

Indian Stock Market: A Cross-sectional Analysis of Returns and Its Predictability

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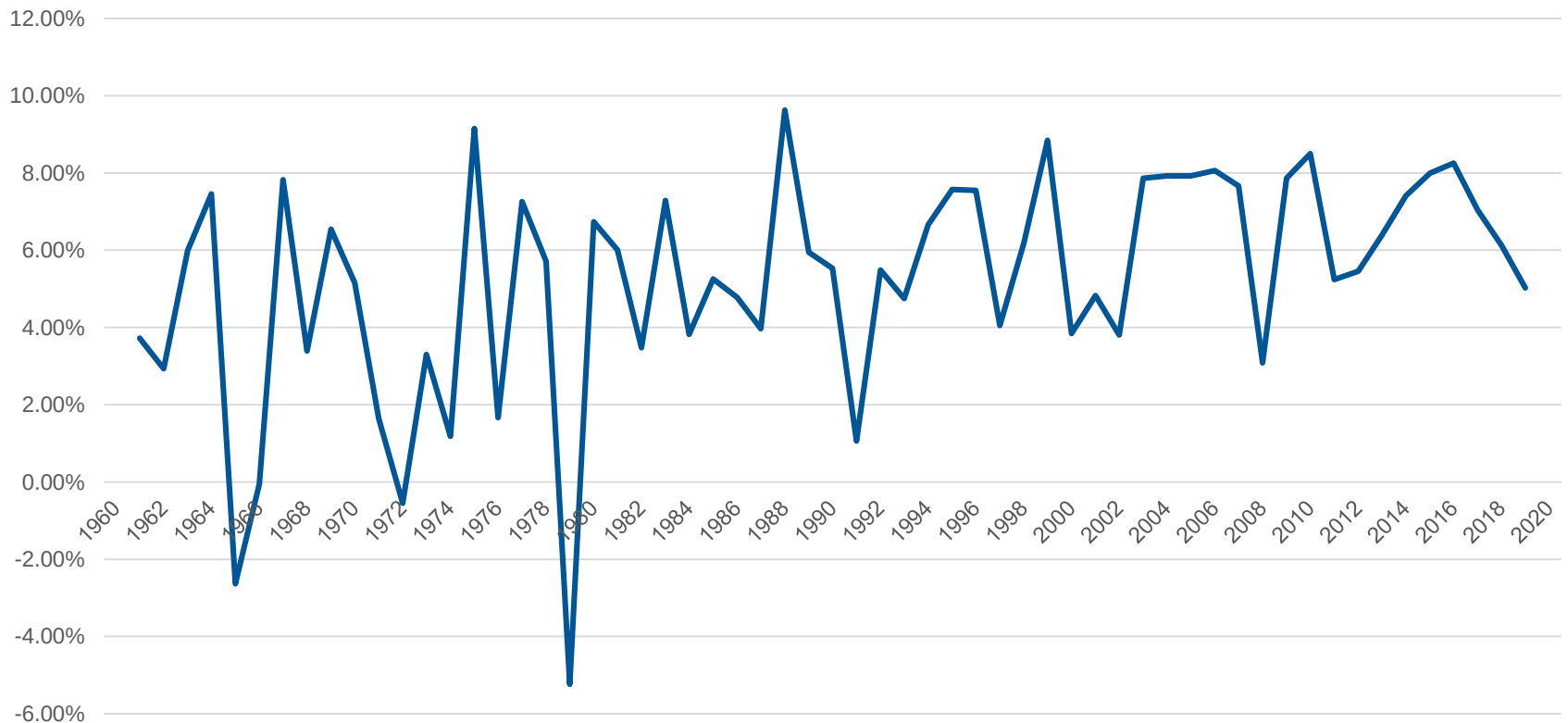
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Why Indian Stock Market?

- By 1999, GDP growth rates touched 8.85%
- In years 2003-2007 India growth rates just short of 8%.
- 2016 saw India eclipsing China for the first time with 8.5% growth.
- In 2017 India earned the title of “The fastest growing economy in the world”
- 2018 India had the 5th largest nominal GDP in the world and the 3rd largest on a PPP basis.

India GDP growth rate Const. \$

India IND GDP (constant 2010 US\$)
Growth Rate % (1960-2019)



Indian Stock Exchanges

- Trading at both NSE AND BSE an open electronic limit order book system providing transparency and traceability. The avg. monthly volume is a \$400 billion, aboutt 15% of NYSE & NASDAQ combined, but higher than Euronext or London Stock Exchange.
- Market Capitalization of BSE and NSE together stood at \$ 4.08 trillion, roughly equal to Shanghai and a little more than Euronext, although just about 12% of NYSE and NASDAQ together

Portfolio Method and Cross-sectional regression method

- In the portfolio method, we utilize the value-weighted and or equal-weighted average monthly returns at time t of quintile (or decile) portfolios **sorted** based on the **predictor in question at time $t-1$** . Analyze it to obtain meaningful return predictors.
- In the cross-sectional regressions method, researchers typically regress the firm-level return predictors e.g. size at time t , on stock returns at time $t+1$ and analyze the regression results.
- Market efficiency implies that the cross-sectional regressions will result in statistically insignificant return regressions.

Related Literature US – Effect of Different Variables on cross-section of stock returns

- Size or (MV) effect by Banz (1981)
- Leverage effect by Bhandari (1988) – not used
- BV is positively related by Stallman (1980) Resenberg et. al, (1985)
- Book to Market ratio by Chen, Hamao and Lakosishok (1991)
- Earnings to price ratio by Basu (1983)
- Size and BE/ME with Beta by Fama-French (1992)
- BV/MV, E/P and CF/P introduced as value measure by Fama French 1996
- Jegadeesh (1990) and Lehman (1990) showed short-term reversal effect
- Jegadeesh and Titman (1993) introduced 3 to 12 months Momentum

Testing the factors: literature search US and Global data

- Fama French (1998) also shows that the value premium is pervasive in 13 major markets where book to market, earnings to price, cash flow to price produce large value premiums.
- Rouwenhorst (1998) tested for Momentum in 13 developed and (1999) in emerging markets
- Chan, Hameed, and Tong (2000) showed profitability of momentum strategies in international stock indices
- Grundy and Martin (2001) showed in US market.
- Asness, et. al (2013) shows momentum strategy in 13 international markets

Related Literature Indian Stock market data

- CAPM test -- Varma (1988), Yalwar (1988) Srinivasan (1988) and later Basu and Chawla (2012)
- Fama – French 3-factor model tests: Connor and Shegal (2004) tested using data of 364 firms and for the period of Jun 89 to Mar 99 with only 179 obs;
- Bahl (2006) using 79 firms and data from 2001 to 2006;
- Taneja (2010) using 187 firms and 2004 to 2009; and
- Aggarwal (2017) with 396 firms and for a period of 2009 to 2015.
- Ansari and Khan (2012) and Dhankar and Maheshwari (2014) found that momentum is a predictor in the Indian stock market returns

Objective of the paper

- No paper has analyzed all ten return predictors
- Covers a multi-decade relevant time frame starting in 1993, covering next two decades ending in 2018.
- This paper provides a comprehensive analysis of the effectiveness of ten predictors in the Indian stock market.
- Yearly avg. of Firms varies from 136 (1994) to 1797 (2018).
- Avg. sample size of monthly return is 910.
- From stocks traded in both BSE and NSE
- 25 years of monthly returns data from January 1994 to December 2018 for our analysis.

Data for Indian stock market

- Indian stock data Thompson Reuters Datastream, and data from January 1993 to December 2018.
- We downloaded stock data from datastream that includes both active and dead stocks from both the Bombay Stock Exchange (BSE) and the National Stock exchange (NSE).
- All variables are in US\$ and the market return is calculated as value weighted return of all stocks in our sample. The risk free return is US 1 month T-bill rate.
- First year's data was used to calculate the momentum variable and the testing period starts in January 1994.

Data: Thompson Reuters Datastream from January 1993 to December 2018

Variables	Description
EWRET	Equally-weighted return
VWRET	Value-weighted return
BV /MV/ MS	Book Value / Market Value / Market Share
1. SIZE	Logarithmic of market cap for size
2. PRICE	Market Price
3. BETA	Stock's Beta (next slide for computation method)
4. BKTMTKT	Stock's book value to market value ratio
5. CF/PR	Cashflow to price ratio
6. E/PR	Earnings to price ratio
7. STDEV	Standard deviation of the stock returns
8. STREV	Short term reversal effect
9. SEE	Stock Idiosyncratic risk or volatility
10. MOM	Momentum (cum. Ret. From t-12 to t-2)
nfirms	Yearly average of number of firms in each month

Risk Measures definitions

- Beta (Stock's Beta): Following Scholes and Williams (1977) and Dimson and Mussavian (2000)
 - $R_{i,d} - r_{f,d} = \alpha_i + \beta_{1,i} (R_{m,d-1} - r_{f,d-1}) + \beta_{2,i} (R_{m,d} - r_{f,d}) + \epsilon_{i,d}$
 - $\beta_i = \beta_{1,i} + \beta_{2,i}$
- STDEV (Stock's Standard Deviation): total volatility of the stock

$$SD_{i,t} = \text{SQRT}[\text{var}(R_{i,d})]$$

SEE (Stock's Idiosyncratic Volatility): Monthly idiosyncratic volatility of an individual stock is obtained from the following single factor model

$$R_{i,d} - r_{f,d} = \alpha_i + \beta_i (R_{m,d} - r_{f,d}) + \epsilon_{i,d}$$

and $SSE_{i,t} = \text{SQRT}[\text{var}(\epsilon_{i,d})]$

Definition of variables Contd.

- STREV (Short-Term Reversal): Following Jegadeesh (1990) and Lehmann (1990), the reversal variable for each stock in month t is defined as the return on the stock over the previous month. (i.e. return in month $t-1$).
- MOM (Momentum): Following Jegadeesh and Titman (1993), the momentum variable for each stock in month t is defined as the cumulative return from month $t-12$ to month $t-2$ (previous 11 months starting one month ago)
- Book to Market, Cash-flow to Price and Earnings to Price calculated from the Datastream at each month's month end.

Methodology of empirical work

- We start with daily data of stock prices from January 1993 and first calculate the Beta, Stdrev, and SEE as defined before, using 1 year of daily data. We keep the values of Beta, STDEV, and SEE for December 1993. We also calculate 11 month momentum using Jan '93 to November 1993 and use that for momentum for Dec. 1993, and 1 month (December) return for STREV. We also calculate BV, MV, P MKTBKT, CF/PR, and E/PR for December 1993.
- We follow the same procedure to calculate monthly variables from Jan 1994 to Dec. 2018, 250 monthly set of 10 variables.

Table II: Panel A Average Values of the Variables over Time

	average	average	average	average	average	average	average	average
year	log(size)	bktmkt	cf/pr	e/pr	stdev	see	price	nfirm
1994	5.98	0.52	0.12	0.07	3.63	3.37	18.16	136.3
1995	5.76	0.50	0.11	0.08	3.03	2.89	12.92	183.8
1996	5.68	0.91	0.15	0.11	2.92	2.69	10.04	239.4
1997	5.75	1.42	0.15	0.19	3.08	2.76	8.80	262.6
1998	5.57	1.74	0.22	0.18	3.40	3.00	5.86	262.4
1999	5.74	2.05	0.29	0.20	3.82	3.36	7.21	248.3
2000	5.86	1.42	0.20	0.15	4.00	3.61	7.27	259.7
2001	5.50	2.05	0.27	0.18	3.60	3.19	3.65	311.6
2002	5.51	2.15	0.41	0.21	3.38	3.11	3.69	323.4
2003	5.69	1.69	0.38	0.17	2.81	2.61	4.37	343.2
2004	6.12	1.30	0.33	0.17	3.30	2.89	6.36	413.4
2005	6.44	0.87	0.22	0.13	2.80	2.53	8.79	478.2
2006	6.55	0.69	0.12	0.09	3.03	2.63	8.59	676.2

Continued: Table II Panel A

Average Values of the Variables over Time

year	average	average	average	average	average	average	average	average
	log(size)	bktmkt	cf/pr	e/pr	stdev	see	price	nfirm
2006	6.55	0.69	0.12	0.09	3.03	2.63	8.59	676.2
2007	6.29	0.93	0.17	0.12	3.22	2.91	6.52	1324.7
2008	6.20	0.91	0.16	0.12	3.76	3.29	5.15	1485.5
2009	5.96	2.00	0.30	0.25	4.20	3.55	3.96	1533.7
2010	6.47	1.12	0.19	0.12	3.26	2.88	5.55	1476.8
2011	6.43	1.08	0.16	0.12	3.01	2.68	4.82	1674.3
2012	6.29	1.64	0.19	0.17	3.01	2.71	3.99	1689.4
2013	6.29	1.74	0.20	0.17	2.87	2.67	3.54	1618.9
2014	6.49	1.96	0.22	0.18	3.15	2.93	4.94	1574.6
2015	6.67	1.28	0.12	0.11	3.36	3.12	6.34	1542.8
2016	6.60	1.25	0.11	0.08	3.24	2.94	6.38	1574.3
2017	6.77	0.95	0.09	0.07	2.86	2.67	8.20	1695.8
2018	6.85	0.79	0.07	0.06	2.84	2.68	9.14	1797.9

Main Results - Portfolio Method

- Full sample Result (ewret): Consistent predictive power in **size**, **momentum**, and **cash-flow-to-price** and short-term reversal. Some cases, the book-to-market and earnings to price factors also became sig. predictors.
- Small Firm Result (ewret): Consistent predictive power in size, **momentum**, and **cash-flow-to-price** and short-term reversal. Some cases, the book-to-market became a significant predictors
- Large Firm Result: **momentum**, and **cash-flow-to-price** are Significant Predictor.
- For vwret: **momentum**, and **cash-flow-to-price** are Significant Predictor for Full, Small and Large firms.

Main Results - Regression Method

- Full sample Result (ewret): Consistent predictive power in **size**, **momentum**, and **cash-flow-to-price** and **short-term reversal**. In some cases, the book-to-market became a significant predictors at 90% level.
- Small Firm Result (ewret): Consistent predictive power in size, **momentum**, and **cash-flow-to-price** and **short-term reversal**.
- Large firm Result: **momentum**, and **cash-flow-to-price** are Significant Predictor.
- In Multiple Regression Result:
- Full and Small sample: Size, STREV, MOM and CFPR,
- Large sample: **momentum**, and **cash-flow-to-price**

Results in the paper

- Table 2A 2B: Statistics and Correlation
- Table III A Full Sample Portfolio Analysis with both ewret and vwret and two different tests High-low t-test and 2nd test on alpha from regression with market return.
- Table III B and C Small and Large Sample Portfolio Analysis
- Table 4 A Full sample-two parts: First part single variable Regression Result and 2nd multiple regressions results.
- Table 4 B and C : same as A for small and Large sample
- Table 5 : Portfolio Analysis for BSE
- Table 5 : Portfolio Analysis for NSE

Table II Panel B: Correlation Matrix of the Variables

	ewret	MV	BV	mom	beta	stdev	see	vwret	Cf/pr	e/pr	strev
ewret	1.00	-0.01	0.01	0.05	-0.02	0.00	0.00	-0.02	0.04	0.01	0.00
mv	-0.01	1.00	-0.16	0.05	0.13	-0.23	-0.29	0.02	-0.06	-0.10	0.24
bv	0.01	-0.16	1.00	-0.10	-0.12	0.19	0.21	0.02	0.40	0.54	-0.15
mom	0.05	0.05	-0.10	1.00	0.03	0.03	0.04	0.04	0.04	-0.06	0.10
beta	-0.02	0.13	-0.12	0.03	1.00	0.23	0.03	-0.01	-0.05	-0.08	-0.03
stdev	0.00	-0.23	0.19	0.03	0.23	1.00	0.97	0.02	0.00	0.07	-0.18
see	0.00	-0.29	0.21	0.04	0.03	0.97	1.00	0.03	0.02	0.09	-0.19
vwret	-0.02	0.02	0.02	0.04	-0.01	0.02	0.03	1.00	0.04	0.01	0.03
Cf/p	0.04	-0.06	0.40	0.04	-0.05	0.00	0.02	0.04	1.00	0.36	-0.06
e/p	0.01	-0.10	0.54	-0.06	-0.08	0.07	0.09	0.01	0.36	1.00	-0.10
strev	0.00	0.24	-0.15	0.10	-0.03	-0.18	-0.19	0.03	-0.06	-0.10	1.00

Procedure for Portfolio method

- For Portfolio method we sort the stocks on the basis of size (Market value) and then create the quintile portfolio from low to high size, and then calculate the return on those quintile portfolio in the following month i.e January 1994.
- We keep doing it every month until the end of data period and we get $25 \times 12 = 300$ portfolio returns in each of the 5 groups. We report the averages of returns.
- Next we sort using the second predictor and continue ...
- Effectively we sort using predictor variable at time **t-1**, and calculate each of five portfolio average stock return at time **t**

Summary of Table IIIA (reformatted) for Full sample showing only *ewret* result

Predictor	size	price	beta	stdev	see	strev	mom	bktmkt	cf/price	e/price
Low	2.03	1.72	1.35	1.09	1.14	1.93	0.83	0.93	0.15	1.09
2	1.82	1.58	1.74	1.57	1.46	1.37	1.26	1.35	1.08	1.50
3	1.44	1.46	1.72	1.68	1.67	1.65	1.25	1.50	1.55	1.49
4	1.21	1.56	1.63	1.90	1.87	1.56	1.83	1.87	2.12	1.76
High	1.21	1.39	1.28	1.47	1.58	1.21	2.54	2.06	2.82	1.87
High-Low	0.82	-0.33	-0.07	0.38	0.44	-0.72	1.71	1.12	2.67	0.78
t-stat	-2.05	-0.89	-0.18	0.99	1.19	-3.28	4.33	2.71	9.07	2.27
capm-alpha	-0.97	-0.28	-0.73	-0.02	0.18	-0.70	1.87	1.01	2.61	0.69
t-stat	-2.82	-0.80	-2.74	-0.06	0.58	-2.58	5.11	3.06	11.32	2.63

Summary of Table IIIB (reformatted) for Small sample

Result showing only *ewret*

	size	price	beta	stdev	see	strev	mom	bktmkt	cf/price	e/price
Low	2.21	1.92	1.45	1.40	1.41	2.81	1.08	1.28	0.36	1.50
2	1.86	1.64	2.07	1.94	1.99	1.92	1.63	1.57	1.07	1.78
3	1.91	1.93	2.01	2.14	1.97	1.79	1.66	2.05	1.94	1.81
4	1.72	1.70	1.95	2.10	2.22	1.88	1.95	2.05	2.67	2.06
High	1.41	1.92	1.62	1.53	1.52	0.73	2.78	2.19	3.08	1.97
High-Low	-0.80	0.01	0.17	0.13	0.11	-2.08	1.70	0.91	2.72	0.48
t-stat	-2.56	0.03	0.44	0.38	0.36	-6.62	4.34	3.04	9.76	1.80
capm-alpha	-1.15	-0.03	-0.50	-0.20	-0.11	-2.07	1.89	0.93	2.73	0.43
t-stat	-4.04	-0.09	-1.52	-0.62	-0.34	-6.41	5.34	3.32	11.04	1.79

Summary of Table IIIC (reformatted) for Large stock sample - Results showing only *ewret*

	size	price	beta	stdev	see	strev	mom	bktmkt	cf/price	e/price
Low	1.47	1.08	0.86	1.14	1.17	0.92	0.21	1.01	0.01	0.86
2	1.13	1.20	1.39	1.26	1.20	1.14	1.05	1.15	1.14	1.31
3	1.31	1.45	1.45	1.34	1.30	1.37	1.14	1.22	1.37	1.40
4	1.27	1.26	1.53	1.53	1.54	1.39	1.64	1.27	1.74	1.30
High	1.14	1.33	1.08	1.04	1.11	1.50	2.27	1.68	2.06	1.45
High-Low	-0.33	0.25	0.22	-0.09	-0.06	0.58	2.06	0.67	2.05	0.59
t-stat	-1.04	0.64	0.49	-0.20	-0.16	1.94	4.71	1.39	4.90	1.36
capm-alpha	-0.23	0.52	-0.44	-0.68	-0.48	0.60	2.25	0.34	1.90	0.41
t-stat	-0.77	1.57	-1.42	-2.25	-1.67	1.88	5.46	1.03	6.42	1.36

Summary of Table IIIA (reformatted) for Full sample

Results showing only *vwret*

	size	price	beta	stdev	see	strev	mom	bktmkt	cf/price	e/price
Low	1.87	1.17	1.15	1.09	1.07	0.94	0.56	0.94	0.61	0.98
2	1.82	0.93	1.20	1.16	1.27	0.84	0.79	1.21	1.15	1.20
3	1.46	1.24	1.39	1.06	1.03	1.05	0.88	1.35	1.40	1.03
4	1.23	1.04	0.92	1.12	0.87	1.22	1.34	1.57	1.66	1.45
High	1.05	1.17	0.88	0.89	0.82	1.04	1.86	1.61	1.89	1.39
High-Low	-0.82	0.00	-0.26	-0.20	-0.25	0.10	1.29	0.66	1.28	0.41
t-stat	-1.88	0.00	-0.60	-0.35	-0.49	0.24	2.30	1.23	2.61	0.78
capm-alpha	-0.85	0.26	-0.94	-0.84	-0.63	0.14	1.61	0.26	1.04	0.10
t-stat	-2.22	0.54	-2.91	-1.93	-1.50	0.36	3.02	0.58	2.61	0.26

Summary of Table IIIB (reformatted) for Small stock sample result showing only *vwret*

	size	price	beta	stdev	see	strev	mom	bktmkt	cf/price	e/price
Low	2.02	1.05	0.86	1.45	1.49	2.00	0.46	1.28	0.14	1.43
2	1.83	1.40	1.77	1.83	1.85	1.64	1.39	1.54	1.01	1.70
3	1.91	2.01	1.80	1.99	1.82	1.67	1.51	1.96	1.90	1.57
4	1.75	1.52	1.77	1.87	2.00	2.01	1.99	1.87	2.78	1.73
High	1.43	1.85	1.65	0.92	0.75	0.95	2.65	1.88	2.93	1.71
High-Low	-0.58	0.80	0.80	-0.52	-0.74	-1.05	2.19	0.60	2.79	0.28
t-stat	-1.80	2.27	1.88	-1.51	-2.32	-2.90	5.57	1.78	8.04	0.88
capm-alpha	-0.86	0.93	0.17	-0.82	-0.90	-1.02	2.41	0.45	2.70	0.15
t-stat	-2.92	2.48	0.47	-2.33	-2.92	-2.88	5.97	1.38	9.28	0.52

Summary of Table IIIC (reformatted) for Large stock sample result showing only *vwret*

	size	price	beta	stdev	see	strev	mom	bktmkt	cf/price	e/price
Low	1.47	0.90	1.03	1.02	1.08	0.86	0.53	1.06	0.49	0.99
2	1.11	1.08	1.25	1.15	1.01	0.93	0.95	0.93	1.18	1.13
3	1.32	1.06	1.24	1.20	1.28	1.04	0.85	1.16	1.25	1.18
4	1.25	0.96	0.92	1.12	1.10	1.30	1.38	1.32	1.56	1.25
High	1.03	1.22	0.87	0.65	0.68	1.07	1.94	1.40	1.58	1.38
High-Low	-0.44	0.32	-0.16	-0.37	-0.40	0.21	1.41	0.34	1.09	0.39
t-stat	-1.27	0.70	-0.37	-0.69	-0.88	0.50	2.62	0.66	2.27	0.77
capm-alpha	-0.32	0.61	-0.87	-1.07	-0.82	0.25	1.67	-0.05	0.81	0.12
t-stat	-1.01	1.55	-2.63	-2.84	-2.43	0.60	3.17	-0.13	2.16	0.30

Summary of Tables III A, B C – Portfolio method of analyzing stock market returns with ten predictors

<u>Portfolio Method</u>						
99%, 95% and 90% Confidence Level as ***, **, *						
	Full sample		Small Cap		Large Cap	
	ewret	vwret	ewret	vwret	ewret	vwret
Size	**	*	**			
Price				**		
Beta						
St. Dev.						
SEE				**		
S.T. Rev.	***		***	***	*	
Mom	***	**	***	***	**	**
BKTMK	***		***	*		
CF/P	***	**	***	***	***	***
E/P	**		*			

Procedure for cross-sectional regression method

- For cross-sectional Regression method, we regress the monthly return at time $t+1$ against the predictor variable at time t , starting January 1994.
- For example if independent variable is size (Market value) at time t (December 1993) and then run regression with stock return, the dependent variable at time $t+1$ i.e. January 1994 for the cross-section of the stock data.
- We keep doing it every month until the end of data period and we get $25 \times 12 = 300$ regression coefficient and take the average of it..
- Next we take the second predictor independent variable and continue ...
- Effectively we use predictor variable at time $t-1$, and regress it stock return at time t .

Table IV. (A) – Cross-Sectional Regressions – Full Samples

SIZE	PRICE	BETA	SD	SEE	STREV	MOM	BKMK	CFPR	EP	R2
-0.16										0.02
-2.27										
	-0.09									0.02
	-1.02									
		-0.25								0.03
		-0.66								
			0.06							0.02
			0.51							
				0.10						0.02
				0.86						
					-0.02					0.01
					-3.26					
						0.01				0.02
						4.05				
							0.11			0.01
							1.85			
								1.27		0.00
								6.77		
									0.52	0.00
									1.35	
-0.26	0.10	0.38	-0.13		-0.03	0.01	0.09			0.08
-3.26	1.19	1.02	-1.52		-5.42	5.25	1.49			
-0.26	0.09	0.36	-0.10		-0.04	0.01		0.99		0.08
-3.29	1.04	0.96	-1.13		-5.68	5.00		4.69		
-0.28	0.06	0.37	-0.14		-0.03	0.01			0.11	0.08
-3.47	0.64	0.99	-1.60		-5.29	5.21			0.30	
-0.26	0.10	0.30		-0.13	-0.03	0.01	0.09			0.08
-3.30	1.18	0.77		-1.52	-5.43	5.24	1.45			
-0.26	0.09	0.29		-0.10	-0.04	0.01		0.99		0.08
-3.32	1.04	0.75		-1.13	-5.69	5.00		4.67		
-0.28	0.06	0.28		-0.13	-0.03	0.01			0.11	0.08
-3.51	0.64	0.74		-1.62	-5.30	5.21			0.28	

Table IV. (B) – Cross-Sectional Regressions – Small Stocks
Size, STREV, Momentum, Cashflow to Price

SIZE	PRICE	BETA	STDEV	SEE	STREV	MOM	BKMK	CFPR	EP	R2
-0.24										0.01
-2.50										
	-0.03									0.01
	-0.27									
		-0.15								0.03
		-0.39								
			0.03							0.01
			0.26							
				0.04						0.01
				0.38						
					-0.05					0.01
					-6.76					
						0.01				0.01
						3.44				
							0.04			0.01
							0.53			
								1.16		0.00
								5.68		
									0.11	0.00
									0.37	

Table IV. (C) – Cross-Sectional Regressions – Large Stocks

SIZE	PRICE	BETA	SD	SEE	STREV	MOM	BKMK	CFPR	EP	R2
-0.06										0.02
-0.62										
	0.05									0.02
	0.46									
		0.27								0.04
		0.56								
			-0.10							0.03
			-0.51							
				-0.12						0.02
				-0.61						
					0.01					0.02
					1.68					
						0.01				0.03
						4.26				
							0.12			0.02
							0.50			
								2.00		0.01
								2.76		
									0.26	0.01
									0.14	

Summary of Tables IV - A, B C – Cross-sectional Regression method of analyzing stock market returns

<u>Simple Cross-sectional Method</u>			
99%, 95% and 90% Confidence Level as ***, **, *			
	Full sample	Small Cap	Large Cap
Size	**	**	
Price			
Beta			
St. Dev.			
SEE			
S.T. Rev.	***	***	*
Momentum	***	***	***
BKTMK			
CF/Price	***	***	***
E/Price			

Multiple Cross-sectional Method

95% Confidence Level

Full							
risk	value	size		risk	growth		R ²
St. Dev.	BKTMK	Size	Price	Beta	S.T. Rev.	Mom	0.08
	CF/P	Size	Price	Beta	S.T. Rev.	Mom	0.08
	E/P	Size	Price	Beta	S.T. Rev.	Mom	0.08
SEE	BKTMK	Size	Price	Beta	S.T. Rev.	Mom	0.08
	CF/P	Size	Price	Beta	S.T. Rev.	Mom	0.08
	E/P	Size	Price	Beta	S.T. Rev.	Mom	0.08
Small							
risk	value	size		risk	growth		R ²
St. Dev.	BKTMK	Size	Price	Beta	S.T. Rev.	Mom	0.07
	CF/P	Size	Price	Beta	S.T. Rev.	Mom	0.07
	E/P	Size	Price	Beta	S.T. Rev.	Mom	0.07
SEE	BKTMK	Size	Price	Beta	S.T. Rev.	Mom	0.07
	CF/P	Size	Price	Beta	S.T. Rev.	Mom	0.07
	E/P	Size	Price	Beta	S.T. Rev.	Mom	0.07
Large							
risk	value	size		risk	growth		R ²
St. Dev.	BKTMK	Size	Price	Beta	S.T. Rev.	Mom	0.1
	CF/P	Size	Price	Beta	S.T. Rev.	Mom	0.1
	E/P	Size	Price	Beta	S.T. Rev.	Mom	0.1
SEE	BKTMK	Size	Price	Beta	S.T. Rev.	Mom	0.1
	CF/P	Size	Price	Beta	S.T. Rev.	Mom	0.1
	E/P	Size	Price	Beta	S.T. Rev.	Mom	0.1

Check this one

Portfolio Method by segmenting data in BSE and NSE

99%, 95% and 90% Confidence Level ***, **, and *

	BSE			NSE	
BSE = 300	ewret	vwret	NSE = 600	ewret	vwret
Size	***	***	Size	**	**
Price			Price		
Beta			Beta		
St. Dev.		**	St. Dev.		
SEE			SEE		
S.T. Rev.	***	**	S.T. Rev.		
Momentum		*	Mom	***	***
BKTMK	***	***	BKTMK	**	
CF/P	***	***	CF/P	***	**
E/P	***	***	E/P		

Conclusions

- A study of Indian Stock market with large number of stocks and with long period data
- We use both portfolio method and regression method
- In Portfolio method use both *ewret* and *vwret*, use Low - High t-test and significance of alpha in CAPM regression.
- In Portfolio method, **Momentum and cash-flow to Price** are predictors in Full, small-cap and large-cap samples.
- In small and full sample: *size, short-term reversal and market to book* are additional predictors.

Conclusions Contd.

- In Regression analysis, for full and small sample size, **momentum and cash-flow to Price**, **short-term reversal and market to book** are significant predictors.
- In Large sample, only **momentum and cash-flow to Price** are the predictors.

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