The Long Term Relationships between Capital Expenditures and Depreciation Across Industries: Important Data for Capitalized Income Based Valuations

by Daniel L. McConaughy, PhD, ASA and Lorena Bordi

Introduction

A better understanding of the long-term relationship between capital expenditures (capx) and depreciation will help financial analysts better forecast the long term cash flows used to estimate company values when capitalizing income. Earlier theoretical studies have shown that, when using the Gordon Growth model, assuming capx = depreciation results in an over valuation.[1] This upward bias also affects valuations using the DCF model when the Gordon model is used for terminal value.

This article provides long-term empirical evidence regarding the relationship between capx and depreciation over the 1986-2001 time period for 582 companies across 39 industries. During this period, on average, capx exceeded depreciation by 21%, though the amount varied across industries. The data presented in this article provide important information to those using the capitalized income approach employing the Gordon Growth model because they reflect the actual long-term relationships between capx and depreciation. Business appraisers and financial analysts should consider the empirical capx/depreciation relationship when making assumptions for use in this growing perpetuity model.

The Gordon Growth model is commonly used for valuation in both the capitalized income approach and for the terminal value in the discounted cash flow (DCF) approach to valuation.

This model assumes that a company will experience a constant growth of cash flow into perpetuity:

$$V = CF/(r-g),$$

where,
V = current value,
CF = expected annual cash flow,
r = discount rate, and
g = growth rate

When calculating CF for this model, analysts often adopt the simplifying assumption that capx equals depreciation. This may be true when g = 0 and there is no inflation. If these assumptions do not hold, and there is positive growth and inflation, then capx likely will exceed depreciation, especially over the long term. This situation results in a reduction of cash flow. Thus, if a valuation analyst assumes capx = depreciation, he has overvalued the company. We find that, over time and across industries, capx has exceeded depreciation by 21%. We also find that this varies by industry. The valuation impact depends not only on growth, but depreciable life and profitability.

Overview of Literature

The main purpose of the article is to examine the *empirical* relationship between capx and depreciation, over the long term and across industries. Up to now, the literature on this subject has been theoretical. Theoretical considerations include growth in capx and depreciation rates. Three recently published articles have addressed the relationship between capx and depreciation. Gilbert E. Matthews, CFA, suggests the simplifying assumption, that depreciation equals capx results in upwardly biased values. In a table, Matthews gives a theoretical example in which he shows the difference between capx and depreciation over a ten-year period. He shows that if a company increases its capx by 3% each year and depreciates its fixed assets in 10 years, on a straight-line basis, at the end of the period, capx will exceed depreciation by 15.5%.[2]

In another table Matthews applies the same approach to different growth rates and equipment life years and obtains higher percentages for higher growth rates and greater number of equipment life years. For instance, he shows that if a company's growth rate in capx is 5% and it has equipment with a 15-year life, and uses straight line depreciation, capx will exceed depreciation by 41%.[3] His examples show that capx growth, depreciation rates, and equipment characteristics can affect the relationship between capx and depreciation and therefore impact the valuation conclusion.

Another article,[4] by Jay B. Abrams, ASA, CPA, also addresses the relationship between cash flow, capx and depreciation. As Abrams develops the payout ratio formula, he notes that capx and depreciation are important inputs for forecasting cash flows, making DCF easier to perform and "reducing the temptation to take the shortcuts that lead to overvaluations."[5] Abrams provides an algebraic equation to express the relationship between capx and depreciation:

Capx (n) = (1+k)*D(n-1), where:
k = multiplicative factor, normally 0 < K < 200%, and
D = depreciation.[6]

To demonstrate this formula, Abrams assumes that a company has five machines each with an average five-year life, and he uses straight-line depreciation. He assumes that the company reaches a constant state in year 5 and no real (i.e., inflation adjusted) growth afterwards. With this example, Abrams shows that the difference between capx and depreciation, for a 3% growth rate, which represents inflationary level growth, and a five- year average equipment life, is 9.2%. This example shows that even if a company is in a mature industry, with only inflationary level growth, at the end of the fifth year, capx will exceed depreciation.

Abrams provides a table where he shows how the relation between capx and depreciation varies with changes in the growth rate and average years equipment life.[7] He shows that the amount that capx exceeds depreciation increases with capx growth and the depreciable life of the asset. For instance, with a 5% capx growth rate and a 15-year average equipment life, he estimates that capx will exceed depreciation by 44.5%, similar to Matthews' result of 41%. Likewise Abrams shows, by assuming a 5% growth rate (which is reasonable for many companies that grow only modestly above inflation, e.g., perhaps at a 2% real growth rate) and a 10 years average equipment life, capx exceeds depreciation by 29.5% after 10 years, a result also similar to Matthews' 26.3%.

The third article,[8] by Brant H. Armentrout, CFA, also addresses this issue. Armentrout assumes that a company spends $20,000 on capital expenditures in its first year, with depreciation expense calculated using a half year straight–line convention. Using the same methodology for different growth rates and different average depreciable life years, Armentrout obtains results similar to Matthews' and Abrams.' For instance, with average depreciable lives of 15 years and 10 years and a capx growth rate of 5%, capx will exceed depreciation by 41% and 26% respectively.

The literature is consistent. Under reasonable assumptions, capx exceeds depreciation and thus reduces cash flow, affirming that making the assumption that capx = depreciation will lead to an upwardly biased value, other things equal.

Empirical Analysis of Capx and Depreciation

This article provides empirical evidence regarding what has actually occurred among companies over the long-term and across industries. Interestingly, it confirms the theoretical models of Matthews, Abrams, and Armentrout when using reasonable assumptions. Because this analysis covers 16 years and hundreds of companies, it provides guidance regarding what are reasonable expectations regarding the long-term relationship between capx and depreciation. This information can be used to develop more realistic cash flow assumptions when the capitalized income method is employed for valuation or when estimating the terminal value in the DCF method. By their very nature, these calculations must be long-term in their assumptions, since they are based on the growing perpetuity valuation model. Thus, the empirical data we present provide important information for those using the Gordon Growth model.

In addition to analyzing capx and depreciation trends across industries, we also examine the relationship between capx-to-sales and depreciation-to-sales to understand how, on an historical basis, capx and depreciation are related to sales. These ratios provide the reader with an idea of the magnitude of the relative size of depreciation and capx. This is a new issue and it was not covered in the above-mentioned articles published in *Business Valuation Review* and *Business Valuation Update*.

Sample

The initial sample comprised 675 companies. We selected these companies from the *Compustat* database. We chose all the companies in the two-digit Standard Industrial Classification ("SIC") codes (from 10 through 89) from 1986 through 2001 and downloaded for each of them, capx, depreciation and sales for each year. We used these data to calculate capx/depreciation, capx/sales and depreciation/sales for each company through the period 1986-2001. Then, for each company we calculate the mean of each ratio from 1986 through 2001. Once we sorted each ratio by the mean, for the analysis across all industries, we dropped the companies in to the 1000 SIC (Metal Mining) code, because of the many extreme values in this industry. We also dropped all the companies with zero values and the top 5%, as outliers. (However, we do present the data for SIC 1000 in the industry analysis.) After all these adjustments, 524 companies remained.

Two different analyses are developed in this article:

1) *Capx-to-depreciation over the long-term period across all industries, and*
2) *Capx-to-depreciation over the long-term by industry.*

Capx-to-Depreciation Across All Industries

Table 1 shows capx-to-depreciation by year across all industries. Using the companies in each industry, we calculate the mean and the median values by industry from 1986 through 2001. Then we calculate for each year the mean of the industry means and the median of the industry medians. All the industries' means and medians are used to calculate the 16 years' overall mean and median. Table 1 provides the results for all industries year by year.

This analysis shows that across all industries over 16 years, the median amount that capx exceeded depreciation was 21%. Because the mean value was 113%, we feel that the median annual value is more representative than the mean over time because the mean is upwardly biased. Rarely does the ratio approach zero, but given the cyclical nature of capx, there can be large individual annual values that shift the annual mean. The median capx/depreciation value over 16 years of operations, of all two digits SIC code companies, was 1.21. *See Table 1 and Chart 1*. This value is similar to the values developed by Matthews and Abrams, which are respectively 23.8% and 25.6%.

Capx-to-Sales and Depreciation-to-Sales Across All Industries

Tables 2 and 3 are calculated like Table 1. As we noted above, the capx/sales and depreciation/sales median values are also more meaningful than the mean values because of the uneven nature of capx spending. The capx/sales and depreciation/sales medians for 16 years of operations, across all two digit SIC code industries, are respectively 0.05 and 0.04. These values, on an historical basis, are relatively stable and show that as sales increase over time, the relationship between sales and capx and depreciation remain stable. This result ties with capx/depreciation because 0.05 is 20% greater than 0.04. *See Tables 2 and 3 and Charts 2 and 3.* This information is important to give an idea of the magnitude of capx and depreciation. If a company's net margin was 5% of sales exceeded depreciation by 1% of sales, then net cash flows would be reduced by 20%. Thus, assuming capx = depreciation would overstate value by 25%.

Capx-to-Depreciation Over the Long-term by Industry

This section is the focus of this article. Table 4 shows that, on an historical basis, capx has exceeded depreciation, for each industry, and the amount varies by industry. Here, companies are grouped by two-digit SIC codes, and the mean and the median for each company's ratio, from 1986 through 2001, are calculated. Next, we calculate the mean of all the companies' means grouped by SIC codes. The same process has been applied to calculate the median of the medians and the median of the means. We feel that on an industry-by-industry basis, the median of the company means presents a better summary of the long-term industry relationships between capx/depreciation, capx/sales and depreciation/sales because the means better reflect the long-term behavior of companies over business cycles.

For example, due to these fluctuations, in the real estate industry (SIC 6500) the ratio (capx/depreciation) mean of the company means is higher (4.33) than the median of the means (1.61). In the Tobacco Products and Leather Products Industry (SIC 3100) the ratio (capx/depreciation) mean of the means and median of the means present lower and more similar values, 1.18 and 1.03 respectively, because companies in this industry do not make relatively large investments in fixed assets in a given year. However, the mean of the means of the companies in the SIC code 1000, metal mining, is 154.56, much higher than the median of the means, which was 2.52. This is the reason this industry was not included in the cross sectional statistics for all companies because it would skew the results. This high value suggests that in the mining industry, significant, large investments are made up front and depreciated slowly. *See Table 4 and Chart 4.*

Capx-to-Sales and Depreciation-to-Sales by Industry

Table 5 shows the capx/sales by industry. In most industries, capx represents a small percentage of sales (around 10% or less). Only in three industries, excluding the 1000 SIC code is capx greater than 40% of sales. The medians of the company means by industry present less divergent values. *See Table 5 and Chart 5.*

Table 6 and Chart 6 show the depreciation/sales mean of the means by industry. They show that in most industries, the ratio is generally below 10%, except for the SIC code 1000, metal mining. It shows that, over the long-term, most companies in these industries generally depreciated their fixed assets at a very low rate compared to the sales levels. The median of the means by industry presents less dispersed values, which show that depreciation-to-sales is similar across industries over the long term.

The standard deviation has been calculated for each SIC code in order to show the variation among all the companies in the same SIC code. The coefficient of variation is a standardized measure of dispersion, calculated as standard deviation/mean. The coefficient of variation shows the relative stability of capx/depreciation, capx/sales and depreciation/sales among the companies in the same SIC code.

Application of the Data to Valuation

To show how the relationships between capx and depreciation can affect the value of the companies in different industries, we develop two examples. The amount that operating income (and therefore value) is overstated when capx is assumed to equal depreciation can be calculated as:

$$\frac{EBITDA}{Sales} \div \left[\frac{EBITDA}{Sales} - \left\{ \frac{Depreciation}{Sales} \times \left(\frac{CapX}{Depreciation} - 1 \right) \right\} \right]$$

Where:

Capex/Depreciation = the long-term average of capx to depreciation – see Table 4, and

Depreciation/Sales = The long-term average of depreciation to sales – see Table 6.

The denominator reduces to:

$$\left[\frac{EBITDA}{Sales} - \left(\frac{CapX}{Sales} - \frac{Depreciation}{Sales} \right) \right]$$, which is the after-capX margin.

Example 1: SIC 2300 Apparel Industry

The five-year average operating margin (EBITDA/Sales) for a company in this industry is 6.35%.[9]

Capx/Depreciation = 1.66 (see Table 4)

Depreciation/Sales = 0.02 (see Table 6)

By substituting the figures in the previous formula we get:

0.0635 – (0.02)*(0.66) = 0.0635 – 0.0132 = 0.0503

0.0635/0.0503 = 1.26.

This shows that, if one assumes depreciation equals capx, value is overstated, on average by 26% in the apparel industry

Example 2: SIC 2000 Hotel, Rooming Houses, Camps

The five-year average operating margin (EBITDA/Sales) for a company in this industry is 21.49%.[10]

Capx/Depreciation = 2.14 (see Table 4)

Depreciation/Sales = 0.06 (see Table 6)

By substituting the figures in the previous formula we get:

0.2149 – (0.06)*(1.14) = 0.2149 – 0.0684 = 0.1465

0.2149/0.1465 = 1.47.

This shows that, if one assumes capx equals depreciation, the value is overstated on average by 47% in the Hotel, Rooming Houses and Camps industry. Generally, the more capital-intensive the industry, the higher its growth and the lower its operating margin, the greater the impact on value.

Summary

This study shows that capx has consistently exceeded depreciation across industries over the long-term, and sometimes by a significant amount. Using real world data, our results suggest that those using the Gordon Growth model who assume that depreciation equals capx overstate company values. Likewise, those who use a discounted cash flow model without taking this into account, overstate values. Depending on the industry, profitability and growth, the overstatement can be significant. This article provides valuable long-term empirical data by industry that can be used by analysts for valuation.

Because this study uses 16 years of data, its results should be valuable for analysts who need to make the long-term projections assumed in the Gordon Growth model. In the Discounted Cash Flow model, the short-term may be foreseeable and deviate from the long term, and annual values of capx and depreciation can be explicitly forecasted, but this is not sufficient. If the analyst assumes that capx = depreciation using a Gordon Growth model for the terminal value, this will also result in a wrong answer for the Discounted Cash Flow model. When using the capitalized income method or calculating a terminal value with the DCF model, the best estimates of future long-term behavior of a company very well may be what has happened in its industry in the past over the long-term (unless the analyst has good reasons to assume otherwise). This article provides a valuable reference to business appraisers and financial analysts by showing the long-term relationships between capx and depreciation by industry.

Endnotes

1. Matthews, Gilbert E., "CapX = depreciation is unrealistic assumption for most terminal values," *Business Valuation Update*, March 2002

   - Abrams, Jay B., ASA, CPA,"Forecasting Cash Flow: Mathematics of the Payout Ratio," *Business Valuation Review*, June 2003

   - Armentrout, Brant H., CFA, "A Sanity Test When Estimating Capital Expenditures," *Business Valuation Review*, September 2003.

2. Matthews (2002), p.3.
3. Matthews (2002), p.3.
4. Abrams (2003).
5. Abrams (2003), p.66.
6. Abrams (2003), p.69.
7. Abrams (2003), p.75.
8. Armentrout (2003).
9. *Cost of Capital – 2003 Yearbook, Ibbotson.*
10. *Cost of Capital – 2003 Yearbook, Ibbotson.*

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Table 1
Annual CapX to Depreciation Ratios Across All Industries: 1986-2001

Year	Mean of Industry Means	Median of Industry Medians
1986	1.90	1.32
1987	2.75	1.34
1988	1.72	1.18
1989	1.83	1.30
1990	1.97	1.22
1991	1.81	1.02
1992	2.01	1.10
1993	2.06	1.11
1994	2.67	1.35
1995	2.99	1.35
1996	2.53	1.28
1997	2.69	1.23
1998	2.31	1.20
1999	1.81	1.14
2000	1.73	1.08
2001	1.24	0.81
1986-2001	**2.13**	**1.21**
	(Mean)	**(Median)**

Chart 1
Mean and Median Capex/Depreciation Ratios Across All Industries: 1986 - 2001

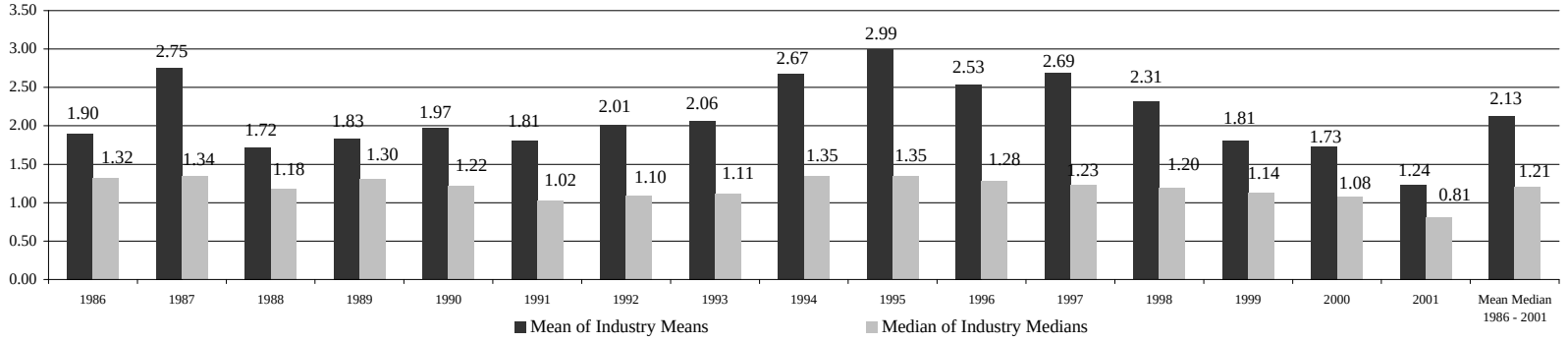

Table 2
Annual CapX to Sales Ratios Across All Industries: 1986-2001

Years	Mean of Industry Means	Median of Industry Medians
1986	0.28	0.05
1987	0.22	0.05
1988	0.15	0.04
1989	0.16	0.05
1990	0.12	0.05
1991	0.13	0.04
1992	0.13	0.04
1993	0.09	0.04
1994	0.13	0.05
1995	0.12	0.05
1996	0.15	0.05
1997	0.15	0.05
1998	0.14	0.05
1999	0.10	0.04
2000	0.13	0.04
2001	0.08	0.03
1986-2001	**0.14**	**0.05**
	(Mean)	**(Median)**

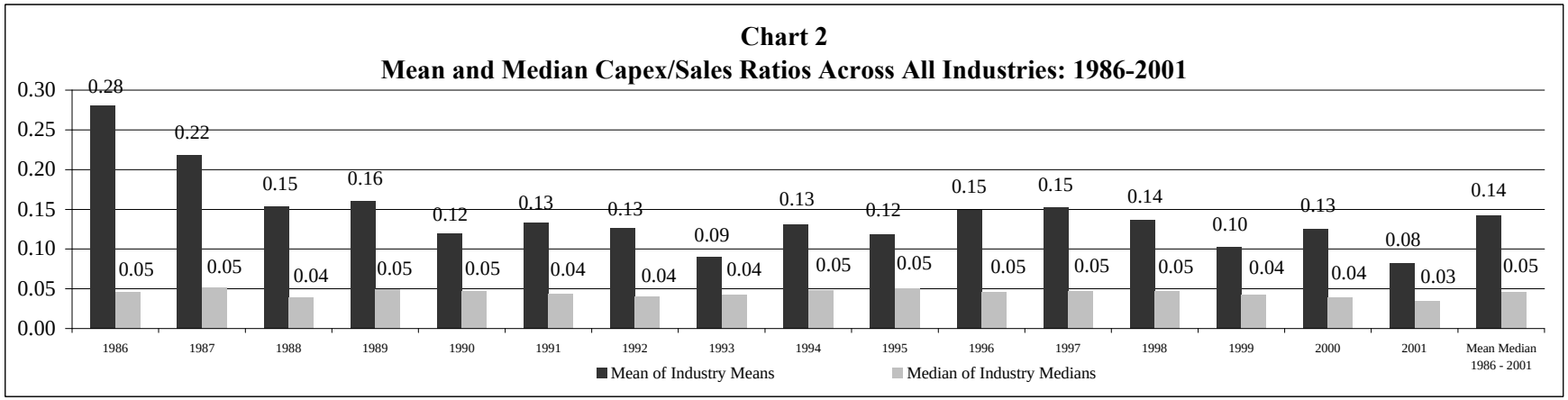

Table 3
Annual Depreciation to Sales Ratios Across All Industries: 1986-2001

Years	Mean of Industry Means	Median of Industry Medians
1986	0.11	0.04
1987	0.09	0.04
1988	0.11	0.04
1989	0.12	0.04
1990	0.10	0.04
1991	0.10	0.04
1992	0.13	0.04
1993	0.07	0.04
1994	0.06	0.04
1995	0.07	0.04
1996	0.06	0.04
1997	0.07	0.04
1998	0.08	0.04
1999	0.08	0.04
2000	0.09	0.05
2001	0.08	0.05
1986-2001	**0.09**	**0.04**
	(Mean)	**(Median)**

Chart 3
Mean and Median Depreciation/Sales Ratios Across All Industries: 1986-2001

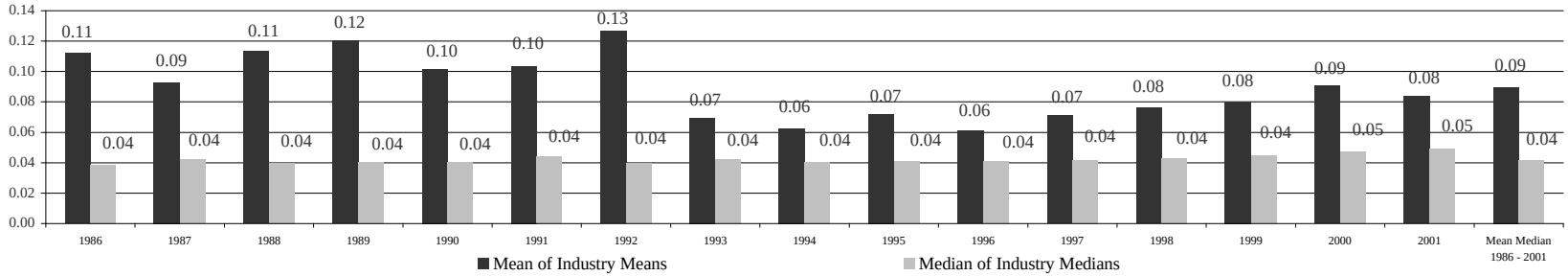

Table 4
Capex/Depreciation by Industry : 1986-2001

Number of Companies	SIC	SIC Description	Mean of Company Means	Median of Company Medians	Median of Company Means	Standard Deviation	Coefficient of Variation —
93	1000	Metal Mining	154.56	2.52	3.1	864.39	5.59
18	1400	Mining And Quarrying Of Nonmetallic Minerals	5.24	1.89	2.56	5.27	1.01
17	1600	Heavy Construction	1.62	1.24	1.38	0.80	0.50
15	1700	Construction Special Trade Contractors	1.44	0.97	1.36	1.03	0.72
14	2000	Food And Kindred Products	1.35	0.97	0.98	1.08	0.80
3	2100	Tobacco Products	1.18	1.05	1.03	0.30	0.25
12	2200	Textile Mill Products	1.80	1.48	1.71	1.10	0.61
20	2300	Apparel And Other Finished Products	2.10	1.22	1.66	1.56	0.74
15	2400	Lumber And Wood Products	2.07	1.16	1.37	1.51	0.73
3	2600	Paper And Allied Products	1.70	0.98	1.60	0.33	0.19
8	2800	Chemicals And Allied Products	1.30	1.41	1.40	0.31	0.24
9	3100	Leather And Leather Products	1.18	1.02	1.03	0.43	0.37
8	3600	Electronic And Other Electrical Equipment	2.47	1.11	1.18	3.37	1.36
13	4100	Local And Suburban Transit And Highway	1.64	1.23	1.41	0.75	0.46
29	4400	Water Transportation	2.86	1.12	1.95	2.77	0.97
15	4700	Transportation Services	2.12	0.98	1.21	1.95	0.92
27	5000	Wholesale Trade-durable Goods	2.47	0.79	1.46	3.67	1.49
14	5200	Building Materials, Hardware, Garden Supply	2.29	1.35	1.67	2.22	0.97
5	5400	Food Stores	2.16	0.91	2.08	1.31	0.61
23	5500	Automotive Dealers And Gasoline Stations	2.23	1.55	1.93	1.25	0.56
12	5600	Apparel And Accessory Stores	2.33	2.22	2.09	1.18	0.51
14	5700	Home Furniture, Furnishings	2.14	1.59	2.08	0.98	0.46
14	5900	Miscellaneous Retail	1.49	0.80	1.44	0.80	0.54
15	6200	Security And Commodity Brokers, Dealers,	1.61	0.96	1.21	1.42	0.89
16	6500	Real Estate	4.33	1.00	1.61	5.31	1.23
2	7000	Hotels, Rooming Houses, Camps	2.14	1.93	2.14	1.42	0.67
39	7200	Personal Services	1.95	1.05	1.38	2.12	1.08
16	7500	Automotive Repair, Services, And Parking	1.52	1.06	1.21	1.04	0.68
5	7600	Miscellaneous Repair Services	1.66	0.64	1.77	0.74	0.45
12	7900	Amusement And Recreation Services	2.12	0.53	0.98	2.70	1.27
21	8000	Health Services	2.18	1.05	1.34	2.15	0.99
56	8200	Educational Services	2.11	1.15	1.31	2.91	1.38
18	8300	Social Services	3.84	0.92	1.61	4.08	1.06
1	8600	Membership Organizations	1.49	1.03	1.49	0.00	0.00
14	8700	Engineering, Accounting, Research,	1.51	1.09	1.37	0.80	0.53
1	8900	Services - Services, NEC	2.15	2.15	2.15	0.00	0.00

Note:
Means and Medians are calculated by Industry over the 1986-2001 time period. The industry means are the means of the individual company means. The industry medians are the medians of the individual

Chart 4
Mean and Median Capex/Depreciation Ratios by SIC code

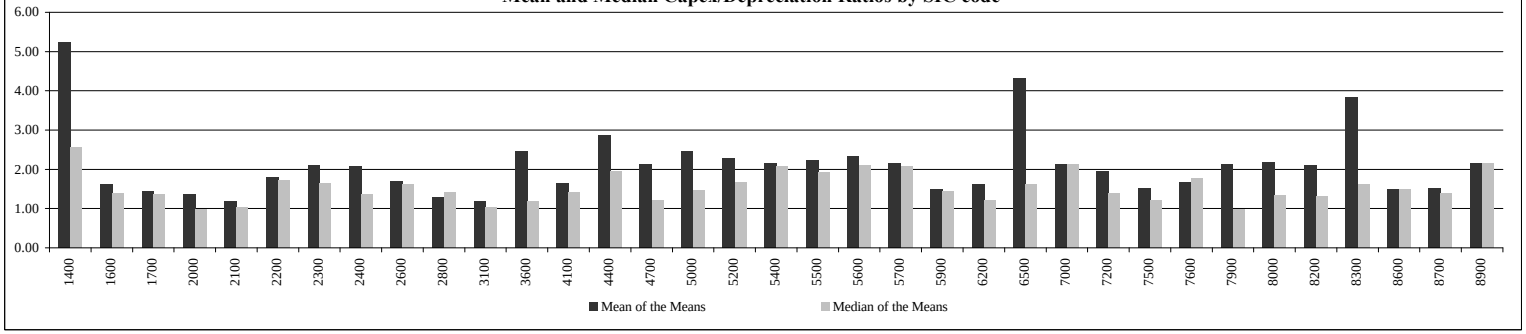

Table 5
Capex/Sales by Industry : 1986-2001

Number of Companies	SIC	SIC Description	Mean of Company Means	Median of Company Medians	Median of Company Means	Standard Deviation	Coefficient of Variation —
93	1000	Metal Mining	25.07	0.13	0.16	113.48	4.53
28	1400	Mining And Quarrying Of Nonmetallic Minerals	0.43	0.13	0.17	0.58	1.34
17	1600	Heavy Construction	0.05	0.04	0.04	0.07	1.35
15	1700	Construction Special Trade Contractors	0.07	0.03	0.03	0.09	1.34
11	2000	Food And Kindred Products	0.03	0.03	0.03	0.01	0.44
3	2100	Tobacco Products	0.03	0.04	0.04	0.02	0.65
12	2200	Textile Mill Products	0.15	0.05	0.06	0.22	1.50
20	2300	Apparel And Other Finished Products	0.11	0.03	0.03	0.21	2.02
15	2400	Lumber And Wood Products	0.14	0.08	0.09	0.11	0.78
3	2600	Paper And Allied Products	0.06	0.07	0.08	0.04	0.69
9	2800	Chemicals And Allied Products	0.09	0.07	0.08	0.03	0.39
9	3100	Leather And Leather Products	0.02	0.01	0.01	0.02	0.84
8	3600	Electronic And Other Electrical Equipment	0.24	0.04	0.06	0.52	2.18
11	4100	Local And Suburban Transit And Highway	0.21	0.07	0.06	0.31	1.49
25	4400	Water Transportation	0.29	0.13	0.25	0.21	0.74
17	4700	Transportation Services	0.19	0.04	0.04	0.20	1.05
14	5000	Wholesale Trade-durable Goods	0.21	0.03	0.10	0.26	1.27
12	5200	Building Materials, Hardware, Garden Supply	0.20	0.03	0.05	0.36	1.86
5	5400	Food Stores	0.12	0.08	0.09	0.08	0.69
23	5500	Automotive Dealers And Gasoline Stations	0.05	0.02	0.03	0.07	1.34
12	5600	Apparel And Accessory Stores	0.05	0.05	0.05	0.03	0.49
13	5700	Home Furniture, Furnishings	0.08	0.04	0.08	0.11	1.30
14	5900	Miscellaneous Retail	0.06	0.04	0.06	0.04	0.57
13	6200	Security And Commodity Brokers, Dealers,	0.32	0.05	0.09	0.56	1.72
10	6500	Real Estate	0.22	0.05	0.09	0.29	1.35
3	7000	Hotels, Rooming Houses, Camps	0.68	0.06	0.11	1.07	1.56
32	7200	Personal Services	0.15	0.04	0.07	0.18	1.24
12	7500	Automotive Repair, Services, And Parking	0.04	0.02	0.04	0.03	0.78
5	7600	Miscellaneous Repair Services	0.12	0.04	0.10	0.09	0.75
11	7900	Amusement And Recreation Services	0.13	0.04	0.08	0.14	1.10
12	8000	Health Services	0.17	0.07	0.10	0.19	1.13
48	8200	Educational Services	0.18	0.05	0.07	0.30	1.66
17	8300	Social Services	0.32	0.04	0.06	0.41	1.29
1	8600	Membership Organizations	0.07	0.06	0.07	N/A	N/A
15	8700	Engineering, Accounting, Research,	0.13	0.03	0.04	0.27	2.11
1	8900	Services - Services, NEC	0.48	0.48	0.48	N/A	N/A

Note:
Means and Medians are calculated by Industry over the 1986-2001 time period. The industry means are the means of the individual company means. The industry medians are the medians of the individual

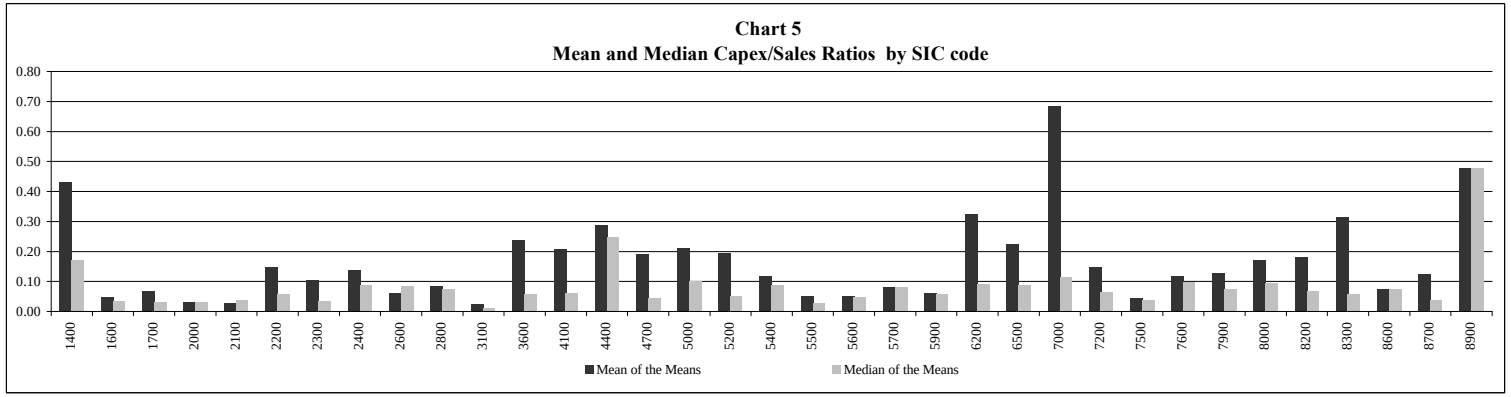

Table 6
Depreciation/Sales by Industry : 1986-2001

Number of Companies	SIC	SIC Description	Mean of Company Means	Median of Company Medians	Median of Company Means	Standard Deviation	Coefficient of Variation —
65	1000	Metal Mining	1.07	0.12	0.13	3.66	3.41
20	1400	Mining And Quarrying Of Nonmetallic Minerals	0.18	0.10	0.11	0.16	0.90
18	1600	Heavy Construction	0.03	0.02	0.02	0.02	0.74
15	1700	Construction Special Trade Contractors	0.05	0.03	0.02	0.04	0.74
14	2000	Food And Kindred Products	0.09	0.03	0.04	0.17	1.81
2	2100	Tobacco Products	0.03	0.03	0.03	0.01	0.34
11	2200	Textile Mill Products	0.09	0.04	0.05	0.10	1.10
19	2300	Apparel And Other Finished Products	0.05	0.02	0.02	0.07	1.46
15	2400	Lumber And Wood Products	0.08	0.06	0.06	0.07	0.84
3	2600	Paper And Allied Products	0.06	0.06	0.06	0.01	0.17
10	2800	Chemicals And Allied Products	0.06	0.06	0.06	0.01	0.22
8	3100	Leather And Leather Products	0.03	0.02	0.02	0.02	0.65
8	3600	Electronic And Other Electrical Equipment	0.14	0.05	0.05	0.25	1.82
13	4100	Local And Suburban Transit And Highway	0.10	0.05	0.05	0.10	0.93
31	4400	Water Transportation	0.19	0.09	0.12	0.27	1.42
18	4700	Transportation Services	0.15	0.07	0.10	0.16	1.10
25	5000	Wholesale Trade-durable Goods	0.29	0.12	0.14	0.37	1.28
10	5200	Building Materials, Hardware, Garden Supply	0.05	0.02	0.02	0.10	1.86
5	5400	Food Stores	0.07	0.06	0.08	0.04	0.55
17	5500	Automotive Dealers And Gasoline Stations	0.09	0.02	0.03	0.25	2.71
13	5600	Apparel And Accessory Stores	0.03	0.02	0.02	0.01	0.33
14	5700	Home Furniture, Furnishings	0.11	0.03	0.03	0.24	2.22
14	5900	Miscellaneous Retail	0.05	0.04	0.04	0.02	0.39
15	6200	Security And Commodity Brokers, Dealers,	0.18	0.06	0.10	0.26	1.42
16	6500	Real Estate	0.11	0.06	0.08	0.10	0.91
4	7000	Hotels, Rooming Houses, Camps	0.06	0.05	0.06	0.04	0.67
38	7200	Personal Services	0.08	0.05	0.07	0.08	0.95
18	7500	Automotive Repair, Services, And Parking	0.09	0.03	0.04	0.23	2.44
5	7600	Miscellaneous Repair Services	0.08	0.05	0.06	0.05	0.60
14	7900	Amusement And Recreation Services	0.08	0.05	0.05	0.07	0.82
23	8000	Health Services	0.11	0.04	0.05	0.32	2.84
50	8200	Educational Services	0.09	0.05	0.06	0.10	1.10
21	8300	Social Services	0.06	0.06	0.06	0.04	0.67
1	8600	Membership Organizations	0.09	0.06	0.09	N/A	N/A
15	8700	Engineering, Accounting, Research,	0.15	0.04	0.05	0.32	2.05
1	8900	Services - Services, NEC	0.24	0.24	0.24	N/A	N/A

Note:
Means and Medians are calculated by Industry over the 1986-2001 time period. The industry means are the means of the individual company means. The industry medians are the medians of the individual

Chart 6
Mean and Median Depreciation/Sales Ratios by SIC code