

Volkswagen AG 2009

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Selected Financial Data for Volkswagen AG (Dec. 31, 2008):

Variable	Volkswagen	Toyota	General Motors	Ford Motor	Daimler	Honda	Peugeot	Fiat	Renault	BMW	Porsche
Enterprise Value (€ billions)	133.76	151.84	24.80	86.28	73.96	54.00	22.42	22.42	30.24	63.12	17.56
BV/(Debt) (€ billions)	69.38	86.90	33.48	111.28	58.64	34.88	27.93	21.36	29.14	59.53	18.17
BV/(Equity) (€ billions)	35.01	94.19	-61.98	-12.45	31.22	36.06	13.14	10.35	18.96	20.27	15.07
MA/(Equity) (€ billions)	77.62	73.24	1.33	3.74	25.28	27.47	2.77	5.69	4.76	14.35	9.76
Cash (€ billions)	9.47	12.82	10.11	15.86	6.91	8.34	2.10	3.46	2.05	7.45	6.99
Net Debt (€ billions)	56.14	78.60	23.27	82.54	48.68	26.54	23.25	16.73	25.48	48.77	7.79
Net Sales (€ billions)	113.81	208.63	107.17	105.23	95.87	95.25	54.36	59.38	37.79	53.20	7.47
EBITDA (€ billions)	15.71	31.54	-7.80	5.78	10.05	11.36	2.85	6.41	4.08	8.15	9.93
Net Income (€ billions)	4.75	13.63	-22.20	-10.56	1.64	4.76	-0.34	1.61	0.57	0.32	6.29
Share Price (€)	194.19	23.05	2.30	1.65	26.40	15.13	12.15	4.59	18.55	21.97	55.79
Earnings per share (EPS) (€)	11.94	4.29	-38.34	-4.65	1.71	2.62	-1.51	1.30	2.23	0.50	35.95
Dividends per share (€)	16.33	5.41	0.11	0.90	15.90	8.80	9.90	9.90	8.90	24.30	7.60
P/E ratio	16.26	5.37	(0.06)	(0.35)	15.44	5.77	(8.06)	3.53	8.33	44.30	1.55
Enterprise Value/EBITDA	8.5x	4.8x	-3.2x	14.9x	7.4x	4.8x	9.1x	3.5x	7.4x	7.7x	1.8x
EBITDA/employees	43.97	99.77	-32.11	27.15	36.79	63.45	13.71	32.31	31.13	81.51	813.46
ROIC (%)	5.56%	7.08%	N/A	-5.33%	1.91%	6.91%	-0.08%	8.23%	1.75%	0.65%	28.21%
Market Beta	0.65	0.87	0.82	0.99	1.59	NA	1.20	1.56	2.32	1.07	1.71
Number of Employees	357,207	316,121	243,000	213,000	273,216	178,960	207,800	198,348	130,985	100,041	12,202
Shares Outstanding (thousands)	398,091	3,177,445	579,000	2,272,000	957,700	1,815,356	227,614	1,239,880	256,552	653,291	175,000

PART 1. Multiples: P/E ratio.

Question 1.1

Volkswagen multiple (P/E ratio) is 16.3, while its peers' average P/E ratio is 7.58. Mr. Klaus Farra is thinking about multiplying the industry-average P/E ratio by Volkswagen's EPS to find a fair valuation of Volkswagen's stock. Is this the right way to proceed? Does this imply that Volkswagen is over-valued, under-valued or correctly priced in December 2008?

No, is not the correct way to proceed. We need to identify the comparable firms. We also need to take into consideration the adjustments to align and coordinate the input data (different countries, o/s, disposals, etc), and we should use forward looking information instead of historical information.

Hypothesis:	P/E ratio =	Volkswagen	Industry
		16.26	7.58
	EPS (2008)	11.94	11.94

Price per share: **194.20** **90.52** Means that is overvalued, because industry paid \$7.58 per dollar earned and VW paid almost 2x.

Problem 1.1 with this approach: The use of the industry average overlooks the fact that companies, even in the same industry, can have differently different expected growth rates, return on invested capital and capital structures (i.e. use this company, aggregate and average).

Problem 1.2 with this approach: It does not use projected EPS (because future earnings per share) who need to use projected EPS as an estimate of future cash flows, so use cash flows might be more appropriate than a fixed rate.

Problem 1.3 with this approach: It does not use the negative earnings in 2008 or extremely large earnings, compared to operational means (e.g. financial gain less extraordinary, when no extreme earnings). Using the median value instead of the average helps to address this problem.

Question 1.2

What should be the comparable firms' set for the P/E analysis? Think about the factors affecting your choice.

	Volkswagen	Toyota	GM	Ford	Daimler	Honda	Peugeot	Fiat	Renault	BMW	Porsche
Net Sales (€ billions)	113.81	208.63	107.17	105.23	95.87	95.25	54.36	6.41	4.08	8.15	9.93
EBITDA	15.71	31.54	-7.80	5.78	10.05	11.36	2.85	6.41	4.08	8.15	9.93
Number of Employees	357,000	315,124	293,000	213,000	255,716	175,960	207,890	198,748	130,985	101,045	12,207
Debt/Equity Ratio	0.041763320680444	0.041763320680444	0.041763320680444	0.041763320680444	0.041763320680444	0.041763320680444	0.041763320680444	0.041763320680444	0.041763320680444	0.041763320680444	0.041763320680444
ROIC	0.06	0.07	N/A	-0.05	0.02	0.07	0.00	0.08	0.02	0.01	0.28
Share Price (€)	194.19	23.05	2.30	1.65	26.40	15.13	12.15	4.59	18.55	21.97	55.79
Earnings per share (€)	11.94	4.29	-38.34	-4.65	1.71	2.62	-1.51	1.30	2.23	0.50	35.95
Price/Earnings	16.3x	5.4x	-0.1x	-0.4x	15.4x	5.8x	-8.1x	3.5x	8.3x	44.3x	1.6x

Volkswagen's share price has been pretty well steady since 2005 (Exhibit 2). After trading in the €30-€60 range between 1999 and 2005, the operational improvements and robust about a takeover by Porsche had steadily pushed up its share price, which was around €20 in May 2009. The stock return in 2007 was 94% and 84% in 2008, notwithstanding the financial crisis (Exhibit 3). Measured by the price-earnings ratio (P/E ratio), the company had a larger P/E ratio (16.3x) than the industry average (7.6x) and this ratio has been quite volatile over the past decade (Exhibit 4).

	Stock Price (May 7th, 2009)	EPS (2008)	EPS (2009 forecast)	EPS (2010 forecast)
Volkswagen	181.20	11.94	3.99	5.54
Toyota	30.45	4.29	0.79	1.37
Daimler	27.57	1.71	1.34	1.37
Honda	23.36	2.62	0.87	1.29
... etc.				

	P/E (2008)	P/E (using EPS 2009 forecast)	P/E (using EPS 2010 forecast)
Volkswagen	15.18	45.41	32.71
Toyota	7.10	38.54	22.23
Daimler	16.12	20.57	20.12
Honda	8.92	26.85	18.11
... etc.			

P/E (median) of the comparable firms:

8.92	26.85	20.12
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Question 1.3

What is the value of Volkswagen stock using P/E multiples valuation?

Comparables P/E 2008	EPS (2008)	Price per share
8.9x	11.9	106.46

	Stock Price (May 7th, 2009)	EPS (2008)	EPS (2009 forecast)	EPS (2010 forecast)	P/E (2008)	P/E (2009 forecast)	P/E (2010 forecast)
Volkswagen	181.20	11.94	3.99	5.54	15.2x	45.4x	32.7x

Stock price of Volkswagen using the P/E multiple valuation:

181.20

Exhibit 6

Financial Snapshot - May 7, 2009

This table shows a list of financial variables of Volkswagen and its competitors on May 7, 2009 based on financial statements and financial analysts' forecasts

Variable	Volkswagen	Toyota	General Motors	Ford Motor	Daimler	Honda	Peugeot	Fiat	Renault	BMW	Porsche
Share Price (€)	181.20	30.45	1.10	4.52	27.57	23.36	17.88	7.47	26.72	27.91	48.99
EPS - Actual - Dec 2008	11.94	4.29	-30.34	-4.65	1.71	2.62	-1.51	1.30	2.23	0.50	35.95
EPS - Analyst Forecast - Dec 2009	3.99	0.79	-19.50	-1.40	1.34	0.87	-5.34	-0.31	-0.93	0.07	7.40
EPS - Analyst Forecast - Dec 2010	5.54	1.37	-6.15	-0.24	1.37	1.29	-1.54	0.28	-1.23	1.62	5.28
EPS - Analyst Forecast - Dec 2011	7.80	N/A	-1.19	0.40	2.67	N/A	2.57	0.65	2.87	3.24	8.16
EBITDA - Actual - Dec 2008	15.71	31.54	-7.80	5.78	10.05	11.36	2.85	6.41	4.08	8.15	9.93
EBITDA - Analyst Forecast - Dec 2009	13.95	7.30	N/A	4.95	7.99	4.40	3.13	4.90	3.10	6.30	-0.24
EBITDA - Analyst Forecast - Dec 2010	10.33	10.15	N/A	N/A	17.04	5.00	3.69	4.36	2.79	6.65	1.63

PART 2. Multiples: EV/EBITDA ratio

Question 2.1

What are the right companies for the comparable set in the EV/EBITDA ratio analysis? What value do you obtain for the multiple? (Hint: Do not forget to adjust for debt when computing share price.)

	Volkswagen	Toyota	GM	Ford	Daimler	Honda	Peugeot	Fiat	Renault	BMW	Porsche
Enterprise Value	133.76	151.84	24.60	86.28	73.96	54.00	26.01	22.42	30.24	63.12	17.56
Net Debt (€ billions)	56.14	78.60	23.27	82.54	48.68	26.54	23.25	16.73	25.48	48.77	7.79
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Net Sales (€ billions)	113.81	208.63	107.17	105.23	95.87	95.25	54.36	59.38	37.79	53.20	7.47
EBITDA	15.71	31.54	-7.80	5.78	10.05	11.36	2.85	6.41	4.08	8.15	9.93
EBITDA Margin (%)	13.8%	15.1%	-7.3%	5.5%	10.5%	11.9%	5.2%	10.8%	10.8%	15.3%	132.9%
EV/EBITDA	8.5x	4.8x	-3.2x	14.9x	7.4x	4.8x	9.1x	3.5x	7.4x	7.7x	1.8x

	EV (May 7th, 2009)	EBITDA (2008)	EBITDA (2009 forecast)	EBITDA (2010 forecast)
Toyota	151.84	31.54	7.30	10.15
Ford	86.28	5.78	4.98	N/A
Daimler	73.96	10.05	7.99	7.04
Honda	54.00	11.36	4.40	5.00
Renault	30.24	2.85	3.10	2.79
BMW	63.12	8.15	6.30	6.65
... etc.				

	EV/EBITDA (using EBITDA 2008)	EV/EBITDA (using EBITDA 2009 forecast)	EV/EBITDA (using EBITDA 2010 forecast)
Toyota	4.8x	20.8x	15.0x
Ford	14.9x	17.3x	
Daimler	7.4x	9.3x	10.8x
Honda	4.8x	12.3x	
Renault	10.6x	9.8x	10.8x
BMW	7.7x	10.0x	9.5x
... etc.			

EV/EBITDA (median) of the comparable firms:

7.6x	11.1x	10.8x
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Question 2.2

What is the value of Volkswagen stock using EV/EBITDA multiples valuation?

Price per share using forward-looking multiples:

Firm	EBITDA (2008)	EBITDA (2009 forecast)	EBITDA (2010 forecast)
Volkswagen	15.71	13.95	10.33

EV (May 2009)	EV (using actual EBITDA 2008)	EV (using 2009 EBITDA forecast)	EV (using EBITDA 2010 forecast)
158.59	118.64	155.49	111.59

Using median P/E