PREDICTABILITY OF PRICE MULTIPLES: EMPLOYABILITY OF ADVANCED STATISTICAL TOOLS TO ANALYZE A CROSS-SECTION OF THE INDUSTRY SECTORS IN INDIA

Rizul Gupta

Pathways World School Aravali Sohna Road, Haryana

India initiated its capital business sector changes in the mid-1990s; this time is otherwise called the Liberalization, Privatization, and Globalization period. A note worthy step was to give statutory status to the Securities Exchange Board of India (SEBI), the capital business controller in India, in 1992. This was trailed by the selectionof screen-based trading with the setting up of the National Stock Exchange (NSE) in 1993 and the consequent dematerialization of securities in 1996. The Indian value business sector has additionallyseen some structural changes in the previous decade, with the introduction of financial subsidiaries in 2000, the movement to rolling settlement (T + 2) in 2001 and the foundation of national merchandise trades, to give some examples. The value showcase now has genuinely well-functioning segments, made out of the preinitial Public Offer (IPO) business sector (involving endeavor stores and private value finances), the IPO market (electronic barters), the optional business (across the nation electronic trading) and business members (families, shared trusts, insurance organizationsand Foreign Institutional Investors (FIIs). The vicinity of business sector members has demonstrated gigantic development, with an increase of only 18 FIIs enrolled with SEBI in 1993 to 1319 in 2008, 35funding finances in 2000 to 106beforethe end of 2008 and only 12 shared subsidizes in 1994 to 40 in 2008. They have additionally demonstrated gigantic potential as far as exchange movement, with FIIs aggregate net investment increasing from an unimportantUSD4 million in 1992–1993 to USD68 billion in 2007–2008. So also, net buys by shared stores increased from aminorUSD460 million in 2000–2001 to USD18.39 billion in 2007–2008. In the same way, the worldwide listing of Indian securities has additionally demonstrated unparalleled development, with the American Depository Receipts (ADRs)/Global Depository Receipts (GDRs) issues increasing from USD240 million in 1992–1993 to give or take USD8.8 billion in 2007–2008 and outer business borrowings (ECBs) from USD358 million in 1992–1993 to about USD22 billion

On the other hand, the year 2008 was a miserable year, with the worldwide economy facing one of the biggest banking emergencies. The Indian value showcases likewise encountered a just about 40% rectification during that year. The value earnings proportion (P/E) of the BSE Sensex likewise fell in line with the business, from around 28 in January to around 12

before the years over. In 2008, FIIs hauled an expected USD13 billion out from the Indian market, the first net surge in 11 years and the best in 15 years. Nonetheless, with oil costs and all other thing costs witnessing sharp revisions coupled with a noteworthy drop in inflation, there are sufficient triggers to bolster a positive development viewpoint. Moreover, the brief and compelling intervention by the Reserve Bank of India (RBI), the national bank of India, through forceful rate cuts and liquidity infusion will clearly give stimulus to development in 2009. In the wake of remaining net merchants through the previous few months, FIIs are turning positive on India, buying shares worth more or less USD357 million in December.

The precarious business sector decline has made open doors for buying numerous development organizations trading at single-digit P/E degrees and underneath their net resource values. The long haul standpoint remains positive for the Indian market, however in the short term, it may indicate compelling unpredictability by virtue of worries over slowing development, selling by remote trusts and investment opportunities in other resource classes, for example, and wares. In spite of worries about the determined harm to investor certainty, the Indian business is not costly and presents an uncommon investment opportunity by virtue of appealing valuations, solid basics of the economy and a generally better development viewpoint.

With such a dynamic open door display in the value market, there is a grave need to place accentuation on the valuation methods used to assess regular stocks. At firms within the investment group, be they value exploration firms, financial speculators, trading firms, investment banks, and flexible investments, and so on. relative valuation is the most adequate system for valuing stocks, aside from major valuation. Relative valuation assesses the estimation of an advantage by looking at the pricing of "practically identical" resources with respect to a typical variable, for example, earnings, money streams, book worth or deals. It is the most well-known procedure of valuing an advantage for a couple of reasons. Initial, a valuation based upon a various for practically identical firms can be immediately evaluated with far less presumptions and in a quick way contrasted with essential investigation. Second, a relative valuation is easier to comprehend and less demanding to present to customers and clients. Values in relative valuations can be institutionalized with respect to earnings firms create, to the book quality or substitution estimation of the organizations themselves, to the incomes that organizations produce or to gauge a company's money streams.

A portion of the essential productsin relative valuations are earnings products, which can be assessed using current earnings every offer, yielding a current P/E, earnings throughout the last four quarters, resulting in a trailing P/E, or expected earnings every offer in the followingyear, providing a forward P/E. The proportion of cost to book esteem (P/BV) or to the substitution esteem, which is the accounting appraisal of book worth is determined by accounting tenets and is vigorously influenced by the original cost paid for any advantages and any

accounting changes, (for example, devaluation) made since. For the individuals who accept that book worth is not a decent measure of the genuine estimation of benefits, an option is to utilize the substitution expense of the advantages; the proportion of the business estimationof a firm to its substitution expense is called Tobin's Q. An alternate vital value numerous utilized as a part of the industry an income based various that is the proportion of the business estimation of an advantage for the income it produces. For value investors, this proportion is the cost to-deals degree (P/S), where the business sector esteem every offer is isolated by the incomes produced every offer. Some value specialists underline cost to-income (P/CF) degrees instead of conventional P/E proportions, as the latter is affectedby the accounting treatment of certain things in an association's financial declarations.

A great deal of exact work has been led for developed business identified with the heartiness of quality drivers in deriving value costs. Beaver, Lambert and Morse (1980) delivered one of the most punctual takes a shot at worth drivers. The study infers a relationship between value changes and earnings changes by expanding the information whereupon earnings desires are molded to include information other than former earnings history. Likewise, Ou and Penman (1989) demonstrate that the information in costs that prompts future earnings is contained in financial explanations. Skogsvik and Skogsvik (2001) investigate P/E proportion valuation as a relative valuation approach. All the more particularly, they investigate how comparable the organization being esteemed and its associate organizations must be in place for a relative P/E proportion valuation model to work. Liu, Nissim and Thomas (2002a) examine the valuation execution of a complete rundown of quality drivers to find out which esteem driver best explains stock costs. They extend their work in 2005 to analyze income based valuations with earnings products.

A little assemblage of writing on price multiples is additionally accessible in the Indian setting. Gupta, Jain and Gupta (1998) give an experimental point of view on P/E degrees. The center of the exploration is available normal P/E proportion and its utilization as a critical business signal. It likewise advocates another way to evaluating the suitable P/E degree as a component of the investment examination of individual organizations. They additionally examine the fleeting unpredictability of the market's P/E proportion, reflecting the conceivable silliness of the business now and again. The exploration is concerned with drawing ramifications of findings for administrative strategy and business sector change. Gill (2003) exhibits observationally that securities exchange valuations are no .more determined singularly by conventional investment principles. Most of the late work done by Indian analysts identifies with P/E degrees, for example, Kumar & Warne (2009). In this manner, there is by all accounts a noteworthy exploration hole on the subject for the Indian environment with respect to other worth drivers, for example, book value, deals and money streams.

Data

The time-series behavior of price multiples has been studied in 15 out of 20 major sectors. The division grouping of the Bombay Stock Exchange 500 (BSE 500) index has been utilized for this reason. Two segments to be specific, Diversified, Miscellaneous are rejected from our work; the prohibition owes to the way of these divisions as they are hard to benchmark. Other three overlooked areas in our study are Telecom, Tourism & Transport Services, as the absence of a sufficient number of organizations in these segments (fulfilling our choice criteria, specified underneath) will make issues while estimating cross-sectional relapses.

For every part, yearly information of around 10–20 extensive top organizations are chosen for a time of 18 years with positive price multiples for every organization. The period secured under the study is from 1994 to 2011. We cover 246 organizations, which represent a noteworthy segment of the aggregate business sector promotion and additionally trading action in India. The information subtle elements are given in Exhibit A. Consequently, the specimen size is illustrative of business execution. The information made out of yearly products, viz., P/E, P/BV, P/CF and P/S, have been taken from CMIE (ability database). These price multiples are balanced for promotion changes, for example, stock parts, stock profits and right issues. The definitions of these price multiples are given in Exhibit B. The greater part of the organizations with financial years ending in March is considered. The price multiples have been topped somewhere around 0 and 100 to evade greatly vast and in addition negative qualities. We additionally examine the time-arrangement conduct of price multiples for the general market by creating just as weighted business intermediary from the specimen organizations. The intermediaries at the business sector cost products are evaluated by taking the normal of these products crosswise over specimen organizations on a year-to-year premise.

Exhibit A : Details of sample companies		
S.NO	Sector	No. of companies
1	AGRICULTURE	17
2	CAPITAL GOODS	20
3	CHEMICAL and PETROCHEMICAL	12
4	CONSUMER DURABLES	11
5	FINANCE	20
6	FAST MOVING CONSUMER GOODS (FMCG)	17
7	HEALTHCARE	20
8	HOUSING RELATED	19
9	INFORMATION TECHNOLOGY (IT)	19

37

10	MEDIA	10
11	METAL, METAL PRODUCTS & MINING	20
12	OIL & GAS	16
13	POWER	15
14	TEXTILE	11
15	TRANSPORT EQUIPMENTS	19
		246

Exhibit B :Definitions of Price Multiples	
PriceMultiples	Definitions
P/E	Price/EPS, where Price = closing price EPS = (net profit – preference dividend – dividend tax)/number of shares
P/BV	Price/BV, where Price = closing price BV = net worth/number ofequity shares &Net worth = equity + reserves and surplus
P/S	Price/Sales, where Price = Closing price Sales = Gross sales
P/CF	Price/Cash Earnings Per Share, where Price = Closing price CF = (net profit – preference dividend – dividend tax + depreciation)/number of equity shares

We next investigate the relationship between price multiples and their determinants using just 15 out of the 20 parts as said above. The yearly information on accounting and financial variables go about as key determinants (or can be utilized to develop such determinants) of price multiples and include market under writing, profit payout, EPS, Cash stream every offer, return on value and net profit margin. These have additionally been taken from CMIE (ability database). EPS numbers are utilized to figure development rates and in addition danger measures.

Time-Series Behavior of Price Multiples

Test of normality on historical circulations of four price multiples, i.e., P/E, P/CF, P/BV and P/S for 15 unmistakable sectors more than a 18-year period. I use a One-Sample Kolmogorov-Smirnov test (K-S test) hence, using a 5% level of centrality. The One-Sample K-S test system ponders the viewed total flow limit for a variable with a foreordained speculative scattering, which may be regular, uniform, Poisson, or exponential.

The Kolmogorov-Smirnov Z is prepared from the greatest qualification (in incomparable worth) between the viewed and theoretical aggregate distribution functions. This goodness of-fit test determines whether the recognitions could sensibly have begun from the predetermined circulation.

The mean K-S estimation and p-quality are discovered for each division by taking Values of these qualities for most of the case associations in a given zone. Non-normality is rejects if there ought to emerge an event of every single one of parts for the total period. Our example results prescribethat price multiples in India can be depicted by two parameters, i.e., its mean extent andtime-series volatility measured by standard deviation. The mean quality various and the standard deviation for a given part are evaluated by taking a typical of these parameters for the illustration associations in every section, the results are exhibited in the going with tables :

Agriculture

One-Sample Kolmogorov-Smirnov Test

		Avg_PE	Avg_PB	avg_PS	avg_PCF
N		17	17	17	17
Normal Parameters[a,b]	Mean	13.4888	1.7810	1.0930	5.6237
	Std. Deviation	10.73294	1.25664	1.52951	4.94900
Most Extreme	Absolute	.249	.276	.322	.241
Differences	Positive	.249	.276	.322	.241
	Negative	-.175	-.210	-.270	-.154
Kolmogorov-Smirnov Z		1.028	1.136	1.327	.995
Asymp. Sig. (2-tailed)		.242	.151	.059	.276

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Avg_PE	17	13.4888	10.73294	3.45	47.12
Avg_PB	17	1.7810	1.25664	.77	5.48
avg_PS	17	1.0930	1.52951	.16	6.60
avg_PCF	17	5.6237	4.94900	.59	20.65

Capital Goods

One-Sample Kolmogorov-Smirnov Test

		Avg_PE	Avg_PB	avg_PS	avg_PCF
N		20	20	20	20
Normal Parameters[a,b]	Mean	19.9832	3.3516	1.2996	8.5844
	Std. Deviation	9.12023	1.80723	.66339	6.29614
Most Extreme	Absolute	.167	.153	.183	.181
Differences	Positive	.167	.153	.183	.181
	Negative	-.084	-.116	-.139	-.139
Kolmogorov-Smirnov Z		.747	.682	.819	.808
Asymp. Sig. (2-tailed)		.633	.740	.513	.532

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Avg_PE	20	19.9832	9.12023	7.07	44.71
Avg_PB	20	3.3516	1.80723	1.20	7.42
avg_PS	20	1.2996	.66339	.58	2.68
avg_PCF	20	8.5844	6.29614	1.74	26.59

Chemical and Petrochemicals

One-Sample Kolmogorov-Smirnov Test

		Avg_PE	Avg_PB	avg_PS	avg_PCF
N		12	12	12	12
Normal Parameters[a,b]	Mean	19.7221	2.7351	1.0465	6.4135
	Std. Deviation	14.71897	1.58710	.52973	5.21372
Most Extreme	Absolute	.329	.235	.205	.281
Differences	Positive	.329	.235	.205	.281
	Negative	-.214	-.125	-.121	-.164
Kolmogorov-Smirnov Z		1.140	.814	.710	.974
Asymp. Sig. (2-tailed)		.149	.521	.694	.299

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Avg_PE	12	19.7221	14.71897	8.06	64.08
Avg_PB	12	2.7351	1.58710	.91	7.02
avg_PS	12	1.0465	.52973	.43	2.22
avg_PCF	12	6.4135	5.21372	.23	15.04

Consumer Durable

One-Sample Kolmogorov-Smirnov Test

		Avg_PE	Avg_PB	avg_PS	avg_PCF
N		11	11	11	11
Normal Parameters[a,b]	Mean	11.5454	1.7505	.3922	3.8273
	Std. Deviation	12.02489	1.85797	.33448	3.54875
Most Extreme	Absolute	.245	.228	.156	.239
Differences	Positive	.245	.228	.156	.239
	Negative	-.173	-.180	-.127	-.153
Kolmogorov-Smirnov Z		.813	.758	.519	.793
Asymp. Sig. (2-tailed)		.522	.615	.951	.556

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Avg_PE	11	11.5454	12.02489	.20	39.32
Avg_PB	11	1.7505	1.85797	.05	6.08
avg_PS	11	.3922	.33448	.01	1.20
avg_PCF	11	3.8273	3.54875	.19	11.92

Finance

One-Sample Kolmogorov-Smirnov Test

		Avg_PE	Avg_PB	avg_PCF
N		20	20	20
Normal Parameters[a,b]	Mean	9.1183	1.3007	6.0326
	Std. Deviation	7.07802	.91373	3.76498
Most Extreme	Absolute	.260	.230	.259
Differences	Positive	.260	.230	.259
	Negative	-.188	-.193	-.088
Kolmogorov-Smirnov Z		1.163	1.027	1.157
Asymp. Sig. (2-tailed)		.134	.242	.137

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Avg_PE	20	9.1183	7.07802	2.86	31.48
Avg_PB	20	1.3007	.91373	.51	3.84
avg_PS	0	.	.	.	.
avg_PCF	20	6.0326	3.76498	.85	14.83

FMCG

One-Sample Kolmogorov-Smirnov Test

		Avg_PE	Avg_PB	avg_PS	avg_PCF
N		17	17	17	17
Normal Parameters[a,b]	Mean	22.3242	7.2939	1.8807	11.1006
	Std. Deviation	10.48373	5.86676	1.29563	8.96037
Most Extreme	Absolute	.125	.232	.191	.201
Differences	Positive	.125	.232	.191	.201
	Negative	-.110	-.134	-.152	-.146
Kolmogorov-Smirnov Z		.514	.955	.789	.828
Asymp. Sig. (2-tailed)		.954	.321	.562	.499

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Avg_PE	17	22.3242	10.48373	6.93	40.55
Avg_PB	17	7.2939	5.86676	.81	19.48
avg_PS	17	1.8807	1.29563	.12	3.81
avg_PCF	17	11.1006	8.96037	1.67	33.95

Healthcare

One-Sample Kolmogorov-Smirnov Test

		Avg_PE	Avg_PB	avg_PS	avg_PCF
N		20	20	20	20
Normal Parameters[a,b]	Mean	21.0456	3.9516	2.5833	10.4751
	Std. Deviation	8.70349	2.04419	1.55898	7.55515
Most Extreme	Absolute	.123	.164	.156	.211
Differences	Positive	.123	.164	.156	.211
	Negative	-.074	-.113	-.132	-.122
Kolmogorov-Smirnov Z		.549	.734	.698	.944
Asymp. Sig. (2-tailed)		.924	.655	.714	.335

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Avg_PE	20	21.0456	8.70349	8.47	37.38
Avg_PB	20	3.9516	2.04419	.12	7.48
avg_PS	20	2.5833	1.55898	.84	7.34
avg_PCF	20	10.4751	7.55515	1.69	28.90

Housing Related

One-Sample Kolmogorov-Smirnov Test

		Avg_PE	Avg_PB	avg_PS	avg_PCF
N		19	19	19	19
Normal Parameters[a,b]	Mean	13.5586	2.3432	1.7927	5.4725
	Std. Deviation	6.57214	1.55396	2.04193	4.51525
Most Extreme	Absolute	.141	.221	.303	.191
Differences	Positive	.141	.221	.303	.191
	Negative	-.101	-.146	-.239	-.158
Kolmogorov-Smirnov Z		.613	.964	1.323	.831
Asymp. Sig. (2-tailed)		.846	.310	.060	.494

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Avg_PE	19	13.5586	6.57214	.04	24.46
Avg_PB	19	2.3432	1.55396	.56	7.20
avg_PS	19	1.7927	2.04193	.34	7.74
avg_PCF	19	5.4725	4.51525	.95	20.38

Information Technology (IT)

One-Sample Kolmogorov-Smirnov Test

		Avg_PE	Avg_PB	avg_PS	avg_PCF
N		19	19	19	19
Normal Parameters[a,b]	Mean	22.1572	4.7543	3.5011	7.6052
	Std. Deviation	16.25002	4.95242	2.77063	3.95063
Most Extreme	Absolute	.193	.244	.225	.147
Differences	Positive	.193	.244	.225	.147
	Negative	-.115	-.221	-.154	-.100
Kolmogorov-Smirnov Z		.840	1.065	.982	.642
Asymp. Sig. (2-tailed)		.480	.207	.289	.804

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Avg_PE	19	22.1572	16.25002	2.66	59.00
Avg_PB	19	4.7543	4.95242	.94	21.26
avg_PS	19	3.5011	2.77063	.68	11.55
avg_PCF	19	7.6052	3.95063	2.54	18.49

Media

One-Sample Kolmogorov-Smirnov Test

		Avg_PE	Avg_PB	avg_PS	avg_PCF
N		10	10	10	10
Normal Parameters[a,b]	Mean	14.8699	1.3158	1.4541	6.7945
	Std. Deviation	13.66661	.82353	.77929	7.69890
Most Extreme	Absolute	.331	.221	.215	.387
Differences	Positive	.331	.221	.215	.387
	Negative	-.176	-.118	-.131	-.234
Kolmogorov-Smirnov Z		1.046	.700	.679	1.224
Asymp. Sig. (2-tailed)		.224	.712	.746	.100

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Avg_PE	10	14.8699	13.66661	2.15	44.39
Avg_PB	10	1.3158	.82353	.28	3.18
avg_PS	10	1.4541	.77929	.44	3.16
avg_PCF	10	6.7945	7.69890	1.20	26.85

Metal, Metal Products & Mining

One-Sample Kolmogorov-Smirnov Test

		Avg_PE	Avg_PB	avg_PS	avg_PCF
N		20	20	20	20
Normal Parameters[a,b]	Mean	14.0361	1.6943	1.6138	3.7896
	Std. Deviation	9.31713	.79202	1.16860	2.35658
Most Extreme	Absolute	.204	.111	.137	.157
Differences	Positive	.204	.111	.137	.157
	Negative	-.140	-.073	-.104	-.112
Kolmogorov-Smirnov Z		.913	.497	.614	.704
Asymp. Sig. (2-tailed)		.375	.966	.845	.705

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Avg_PE	20	14.0361	9.31713	3.97	42.39
Avg_PB	20	1.6943	.79202	.33	3.18
avg_PS	20	1.6138	1.16860	.14	4.80
avg_PCF	20	3.7896	2.35658	.92	10.69

Oil & Gas

One-Sample Kolmogorov-Smirnov Test

		Avg_PE	Avg_PB	avg_PS	avg_PCF
N		16	16	16	16
Normal Parameters[a,b]	Mean	12.2316	1.8576	1.6179	5.6299
	Std. Deviation	7.33873	1.02053	1.40704	4.56111
Most Extreme	Absolute	.163	.257	.158	.267
Differences	Positive	.163	.257	.154	.267
	Negative	-.137	-.155	-.158	-.151
Kolmogorov-Smirnov Z		.653	1.030	.631	1.067
Asymp. Sig. (2-tailed)		.787	.239	.821	.205

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Avg_PE	16	12.2316	7.33873	1.21	34.32
Avg_PB	16	1.8576	1.02053	.22	4.19
avg_PS	16	1.6179	1.40704	.21	5.20
avg_PCF	16	5.6299	4.56111	.92	19.43

Power

One-Sample Kolmogorov-Smirnov Test

		Avg_PE	Avg_PB	avg_PS	avg_PCF
N		15	15	15	15
Normal Parameters[a,b]	Mean	8.8294	1.0934	1.4833	4.2948
	Std. Deviation	6.08744	.97833	1.14714	3.20640
Most Extreme	Absolute	.127	.186	.191	.148
Differences	Positive	.127	.186	.191	.148
	Negative	-.086	-.148	-.141	-.110
Kolmogorov-Smirnov Z		.493	.722	.738	.572
Asymp. Sig. (2-tailed)		.968	.675	.647	.899

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Avg_PE	15	8.8294	6.08744	.52	22.84
Avg_PB	15	1.0934	.97833	.07	4.03
avg_PS	15	1.4833	1.14714	.25	3.88
avg_PCF	15	4.2948	3.20640	.36	11.10

Textile

One-Sample Kolmogorov-Smirnov Test

		Avg_PE	Avg_PB	avg_PS	avg_PCF
N		11	11	11	11
Normal Parameters[a,b]	Mean	13.8681	1.4630	.6946	5.7313
	Std. Deviation	12.72681	.75351	.38142	3.59879
Most Extreme	Absolute	.252	.226	.181	.337
Differences	Positive	.252	.226	.181	.337
	Negative	-.240	-.172	-.121	-.188
Kolmogorov-Smirnov Z		.834	.750	.600	1.119
Asymp. Sig. (2-tailed)		.489	.627	.864	.164

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Avg_PE	11	13.8681	12.72681	4.90	48.77
Avg_PB	11	1.4630	.75351	.64	2.83
avg_PS	11	.6946	.38142	.25	1.55
avg_PCF	11	5.7313	3.59879	2.55	15.13

Transport Equipments

One-Sample Kolmogorov-Smirnov Test

		Avg_PE	Avg_PB	avg_PS	avg_PCF
N		19	19	19	19
Normal Parameters[a,b]	Mean	14.2630	2.9398	1.0241	5.5355
	Std. Deviation	6.07367	1.70552	.56661	3.17414
Most Extreme	Absolute	.130	.164	.143	.145
Differences	Positive	.082	.164	.143	.145
	Negative	-.130	-.122	-.113	-.092
Kolmogorov-Smirnov Z		.569	.716	.623	.633
Asymp. Sig. (2-tailed)		.903	.684	.832	.818

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Avg_PE	19	14.2630	6.07367	2.82	26.08
Avg_PB	19	2.9398	1.70552	.95	7.33
avg_PS	19	1.0241	.56661	.34	2.11
avg_PCF	19	5.5355	3.17414	.91	14.49

Model Specification and Estimation

The relationship between price multiples and their central determinants can be indicated utilizing DCF approach, the value worth ought to be a capacity of three variables-its ability to create money streams for value holders, its normal development in these money streams, and the instability connected with these money streams. The value of equity is:

Value of equity = Po = DPS1/ke– g   (1)

Where DPS1 is the expected dividend next year, keisthe cost of equity and g is the expected stable growth rate.

Dividing both side of equation (1) by the current earnings, we obtain the discounted cash flow equation, specifying the price-to-equity ratio for a stable-growth firm:

49

$$Po/EPS0 = P/E = \text{Payout ratio}*(1 + g)/ke - g. \qquad (2)$$

Equation (2) can be rearranged as:

$$Po = EPS0 * \text{Payout ratio}*(1 + g)/ke - g. \qquad (3)$$

Dividing equation (3) by cashflows on both sides, we can estimate the price-to-cash flow ratio as:

$$Po/CFo = PC/F = (EPS0/CFo)*\text{Payout ratio}*(1 + g)/ke - g. \qquad (4)$$

Similarly, dividing equation (3) by book value, we get the price-to-book value equation:

$$Po/BVo = PB/V = ROE*\text{Payout ratio}*(1 + g)/ke - g, \qquad (5)$$

Where ROE is return on equity. Finally, we estimate the price-to-sales ratio by dividing equation (3) by net sales on both sides:

$$Po/Sales = P/S = (NPM)*\text{Payout ratio}*(1 + g)/ke - g, \qquad (6)$$

WhereNPM is net profit margin.

We employ multiple regression analysis for our purpose as shown below :

$$P/E = a + b1 \text{ payout} + b2 \text{ growth} + b3 \text{ risk} + b4 \text{ size} + ei, \qquad (7)$$

$$P/CF = a + b1 (EPS/CF) + b2 \text{ payout} + b3 \text{ growth} + b4 \text{ risk} + b5 \text{ size} + ei, \qquad (8)$$

$$P/BV = a + b1 ROE + b2 \text{ payout} + b3 \text{ growth} + b4 \text{ risk} + b5 \text{ size} + ei, \qquad (9)$$

$$P/Sales = a + b1 NPM + b2 \text{ payout} + b3 \text{ growth} + b4 \text{ risk} + b5 \text{ size} + ei, \qquad (10)$$

To detect any multicollinearity, we used variance-inflating factor (VIF) between the fundamental determinants. VIF shows how the variance of an estimator is inflated by the presence of multicollinearity. As a rule of thumb, if the VIF of a variable exceeds 10, which will happen if adjusted R^2 exceeds 0.90, that variable is said to be highly collinear.

We utilize changed variables in our principle regressions (comparisons7, 8, 9 and 10) wherever we discover a VIF of over 10 between the illustrative variables. We create changed variables by running auxiliary regressions between the covering variables, say, X and X1, and utilize the error distribution of the regression as a free variable, supplantingX1 in our principle regressions.

Empirical Results

Connections between price multiples and their determinants are demonstrated in Panel A, B, C & D for P/B, P/CF, P/BV and P/S respectively. Using sector regressions involving P/E and its determinants, we find that balanced R2 is more prominent than half for just 7 out of 15 divisions, though for the general business it is very clear that the relationship between the P/E & its essential determinant does not hold. Herein the determinant don't appear to display conjectured association with P/E different, as reflected by the sign and the importance of their't-detail' probabilities. Within the general market few divisions exhibited a superior fit as indicated by balanced R2 yet, as said some time recently, their independent coefficient demonstrated a blend result.

The outcomes for P/CF are somewhat superior to P/E proportion, here the general business sector demonstrated a measurably noteworthy relationship between the determinant & numerous, however the individual coefficient signs & criticalness is still sketchy. Results for P/BV and P/S are much stronger. For the situation of P/BV, the balanced R2 of all divisions aside from finance is 30% or more. Also the general market likewise demonstrated a huge relationship between the determinants & P/BV and P/S numerous. For the situation of P/S, 7 out of 14 areas (we avoided Finance part, because of no meaningful interpretation of this degree for the segment) demonstrated a balanced R2 estimation of more than half.

Few areas like Healthcare & House Related (Housing) have demonstrated an extremely solid huge relationship over all products & there central determinants, these are nearly trailed by segments like FMCG, Consumer Durables & Transport Equipment. This may be because of the reality, that there value revelation component are more appended to the inherent elements instead of the business cycles. Besides in the more extensive business sector segments like FMCG and Healthcare are alluded as defensives in light of their capacity to counter market cycles or instability arising because of supply-request confuse, as a result there costs stick to their execution in their separate businesses (subsequently caught by basic determinants).

My results can be mainly ascribed to an experimentally powerless relationship between price multiples and their crucial determinants. They might likewise part of the way be brought on by micro-numerosity (low degrees of opportunity), owing to the set number of organizations in our sector regressions.

Panel A : P/E RATIO						
SECTOR	*INTERCEPT*	*DPR*	*GROWTH*	*RISK*	*MCAP(LOG)*	*ADJUSTED R^2*	*F-Stat(p value)*
AGRICULTURE (Coefficients)	24.412	0.389	0.040	0.145	-3.380	0.679	0.001
t-Stat(p value)	0.009	0.000	0.736	0.311	0.015		
CAPITAL GOODS (Coefficients)	-21.119	0.209	-0.278	-0.014	3.979	0.265	0.070
t-Stat(p value)	0.148	0.094	0.197	0.626	0.016		
CHEMICAL PETRO (Coefficients)	-4.848	0.292	-0.443	-0.120	1.516	0.642	0.021
t-Stat(p value)	0.849	0.007	0.430	0.363	0.647		
CONSUMER DURABLE (Coefficients)	5.968	0.261	0.083	0.455	-1.242	0.620	0.039
t-Stat(p value)	0.239	0.029	0.806	0.231	0.376		
FINANCE (Coefficients)	-7.665	0.006	0.017	-0.019	2.010	0.009	0.418
t-Stat(p value)	0.632	0.983	0.919	0.589	0.156		
FMCG (Coefficients)	-40.080	-0.24	0.359	-1.03	10.458	-0.021	0.488

		1		6			
t-Stat(p value)	0.371	0.663	0.287	0.359	0.130		
HEALTHCARE (Coefficients)	-44.245	0.132	0.224	0.013	6.361	0.780	0.000
t-Stat(p value)	0.000	0.024	0.173	0.674	0.000		
HOUSING (Coefficients)	8.317	0.584	-0.085	0.071	-1.345	0.676	0.000
t-Stat(p value)	0.151	0.000	0.503	0.001	0.144		
IT (Coefficients)	-17.195	0.038	0.272	-0.125	5.283	0.599	0.002
t-Stat(p value)	0.041	0.737	0.235	0.606	0.001		
MEDIA (Coefficients)	5.161	-0.540	0.262	2.332	1.852	0.253	0.274
t-Stat(p value)	0.641	0.399	0.145	0.184	0.694		
METAL (Coefficients)	14.502	0.284	0.108	-0.058	-0.554	-0.119	0.741
t-Stat(p value)	0.202	0.322	0.533	0.528	0.680		
OIL GAS (Coefficients)	3.589	-0.106	0.129	-0.219	1.542	-0.116	0.611

53

t-Stat(p value)	0.664	0.574	0.553	0.476	0.149		
POWER (Coefficients)	4.353	-10.16	0.198	-7.189	39.029	0.112	0.238
t-Stat(p value)	0.931	0.050	0.813	0.210	0.043		
TEXTILE (Coefficients)	-3.216	0.637	-0.055	-0.065	0.475	0.429	0.119
t-Stat(p value)	0.751	0.035	0.835	0.760	0.766		
TRANSPORT EQIPMENTS (Coefficients)	0.785	0.844	0.666	0.082	-2.287	0.587	0.001
t-Stat(p value)	0.961	0.002	0.063	0.079	0.324		
MARKET (Coefficients)	5.910	0.229	-0.288	-0.091	0.847	0.355	0.077
t-Stat(p value)	0.302	0.130	0.317	0.542	0.560		

Panel B : P/CF RATIO							
SECTOR	*INTER CEPT*	*EPS /CF*	*DP R*	*GRO WTH*	*RI SK*	*MCAP(LOG)*	*ADJUST ED R^2*	*F-Stat(p value)*
AGRICULTURE (Coefficients)	4.447	- 0.73 0	0.0 65	- 0.022	0.0 10	-0.055	-0.276	0.899
t-Stat(p value)	0.560	0.94 4	0.4 29	0.840	0.9 47	0.968		
CAPITAL GOODS (Coefficients)	-2.513	- 5.06 7	0.1 62	0.013	- 0.0 18	1.087	-0.049	0.554
t-Stat(p value)	0.832	0.65 9	0.1 38	0.940	0.4 63	0.426		
CHEMICAL PETRO (Coefficients)	-14.135	- 0.29 5	0.0 75	0.277	- 0.0 61	2.057	0.722	0.019
t-Stat(p value)	0.114	0.82 6	0.0 25	0.144	0.1 65	0.083		
CONSUMER DURABLE (Coefficients)	4.497	3.61 2	- 0.0 19	0.017	0.0 60	-0.477	-0.778	0.980
t-Stat(p value)	0.186	0.61 8	0.7 59	0.945	0.8 13	0.687		
FINANCE (Coefficients)	4.204	- 12.3 3	0.0 02	0.066	- 0.0 1	1.358	0.185	0.165
t-Stat(p value)	0.633	0.21 2	0.9 90	0.426	0.4 01	0.099		

FMCG (Coefficients)	-1.126	-9.145	0.211	0.041	-0.09	1.316	0.258	0.099
t-Stat(p value)	0.931	0.028	0.200	0.669	0.775	0.496		
HEALTHCARE (Coefficients)	-27.561	10.559	0.203	0.343	0.064	1.998	0.779	0.000
t-Stat(p value)	0.025	0.424	0.002	0.045	0.034	0.058		
HOUSING (Coefficients)	7.072	2.860	0.352	0.094	0.021	-1.545	0.524	0.009
t-Stat(p value)	0.163	0.103	0.004	0.400	0.159	0.054		
IT (Coefficients)	4.436	-4.300	0.003	0.084	0.060	0.549	-0.166	0.779
t-Stat(p value)	0.221	0.753	0.951	0.426	0.560	0.606		
MEDIA (Coefficients)	1.214	-20.88	-0.161	0.179	1.784	1.686	0.433	0.211
t-Stat(p value)	0.860	0.695	0.634	0.082	0.079	0.754		
METAL (Coefficients)	4.771	-0.456	-0.072	0.027	-0.02	0.137	-0.050	0.555
t-Stat(p value)	0.095	0.536	0.315	0.524	0.247	0.678		
OIL GAS (Coefficients)	0.120	9.979	0.017	0.070	-0.3	0.435	0.222	0.189

56

					6		
t-Stat(p value)	0.979	0.067	0.863	0.539	0.040	0.445		
POWER(Coefficients)	17.496	-191.1	-1.960	-0.409	-3.26	19.761	0.438	0.024
t-Stat(p value)	0.327	0.032	0.332	0.189	0.105	0.007		
TEXTILE (Coefficients)	3.189	-2.751	0.166	-0.009	0.075	-0.140	0.330	0.235
t-Stat(p value)	0.375	0.701	0.098	0.910	0.313	0.847		
TRANSPORT EQUIMENTS	4.747	-23.69	1.054	1.262	0.043	-3.223	0.611	0.002
t-Stat(p value)	0.859	0.068	0.014	0.028	0.575	0.466		
MARKET (Coefficients)	1.300	13.651	0.054	-0.220	-0.06	-0.226	0.544	0.027
t-Stat(p value)	0.569	0.018	0.363	0.081	0.293	0.735		

Panel C : P/BV RATIO							
SECTOR	*INTER CEPT*	*RO E*	*DP R*	*GRO WTH*	*RI SK*	*MCAP(LOG)*	*ADJUST ED R^2*	*F-Stat(p value)*
AGRICULTURE (Coefficients)	0.014	0.0 01	0.0 09	- 0.018	0.0 70	0.081	0.350	0.077
t-Stat(p value)	0.992	0.8 76	0.4 29	0.383	0.0 11	0.690		
CAPITAL GOODS (Coefficients)	-4.586	0.1 75	- 0.0 24	- 0.073	- 0.0 06	0.692	0.260	0.097
t-Stat(p value)	0.132	0.1 14	0.3 43	0.111	0.2 84	0.039		
CHEMICAL PETRO (Coefficients)	-6.280	0.0 38	- 0.0 05	0.002	0.0 03	1.019	0.351	0.184
t-Stat(p value)	0.379	0.6 90	0.7 08	0.980	0.8 78	0.353		
CONSUMER DURABLE (Coefficients)	-0.678	0.0 68	0.0 33	- 0.030	0.0 19	0.083	0.844	0.008
t-Stat(p value)	0.363	0.1 63	0.0 17	0.422	0.6 29	0.601		
FINANCE (Coefficients)	-1.113	0.0 14	0.0 03	0.020	- 0.0 02	0.235	0.015	0.424
t-Stat(p value)	0.591	0.4 13	0.9 42	0.372	0.7 28	0.196		
FMCG (Coefficients)	-6.975	0.1 79	0.0 40	0.043	- 0.1 32	0.954	0.874	0.000

t-Stat(p value)	0.013	0.000	0.326	0.031	0.042	0.020		
HEALTHCARE (Coefficients)	-10.698	0.147	0.014	0.020	0.003	1.128	0.831	0.000
t-Stat(p value)	0.000	0.000	0.245	0.541	0.649	0.000		
HOUSING (Coefficients)	-0.316	0.107	0.053	-0.025	0.010	-0.123	0.581	0.004
t-Stat(p value)	0.852	0.015	0.133	0.478	0.081	0.608		
IT (Coefficients)	-7.926	0.112	-0.057	-0.037	-0.037	1.791	0.661	0.001
t-Stat(p value)	0.004	0.450	0.090	0.574	0.620	0.002		
MEDIA (Coefficients)	0.151	0.006	0.016	0.000	0.009	0.276	0.732	0.055
t-Stat(p value)	0.713	0.817	0.587	0.958	0.887	0.173		
METAL (Coefficients)	-0.824	0.046	-0.001	-0.010	0.009	0.169	0.495	0.010
t-Stat(p value)	0.282	0.049	0.954	0.329	0.178	0.066		
OIL GAS (Coefficients)	-0.204	0.051	0.008	0.017	0.038	0.028	0.088	0.341
t-Stat(p value)	0.888	0.234	0.731	0.579	0.384	0.832		
POWER(Coefficients)	0.957	-0.1	-0.0	0.004	-0.0	0.584	0.098	0.647

		30	66		91			
t-Stat(p value)	0.538	0.483	0.652	0.832	0.481	0.187		
TEXTILE (Coefficients)	1.615	-0.009	0.018	-0.026	0.022	-0.105	0.033	0.472
t-Stat(p value)	0.253	0.788	0.362	0.246	0.283	0.511		
TRANSPORT EQIPMENTS (Coefficients)	-4.906	-0.013	-0.096	-0.059	-0.008	1.369	0.292	0.075
t-Stat(p value)	0.204	0.803	0.160	0.503	0.405	0.022		
MARKET (Coefficients)	-0.955	0.160	0.047	-0.018	-0.046	0.082	0.638	0.011
t-Stat(p value)	0.541	0.006	0.261	0.814	0.282	0.841		

Panel D : P/S RATIO							
SECTOR	*INTER CEPT*	*NP M*	*DP R*	*GRO WTH*	*RI SK*	*MCAP(LOG)*	*ADJUST ED R^2*	*F-Stat(p value)*
AGRICULTURE (Coefficients)	3.287	0.0 89	0.0 07	- 0.006	0.0 03	-0.357	-0.127	0.675
t-Stat(p value)	0.150	0.3 62	0.7 20	0.845	0.9 40	0.285		
CAPITAL GOODS (Coefficients)	-1.685	0.1 18	0.0 04	- 0.012	- 0.0 02	0.288	0.180	0.170
t-Stat(p value)	0.150	0.1 66	0.6 83	0.528	0.3 57	0.027		
CHEMICAL PETRO (Coefficients)	-1.882	- 0.0 58	0.0 00	- 0.027	- 0.0 05	0.385	0.166	0.333
t-Stat(p value)	0.420	0.6 78	0.9 86	0.484	0.5 24	0.337		
CONSUMER DURABLE (Coefficients)	0.081	0.0 01	0.0 07	- 0.002	0.0 03	0.023	0.915	0.002
t-Stat(p value)	0.324	0.9 59	0.0 03	0.641	0.4 98	0.231		
FINANCE (Coefficients)	NA	N A	N A	NA	N A	NA	NA	NA
t-Stat(p value)	NA	N A	N A	NA	N A	NA		
FMCG (Coefficients)	-1.526	0.1 84	0.0 16	0.013	- 0.0 45	0.279	0.709	0.000
t-Stat(p value)	0.116	0.0	0.2	0.082	0.0	0.065		

	35	36		69			
HEALTHCARE (Coefficients)	-9.345	0.069	-0.008	0.009	-0.007	1.289	0.540	0.005
t-Stat(p value)	0.003	0.275	0.555	0.841	0.438	0.000		
HOUSING (Coefficients)	1.811	-0.226	0.065	-0.005	0.021	-0.202	0.439	0.024
t-Stat(p value)	0.436	0.008	0.260	0.931	0.011	0.589		
IT (Coefficients)	-2.620	0.083	-0.030	-0.052	0.030	0.848	0.599	0.003
t-Stat(p value)	0.066	0.090	0.140	0.192	0.468	0.002		
MEDIA (Coefficients)	0.441	-0.011	-0.008	-0.011	0.115	0.143	-0.449	0.803
t-Stat(p value)	0.622	0.708	0.890	0.487	0.425	0.727		
METAL (Coefficients)	0.605	0.108	-0.038	-0.002	0.001	0.084	0.260	0.097
t-Stat(p value)	0.595	0.021	0.231	0.926	0.908	0.544		
OIL GAS (Coefficients)	1.952	-0.051	-0.045	0.020	0.016	0.068	-0.119	0.648
t-Stat(p value)	0.293	0.4	0.2	0.651	0.7	0.744		

62

		12	27		97			
POWER(Coefficients)	27.793	-1.671	0.794	0.893	-0.642	-3.884	0.737	0.000
t-Stat(p value)	0.518	0.000	0.840	0.265	0.886	0.787		
TEXTILE (Coefficients)	0.634	-0.050	-0.003	-0.002	0.025	-0.027	0.633	0.063
t-Stat(p value)	0.082	0.131	0.672	0.710	0.012	0.526		
TRANSPORT EQIPMENTS (Coefficients)	0.149	-0.085	-0.033	-0.026	-0.004	0.297	0.602	0.002
t-Stat(p value)	0.934	0.022	0.321	0.505	0.462	0.302		
MARKET (Coefficients)	-0.350	0.263	0.011	-0.073	-0.004	0.093	0.559	0.034
t-Stat(p value)	0.684	0.003	0.615	0.167	0.846	0.665		