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VALUATION USING MULTIPLES. HOW DO ANALYSTS REACH THEIR CONCLUSIONS?

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Abstract

This paper focuses on equity valuation using multiples. Our basic conclusion is that multiples nearly always have broad dispersion, which is why valuations performed using multiples may be highly debatable. We revise the 14 most popular multiples and deal with the problem of using multiples for valuation: their dispersion. 1,200 multiples from 175 companies illustrate the dispersion of multiples of European utilities, English utilities, European constructors, hotel companies, telecommunications, banks and Internet companies.

We also show that PER, EBITDA and Profit after Tax (the most commonly used parameters for multiples) were more volatile than equity value during the period 1991-99.

We also provide additional evidence of the analysts' recommendations for Spanish companies: less than 15% of the recommendations are to sell.

However, multiples are useful in a second stage of the valuation: after performing the valuation using another method, a comparison with the multiples of comparable firms enables us to gauge the valuation performed and identify differences between the firm valued and the firms it is compared with.

JEL Classification: G12, G31, M21

Keywords: multiples, dispersion of multiples, PER, relative multiples, analysts' recommendations.

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VALUATION USING MULTIPLES.
HOW DO ANALYSTS REACH THEIR CONCLUSIONS?

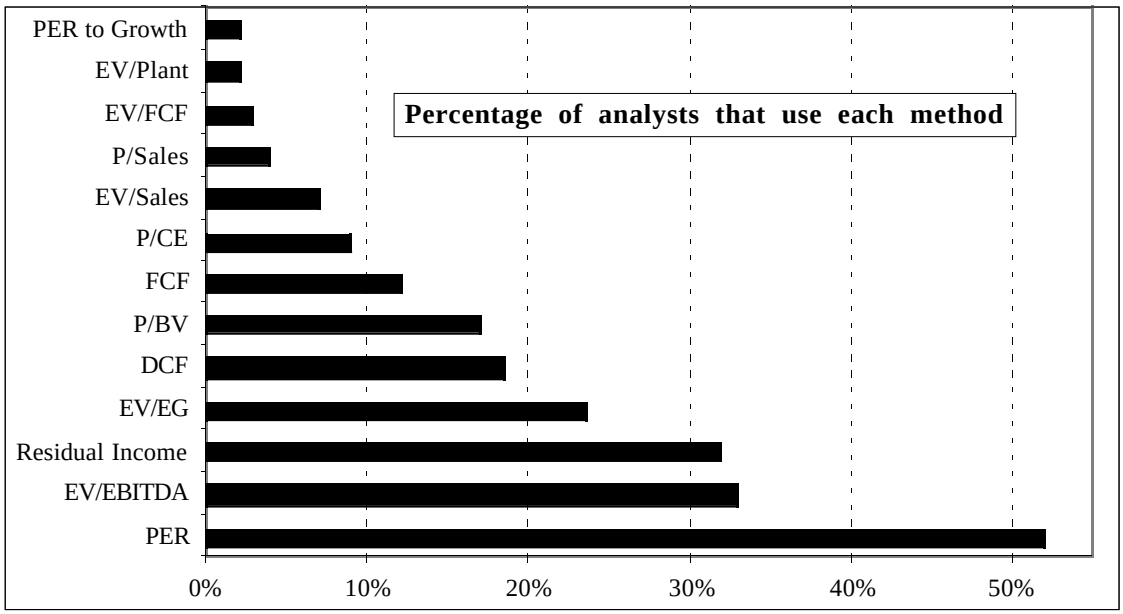
This paper focuses on equity valuation using multiples. The basic conclusion is that multiples almost always have broad dispersion, which is why valuations performed using multiples are highly debatable.

However, multiples are useful in a second stage of the valuation: after performing the valuation using another method, a comparison with the multiples of comparable firms enables us to gage the valuation performed and identify differences between the firm valued and the firms it is compared with.

1. Valuation methods used by the analysts

Figure 1 shows the valuation methods (2) most widely used by Morgan Stanley Dean Witter's analysts for valuing European companies. Surprisingly, the discounted cash flow (DCF) is in fifth place, behind multiples such as the PER, the EV/EBITDA and the EV/EG.

Figure 1. Most widely used valuation methods



Source: Morgan Stanley Dean Witter Research.

(2) Weighted by the market capitalization of the industry in which it is applied.

2. Most commonly used multiples

Although as Figure 1 shows, the PER and the EV/EBITDA seem to be the most popular multiples for valuing firms, it is also true that, depending on the industry being analyzed, certain multiples are more appropriate than others.

Table 1. Most commonly used multiples

P/E,	Price earnings ratio
P/CE	Price to cash earnings
P/S	Price to sales
P/LFCF	Price to levered free cash flow
P/BV	Price to book value
P/AV	Price to asset value
P/Customer	Price to customer
P/units	Price to units

P/output	Price to output
EV/EBITDA	Enterprise value to EBITDA
EV/S	Enterprise value to sales
EV/FCF	Enterprise value to unlevered free cash flow
EV/BV	
PEG	
EV/EG	

The multiples can be divided into three groups (3):

1. Multiples based on the company's capitalization (equity value: E).

2. Multiples based on the company's value (equity value and debt value: E+D) (4).

3. Growth-referenced multiples.

2.1. Multiples based on capitalization

The price- or capitalization-based multiples have the advantage of being very easy to understand and calculate.

1. Price Earnings Ratio (PER).

PER = market capitalization / total net income = share price / earnings per share

Sometimes, the mean of last or next few years' earnings is used.

2. Price to Cash Earnings (P/CE).

P/CE = market capitalization / (net income before depreciation and amortization)

3. Price to sales (P/S).

P/S= market capitalization / sales = Share price / sales per share

(3) Morgan Stanley Dean Witters Report How We Value Stocks, 15 September 1999.
(4) The value of the firm (E+D) is often called Enterprise Value (EV). However, the initials are also used sometimes to indicate the value of the shares (Equity Value).

This multiple compares sales with capitalization (the shares' value) only. However, sales are attributable to all the company's stakeholders: shareholders, creditors, pensioners, Inland Revenue... As we will see in the next paper, this multiple is often used to value Internet companies... and also telecommunications infrastructure companies, bus companies and pharmacies.

4. Price to Levered Free Cash Flow (P/LFCF).

P/LFCF= Market capitalization / (Operating income after interest and tax + depreciation + amortization – increased working capital requirements – investments in existing businesses (5)).

One variant of this multiple is the P/FAD (funds available for distribution).

5. Price to Book Value (P/BV).

VM/VC = P/BV= market capitalization / book value of shareholder's equity

In a firm with constant growth g, the relationship between market value and book value is: P/BV= (ROE-g)/ (Ke-g)

This multiple is often used to value banks. Other industries that use P/BV or its derivatives are the paper and pulp industry, real estate and insurance. One variant of this multiple for the insurance industry is the capitalization / embedded value (shareholder's equity + present value of the future cash flows on signed insurance contracts).

6. Price to Customer

P / Customer = market capitalization / number of customers

This multiple is very commonly used to value cellular phone and Internet companies.

7. Price to units

This multiple is often used to value soft drinks and consumer product companies.

8. Price to output

This multiple is used to value cement and commodities companies.

(5) "Investments in existing businesses" are those in businesses that the company already has. They do not include growth-oriented investments, either for new businesses or to increase capacity.

9. Price to potential customer

As we will see in the next paper, some analysts use this multiple to value Internet companies.

2.2. Multiples based on the company's value

These multiples are similar to those in the previous section, but instead of dividing the market capitalization by another parameter, they use the sum of the firm's market capitalization and financial debt. This sum is usually called the Enterprise Value (EV) (6).

1. Enterprise Value to EBITDA (EV/EBITDA).

EV/ EBITDA = Enterprise value / Earnings before interest, tax, depreciation and amortization.

This is one of the most widely used multiples by analysts. However, the EBITDA (earnings before interest, tax, depreciation and amortization) has a number of limitations (7), including:

1. It does not include the changes in the working capital requirements (WCR)
2. It does not consider capital investments.

2. Enterprise Value to Sales (EV/Sales).

EV/Sales = Enterprise value / Sales.

3. Enterprise Value to Unlevered Free Cash Flow (EV/FCF).

EV/FCF = Enterprise value / (Earnings before interest and after tax + depreciation + amortization - increased working capital requirements - capital investments (8)).

2.3. Growth-referenced multiples

1. P/EG or PEG. PER to EPS growth

PER/g = P/EG = PEG = PER / growth of earnings per share in the next few years

(6) If there are preferred shares and minority interests, the enterprise value is: market capitalization + preferred shares + minority interests + net debt.

(7) For a good report on the limitations of the EBITDA, see Putting EBITDA In Perspective, Moody's Investors Service, June 2000.

(8) Sometimes recurrent free cash flow is used as well. In this case, investments in existing businesses are considered.

This multiple is mainly used in growth industries, such as luxury goods, health and technology.

2. EV/EG. Enterprise value to EBITDA growth

EV/ EG= EV/EBITDA (historic) / growth of EBITDA in the next few years

As with the previous multiple, it is mainly used in growth industries, particularly health, technology and telecommunications.

3. Relative multiples

All of these multiples by themselves can tell us very little. They need to be placed in a context. There are basically three relative valuations:

1. With respect to the firm's own history
2. With respect to the market
3. With respect to the industry

1. With respect to the firm's history

History-referenced multiple = multiple / mean of recent years' multiple

One problem with historic multiples is that they depend on exogenous factors, such as interest rates and stock market situation. In addition, the composition and nature of many firms' business changes substantially over time, so it does not make much sense to compare them with previous years.

2. With respect to the market

Market-referenced multiple = firm multiple / market multiple

3. With respect to the industry

Industry-referenced multiple = firm multiple / industry multiple

This comparison with the industry is more appropriate than the two previous comparisons. However, one problem is that when the industry is overvalued, all of the companies in it are overvalued: a clear example of this situation was the Internet companies up to 2000. We shall also see in section 4 that the multiples of companies operating in the same industry normally have very wide dispersion.

Table 2 is a summary of the most commonly used multiples for valuing different industries.

Table 2. Most commonly used multiples in different industries

Industry	Sub-Sector	Most commonly used multiples
Automobiles	Manufactures	P/S
	Components	P/CE relative and P/S
Banks		P/BV
Base Materials	Paper	P/BV
	Chemicals	EV/EBITDA, EV/S, P/CE
	Metals & Mining	P/LFCF and EV/EBITDABuilding
& Construction		P/LFCF, EV/FCF, PER and EV/EBITDA
Business Services		EV/EBITDA, ROCE, P/LFCF, PER and PER to growth
Capital Goods	Engineering	PER, EV/EBITDA and EV/S
	Defence	PER, EV/EBITDA and EV/S
Food, Drink	Food Producers	EV/EBITDA and EV/CE
& Tobacco	Brewers & Pubs	ROCE, PER to growth and PER relative
	Alcoholic Beverages	EV/EBITDA
	Tobacco	ROCE
Food, Drink	Food Producers	EV/EBITDA and EV/CE
& Tobacco	Brewers & Pubs	ROCE, PER to growth and PER relative
	Alcoholic Beverages	EV/EBITDA
	Tobacco	ROCE
Healthcare		PER, PER relative to S&P and EV/EBITDA
Insurance		P/AV
Leisure		EV/EBITDA
Media		PER relative and EV/EBITDA
Oil & Gas	Integrated	PER and EV/CE
Real Estate		P/FAD, EV/EBITDA and P/NAV
Retail & Consumer	Clothing	PER relative to market and sector, EV/EBITDA
Goods	Food	PER relative
	Luxury Goods	PER, PER to growth, EV/S and EV/E to EBITDA growth
Technology	Software, equipment & semiconductors	PER and PER relative
Telecoms		EV/E to EBITDA growth, EV/S and P/customer
Transport	Air	EV/EBITDA
	Travellers by road	P/S
Utilities		PER and P/CE

Table 3 shows the average multiple of different industries (9) in the US stock market in September 2000. The total number of companies analyzed was 5,903.

Table 3. Mean multiples of different American industries. September 2000.

	Per	P/S	EV/S	P/BV	EV/BV	EV/ EBITDA	PEG	ROE	ROC	Payout	Beta	Dividend Yield	Volati-lity	Capitali-zation (mill.)
Air Transport	12.0	0.4	0.7	1.8	1.6	3.8	1.0	13.9%	15.3%	10.7%	1.1	0.98%	53.1%	64
Auto & Truck	14.7	0.7	1.4	2.1	1.5	4.9	1.0	12.6%	12.5%	28.7%	0.9	1.15%	45.8%	378
Bank	12.2	n.a.	n.a.	2.2	2.1	4.0	1.1	18.9%	28.1%	38.1%	0.8	3.28%	32.5%	524
Beverage (Soft Drink)	39.8	3.5	3.9	9.4	5.4	13.4	2.6	22.1%	19.6%	46.5%	0.8	0.68%	38.5%	236
Chemical (Diversified)	24.0	2.0	2.4	4.0	2.7	7.4	1.6	15.7%	16.7%	44.2%	0.8	1.51%	39.7%	183
Computer & Peripherals	75.8	3.9	3.9	12.5	12.9	25.2	2.7	18.3%	24.5%	9.2%	1.1	0.06%	88.8%	1,418
Computer Software & Svcs	73.1	7.3	7.1	12.6	17.5	25.3	2.3	19.2%	33.4%	4.3%	1.0	0.09%	91.1%	1,223
Drug	59.0	9.2	9.3	14.3	13.6	27.2	2.1	23.9%	28.3%	48.2%	0.9	0.08%	95.6%	1,490
Electric Utility (East)	13.2	1.0	1.9	1.7	1.3	5.3	1.6	13.5%	11.7%	70.6%	0.5	4.83%	30.1%	137
Electrical Equipment	43.8	4.3	4.4	9.5	8.2	23.9	2.2	22.9%	17.9%	40.9%	0.9	0.68%	76.5%	650
Electronics	110.8	2.8	2.9	8.2	7.3	27.8	4.5	10.9%	12.4%	9.2%	0.9	0.19%	75.4%	260
Entertainment	125.8	2.8	3.3	2.8	2.2	11.1	5.7	2.5%	7.9%	17.9%	0.9	0.16%	70.0%	306
Financial Services	21.3	5.7	7.6	3.6	2.4	8.0	1.3	17.7%	17.4%	18.9%	0.9	1.36%	48.8%	784
Food Processing	14.0	0.8	0.9	2.3	2.4	5.3	1.1	15.0%	19.9%	42.0%	0.7	1.61%	41.8%	247
Foreign Electron/Entertn	342.6	2.6	2.7	3.2	3.3	8.9	20.2	2.8%	11.8%	122.6%	0.9	1.50%	42.6%	437
Foreign Telecom.	82.3	9.9	10.6	10.8	6.8	17.3	5.2	10.3%	19.1%	49.8%	1.1	1.23%	45.7%	1,765
Household Products	20.8	1.8	2.0	7.1	4.0	8.2	1.4	35.0%	24.4%	39.2%	0.8	1.23%	43.4%	172
Insurance (Life)	14.9	n.a.	n.a.	2.2	2.1	4.2	1.4	15.0%	31.6%	23.6%	0.9	1.43%	42.4%	125
Internet	n.a.	26.7	26.1	16.2	26.4	n.a.	n.a.	–18.3%	–13.0%	0.0%	2.0	0.00%	134.0%	672
Medical Services	21.8	0.7	0.8	2.3	2.1	6.5	1.0	10.0%	14.1%	8.2%	0.9	0.18%	76.1%	136
Medical Supplies	34.9	2.2	2.3	7.3	5.8	14.8	1.6	21.7%	20.9%	27.8%	0.8	0.16%	73.2%	442
Natural Gas (Diversified)	36.4	1.2	1.6	3.6	2.1	9.1	2.0	12.1%	10.4%	46.0%	0.7	2.73%	44.8%	142
Newspaper	37.9	2.8	3.3	4.4	3.2	11.1	3.2	12.6%	13.6%	33.6%	0.8	1.40%	38.8%	142
Petroleum (Integrated)	23.6	1.2	1.3	3.0	2.6	6.4	1.6	12.3%	17.4%	68.6%	0.8	2.43%	40.3%	973
Retail Building Supply	41.6	2.0	2.0	7.1	6.3	18.8	2.8	18.0%	17.9%	9.6%	0.9	0.43%	42.9%	136
Retail Store	26.9	0.8	1.0	4.5	2.9	10.2	1.8	16.8%	13.8%	18.7%	1.1	1.06%	45.0%	373
Securities Brokerage	18.9	1.7	3.0	4.4	2.0	5.4	1.1	27.4%	19.8%	11.6%	1.2	1.20%	62.5%	271
Semiconductor	80.9	8.6	8.5	11.3	13.6	25.7	2.7	18.8%	26.5%	6.8%	1.3	0.01%	90.7%	978
Semiconductor Cap Equip	86.8	9.2	8.9	13.6	25.4	40.6	3.2	26.2%	33.6%	0.0%	1.8	0.00%	72.0%	108
Telecom. Equipment	122.0	6.1	6.2	11.0	9.5	30.3	3.8	9.9%	15.1%	7.5%	1.1	0.02%	98.7%	489
Telecom. Services	111.3	4.2	4.8	4.6	3.2	11.2	3.7	2.8%	11.4%	87.2%	1.2	0.24%	83.9%	1,120
Tobacco	8.6	0.7	0.8	3.8	2.8	4.5	1.1	43.6%	31.1%	55.2%	0.6	5.61%	48.8%	89
Total market	34.6	2.2	2.6	4.6	3.1	9.6	1.7	14.4%	15.9%	35.0%	0.9	1.14%	60.5%	20,057

4. The problem with multiples: their dispersion.

4.1. Dispersion of the utilities' multiples

Table 4 shows multiples used to value European utilities. Table 5 concentrates solely on English utilities. Note the multiples' wide dispersion in all cases.

Table 4. Multiples of European utilities (excluding the English utilities). September 2000.

	PER		P/CE		Dividend yield (%)		EV/EBITDA		P/BV
	1999	**2000E**	**1999**	**2000E**	**1999**	**2000E**	**1999**	**2000E**	**1999**
EVN	–5.9	14.4	3.8	5.3	2.2	2.4	6.4	7.7	1.4
Verbund	32.6		8.9		1.2		11.8		3.7
Electrabe	15.0	15.1	7.4	7.7	5.6	5.8	8.5	8.2	2.8
Fortum	4.3	10.0	6.1	3.7	4.7	4.5	6.1	6.3	0.6
Vivendi	32.2		9.7		1.9		13.7		4.7
Suez LdE	27.2	24.5	6.8	7.0	2.7	2.9	9.7	8.3	2.4
RWE	19.4	18.4	4.9	4.7	3.6	3.9	4.7	4.5	3.4
E.ON	14.0	10.6	5.8	8.0	3.1	3.4	7.7	7.9	1.8
Edison	32.5	31.6	13.4	13.3	1.3	1.4	11.8	10.4	3.6
ENEL	22.8	25.6	7.7	8.9	2.7	3.0	7.3	8.6	7.9
EDP	21.0	19.2	8.4	8.2	3.9	4.2	9.3	9.3	1.8
Agbar	18.6	16.2	9.5	8.2	1.8	2.0	10.9	8.9	2.1
Endesa	18.1		5.7		2.7		10.6		2.5
Iberdrola	17.6		7.1		3.6		8.6		1.6
Unión Fenosa	10.6	23.4	11.0	10.5	1.7	2.1	7.5	6.9	2.3
Hidrocantábrico	21.2	18.6	9.3	8.5	2.6	2.8	9.6	8.5	2.2
REE	19.6	18.4	8.8	8.4	3.4	3.7	6.7	6.5	2.1
Sydkraft A (SKr)	14.8	13.3	7.6	7.0	3.3	3.4	6.2	5.9	1.4
Average	18.6	18.5	7.9	7.8	2.9	3.3	8.7	7.7	2.7
Maximum	**32.6**	**31.6**	**13.4**	**13.3**	**5.6**	**5.8**	**13.7**	**10.4**	**7.9**
Minimum	**–5.9**	**10.0**	**3.8**	**3.7**	**1.2**	**1.4**	**4.7**	**4.5**	**0.6**

Source: Morgan Stanley Dean Witter Research.

Table 5. Multiples of English utilities. September 2000.

	PER		P/CE		Dividend yield (%)		EV/EBITDA		P/BV
	2000	**2001E**	**2000**	**2001E**	**2000**	**2001E**	**2000**	**2001E**	**2000**
British Energy	7.4	–26.1	1.8	2.4	4.6	4.6	4.4	5.7	0.8
National Grid	25.0	29.8	17.2	14.7	2.3	2.5	11.6	11.4	4.5
National Power	12.8	14.7	7.6	8.9	3.2	3.4	8.1	10.0	3.3
PowerGen	8.9	7.4	5.1	5.1	6.2	6.8	6.9	6.3	1.9
Scottish Power	7.3	18.2	7.8	8.7	4.7	5.0	9.1	7.6	1.5
Scottish & Southern	12.3	12.4	9.0	8.9	4.9	5.1	7.5	7.6	2.9
Anglian Water	9.6	12.0	5.5	5.8	7.4	7.6	6.9	7.1	1.0
Hyder	5.2	5.0	2.1	2.2	5.6	5.9	5.9	5.2	0.6
Kelda	6.8	10.6	4.0	4.8	6.5	6.9	6.7	7.1	0.8
Pennon	7.7	11.9	5.3	6.3	7.2	5.4	6.9	7.9	1.0
Severn Trent	9.9	10.9	4.4	4.9	6.2	6.5	6.9	6.3	1.0
Thames	12.5	27.7	7.8	11.7	3.9	4.1	7.8	8.6	1.9
United Utilities	8.4	12.1	5.0	6.0	6.5	6.7	6.8	7.3	1.5
Average	10.3	11.3	6.4	7.0	5.3	5.4	7.3	7.5	1.7
Maximum	**25.0**	**29.8**	**17.2**	**14.7**	**7.4**	**7.6**	**11.6**	**11.4**	**4.5**
Minimum	**5.2**	**–26.1**	**1.8**	**2.2**	**2.3**	**2.2**	**4.4**	**5.2**	**0.6**

Source: Morgan Stanley Dean Witter Research.

4.2. Dispersion of the multiples of construction companies

Table 6 shows different multiples for construction and building materials companies in Europe, America, Asia and Spain. Table 7 contains multiples for hotel companies

Table 6. Multiples of construction companies. August 2000.

	PER				EV/EBITDA				P/CE			
	1999	**2000E**	**2001**	**2002E**	**1999**	**2000E**	**2001**	**2002E**	**1999**	**2000E**	**2001**	**2002E**
CRH	17.5	14.4	13.0	12.4	10.1	7.6	7.3	7.0	10.7	8.8	8.4	8.0
Holderbank	19.5	17.1	13.7	12.2	8.7	7.6	7.0	6.5	8.9	8.2	7.1	6.6
Lafarge	15.2	12.2	11.8	10.2	7.2	5.9	5.8	5.5	6.8	6.1	6.0	5.7
Saint Gobain	18.0	11.5	9.8	8.4	5.4	4.6	4.1	3.7	8.0	5.9	5.2	4.7
Cemex	5.5	6.6	6.1	5.7	5.1	5.7	5.1	4.9	4.1	5.0	4.7	4.5
Lafarge corporation	6.5	6.0	5.8		5.3	4.8	4.7					
Martin Marietta Materials	15.8	15.0	13.0		6.7	6.2	5.6		7.9	7.2	6.6	
Vulcan Materials	19.2	17.0	13.5		9.8	8.9	7.5		2.4	2.7	3.5	
Siam Cement	9.6	6.6	5.6		8.5	5.7	5.1	4.9	4.1	3.2	2.6	2.3
Acciona	26.5	22.3	18.5	16.1	12.5	9.1	7.8	7.0	15.4	11.5	9.9	9.0
ACS	18.8	15.3	13.7	12.1	10.6	7.8	7.1	6.4	12.4	10.6	9.7	8.8
Dragados	14.1	13.6	10.4	9.1	7.2	6.5	5.9	5.0	9.6	9.6	8.0	7.6
FCC	11.4	11.3	11.1	10.6	5.8	5.6	5.3	5.0	6.1	5.7	5.3	5.1
Ferrovial	16.9	13.0	10.5	9.2	21.2	16.2	14.2	12.3	10.1	8.3	7.2	6.3
Average	15.3	13.0	11.2	10.6	8.9	7.3	6.6	6.2	8.2	7.1	6.5	6.2
Maximum	**26.5**	**22.3**	**18.5**	**16.1**	**21.2**	**16.2**	**14.2**	**12.3**	**15.4**	**11.5**	**9.9**	**9.0**
Minimum	**5.5**	**6.0**	**5.6**	**5.7**	**5.1**	**4.6**	**4.1**	**37**	**2.4**	**2.7**	**2.6**	**2.3**

Source: Morgan Stanley Dean Witter Research.

Table 7. Multiples of hotel companies. November 2000.

	EV/EBITDA		PER	
	2000E	**2001E**	**2000E**	**2001E**
Accor	10.0	9.0	23.1	20.0
Bass	5.8	6.3	11.8	10.7
Club Med	10.5	8.2	26.2	18.4
Hilton Group	10.0	8.8	13.2	11.4
Hilton Hotels Corp.	7.6	7.3	13.5	12.8
Marriot Int'l	10.6	9.4	20.5	18.4
Millenium & Copthorne	8.7	8.0	11.2	9.8
NH Hotels	12.8	9.9	21.4	18.1
Scandic Hotels	7.7	6.5	15.2	14.5
Sol Meliá	10.0	8.7	17.6	14.4
Starwood	7.4	7.1	16.0	14.2
Thistle Hotels	8.1	7.8	9.2	9.2
Average	**9.1**	**8.1**	**16.6**	**14.3**
Maximum	***12.8***	*9.9*	*26.2*	*20.0*
Minimum	5.8	*6.3*	*9.2*	*9.2*

4.3. Dispersion of the multiples of telecommunications

Table 8 shows the leading telecommunications operators divided by geographical area. In the case of North America, Europe, and Latin America, it can be seen that the PER is the multiple with the highest dispersion, particularly for the year 2000E, ranging between 13.5 - 73, 12.2 - 63 and 14.9 - 45.1, respectively. In the case of Asia, the differences are substantial in all multiples, particularly the EV/EBITDA, which ranges between 3.4 and 136.7 (for 2000E) and 3.1 and 117.1 (for 2001E), and the P/CE, with data between 3.2 - 196.9 and 2.9 - 171.4 for 2000E and 2001E, respectively.

Table 9 shows multiples for cellular phone companies. Note, again, the multiples' wide dispersion.

Table 8. Valuation by multiples of telecommunications companies

		P/E		EV/EBITDA		P/CE		EV/Sales	
		2000E	**2001E**	**2000E**	**2001E**	**2000E**	**2001E**	**2000E**	**2001E**
North America	AT&T	18.6	18.9	7.6	6.7	13.6	13.1	2.7	2.5
	Verizon	13.5	11.9	5.9	5.3			2.6	2.4
	BellSouth	16.7	14.7	6.8	6.1	15.7	13.9	3.1	2.9
	Broadwing			15.5	11.5			3.8	3.0
	CenturyTel	17.3	13.8	6.3	5.0	14.1	11.7	3.1	2.5
	Commonwealth Telepone Ent.	73.0	53.9	11.5	9.5			3.8	3.4
	WorldCom	15.7	12.3	8.2	6.6	12.7	10.3	2.8	2.4
	SBC Communications	19.6	17.0	8.1	7.2	18.6	16.1	3.3	3.0
	Sprint FON Group	14.3	12.0	5.7	5.1	13.9	11.8	1.7	1.5
	TELUS Corp.	15.4	17.2	4.7	4.8	5.5	5.5	1.9	1.9
	Qwest	62.2	71.9	13.7	11.6	16.8	14.1	5.2	4.9
Europe	British Telecom	53.6		11.6	12.4	13.8	16.0	3.4	2.9
	Cable & Wireless	63.6	44.2	17.7	15.5	24.0	18.1	4.4	4.3
	Deutsche Telecom	17.5	18.5	9.6	9.7	9.7	13.3	5.4	5.0
	KPN	20.4		13.2	11.4	7.3	11.5	4.2	3.6
	OTE	16.4	15.2	7.8	7.3	10.0	8.9	3.4	3.3
	Portugal Telecom	25.9	26.8	9.0	8.5	11.3	11.4	4.3	4.0
	Swisscom	12.2	34.3	10.1	9.8	6.9	10.9	3.0	2.8
	Telefónica	47.6	39.5	12.9	12.2	18.6	17.9	5.2	4.8
	Telia		57.0	17.2	13.5	18.6	15.4	3.8	3.4
Latin America	CANTV		38.1	3.2	3.3	3.4	3.4	1.4	1.4
	CTC	45.1	24.2	8.3	7.7	7.6	6.5	3.7	3.5
	Embratel	21.5	15.1	7.3	5.5	8.2	6.6	2.1	1.7
	Brasil Telecom	24.6	18.4	3.7	3.0	4.9	4.2	1.8	1.5
	Telemar	42.8	19.5	3.8	3.0	4.0	3.3	1.8	1.4
	Telecom Argentina	14.9	14.1	4.8	4.4	3.9	3.6	2.2	2.1
	TelMex	16.6	15.7	7.2	6.4	9.1	8.5	3.8	3.3
Asia	Korea Telecom	19.7	13.3	6.6	5.3	5.3	4.6	2.5	2.3
	MTNL	4.4	4.2	3.4	3.1	3.2	2.9	1.7	1.6
	PLDT			7.2	5.6	7.4	7.3	3.5	3.1
	Indosat	5.5	5.4	3.8	3.7	5.0	4.8	2.2	2.1
	PT TELKOM	10,1	7.7	5.4	4.7	5.2	4.5	3.7	3.3
	Singapore Telecom	20.1	19.6	13.2	13.1	15.8	15.1	7.0	6.9
	Telecom New Zealand	14.3	13.2	7.7	6.8	7.9	7.3	3.5	3.0
	VSNL (GRDR)			136.7	117.1	196.9	171.4	45.3	43.2
	Japan Telecom	59.8	59.4	6.6	5.3	9.6	7.4	1.6	1.4
	NTT		59.3	6.2	5.8	6.4	5.9	2.2	2.0
	Average	19.1	22.8	19.7	17.1	26.3	23.1	7.3	6.9

Source: Morgan Stanley Dean Witter Research. 15 September 2000.

Table 9. Multiples of cellular phone companies. September 2000

	P/E		EV/EBITDA		P/CE		EV/Sales	
	2000E	**2001E**	**2000E**	**2001E**	**2000E**	**2001E**	**2000E**	**2001E**
Europolitan	42.0	39.4	22.1	20.0	28.0	25.0	8.4	7.9
Libertel	55.3	38.2	17.9	12.3	22.0	15.2	4.6	3.9
Mobistar			30.0	17.8	63.7	28.8	5.0	3.9
Panafon	34.0	31.6	16.3	14.2	23.9	21.7	6.8	5.8
Sonera		65.3	46.0	37.1	45.2	35.8	13.4	11.3
STET Hellas	52.7	35.6	11.0	8.8	15.2	11.1	3.0	2.6
Telecel	34.8	28.8	13.2	11.2	16.8	14.2	4.5	4.3
Turkcell	36.7	22.3	16.5	10.8	18.6	11.9	6.1	4.2
Vodafone Group	72.7	52.7	25.7	21.1	37.8	29.6	8.8	7.6
Average. Europe	***46.9***	***39.2***	***22.1***	***17.0***	***30.1***	***21.5***	***6.7***	***5.7***
Tusacell			13.1	10.9	14.1	10.2	4.5	3.9
Tele Celular Sul	46.9	30.4	9.2	7.0	11.2	8.8	2.9	2.5
Tele Centro Oeste	30.9	26.2	8.1	7.2	11.1	9.0	3.2	2.5
Tele Leste Celular		23.1	10.6	5.5	13.1	6.2	2.3	1.9
Tele Nordeste Celular	34.7	23.3	6.9	5.4	9.8	7.6	2.2	1.9
Tele Norte Celular	60.4	27.8	6.4	4.6	6.4	5.0	1.5	1.3
Teleming Celular Part.	72.7	54.1	8.2	6.5	8.5	7.1	2.8	4.5
Telesp Celular Part.	61.6	46.5	12.8	11.3	13.3	11.6	5.4	4.5
Average. Latin America	***51.2***	***33.1***	***9.4***	***7.3***	***10.9***	***8.2***	***3.1***	***2.6***
Adv. Info. Service (AIS)	24.1	23.8	9.1	8.5	11.8	10.8	3.2	2.9
China Mobile (HK)	42.3	38.6	18.8	15.5	24.7	20.4	10.6	8.7
SK Telecom	23.0	23.0	8.0	7.8	11.4	11.8	3.6	3.6
SmarTone	44.8	37.3	13.9	10.4	58.8	12.0	2.0	1.9
Total Acces Com.	21.0	19.9	12.6	12.0	15.0	12.9	4.6	4.2
DDI		50.9	8.2	6.2	6.7	4.9	1.8	1.4
NTT DoCoMo			24.5	20.0	32.4	26.5	7.4	6.3
Average. Asia	***31.0***	***32.3***	***13.6***	***11.5***	***23.0***	***14.2***	***4.7***	***4.1***

4.4. Dispersion of the multiples of banks

Table 10 shows multiples for Spanish and Portuguese banks in November 2000. The PER in 2000 ranges between 10.4 and 30.9; the price to book value multiple ranges between 1.5 and 4.7; the ROE ranges between 12.9% and 28.2%. The multiples are much more homogenous in the case of the Portuguese banks.

Table 10. Multiples of Spanish and Portuguese banks. November 2000

	PER			P/BV		P/NAV	Dividend yield		ROE		ROE/P/BV	
	2000	2001	2002	2000	2001	2000	2000	2001	2000	2001	2000	2001
BBVA	21.5	17.3	13.9	3.9	3.5	3.4	2.2%	2.6%	20.2%	21.4%	5.2	6.1
BSCH	19.6	15.8	12.9	3.2	2.9	4.2	2.6%	3.4%	19.6%	19.2%	6.2	6.6
Banco Popular	16.5	14.2	12.5	4.7	4.1	4.1	3.3%	3.9%	28.2%	30.7%	6.0	7.5
Bankinter	30.9	29.9	27.0	4.0	3.8	3.2	2.2%	2.3%	12.9%	12.8%	3.2	3.3
Banco Pastor	10.4	9.5	9.2	1.5	1.4	1.5	2.8%	3.1%	14.7%	14.2%	9.5	10.3
Banco Zaragozano	17.8	16.6	16.6	1.7	1.6	n.a.	2.4%	2.9%	15.0%	16.0%	8.8	10.0
Banco Valencia	13.7	12.4	11.5	2.2	2.0	2.2	3.5%	5.7%	16.4%	17.0%	7.4	8.5
Spain	*18.6*	*16.5*	*14.8*	*3.0*	*2.9*	*3.1*	*2.7%*	*3.4%*	*18.1%*	*18.8%*	*6.3*	*6.8*
BCP	17.7	16.2	14.4	3.0	2.8	3.0	2.4%	2.6%	18.6%	19.8%	6.3	7.0
BES	13.7	12.2	11.6	2.6	2.4	2.6	3.5%	4.0%	18.6%	14.4%	7.3	6.0
BPI	14.0	12.8	11.4	2.6	2.4	2.6	2.9%	3.1%	18.6%	21.4%	7.0	8.9
Portugal	*15.1*	*13.7*	*12.5*	*2.7*	*2.5*	*2.7*	*2.9%*	*3.3%*	*18.6%*	*18.5%*	*6.9*	*7.3*

4.5. Dispersion of the multiples of Internet companies

Table 11 contains the price/sales multiple of Internet companies. Note the wide dispersion and the multiple's decrease in 2000.

Table 11. Multiples of Internet companies in 1999 and 2000

E.services companies			**price/sales**		
Company	**December 1999**	**March 2000**	**June 2000**	**September 2000**	**December 2000**
Agency.com	20.7	8.1	4.3	3.0	0.7
Answerthink	5.8	3.8	2.4	2.3	0.5
Braun Consulting	30.8	11.7	6.7	5.4	0.9
Cambridge Technology	2.6	1.4	0.9	0.5	0.3
C-bridge Internet Solutions	44.8	36.8	7.8	6.0	0.9
CMGI	312.0	88.9	24.2	9.4	1.3
Diamond Tech. Partners	18.2	11.8	13.3	9.5	3.4
Digitas Inc.		6.7	4.0	3.9	1.0
Inforte Corp.		16.2	9.5	7.8	2.6
iXL Enterprises, Inc.	19.2	7.4	3.0	0.9	0.2
iGate Capital Corporation	3.6	6.1	1.7	0.7	0.4
Internet Capital Group	2880.6	1658.8	733.0	208.6	9.2
Lante Corporation		26.5	13.1	2.7	0.8
Luminant Worldwide	23.7	5.5	2.1	0.6	0.2
MarchFirst	16.8	8.9	3.2	2.1	0.2
Modem Media, Inc	23.3	8.8	2.9	0.9	0.6
Organic, Inc,		19.6	7.3	3.0	0.5
Proxicom	84.8	23.2	19.0	6.2	1.1
Razorfish	53.1	13.0	6.4	3.3	0.5
Sapient	60.4	31.2	33.3	10.8	2.8
Scient Corporation	63.7	42.6	14.0	5.1	0.6
Viant Corporation	77.5	19.1	12.7	2.2	1.5
Xpedior	10.8	7.2	3.7	0.8	0.1
Average	**197.5**	**89.7**	**40.4**	**12.8**	**1.3**

DOT COMS			price/sales		
Company	**December 1999**	**March 2000**	**June 2000**	**September 2000**	**December 2000**
About.com	60.3	39.5	10.0	7.7	5.0
Amazon.com	16.5	12.4	5.9	5.6	2.2
El sitio	221.2	72.4	15.3	6.2	0.9
Excite@Home	51.2	29.5	15.8	9.9	3.6
Gemstar	140.1	145.8	96.8	128.6	66.8
Homestore.com	97.3	41.8	17.8	21.5	7.2
iGo	9.0	6.0	2.7	1.8	1.0
InfoSpace.com	1351.4	669.8	189.0	75.9	10.9
iTurf	10.6	6.6	1.6	0.7	
Liberate	1260.1	268.6	107.6	92.6	39.2
Promotion.com	27.0	8.0	3.2	0.9	0.2
Quepasa.com	426.7	89.4	11.7	4.9	
Salon.com	11.1	7.6	2.0	2.4	0.8
Sportsline	22.0	10.8	5.4	3.9	1.4
StarMedia	131.2	69.3	32.3	9.9	2.0
Student Average	29.0	10.7	6.5	6.0	3.1
Switchboard		77.2	17.8	9.3	3.5
Terra	559.0	462.6	149.1	113.9	34.3
TheKnot Inc.	24.0	12.2	3.7	2.4	0.6
TicketMaster CitySearch	32.3	16.3	8.2	7.4	3.4
Tickets.com	18.4	10.5	3.6	1.1	0.3
Travelcity.com		18.0	7.1	4.7	3.2
Women.com Networks	22.2	9.4	2.0	2.6	0.2
Yahoo	403.8	132.0	79.6	50.2	14.8
Average	**223.8**	**92.8**	**33.1**	**23.7**	**9.3**

5. Volatility of the most widely used parameters for multiples

Table 12 shows the average volatility of several of the most commonly used parameters for multiples and of some of the multiples for the 26 largest Spanish companies during the period 1991-99. PER, EBITDA and profit after tax were more volatile than equity value.

Table 12. Average volatility of several parameters used for multiples. 26 Spanish companies. 1991-1999

		Profit						
	Equity value	**After fax**	**EBITDA**	**Dividends**	**Book value**	**ROE**	**ROA**	**PER**
Average volatility	41%	49%	59%	20%	18%	4%	2%	76%

6. Analysts' recommendations: hardly ever sell

Table 13 shows the recommendations of 226 brokers during the period 1989-1994. Note that the recommendations range mostly between hold and buy. Less than 10% of the recommendations are to sell.

Table 14 shows the analysts' recommendations for Spanish companies in the IBEX 35 index. Note that the recommendations mostly range between holding and buying. Less than 15% of the recommendations are to sell. On 14 February 2000, the IBEX stood at 12,458 points; by 23 October it had fallen to 10,329 points.

Table 13. North American analysts' recommendations. 1989-1994

From ↓ To →	**Strong buy**	**Buy**	**Hold**	**Sell**	**Strong Sell**	**Sum**	**Percentage**
Strong buy	8,190	2,234	4,012	92	154	14,682	27.5%
Buy	2,323	4,539	3,918	262	60	11,102	20.8%
Hold	3,622	3,510	13,043	1,816	749	22,740	42.5%
Sell	115	279	1,826	772	375	3,367	6.3%
Strong Sell	115	39	678	345	407	1,584	3.0%
Sum	**14,365**	**10,601**	**23,477**	**3,287**	**1,745**	**53,475**	
Percentage	**26.9**	**19.8**	**43.9**	**6.1**	**3.3**		

Source: Welch (2000).

Table 14. Analysts' recommendations on Spanish stocks
(In percentage)

	14 February 2000			**23 October 2000**		
	Buy	**Hold**	**Sell**	**Buy**	**Hold**	**Sell**
ACS	90.0	0.0	10.0	81.8	18.2	0.0
Acciona	37.5	25.0	37.5	88.9	0.0	11.1
Aceralia	82.4	5.9	11.8	79.0	21.1	0.0
Acerinox	68.8	18.8	12.5	70.6	17.7	11.8
Acesa	54.6	36.4	9.1	72.7	27.3	0.0
Aguas Bna.	69.2	15.4	15.4	50.0	36.7	13.1
Alba	80.0	0.0	20.0	62.5	25.0	12.5
Altadis	72.7	18.2	9.1	76.9	15.4	7.7
Amadeus	75.0	0.0	25.0	58.6	34.3	7.1
Bankinter	31.6	47.4	21.1	33.3	38.9	27.8
BBVA	57.7	34.6	7.7	54.7	33.5	11.8
BSCH	63.0	37.0	0.0	51.8	48.2	0.0
Cantábrico	42.9	42.9	14.3	27.8	44.4	27.8
Continente	71.4	14.3	14.3	53.3	40.0	6.7
Dragados	50.0	41.7	8.3	66.7	33.3	0.0
Endesa	67.9	28.6	3.6	52.9	44.4	2.8
FCC	70.0	30.0	0.0	51.3	48.7	0.0
Ferrovial	50.0	30.0	20.0	70.0	30.0	0.0
Gas Natural	18.8	43.8	37.5	22.2	50.0	27.8
Iberdrola	57.9	36.8	5.3	50.0	38.0	12.0
Indra	55.6	33.3	11.1	76.9	23.1	0.0
NH Hoteles	85.0	15.0	0.0	81.3	18.8	0.0
Popular	54.6	36.4	9.1	70.0	30.0	0.0
Repsol	75.8	18.2	6.1	48.6	45.9	5.6
Sogecable	87.5	0.0	12.5	62.4	25.9	11.8
Sol Melia	60.0	26.7	13.3	76.5	17.7	5.9
Terra	87.5	0.0	12.5	59.1	31.8	9.1
Tele pizza	50.0	37.5	14.3	41.5	35.4	23.1
Telefónica	94.7	5.3	0.0	86.3	11.8	2.0
TPI	50.0	37.5	18.5	38.5	30.8	30.8
Unión Fenosa	88.2	11.8	0.0	85.7	14.3	0.0
Vallehermoso	50.0	10.0	40.0	76.9	23.1	0.0
Average	**64.1**	**23.1**	**13.1**	**61.8**	**29.8**	**8.4**

Source: Actualidad Económica.

Key concepts

Multiple Dispersion
Analysts' recommendations

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