to pay less dividends

a. Alexander and Brown and Overseas Shipholding.

b. Sea Containers.

c. If I thought that the returns on projects for this entire sector were going to improve, it would make me more cautious about raising dividends in the first place. If, on the other hand, I thought that returns for this entire sector were going to drop, I would push for more dividends more aggressively.

21-19

Company	Payout Ratio	Dividend Yield	Growth
Fedders	11%	1.20%	22%
Maytag	37%	2.80%	23%
National Presto	67%	4.90%	13.50%

Toro	15%	1.50%	16.50%
Whirlpool	30%	2.50%	20.50%
Average	32%	2.58%	19.10%
Black & Decker	24%	1.30%	23%

a. Black and Decker pays less in dividends than the average company in the sector.

b. Black and Decker also has higher growth than the average company in the sector. One way of controlling for differences in growth rate is to regress dividend payout ratios and yields against the growth rates.

Dividend Payout Ratio = 0.88 - 2.90 (Expected Growth)

Dividend Yield = 0.07 - 0.23 (Expected Growth)

Black & Decker's predicted payout ratio = 0.88 - 2.90 (.23) = 21.30%

Black & Decker's predicted dividend yield = 0.07 - 0.23*(.23) = 1.71%

21-20

a. Estimated Dividend Yield for Black and Decker:

= 0.0478 - 0.0157 (1.30) - 0.0000008 (5500) + 0.006797 (.35) + 0.0002 (0.145) - 0.09

(.04)

= 2.21%

b. This regression factors in all firms in the market, rather than just the sector.

21-21

No. I would expect, given the higher growth rate, that Handy and Harman will pay less in dividends than the average firm in the sector. The higher growth creates a greater reinvestment need.

21-22

Yes. If I can take poor (albeit risky) projects, and I pay high dividends, and I am very highly levered, I might expropriate enough wealth from my bondholders to make myself better off as a stockholder.