



# SESSION 16: MORE EARNINGS MULTIPLES

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# Value/Earnings and Value/Cashflow Ratios

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- While Price earnings ratios look at the market value of equity relative to earnings to equity investors, Value earnings ratios look at the market value of the operating assets of the firm (Enterprise value or EV) relative to operating earnings or cash flows.

$$EV = \text{Market value of equity} + \text{Debt} - \text{Cash}$$

- The form of value to cash flow ratios that has the closest parallels in DCF valuation is the ratio of Enterprise value to Free Cash Flow to the Firm.

$$FCFF = EBIT (1-t) - \text{Net Cap Ex} - \text{Change in WC}$$

- In practice, what we observe more commonly are firm values as multiples of operating income (EBIT), after-tax operating income (EBIT (1-t)) or EBITDA.

# Enterprise Value/EBITDA Multiple

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## □ The Classic Definition

$$\frac{\text{Value}}{\text{EBITDA}} = \frac{\text{Market Value of Equity} + \text{Market Value of Debt}}{\text{Earnings before Interest, Taxes and Depreciation}}$$

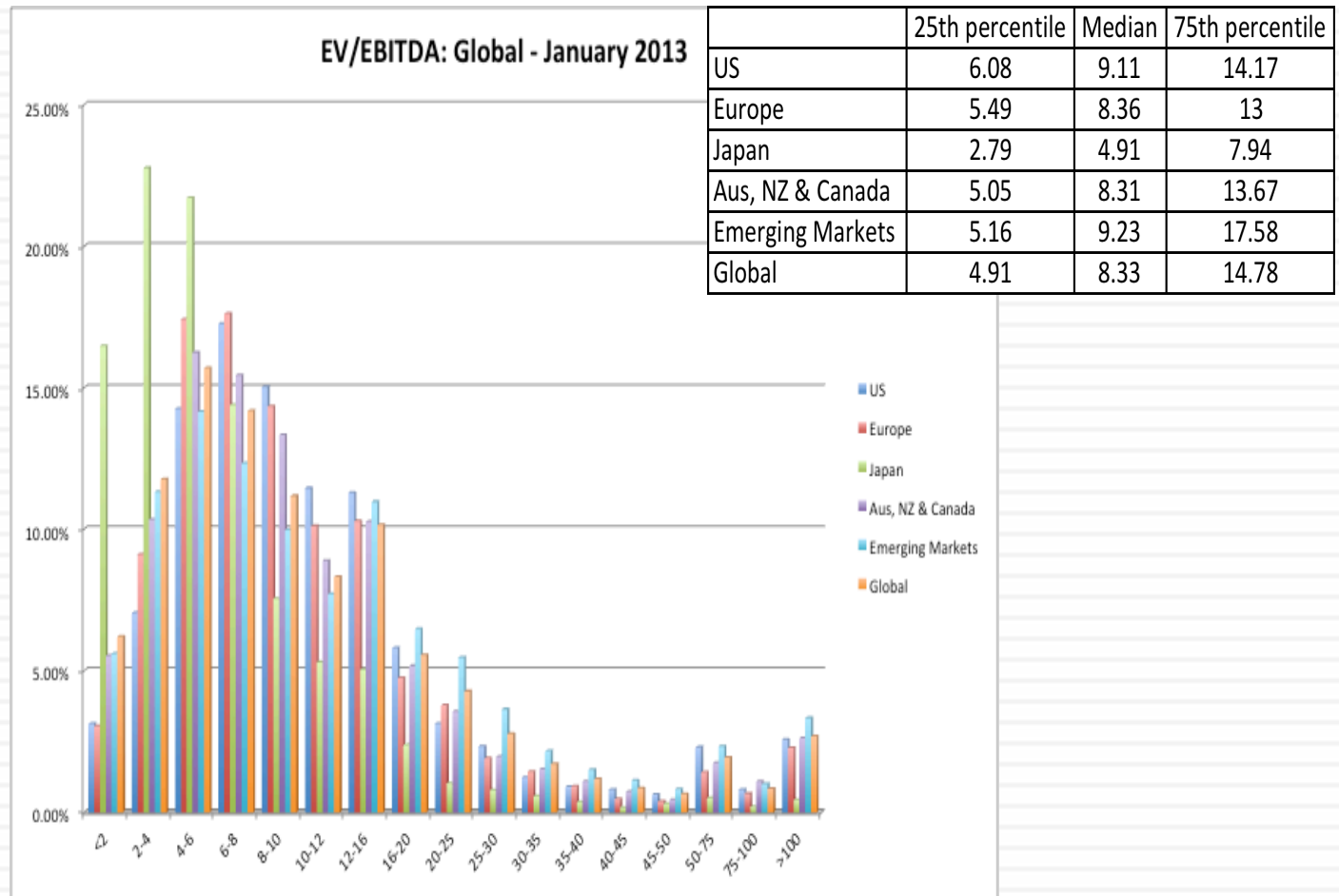
## □ The No-Cash Version

$$\frac{\text{Enterprise Value}}{\text{EBITDA}} = \frac{\text{Market Value of Equity} + \text{Market Value of Debt} - \text{Cash}}{\text{Earnings before Interest, Taxes and Depreciation}}$$

# Enterprise Value/EBITDA : Global Data

6 times EBITDA seems like a good rule of thumb..

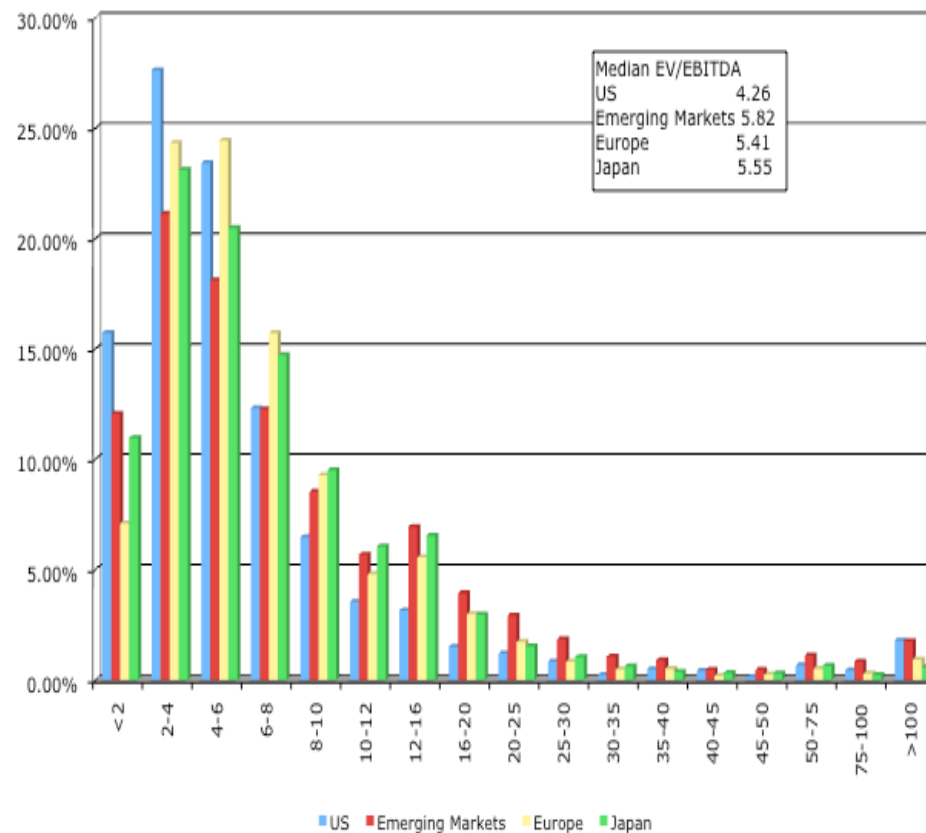
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# But not in early 2009...

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EV/EBITDA across Markets- January 2009



# The Determinants of Value/EBITDA Multiples: Linkage to DCF Valuation

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- The value of the operating assets of a firm can be written as:

$$EV_0 = \frac{FCFF_1}{WACC-g}$$

- The numerator can be written as follows:

$$\begin{aligned} FCFF &= EBIT (1-t) - (Cex - Depr) - \Delta \text{ Working Capital} \\ &= (EBITDA - Depr) (1-t) - (Cex - Depr) - \Delta \text{ Working} \\ &\quad \text{Capital} \\ &= EBITDA (1-t) + Depr (t) - Cex - \Delta \text{ Working Capital} \end{aligned}$$

# From Firm Value to EBITDA Multiples

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- Now the value of the firm can be rewritten as,

$$EV = \frac{EBITDA (1-t) + \text{Depr (t)} - C_{ex} - \Delta \text{ Working Capital}}{WACC - g}$$

- Dividing both sides of the equation by EBITDA,

$$\frac{EV}{EBITDA} = \frac{(1-t)}{WACC - g} + \frac{\text{Depr (t)/EBITDA}}{WACC - g} - \frac{C_{ex}/EBITDA}{WACC - g} - \frac{\Delta \text{ Working Capital/EBITDA}}{WACC - g}$$

- Since Reinvestment = (C<sub>Ex</sub> – Depreciation + D Working Capital), the determinants of EV/EBITDA are:
  - The cost of capital
  - Expected growth rate
  - Tax rate
  - Reinvestment rate (or ROC)

# A Simple Example

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- Consider a firm with the following characteristics:
  - Tax Rate = 36%
  - Capital Expenditures/EBITDA = 30%
  - Depreciation/EBITDA = 20%
  - Cost of Capital = 10%
  - The firm has no working capital requirements
  - The firm is in stable growth and is expected to grow 5% a year forever.



# Calculating Value/EBITDA Multiple

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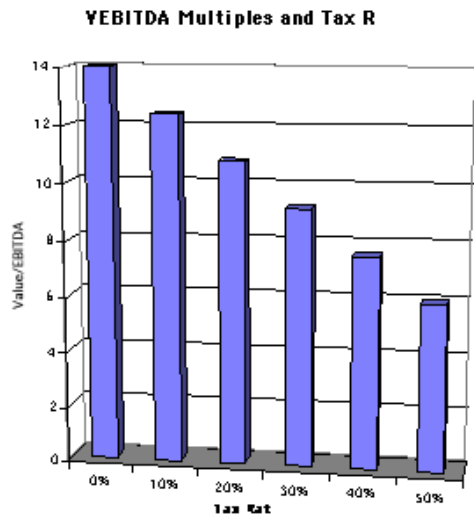
- In this case, the Value/EBITDA multiple for this firm can be estimated as follows:

$$\frac{\text{Value}}{\text{EBITDA}} = \frac{(1 - .36)}{.10 - .05} + \frac{(0.2)(.36)}{.10 - .05} - \frac{0.3}{.10 - .05} - \frac{0}{.10 - .05} = 8.24$$

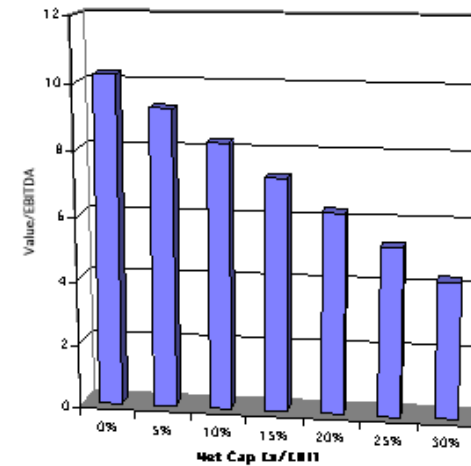
# The Determinants of EV/EBITDA

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*Tax Rates*

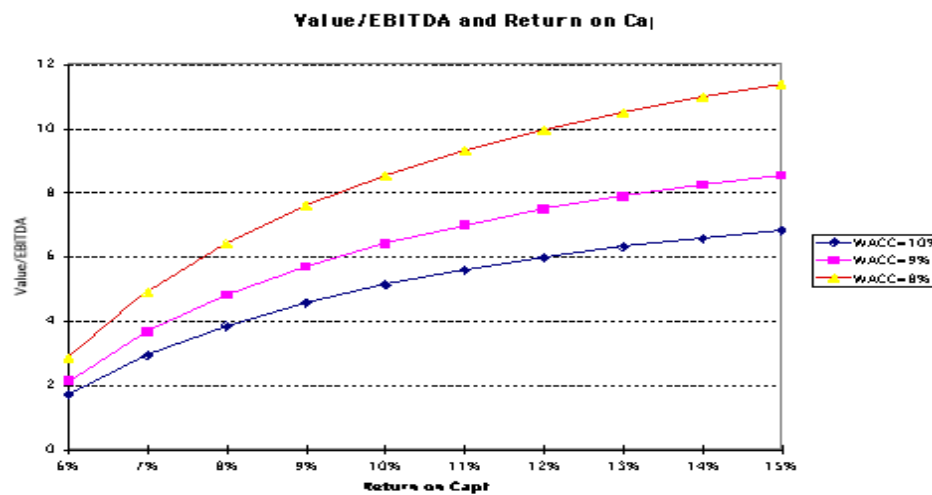


**Value/EBITDA and Net Cap Ex Ra**



*Reinvestment Needs*

*Excess Returns*



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# Value/EBITDA Multiple: Trucking Companies: Is Ryder cheap?

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With infrastructure companies, be wary about low EV/EBITDA multiples, since they can be affected by investment timing and irregular reinvestment needs.

Company Name	Value	EBITDA	Value/EBITDA
KLLM Trans. Svcs.	\$ 114.32	\$ 48.81	2.34
Ryder System	\$ 5,158.04	\$ 1,838.26	2.81
Rollins Truck Leasing	\$ 1,368.35	\$ 447.67	3.06
Cannon Express Inc.	\$ 83.57	\$ 27.05	3.09
Hunt (J.B.)	\$ 982.67	\$ 310.22	3.17
Yellow Corp.	\$ 931.47	\$ 292.82	3.18
Roadway Express	\$ 554.96	\$ 169.38	3.28
Marten Transport Ltd.	\$ 116.93	\$ 35.62	3.28
Kenan Transport Co.	\$ 67.66	\$ 19.44	3.48
M.S. Carriers	\$ 344.93	\$ 97.85	3.53
Old Dominion Freight	\$ 170.42	\$ 45.13	3.78
Trimac Ltd	\$ 661.18	\$ 174.28	3.79
Matlack Systems	\$ 112.42	\$ 28.94	3.88
XTRA Corp.	\$ 1,708.57	\$ 427.30	4.00
Covenant Transport Inc	\$ 259.16	\$ 64.35	4.03
Builders Transport	\$ 221.09	\$ 51.44	4.30
Werner Enterprises	\$ 844.39	\$ 196.15	4.30
Landstar Sys.	\$ 422.79	\$ 95.20	4.44
AMERCO	\$ 1,632.30	\$ 345.78	4.72
USA Truck	\$ 141.77	\$ 29.93	4.74
Frozen Food Express	\$ 164.17	\$ 34.10	4.81
Arnold Inds.	\$ 472.27	\$ 96.88	4.87
Greyhound Lines Inc.	\$ 437.71	\$ 89.61	4.88
USFreightways	\$ 983.86	\$ 198.91	4.95
Golden Eagle Group Inc.	\$ 12.50	\$ 2.33	5.37
Arkansas Best	\$ 578.78	\$ 107.15	5.40
Airlease Ltd.	\$ 73.64	\$ 13.48	5.46
Celadon Group	\$ 182.30	\$ 32.72	5.57
Amer. Freightways	\$ 716.15	\$ 120.94	5.92
Transfinancial Holdings	\$ 56.92	\$ 8.79	6.47
Vitran Corp. 'A'	\$ 140.68	\$ 21.51	6.54
Interpool Inc.	\$ 1,002.20	\$ 151.18	6.63
Intrenet Inc.	\$ 70.23	\$ 10.38	6.77
Swift Transportation	\$ 835.58	\$ 121.34	6.89
Landair Services	\$ 212.95	\$ 30.38	7.01
CNF Transportation	\$ 2,700.69	\$ 366.99	7.36
Budget Group Inc	\$ 1,247.30	\$ 166.71	7.48
Caliber System	\$ 2,514.99	\$ 333.13	7.55
Knight Transportation Inc	\$ 269.01	\$ 28.20	9.54
Heartland Express	\$ 727.50	\$ 64.62	11.26
Greyhound CDA Transn Corp	\$ 83.25	\$ 6.99	11.91
Mark VII	\$ 160.45	\$ 12.96	12.38
Coach USA Inc	\$ 678.38	\$ 51.76	13.11
US 1 Inds Inc.	\$ 5.60	\$ (0.17)	NA
<b>Average</b>			<b>5.61</b>