

ANNEX 1

a) Total Investment

(In Rs '000)

FY	NABIL	NIBL	SCBL	HBL	EBL	All Banks
2005	5,836,068.00	3,862,483.00	11,360,328.00	9,292,103.00	2,535,657.00	32,886,639.00
2006	4,277,953.00	3,934,189.00	9,702,553.00	11,692,342.00	2,128,932.00	31,735,969.00
2007	6,180,658.00	5,602,869.00	12,838,555.00	10,889,031.00	4,201,324.00	39,712,437.00
2008	8,956,309.00	6,505,680.00	13,553,233.00	11,822,985.00	4,985,119.00	45,823,326.00
2009	9,966,562.00	6,879,424.00	13,927,194.00	13,340,177.00	5,061,158.00	49,174,515.00
2010	10,874,806.00	7,403,112.00	20,260,496.00	8,710,691.00	5,950,080.00	53,199,185.00
Total	46,092,356.00	34,187,757.00	81,642,359.00	65,747,329.00	24,862,270.00	252,532,071.00
Average	7,682,059.33	5,697,959.50	13,607,059.83	10,957,888.17	4,143,711.67	42,088,678.50

Source: Annual Report of Commercial Banks

b) Total Deposit

(In Rs '000)

FY	NABIL	NIBL	SCBL	HBL	EBL	All Banks
2005	14,119,032.00	11,524,680.00	21,161,442.00	22,010,333.00	8,063,902.00	76,879,389.00
2006	14,586,609.00	14,254,474.00	19,363,470.00	24,810,012.00	10,097,693.00	83,112,258.00
2007	19,347,399.00	18,927,306.00	23,061,032.00	26,490,852.00	13,802,446.00	101,629,035.00
2008	23,342,285.00	24,488,056.00	24,647,021.00	30,048,418.00	18,186,254.00	120,712,034.00
2009	31,915,047.00	34,451,726.00	29,743,999.00	31,842,789.00	23,976,299.00	151,929,860.00
2010	37,348,256.00	46,698,100.00	35,871,721.00	34,681,345.00	33,322,946.00	187,922,368.00
Total	140,658,628.00	150,344,342.00	153,848,685.00	169,883,749.00	107,449,540.00	722,184,944.00
Average	23,443,104.67	25,057,390.33	25,641,447.50	28,313,958.17	17,908,256.67	120,364,157.33

Source: Annual Report of Commercial Banks

c) Investment on Government Securities

(In Rs '000)

FY	NABIL	NIBL	SCBL	HBL	EBL	All Banks
2005	3,672,626.00	2,001,100.00	7,948,217.00	3,431,728.00	2,466,428.00	19,520,099.00
2006	2,418,432.00	1,948,500.00	7,203,066.00	5,469,729.00	2,100,289.00	19,140,016.00
2007	2,301,464.00	2,522,300.00	8,644,856.00	5,144,313.00	3,322,443.00	21,935,376.00
2008	4,808,348.00	3,256,400.00	7,107,937.00	6,454,873.00	4,704,632.00	26,332,190.00
2009	4,646,883.00	3,155,000.00	8,137,615.00	7,471,668.00	4,821,605.00	28,232,771.00
2010	3,706,103.00	2,531,300.00	9,998,754.00	4,212,300.00	5,146,046.00	25,594,503.00
Total	21,553,856.00	15,414,600.00	49,040,445.00	32,184,611.00	22,561,443.00	140,754,955.00
Average	3,592,309.33	2,569,100.00	8,173,407.50	5,364,101.83	3,760,240.50	23,459,159.17

d) Investment on Share and Debenture

(In Rs '000)

FY	NABIL	NIBL	SCBL	HBL	EBL	All Banks
2005	22,220.00	13,895.00	11,195.00	34,265.00	17,114.00	98,689.00
2006	415,724.00	17,738.00	13,348.00	39,909.00	19,387.00	506,106.00
2007	104,192.00	17,738.00	15,343.00	39,909.00	19,082.00	196,264.00
2008	286,958.00	35,253.00	44,943.00	73,424.00	19,887.00	460,465.00
2009	323,236.00	59,945.00	114,536.00	89,558.00	101,152.00	688,427.00
2010	354,931.00	64,270.00	115,418.00	93,883.00	102,034.00	730,536.00
Total	1,507,261.00	208,839.00	314,783.00	370,948.00	278,656.00	2,680,487.00
Average	251,210.17	34,806.50	52,463.83	61,824.67	46,442.67	446,747.83

e) Investment on Loan and Advances

(In Rs '000)

FY	NABIL	NIBL	SCBL	HBL	EBL	All Banks
2005	8,548,657.00	7,338,566.00	6,693,862.00	12,919,631.00	6,095,841.00	41,596,557.00
2006	10,946,737.00	10,453,164.00	8,420,868.00	13,451,168.00	7,900,015.00	51,171,952.00
2007	13,278,782.00	13,178,152.00	9,206,280.00	15,761,977.00	10,136,254.00	61,561,445.00
2008	15,903,024.00	17,769,100.00	10,790,148.00	17,793,724.00	14,082,686.00	76,338,682.00
2009	21,759,460.00	27,529,305.00	13,963,984.00	20,179,995.00	18,836,432.00	102,269,176.00
2010	27,999,012.00	36,827,157.00	13,880,703.00	25,519,519.00	24,469,556.00	128,695,947.00
Total	98,435,672.00	113,095,444.00	62,955,845.00	105,626,014.00	81,520,784.00	461,633,759.00
Average	16,405,945.33	18,849,240.67	10,492,640.83	17,604,335.67	13,586,797.33	76,938,959.83

f) Total Outside Investment

(In Rs '000)

FY	NABIL	NIBL	SCBL	HBL	EBL	All Banks
2005	12,354,728.00	9,353,561.00	14,653,275.00	16,385,626.00	8,579,384.00	61,326,574.00
2006	13,800,958.00	12,224,482.00	15,637,283.00	18,960,806.00	10,019,767.00	70,643,296.00
2007	15,684,438.00	15,718,190.00	17,851,136.00	20,944,856.00	13,704,758.00	83,903,378.00
2008	20,998,330.00	21,060,753.00	17,838,002.00	24,322,021.00	18,807,205.00	103,026,311.00
2009	26,729,578.00	30,744,250.00	22,216,135.00	27,740,839.00	23,759,189.00	131,189,991.00
2010	32,060,045.00	39,422,728.00	23,994,875.00	29,825,703.00	29,615,601.00	154,918,952.00
Total	121,628,077.00	128,523,964.00	112,190,706.00	138,179,851.00	104,485,904.00	605,008,502.00
Average	20,271,346.17	21,420,660.67	18,698,451.00	23,029,975.17	17,414,317.33	100,834,750.33

Here, total outside investment includes the investments on government securities, loan and advances and share and debentures.

g) Interest on Government Securities

(In Rs '000)

FY	NABIL	NIBL	SCBL	HBL	EBL	All Banks
2005	192,761.00	35,868.00	380,441.00	170,332.00	92,509.00	871,911.00
2006	151,064.00	56,550.00	331,663.00	149,131.00	77,993.00	766,401.00
2007	130,197.00	82,420.00	355,291.00	172,242.00	97,272.00	837,422.00
2008	132,229.00	78,494.00	326,550.00	191,559.00	128,566.00	857,398.00
2009	198,442.00	99,991.00	319,606.00	201,310.00	180,219.00	999,568.00
2010	269,187.00	140,698.00	406,326.00	354,949.00	289,765.00	1,460,925.00
Total	1,073,880.00	494,021.00	2,119,877.00	1,239,523.00	866,324.00	5,793,625.00
Average	178,980.00	82,336.83	353,312.83	206,587.17	144,387.33	965,604.17

h) Interest on Loan and Advances

(In Rs '000)

FY	NABIL	NIBL	SCBL	HBL	EBL	All Banks
2005	761,616.00	663,016.00	558,006.00	970,166.00	563,137.00	3,515,941.00
2006	831,830.00	769,195.00	581,664.00	1,122,392.00	633,625.00	3,938,706.00
2007	988,417.00	964,689.00	596,622.00	1,140,687.00	770,826.00	4,461,241.00
2008	1,167,255.00	1,302,122.00	728,589.00	1,242,850.00	967,178.00	5,407,994.00
2009	1,496,244.00	1,907,261.00	872,690.00	1,444,245.00	1,329,695.00	7,050,135.00
2010	2,182,647.00	2,906,055.00	1,104,047.00	1,861,045.00	1,852,128.00	9,905,922.00
Total	7,428,009.00	8,512,338.00	4,441,618.00	7,781,385.00	6,116,589.00	34,279,939.00
Average	1,238,001.50	1,418,723.00	740,269.67	1,296,897.50	1,019,431.50	5,713,323.17

i) Total Asset

(In Rs '000)

FY	NABIL	NIBL	SCBL	HBL	EBL	All Banks
2005	167,454,886.00	13,463,937.00	23,642,060.00	25,729,787.00	9,608,570.00	239,899,240.00
2006	17,064,082.00	16,390,652.00	21,781,679.00	28,871,343.00	11,792,126.00	95,899,882.00
2007	22,329,971.00	21,732,081.00	25,767,352.00	30,579,808.00	15,959,285.00	116,368,497.00
2008	27,253,393.00	18,073,517.00	28,596,689.00	34,314,868.00	21,432,574.00	129,671,041.00
2009	37,132,759.00	39,405,959.00	33,335,788.00	36,857,624.00	27,149,343.00	173,881,473.00
2010	43,867,398.00	53,596,754.00	40,587,468.00	40,046,686.00	36,916,849.00	215,015,155.00
Total	315,102,489.00	162,662,900.00	173,711,036.00	196,400,116.00	122,858,747.00	970,735,288.00
Average	52,517,081.50	27,110,483.33	28,951,839.33	32,733,352.67	20,476,457.83	161,789,214.67

j) Net Profit

(In Rs '000)

FY	NABIL	NIBL	SCBL	HBL	EBL	All Banks
2005	455,311.00	152,671.00	437,800.00	263,052.00	143,566.00	1,452,400.00
2006	520,114.00	232,147.00	536,245.00	308,277.00	170,810.00	1,767,593.00
2007	639,262.00	350,536.00	658,748.00	457,458.00	237,280.00	2,343,284.00
2008	673,960.00	501,399.00	691,668.00	491,823.00	296,409.00	2,655,259.00
2009	746,468.00	698,673.00	818,921.00	635,869.00	451,219.00	3,351,150.00
2010	1,031,053.00	900,619.00	1,025,116.00	752,835.00	638,733.00	4,348,356.00
Total	4,066,168.00	2,836,045.00	4,168,498.00	2,909,314.00	1,938,017.00	15,918,042.00
Average	677,694.67	472,674.17	694,749.67	484,885.67	323,002.83	2,653,007.00

ANNEX 2

Calculation of Return on Government Securities of NABIL

Here,

$$\sum R_g = 31.44$$

$$\overline{R_g} = \frac{\sum R_g}{n} = \frac{31.44}{6} = 5.24\%$$

Calculation of Return on Government Securities of NIBL

Here,

$$\sum R_g = 19.10$$

$$\overline{R_g} = \frac{\sum R_g}{n} = \frac{19.10}{6} = 3.18\%$$

Calculation of Return on Government Securities of SCBL

Here,

$$\sum R_g = 26.09$$

$$\overline{R_g} = \frac{\sum R_g}{n} = \frac{26.09}{6} = 4.35\%$$

Calculation of Return on Government Securities of HBL

Here,

$$\sum R_g = 25.13$$

$$\overline{R_g} = \frac{\sum R_g}{n} = \frac{25.13}{6} = 4.19\%$$

Calculation of Return on Government Securities of EBL

Here,

$$\sum R_g = 22.49$$

$$\overline{R_g} = \frac{\sum R_g}{n} = \frac{22.49}{6} = 3.75\%$$

Calculation of Return on Government Securities of Banking Industry

Here,

$$\sum R_g = 24.79$$

$$\overline{R_g} = \frac{\sum R_g}{n} = \frac{24.79}{6} = 4.13\%$$

ANNEX 3

Calculation of Return on Loan and Advances of NABIL

Here,

$$\sum R_l = 45.96$$

$$\overline{R}_l = \frac{\sum R_l}{n} = \frac{45.96}{6} = 7.66\%$$

Calculation of Return on Loan and Advances of NIBL

Here,

$$\sum R_l = 45.86$$

$$\overline{R}_l = \frac{\sum R_l}{n} = \frac{45.86}{6} = 7.64\%$$

Calculation of Return on Loan and Advances of SCBL

Here,

$$\sum R_l = 42.68$$

$$\overline{R}_l = \frac{\sum R_l}{n} = \frac{42.68}{6} = 7.11\%$$

Calculation of Return on Loan and Advances of HBL

Here,

$$\sum R_l = 44.52$$

$$\overline{R}_l = \frac{\sum R_l}{n} = \frac{44.52}{6} = 7.42\%$$

Calculation of Return on Loan and Advances of EBL

Here,

$$\sum R_l = 46.36$$

$$\overline{R}_l = \frac{\sum R_l}{n} = \frac{46.36}{6} = 7.73\%$$

Calculation of Return on Loan and Advances of Banking Industry

Here,

$$\sum R_l = 45.07$$

$$\overline{R}_l = \frac{\sum R_l}{n} = \frac{45.07}{6} = 7.51\%$$

ANNEX 4

Calculation of Risk on Government Securities of NABIL

Here, $\sum (R_g - \bar{R}_g)^2 = 12.4180$, $\bar{R}_g = 5.24$

$$\text{Now, } \dagger_g = \sqrt{\frac{\sum (R_g - \bar{R}_g)^2}{n-1}} = \sqrt{\frac{12.4180}{6-1}} = 1.5759$$

Calculation of Risk on Government Securities of NIBL

Here, $\sum (R_g - \bar{R}_g)^2 = 8.2759$, $\bar{R}_g = 3.18$

$$\text{Now, } \dagger_g = \sqrt{\frac{\sum (R_g - \bar{R}_g)^2}{n-1}} = \sqrt{\frac{8.2759}{6-1}} = 1.2865$$

Calculation of Risk on Government Securities of SCBL

Here, $\sum (R_g - \bar{R}_g)^2 = 0.6317$, $\bar{R}_g = 4.35$

$$\text{Now, } \dagger_g = \sqrt{\frac{\sum (R_g - \bar{R}_g)^2}{n-1}} = \sqrt{\frac{0.6317}{6-1}} = 0.3554$$

Calculation of Risk on Government Securities of HBL

Here, $\sum (R_g - \bar{R}_g)^2 = 25.1461$, $\bar{R}_g = 4.19$

$$\text{Now, } \dagger_g = \sqrt{\frac{\sum (R_g - \bar{R}_g)^2}{n-1}} = \sqrt{\frac{25.1461}{6-1}} = 2.2426$$

Calculation of Risk on Government Securities of EBL

Here, $\sum (R_g - \bar{R}_g)^2 = 5.2489$, $\bar{R}_g = 3.75$

$$\text{Now, } \dagger_g = \sqrt{\frac{\sum (R_g - \bar{R}_g)^2}{n-1}} = \sqrt{\frac{5.2489}{6-1}} = 1.0246$$

Calculation of Risk on Government Securities of Banking Industry

Here, $\sum (R_g - \bar{R}_g)^2 = 3.8299$, $\bar{R}_g = 4.13$

$$\text{Now, } \dagger_g = \sqrt{\frac{\sum (R_g - \bar{R}_g)^2}{n-1}} = \sqrt{\frac{3.8299}{6-1}} = 0.8752$$

ANNEX 5

Calculation of Risk on Loan and Advances of NABIL

Here, $\sum (R_i - \bar{R}_i)^2 = 2.3422$, $\bar{R}_i = 7.66$

$$\text{Now, } \dagger_i = \sqrt{\frac{\sum (R_i - \bar{R}_i)^2}{n-1}} = \sqrt{\frac{2.3422}{6-1}} = 0.6844$$

Calculation of Risk on Loan and Advances of NIBL

Here, $\sum (R_i - \bar{R}_i)^2 = 2.7755$, $\bar{R}_i = 7.64$

$$\text{Now, } \dagger_i = \sqrt{\frac{\sum (R_i - \bar{R}_i)^2}{n-1}} = \sqrt{\frac{2.7755}{6-1}} = 0.7451$$

Calculation of Risk on Loan and Advances of SCBL

Here, $\sum (R_i - \bar{R}_i)^2 = 3.5245$, $\bar{R}_i = 7.11$

$$\text{Now, } \dagger_i = \sqrt{\frac{\sum (R_i - \bar{R}_i)^2}{n-1}} = \sqrt{\frac{3.5245}{6-1}} = 0.8396$$

Calculation of Risk on Loan and Advances of HBL

Here, $\sum (R_i - \bar{R}_i)^2 = 1.1650$, $\bar{R}_i = 7.42$

$$\text{Now, } \dagger_i = \sqrt{\frac{\sum (R_i - \bar{R}_i)^2}{n-1}} = \sqrt{\frac{1.1650}{6-1}} = 0.4827$$

Calculation of Risk on Loan and Advances of EBL

Here, $\sum (R_i - \bar{R}_i)^2 = 3.5951$, $\bar{R}_i = 7.73$

$$\text{Now, } \dagger_i = \sqrt{\frac{\sum (R_i - \bar{R}_i)^2}{n-1}} = \sqrt{\frac{3.5951}{6-1}} = 0.8479$$

Calculation of Risk on Loan and Advances of Banking Industry

Here, $\sum (R_i - \bar{R}_i)^2 = 1.5927$, $\bar{R}_i = 7.51$

$$\text{Now, } \dagger_i = \sqrt{\frac{\sum (R_i - \bar{R}_i)^2}{n-1}} = \sqrt{\frac{1.5927}{6-1}} = 0.5644$$

ANNEX 6

(a) Calculation of Market Return on Share and Debenture (In Percentage)

FY	NEPSE Index	Market Return
2005	222.04	8.38
2006	286.87	29.19
2007	386.83	34.84
2008	683.95	76.81
2009	683.90	-0.01
2010	749.10	9.53
Total		158.74

Source: SEBO

NEPSE Index in year 2004 = 204.86

Here $\sum R_s = 158.74$

$$\text{Now, } \bar{R}_s = \frac{\sum R_s}{n} = \frac{158.74}{6} = 26.46$$

(b) Calculation of Market Risk on Share and Debenture

Year	NEPSE Index	Market Return	$(R_s - \bar{R}_s)$	$(R_s - \bar{R}_s)^2$
2005	222.04	8.38	-18.08	326.71
2006	286.87	29.11	2.66	7.05
2007	386.83	34.91	8.45	71.49
2008	683.95	76.81	50.36	2535.63
2009	683.90	-0.01	-26.47	700.40
2010	749.10	9.53	-16.93	286.46
Total	3012.69	158.73	16.93	3927.72
Average		26.46	0.00	
SD (σ)				28.03

Source: SEBO

Here, $\sum (R_s - \bar{R}_s)^2 = 3927.72$

$$\dagger = \sqrt{\frac{\sum (R_s - \bar{R}_s)^2}{n-1}} = \sqrt{\frac{3927.72}{6-1}} = 28.03$$

ANNEX 7

Calculations of Portfolio return on Investment of NABIL

$$\begin{aligned}\text{Portfolio return } (R_p) &= \sum W \times R = \sum W_1R_1 + W_2R_2 + W_3R_3 \\ &= 0.1774 \times 5.24 + 0.8102 \times 7.66 + 0.0124 \times 26.46 = 7.463\end{aligned}$$

Calculations of Portfolio return on Investment of NIBL

$$\begin{aligned}\text{Portfolio return } (R_p) &= \sum W \times R = \sum W_1R_1 + W_2R_2 + W_3R_3 \\ &= 0.1198 \times 3.18 + 0.8786 \times 7.64 + 0.0016 \times 26.46 = 7.136\end{aligned}$$

Calculations of Portfolio return on Investment of SCBL

$$\begin{aligned}\text{Portfolio return } (R_p) &= \sum W \times R = \sum W_1R_1 + W_2R_2 + W_3R_3 \\ &= 0.4366 \times 4.35 + 0.5605 \times 7.11 + 0.0028 \times 26.46 = 5.958\end{aligned}$$

Calculations of Portfolio return on Investment of HBL

$$\begin{aligned}\text{Portfolio return } (R_p) &= \sum W \times R = \sum W_1R_1 + W_2R_2 + W_3R_3 \\ &= 0.2329 \times 4.19 + 0.7644 \times 7.42 + 0.0027 \times 26.46 = 6.72\end{aligned}$$

Calculations of Portfolio return on Investment of EBL

$$\begin{aligned}\text{Portfolio return } (R_p) &= \sum W \times R = \sum W_1R_1 + W_2R_2 + W_3R_3 \\ &= 0.2162 \times 3.75 + 0.7811 \times 7.73 + 0.0027 \times 26.46 = 6.920\end{aligned}$$

Calculations of Portfolio return on Investment of Banking Industry

$$\begin{aligned}\text{Portfolio return } (R_p) &= \sum W \times R = \sum W_1R_1 + W_2R_2 + W_3R_3 \\ &= 0.2326 \times 4.13 + 0.7629 \times 7.51 + 0.0044 \times 26.46 = 6.806\end{aligned}$$

ANNEX 8

(a) Calculation of Correlation Coefficient and Covariance between various Investment Securities of NABIL

Year	Return on Govt. Securities (R _g)	Return on Loan and Advances (R _l)	Return on Share & Debenture (R _s)	R _g x R _l	R _g x R _s	R _l x R _s	(R _g) ²	(R _l) ²	(R _s) ²
2005	5.25	8.91	8.38	46.78	44.00	74.67	27.56	79.39	70.22
2006	6.25	7.60	29.11	47.50	181.94	221.24	39.06	57.76	847.39
2007	5.66	7.44	34.91	42.11	197.59	259.73	32.04	55.35	1218.71
2008	2.75	7.34	76.81	20.19	211.23	563.79	7.56	53.88	5899.78
2009	4.27	6.88	-0.01	29.38	-0.04	-0.07	18.23	47.33	0.00
2010	7.26	7.80	9.53	56.63	69.19	74.33	52.71	60.84	90.82
Total	31.44	45.97	158.73	242.58	703.90	1193.68	177.16	354.55	8126.92

Now,

Correlation Coefficient between R_g & R_l

$$r_{gl} = \frac{n \sum R_g \times R_l - \sum R_g \sum R_l}{\sqrt{n \sum R_g^2 - (\sum R_g)^2} \times \sqrt{n \sum R_l^2 - (\sum R_l)^2}}$$

$$r_{gl} = \frac{6 \times 242.58 - 31.44 \times 45.97}{\sqrt{6 \times 177.16 - (31.44)^2} \times \sqrt{6 \times 354.55 - (45.97)^2}} = 0.3149$$

Correlation Coefficient between R_g & R_s

$$r_{gs} = \frac{n \sum R_g \times R_s - \sum R_g \sum R_s}{\sqrt{n \sum R_g^2 - (\sum R_g)^2} \times \sqrt{n \sum R_s^2 - (\sum R_s)^2}}$$

$$r_{gs} = \frac{6 \times 703.90 - 31.44 \times 158.73}{\sqrt{6 \times 177.16 - (31.44)^2} \times \sqrt{6 \times 8126.92 - (158.73)^2}} = -0.5790$$

Correlation Coefficient between R_l & R_s

$$r_{ls} = \frac{n \sum R_l \times R_s - \sum R_l \sum R_s}{\sqrt{n \sum R_l^2 - (\sum R_l)^2} \times \sqrt{n \sum R_s^2 - (\sum R_s)^2}}$$

$$r_{ls} = \frac{6 \times 1193.68 - 45.97 \times 158.73}{\sqrt{6 \times 354.55 - (45.97)^2} \times \sqrt{6 \times 8126.92 - (158.73)^2}} = -0.2341$$

$$Cov_{gl} = r_{gl} \times \dagger_g \times \dagger_l = 0.3149 \times 1.5759 \times 0.6894 = 0.3421$$

$$Cov_{gs} = r_{gs} \times \dagger_g \times \dagger_s = -0.5790 \times 1.5759 \times 28.03 = -25.58$$

$$Cov_{ls} = r_{ls} \times \dagger_l \times \dagger_s = -0.2341 \times 0.6844 \times 28.03 = -4.490$$

(b) Calculation of Correlation Coefficient and Covariance between various Investment Securities of NIBL

Year	Return on Govt. Securities (R _g)	Return on Loan and Advances (R _l)	Return on Share & Debenture (R _s)	R _g x R _l	R _g x R _s	R _l x R _s	(R _g) ²	(R _l) ²	(R _s) ²
2005	1.79	9.03	8.38	16.16	15.00	75.67	3.20	81.54	70.22
2006	2.90	7.36	29.11	21.34	84.42	214.25	8.41	54.17	847.39
2007	3.27	7.32	34.91	23.94	114.16	255.54	10.69	53.58	1218.71
2008	2.41	7.33	76.81	17.67	185.11	563.02	5.81	53.73	5899.78
2009	3.17	6.93	-0.01	21.97	-0.03	-0.07	10.05	48.02	0.00
2010	5.56	7.89	9.53	43.87	52.99	75.19	30.91	62.25	90.82
Total	19.10	45.86	158.73	144.95	451.64	1183.60	69.08	353.30	8126.92

Now,

Correlation Coefficient between R_g & R_l

$$r_{gl} = \frac{n \sum R_g \times R_l - \sum R_g \sum R_l}{\sqrt{n \sum R_g^2 - (\sum R_g)^2} \times \sqrt{n \sum R_l^2 - (\sum R_l)^2}}$$

$$r_{gl} = \frac{6 \times 144.95 - 19.10 \times 45.86}{\sqrt{6 \times 69.08 - (19.10)^2} \times \sqrt{6 \times 353.30 - (45.86)^2}} = 0.2164$$

Correlation Coefficient between R_g & R_s

$$r_{gs} = \frac{n \sum R_g \times R_s - \sum R_g \sum R_s}{\sqrt{n \sum R_g^2 - (\sum R_g)^2} \times \sqrt{n \sum R_s^2 - (\sum R_s)^2}}$$

$$r_{gs} = \frac{6 \times 451.64 - 19.10 \times 158.73}{\sqrt{6 \times 69.08 - (19.10)^2} \times \sqrt{6 \times 8126.92 - (158.73)^2}} = -0.0297$$

Correlation Coefficient between R_l & R_s

$$r_{ls} = \frac{n \sum R_l \times R_s - \sum R_l \sum R_s}{\sqrt{n \sum R_l^2 - (\sum R_l)^2} \times \sqrt{n \sum R_s^2 - (\sum R_s)^2}}$$

$$r_{ls} = \frac{6 \times 1183.60 - 45.86 \times 158.73}{\sqrt{6 \times 353.30 - (45.86)^2} \times \sqrt{6 \times 8126.92 - (158.73)^2}} = -0.2836$$

$$Cov_{gl} = r_{gl} \times \dagger_g \times \dagger_l = 0.2164 \times 1.2865 \times 0.7451 = 0.2074$$

$$Cov_{gs} = r_{gs} \times \dagger_g \times \dagger_s = -0.0297 \times 1.2865 \times 28.03 = -1.0709$$

$$Cov_{ls} = r_{ls} \times \dagger_l \times \dagger_s = -0.2836 \times 0.7451 \times 28.03 = -5.923$$

(c) Calculation of Correlation Coefficient and Covariance between various Investment Securities of SCBL

Year	Return on Govt. Securities (R _g)	Return on Loan and Advances (R _l)	Return on Share & Debenture (R _s)	R _g x R _l	R _g x R _s	R _l x R _s	(R _g) ²	(R _l) ²	(R _s) ²
2005	4.79	8.34	8.38	39.95	40.14	69.89	22.94	69.56	70.22
2006	4.60	6.91	29.11	31.79	133.91	201.15	21.16	47.75	847.39
2007	4.11	6.48	34.91	26.63	143.48	226.22	16.89	41.99	1218.71
2008	4.59	6.75	76.81	30.98	352.56	518.47	21.07	45.56	5899.78
2009	3.93	6.25	-0.01	24.56	-0.04	-0.06	15.44	39.06	0.00
2010	4.06	7.95	9.53	32.28	38.69	75.76	16.48	63.20	90.82
Total	26.08	42.68	158.73	186.19	708.74	1091.42	113.99	307.12	8126.92

Now,

Correlation Coefficient between R_g & R_l

$$r_{gl} = \frac{n \sum R_g \times R_l - \sum R_g \sum R_l}{\sqrt{n \sum R_g^2 - (\sum R_g)^2} \times \sqrt{n \sum R_l^2 - (\sum R_l)^2}}$$

$$r_{gl} = \frac{6 \times 186.19 - 26.08 \times 42.68}{\sqrt{6 \times 113.99 - (26.08)^2} \times \sqrt{6 \times 307.12 - (42.68)^2}} = 0.4572$$

Correlation Coefficient between R_g & R_s

$$r_{gs} = \frac{n \sum R_g \times R_s - \sum R_g \sum R_s}{\sqrt{n \sum R_g^2 - (\sum R_g)^2} \times \sqrt{n \sum R_s^2 - (\sum R_s)^2}}$$

$$r_{gs} = \frac{6 \times 708.74 - 26.08 \times 158.73}{\sqrt{6 \times 113.99 - (26.08)^2} \times \sqrt{6 \times 8126.92 - (158.73)^2}} = 0.3813$$

Correlation Coefficient between R_l & R_s

$$r_{ls} = \frac{n \sum R_l \times R_s - \sum R_l \sum R_s}{\sqrt{n \sum R_l^2 - (\sum R_l)^2} \times \sqrt{n \sum R_s^2 - (\sum R_s)^2}}$$

$$r_{ls} = \frac{6 \times 1091.42 - 42.68 \times 158.73}{\sqrt{6 \times 307.12 - (42.68)^2} \times \sqrt{6 \times 8126.92 - (158.73)^2}} = -0.3203$$

$$Cov_{gl} = r_{gl} \times \dagger_g \times \dagger_l = 0.4572 \times 0.3554 \times 0.8396 = 0.1364$$

$$Cov_{gs} = r_{gs} \times \dagger_g \times \dagger_s = 0.3813 \times 0.3554 \times 28.03 = 3.798$$

$$Cov_{ls} = r_{ls} \times \dagger_l \times \dagger_s = -0.3203 \times 0.8396 \times 28.03 = -7.538$$

(d) Calculation of Correlation Coefficient and Covariance between various Investment Securities of HBL

Year	Return on Govt. Securities (R _g)	Return on Loan and Advances (R _l)	Return on Share & Debenture (R _s)	R _g x R _l	R _g x R _s	R _l x R _s	(R _g) ²	(R _l) ²	(R _s) ²
2005	4.96	7.51	8.38	37.25	41.56	62.93	24.60	56.40	70.22
2006	2.73	8.34	29.11	22.77	79.47	242.78	7.45	69.56	847.39
2007	3.35	7.24	34.91	24.25	116.95	252.75	11.22	52.42	1218.71
2008	2.97	6.98	76.81	20.73	228.13	536.13	8.82	48.72	5899.78
2009	2.69	7.16	-0.01	19.26	-0.03	-0.07	7.24	51.27	0.00
2010	8.43	7.29	9.53	61.45	80.34	69.47	71.06	53.14	90.82
Total	25.13	44.52	158.73	185.72	546.42	1164.00	130.40	331.50	8126.92

Now,

Correlation Coefficient between R_g & R_l

$$r_{gl} = \frac{n \sum R_g \times R_l - \sum R_g \sum R_l}{\sqrt{n \sum R_g^2 - (\sum R_g)^2} \times \sqrt{n \sum R_l^2 - (\sum R_l)^2}}$$

$$r_{gl} = \frac{6 \times 185.72 - 25.13 \times 44.52}{\sqrt{6 \times 130.40 - (25.13)^2} \times \sqrt{6 \times 331.50 - (44.52)^2}} = -0.1377$$

Correlation Coefficient between R_g & R_s

$$r_{gs} = \frac{n \sum R_g \times R_s - \sum R_g \sum R_s}{\sqrt{n \sum R_g^2 - (\sum R_g)^2} \times \sqrt{n \sum R_s^2 - (\sum R_s)^2}}$$

$$r_{gs} = \frac{6 \times 546.42 - 25.13 \times 158.73}{\sqrt{6 \times 130.40 - (25.13)^2} \times \sqrt{6 \times 8126.92 - (158.73)^2}} = -0.3767$$

Correlation Coefficient between R_l & R_s

$$r_{ls} = \frac{n \sum R_l \times R_s - \sum R_l \sum R_s}{\sqrt{n \sum R_l^2 - (\sum R_l)^2} \times \sqrt{n \sum R_s^2 - (\sum R_s)^2}}$$

$$r_{ls} = \frac{6 \times 1164.00 - 44.52 \times 158.73}{\sqrt{6 \times 331.50 - (44.52)^2} \times \sqrt{6 \times 8126.92 - (158.73)^2}} = -0.2039$$

$$Cov_{gl} = r_{gl} \times \sigma_g \times \sigma_l = -0.1377 \times 2.2426 \times 0.4827 = -0.1491$$

$$Cov_{gs} = r_{gs} \times \sigma_g \times \sigma_s = -0.3767 \times 2.2426 \times 28.03 = -23.679$$

$$Cov_{ls} = r_{ls} \times \sigma_l \times \sigma_s = -0.2039 \times 0.4827 \times 28.03 = -2.7587$$

(e) Calculation of Correlation Coefficient and Covariance between various Investment Securities of EBL

Year	Return on Govt. Securities (Rg)	Return on Loan and Advances (Rl)	Return on Share & Debenture (Rs)	Rg x Rl	Rg x Rs	Rl x Rs	(Rg)2	(Rl)2	(Rs)2
2005	3.75	9.24	8.38	34.65	31.43	77.43	14.06	85.38	70.22
2006	3.71	8.02	29.11	29.75	108.00	233.46	13.76	64.32	847.39
2007	2.93	7.60	34.91	22.27	102.29	265.32	8.58	57.76	1218.71
2008	2.73	6.87	76.81	18.76	209.69	527.68	7.45	47.20	5899.78
2009	3.74	7.06	-0.01	26.40	-0.04	-0.07	13.99	49.84	0.00
2010	5.63	7.57	9.53	42.62	53.65	72.14	31.70	57.30	90.82
Total	22.49	46.36	158.73	174.45	505.02	1175.97	89.55	361.80	8126.92

Now,

Correlation Coefficient between R_g & R_l

$$r_{gl} = \frac{n \sum R_g \times R_l - \sum R_g \sum R_l}{\sqrt{n \sum R_g^2 - (\sum R_g)^2} \times \sqrt{n \sum R_l^2 - (\sum R_l)^2}}$$

$$r_{gl} = \frac{6 \times 174.45 - 22.49 \times 46.36}{\sqrt{6 \times 89.55 - (22.49)^2} \times \sqrt{6 \times 361.80 - (46.36)^2}} = 0.1790$$

Correlation Coefficient between R_g & R_s

$$r_{gs} = \frac{n \sum R_g \times R_s - \sum R_g \sum R_s}{\sqrt{n \sum R_g^2 - (\sum R_g)^2} \times \sqrt{n \sum R_s^2 - (\sum R_s)^2}}$$

$$r_{gs} = \frac{6 \times 505.02 - 22.49 \times 158.73}{\sqrt{6 \times 89.55 - (22.49)^2} \times \sqrt{6 \times 8126.92 - (158.73)^2}} = -0.6265$$

Correlation Coefficient between R_l & R_s

$$r_{ls} = \frac{n \sum R_l \times R_s - \sum R_l \sum R_s}{\sqrt{n \sum R_l^2 - (\sum R_l)^2} \times \sqrt{n \sum R_s^2 - (\sum R_s)^2}}$$

$$r_{ls} = \frac{6 \times 1175.97 - 46.36 \times 158.73}{\sqrt{6 \times 361.80 - (46.36)^2} \times \sqrt{6 \times 8126.92 - (158.73)^2}} = -0.4250$$

$$Cov_{gl} = r_{gl} \times \dagger_g \times \dagger_l = 0.1790 \times 1.0246 \times 0.8479 = 0.1555$$

$$Cov_{gs} = r_{gs} \times \dagger_g \times \dagger_s = -0.6265 \times 1.0246 \times 28.03 = -17.99$$

$$Cov_{ls} = r_{ls} \times \dagger_l \times \dagger_s = -0.4250 \times 0.8479 \times 28.03 = -10.10$$

(f) Calculation of Correlation Coefficient and Covariance between various Investment Securities of Banking Industry

Year	Return on Govt. Securities (R _g)	Return on Loan and Advances (R _l)	Return on Share & Debenture (R _s)	R _g x R _l	R _g x R _s	R _l x R _s	(R _g) ²	(R _l) ²	(R _s) ²
2005	4.47	8.45	8.38	37.77	37.46	70.81	19.98	71.40	70.22
2006	4.00	7.70	29.11	30.80	116.44	224.15	16.00	59.29	847.39
2007	3.82	7.25	34.91	27.70	133.36	253.10	14.59	52.56	1218.71
2008	3.26	7.08	76.81	23.08	250.40	543.81	10.63	50.13	5899.78
2009	3.54	6.89	-0.01	24.39	-0.04	-0.07	12.53	47.47	0.00
2010	5.71	7.70	9.53	43.97	54.42	73.38	32.60	59.29	90.82
Total	24.80	45.07	158.73	187.70	592.04	1165.18	106.34	340.14	8126.92

Now,

Correlation Coefficient between R_g & R_l

$$r_{gl} = \frac{n \sum R_g \times R_l - \sum R_g \sum R_l}{\sqrt{n \sum R_g^2 - (\sum R_g)^2} \times \sqrt{n \sum R_l^2 - (\sum R_l)^2}}$$

$$r_{gl} = \frac{6 \times 187.70 - 24.80 \times 45.07}{\sqrt{6 \times 106.34 - (24.80)^2} \times \sqrt{6 \times 340.14 - (45.07)^2}} = 0.5719$$

Correlation Coefficient between R_g & R_s

$$r_{gs} = \frac{n \sum R_g \times R_s - \sum R_g \sum R_s}{\sqrt{n \sum R_g^2 - (\sum R_g)^2} \times \sqrt{n \sum R_s^2 - (\sum R_s)^2}}$$

$$r_{gs} = \frac{6 \times 592.04 - 24.80 \times 158.73}{\sqrt{6 \times 106.34 - (24.80)^2} \times \sqrt{6 \times 8126.92 - (158.73)^2}} = -0.5219$$

Correlation Coefficient between R_l & R_s

$$r_{ls} = \frac{n \sum R_l \times R_s - \sum R_l \sum R_s}{\sqrt{n \sum R_l^2 - (\sum R_l)^2} \times \sqrt{n \sum R_s^2 - (\sum R_s)^2}}$$

$$r_{ls} = \frac{6 \times 1165.18 - 45.07 \times 158.73}{\sqrt{6 \times 340.14 - (45.07)^2} \times \sqrt{6 \times 8126.92 - (158.73)^2}} = -0.3435$$

$$Cov_{gl} = r_{gl} \times \dagger_g \times \dagger_l = 0.5719 \times 0.8752 \times 0.5644 = 0.2825$$

$$Cov_{gs} = r_{gs} \times \dagger_g \times \dagger_s = -0.5219 \times 0.8752 \times 28.03 = -12.80$$

$$Cov_{ls} = r_{ls} \times \dagger_l \times \dagger_s = -0.3435 \times 0.5644 \times 28.03 = -5.466$$

ANNEX 9

Calculation of Standard Deviation of Portfolio Investment of NABIL

$$\begin{aligned}\sigma_p &= \sqrt{W_g^2 \sigma_g^2 + W_l^2 \sigma_l^2 + W_s^2 \sigma_s^2 + 2W_g W_l Cov_{gl} + 2W_g W_s Cov_{gs} + 2W_l W_s Cov_{ls}} \\ \sigma_p &= \sqrt{(0.1774)^2 \times (1.5759)^2 + (0.8102)^2 \times (0.6844)^2 + (0.0124)^2 \times (28.03)^2 \\ &\quad + 2 \times 0.1774 \times 0.8102 \times 0.3421 + 2 \times 0.8102 \times 0.0124 \times (-25.11) + 2 \times 0.8102 \times 0.0124 \times (-4.4108)} = 0.1077\end{aligned}$$

Calculation of Standard Deviation of Portfolio Investment of NIBL

$$\begin{aligned}\sigma_p &= \sqrt{W_g^2 \sigma_g^2 + W_l^2 \sigma_l^2 + W_s^2 \sigma_s^2 + 2W_g W_l Cov_{gl} + 2W_g W_s Cov_{gs} + 2W_l W_s Cov_{ls}} \\ \sigma_p &= \sqrt{(0.1198)^2 \times (1.2865)^2 + (0.8786)^2 \times (0.7451)^2 + (0.0016)^2 \times (28.03)^2 \\ &\quad + 2 \times 0.1198 \times 0.8786 \times 0.2074 + 2 \times 0.1198 \times 0.0016 \times (-1.0518) + 2 \times 0.8786 \times 0.0016 \times (-5.817)} = 0.6937\end{aligned}$$

Calculation of Standard Deviation of Portfolio Investment of SCBL

$$\begin{aligned}\sigma_p &= \sqrt{W_g^2 \sigma_g^2 + W_l^2 \sigma_l^2 + W_s^2 \sigma_s^2 + 2W_g W_l Cov_{gl} + 2W_g W_s Cov_{gs} + 2W_l W_s Cov_{ls}} \\ \sigma_p &= \sqrt{(0.4366)^2 \times (0.3554)^2 + (0.5605)^2 \times (0.8396)^2 + (0.0028)^2 \times (28.03)^2 \\ &\quad + 2 \times 0.4366 \times 0.5605 \times 0.1364 + 2 \times 0.4366 \times 0.0028 \times (3.7307) + 2 \times 0.5605 \times 0.0028 \times (-7.4034)} = 0.5516\end{aligned}$$

Calculation of Standard Deviation of Portfolio Investment of HBL

$$\begin{aligned}\sigma_p &= \sqrt{W_g^2 \sigma_g^2 + W_l^2 \sigma_l^2 + W_s^2 \sigma_s^2 + 2W_g W_l Cov_{gl} + 2W_g W_s Cov_{gs} + 2W_l W_s Cov_{ls}} \\ \sigma_p &= \sqrt{(0.2329)^2 \times (2.2426)^2 + (0.7644)^2 \times (0.4827)^2 + (0.0027)^2 \times (28.03)^2 \\ &\quad + 2 \times 0.2329 \times 0.7644 \times (-0.1491) + 2 \times 0.2329 \times 0.0027 \times (-23.256) + 2 \times 0.7644 \times 0.0027 \times (-2.7095)} = 0.5667\end{aligned}$$

Calculation of Standard Deviation of Portfolio Investment of EBL

$$\begin{aligned}\sigma_p &= \sqrt{W_g^2 \sigma_g^2 + W_l^2 \sigma_l^2 + W_s^2 \sigma_s^2 + 2W_g W_l Cov_{gl} + 2W_g W_s Cov_{gs} + 2W_l W_s Cov_{ls}} \\ \sigma_p &= \sqrt{(0.2162)^2 \times (1.0246)^2 + (0.7811)^2 \times (0.8479)^2 + (0.0027)^2 \times (28.03)^2 \\ &\quad + 2 \times 0.2162 \times 0.7811 \times (0.1555) + 2 \times 0.2162 \times 0.0027 \times (-17.67) + 2 \times 0.7811 \times 0.0027 \times (-9.9206)} = 0.7531\end{aligned}$$

Calculation of Standard Deviation of Portfolio Investment of Banking Industry

$$\begin{aligned}\sigma_p &= \sqrt{W_g^2 \sigma_g^2 + W_l^2 \sigma_l^2 + W_s^2 \sigma_s^2 + 2W_g W_l Cov_{gl} + 2W_g W_s Cov_{gs} + 2W_l W_s Cov_{ls}} \\ \sigma_p &= \sqrt{(0.2326)^2 \times (0.8752)^2 + (0.7629)^2 \times (0.5644)^2 + (0.0044)^2 \times (28.03)^2 \\ &\quad + 2 \times 0.2326 \times 0.7629 \times 0.2825 + 2 \times 0.2326 \times 0.0044 \times (-12.574) + 2 \times 0.7629 \times 0.0044 \times (-5.3372)} = 0.5298\end{aligned}$$

ANNEX 10

Calculation of Mean, S.D, C.V of Total Investment to Total Deposit Ratio Total Investment to Total Deposit Ratio of NABIL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2005	41.33	7.78	60.45
2006	29.33	-4.23	17.85
2007	31.95	-1.61	2.58
2008	38.37	4.82	23.18
2009	31.23	-2.33	5.41
2010	29.12	-4.44	19.67
Total	201.33	0.00	129.14
Mean	33.56		

Source: Annual Reports of NABIL

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (x - \bar{x})^2}{n}} = 5.08$$

$$\text{Coefficient of Variance (C.V)} = \frac{\dagger}{x} \times 100 = \frac{5.08}{33.56} \times 100 = 15.00$$

Total Investment to Total Deposit Ratio of NIBL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2005	33.51	7.99	63.89
2006	27.60	2.08	4.34
2007	29.60	4.08	16.67
2008	26.57	1.05	1.11
2009	19.97	-5.55	30.77
2010	15.85	-9.67	93.44
Total	153.10	0.00	210.23
Mean	25.52		

Source: Annual Reports of NIBL

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (x - \bar{x})^2}{n}} = 6.48$$

$$\text{Coefficient of Variance (C.V)} = \frac{\dagger}{x} \times 100 = \frac{6.48}{25.52} \times 100 = 25.40$$

Total Investment to Total Deposit Ratio of SCBL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2005	53.68	0.72	0.52
2006	50.11	-2.85	8.11
2007	55.67	2.71	7.35
2008	54.99	2.03	4.13
2009	46.82	-6.14	37.68
2010	56.48	3.52	12.40
Total	317.75	0.00	70.20
Mean	52.96		

Source: Annual Reports of SCBL

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (x - \bar{x})^2}{n}} = 3.75$$

$$\text{Coefficient of Variance (C.V)} = \frac{\dagger}{x} \times 100 = \frac{3.75}{52.96} \times 100 = 7.08$$

Total Investment to Total Deposit Ratio of HBL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2005	42.22	2.75	7.57
2006	47.13	7.66	58.70
2007	41.10	1.63	2.66
2008	39.35	-0.12	0.01
2009	41.89	2.42	5.86
2010	25.12	-14.35	205.87
Total	236.81	0.00	280.69
Mean	39.47		

Source: Annual Reports of HBL

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (x - \bar{x})^2}{n}} = 7.49$$

$$\text{Coefficient of Variance (C.V)} = \frac{\dagger}{x} \times 100 = \frac{7.49}{39.47} \times 100 = 18.98$$

Total Investment to Total Deposit Ratio of EBL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2005	31.44	6.55	42.90
2006	21.08	-3.81	14.52
2007	30.44	5.55	30.80
2008	27.41	2.52	6.35
2009	21.11	-3.78	14.29
2010	17.86	-7.03	49.42
Total	149.34	0.00	158.28
Mean	24.89		

Source: Annual Reports of EBL

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (x - \bar{x})^2}{n}} = 5.63$$

$$\text{Coefficient of Variance (C.V)} = \frac{\dagger}{\bar{x}} \times 100 = \frac{5.63}{24.89} \times 100 = 22.65$$

Total Investment to Total Deposit Ratio of Banking Industry (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2005	42.78	6.34	40.15
2006	38.18	1.74	3.02
2007	39.08	2.64	6.95
2008	37.96	1.52	2.30
2009	32.35	-4.09	16.76
2010	28.31	-8.13	66.15
Total	218.66	0.00	135.33
Mean	36.44		

Source: Annual Reports of Commercial Banks

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (x - \bar{x})^2}{n}} = 5.20$$

$$\text{Coefficient of Variance (C.V)} = \frac{\dagger}{\bar{x}} \times 100 = \frac{5.20}{36.44} \times 100 = 14.27$$

ANNEX 11

Calculation of Mean, S.D, C.V of Investment on Government Securities to Total Outside Investment Ratio

Investment on Government Securities to Total outside Investment Ratio of NABIL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2005	29.73	10.77	115.99
2006	17.52	-1.44	2.07
2007	14.67	-4.29	18.40
2008	22.90	3.94	15.52
2009	17.38	-1.58	2.50
2010	11.56	-7.40	54.76
Total	113.76	0.00	209.25
Mean	18.96		

Source: Annual Report of NABIL

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}} = 6.47$$

$$\text{Coefficient of Variation (C.V)} = \frac{\dagger}{\bar{x}} \times 100 = \frac{6.47}{18.96} \times 100 = 34.12$$

Investment on Government Securities to Total outside Investment Ratio of NIBL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2005	21.39	7.14	50.93
2006	15.94	1.69	2.84
2007	16.05	1.80	3.23
2008	15.46	1.21	1.46
2009	10.26	-3.99	15.95
2010	6.42	-7.83	61.36
Total	85.52	0.00	135.77
Mean	14.25		

Source: Annual Report of NIBL

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}} = 5.21$$

$$\text{Coefficient of Variation (C.V)} = \frac{\dagger}{\bar{x}} \times 100 = \frac{5.21}{14.25} \times 100 = 36.55$$

Investment on Government Securities to Total outside Investment Ratio of SCBL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2005	54.24	9.76	95.26
2006	46.06	1.58	2.50
2007	48.43	3.95	15.60
2008	39.85	-4.63	21.44
2009	36.63	-7.85	61.62
2010	41.67	-2.81	7.90
Total	266.88	0.00	204.31
Mean	44.48		

Source: Annual Report of SCBL

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}} = 6.39$$

$$\text{Coefficient of Variation (C.V)} = \frac{\dagger}{x} \times 100 = \frac{6.39}{44.48} \times 100 = 14.37$$

Investment on Government Securities to Total outside Investment Ratio of HBL

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2005	20.94	-2.72	7.38
2006	28.85	5.19	26.97
2007	24.56	0.90	0.82
2008	26.54	2.88	8.31
2009	26.93	3.27	10.71
2010	14.12	-9.54	90.95
Total	141.94	0.00	145.14
Mean	23.66		

Source: Annual Report of HBL

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}} = 5.39$$

$$\text{Coefficient of Variation (C.V)} = \frac{\dagger}{x} \times 100 = \frac{5.39}{23.66} \times 100 = 22.78$$

Investment on Government Securities to Total outside Investment Ratio of EBL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2005	28.75	5.98	35.72
2006	20.96	-1.81	3.29
2007	24.24	1.47	2.15
2008	25.02	2.25	5.05
2009	20.29	-2.48	6.17
2010	17.38	-5.39	29.09
Total	136.64	0.00	81.46
Mean	22.77		

Source: Annual Report of EBL

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}} = 4.04$$

$$\text{Coefficient of Variation (C.V)} = \frac{\dagger}{x} \times 100 = \frac{4.04}{22.77} \times 100 = 17.72$$

Investment on Government Securities to Total outside Investment Ratio of Banking Industry (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2005	31.83	7.05	49.75
2006	27.09	2.31	5.35
2007	26.14	1.36	1.86
2008	25.56	0.78	0.61
2009	21.52	-3.26	10.61
2010	16.52	-8.26	68.17
Total	148.66	8.26	136.35
Mean	24.78		

Source:

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}} = 5.22$$

$$\text{Coefficient of Variation (C.V)} = \frac{\dagger}{x} \times 100 = \frac{5.22}{24.78} \times 100 = 21.07$$

ANNEX 12

Calculation of Mean, S.D, C.V of Investment on Loan and Advances to Total Outside Investment Ratio

Investment on Loan and Advances to Total outside Investment Ratio of NABIL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2005	69.19	-10.42	108.51
2006	79.32	-0.29	0.08
2007	84.66	5.05	25.54
2008	75.73	-3.88	15.03
2009	81.41	1.80	3.25
2010	87.33	7.72	59.65
Total	477.64	0.00	212.06
Mean	79.61		

Source: Annual Reports of NABIL

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}} = 6.51$$

$$\text{Coefficient of Variation (C.V)} = \frac{\dagger}{x} \times 100 = \frac{6.51}{79.61} \times 100 = 8.18$$

Investment on Loan and Advances to Total outside Investment Ratio of NIBL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2005	78.46	-7.40	54.71
2006	85.51	-0.35	0.12
2007	83.84	-2.02	4.07
2008	84.37	-1.49	2.21
2009	89.54	3.68	13.57
2010	93.42	7.56	57.20
Total	515.14	0.00	131.88
Mean	85.86		

Source: Annual Reports of NIBL

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}} = 5.14$$

$$\text{Coefficient of Variation (C.V)} = \frac{\dagger}{x} \times 100 = \frac{5.14}{85.86} \times 100 = 5.98$$

Investment on Loan and Advances to Total outside Investment Ratio of SCBL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2005	45.68	-9.70	94.15
2006	53.85	-1.53	2.35
2007	51.57	-3.81	14.54
2008	60.49	5.11	26.08
2009	62.86	7.48	55.90
2010	57.85	2.47	6.08
Total	332.30	0.00	199.11
Mean	55.38		

Source: Annual Reports of SCBL

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}} = 6.31$$

$$\text{Coefficient of Variation (C.V)} = \frac{\dagger}{x} \times 100 = \frac{6.31}{55.38} \times 100 = 11.34$$

Investment on Loan and Advances to Total outside Investment Ratio of HBL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2005	78.85	2.77	7.65
2006	70.94	-5.14	26.45
2007	75.25	-0.83	0.69
2008	73.16	-2.92	8.55
2009	72.74	-3.34	11.18
2010	85.56	9.48	89.81
Total	456.50	0.00	144.33
Mean	76.08		

Source: Annual Reports of HBL

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}} = 5.37$$

$$\text{Coefficient of Variation (C.V)} = \frac{\dagger}{x} \times 100 = \frac{5.37}{76.08} \times 100 = 7.06$$

Investment on Loan and Advances to Total outside Investment Ratio of EBL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2005	71.05	-5.72	32.74
2006	78.84	2.07	4.28
2007	73.96	-2.81	7.91
2008	74.88	-1.89	3.58
2009	79.28	2.51	6.29
2010	82.62	5.85	34.20
Total	460.63	0.00	88.99
Mean	76.77		

Source: Annual Reports of EBL

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}} = 4.22$$

$$\text{Coefficient of Variation (C.V)} = \frac{\dagger}{x} \times 100 = \frac{4.22}{76.77} \times 100 = 5.50$$

Investment on Loan and Advances to Total outside Investment Ratio of Banking Industry (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2005	67.83	-6.97	48.51
2006	72.44	-2.36	5.55
2007	73.37	-1.43	2.03
2008	74.10	-0.70	0.48
2009	77.96	3.16	10.02
2010	83.07	8.27	68.48
Total	448.77	-8.28	135.06
Mean	74.80		

Source: Annual Reports

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}} = 5.19$$

$$\text{Coefficient of Variation (C.V)} = \frac{\dagger}{x} \times 100 = \frac{5.19}{74.80} \times 100 = 6.94$$

ANNEX 13

Calculation of Mean, S.D, C.V of Investment on Share and Debenture to Total Outside Investment Ratio

Investment on Share and Debenture to Total outside Investment Ratio of NABIL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2005	0.18	-1.08	1.1592
2006	3.01	1.75	3.0742
2007	0.66	-0.60	0.3560
2008	1.37	0.11	0.0128
2009	1.21	-0.05	0.0022
2010	1.11	-0.15	0.0215
Total	7.54	0.00	4.6259
Mean	1.26		

Source: Annual Reports of NABIL

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}} = 0.96$$

$$\text{Coefficient of Variation (C.V)} = \frac{\dagger}{x} \times 100 = \frac{0.96}{1.26} \times 100 = 76.34$$

Investment on Share and Debenture to Total outside Investment Ratio of NIBL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2005	0.15	-0.01	0.0000
2006	0.15	-0.01	0.0000
2007	0.11	-0.05	0.0020
2008	0.17	0.02	0.0002
2009	0.19	0.04	0.0012
2010	0.16	0.01	0.0000
Total	0.93	0.00	0.0036
Mean	0.16		

Source: Annual Reports of NIBL

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}} = 0.03$$

$$\text{Coefficient of Variation (C.V)} = \frac{\dagger}{x} \times 100 = \frac{0.03}{0.16} \times 100 = 16.77$$

Investment on Share and Debenture to Total outside Investment Ratio of SCBL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2005	0.08	-0.17	0.0295
2006	0.09	-0.16	0.0261
2007	0.09	-0.16	0.0261
2008	0.25	0.00	0.0000
2009	0.52	0.27	0.0720
2010	0.48	0.23	0.0521
Total	1.51	0.00	0.2059
Mean	0.25		

Source: Annual Reports of SCBL

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}} = 0.20$$

$$\text{Coefficient of Variation (C.V)} = \frac{\dagger}{x} \times 100 = \frac{0.20}{0.25} \times 100 = 81.17$$

Investment on Share and Debenture to Total outside Investment Ratio of HBL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2005	0.21	-0.05	0.0022
2006	0.21	-0.05	0.0022
2007	0.19	-0.07	0.0044
2008	0.30	0.04	0.0019
2009	0.32	0.06	0.0040
2010	0.31	0.05	0.0028
Total	1.54	0.00	0.0175
Mean	0.26		

Source: Annual Reports of HBL

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}} = 0.06$$

$$\text{Coefficient of Variation (C.V)} = \frac{\dagger}{x} \times 100 = \frac{0.06}{0.26} \times 100 = 22.75$$

Investment on Share and Debenture to Total outside Investment Ratio of EBL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2005	0.20	-0.04	0.0012
2006	0.19	-0.05	0.0020
2007	0.14	-0.10	0.0090
2008	0.11	-0.23	0.0529
2009	0.43	0.20	0.0380
2010	0.34	0.34	0.1156
Total	1.41	0.13	0.2188
Mean	0.24		

Source: Annual Reports of EBL

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}} = 0.21$$

$$\text{Coefficient of Variation (C.V)} = \frac{\dagger}{x} \times 100 = \frac{0.21}{0.24} \times 100 = 87.16$$

Investment on Share and Debenture to Total outside Investment Ratio of Banking Industry (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2005	0.16	-0.27	0.0702
2006	0.72	0.30	0.0870
2007	0.23	-0.20	0.0380
2008	0.45	0.03	0.0006
2009	0.52	0.10	0.0090
2010	0.47	0.05	0.0020
Total	2.55	0.00	0.2070
Mean	0.43		

Source: Annual Reports

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}} = 0.20$$

$$\text{Coefficient of Variation (C.V)} = \frac{\dagger}{x} \times 100 = \frac{0.20}{0.43} \times 100 = 47.32$$

ANNEX 14

Calculation of Mean, S.D, C.V of Return on Total Asset Return on Total Asset of NABIL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2005	0.27	-1.90	3.6037
2006	3.05	0.88	0.7773
2007	2.86	0.69	0.4784
2008	2.47	0.30	0.0910
2009	2.01	-0.16	0.0251
2010	2.35	0.18	0.0330
Total	13.01	0.00	5.0085
Mean	2.17		

Source: Annual Report of NABIL

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (x - \bar{x})^2}{n-1}} = 1.00$$

$$\text{Coefficient of Variance (C.V)} = \frac{\dagger}{x} \times 100 = \frac{1.00}{2.17} \times 100 = 46.12$$

Return on Total Asset of NIBL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2005	1.13	-0.60	0.3600
2006	1.42	-0.31	0.0961
2007	1.61	-0.12	0.0144
2008	2.77	1.04	1.0816
2009	1.77	0.04	0.0016
2010	1.68	-0.05	0.0025
Total	10.38	0.00	1.5562
Mean	1.73		

Source: Annual Report of NIBL

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (x - \bar{x})^2}{n-1}} = 0.56$$

$$\text{Coefficient of Variance (C.V)} = \frac{\dagger}{x} \times 100 = \frac{0.56}{1.73} \times 100 = 32.24$$

Return on Total Asset of SCBL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2005	1.85	-0.53	0.2809
2006	2.46	0.08	0.0064
2007	2.56	0.18	0.0324
2008	2.42	0.04	0.0016
2009	2.46	0.08	0.0064
2010	2.53	0.15	0.0225
Total	14.28	0.00	0.3502
Mean	2.38		

Source: Annual Report of SCBL

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}} = 0.26$$

$$\text{Coefficient of Variance (C.V)} = \frac{\dagger}{\bar{x}} \times 100 = \frac{0.26}{2.38} \times 100 = 11.12$$

Return on Total Asset of HBL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2005	1.02	-0.42	0.1750
2006	1.07	-0.37	0.1357
2007	1.50	0.06	0.0038
2008	1.43	-0.01	0.0001
2009	1.73	0.29	0.0851
2010	1.88	0.44	0.1951
Total	8.63	0.00	0.5947
Mean	1.44		

Source: Annual Report of HBL

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}} = 0.34$$

$$\text{Coefficient of Variance (C.V)} = \frac{\dagger}{\bar{x}} \times 100 = \frac{0.34}{1.44} \times 100 = 23.98$$

Return on Total Asset of EBL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2005	1.49	-0.04	0.0019
2006	1.45	-0.08	0.0069
2007	1.49	-0.04	0.0019
2008	1.38	-0.15	0.0235
2009	1.66	0.13	0.0160
2010	1.73	0.20	0.0387
Total	9.20	0.00	0.0889
Mean	1.53		

Source: Annual Report of EBL

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}} = 0.13$$

$$\text{Coefficient of Variance (C.V)} = \frac{\dagger}{x} \times 100 = \frac{0.13}{1.53} \times 100 = 8.72$$

Return on Total Asset of Banking Industry (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2005	0.61	-1.13	1.2844
2006	1.84	0.10	0.0093
2007	2.01	0.27	0.0711
2008	2.05	0.31	0.0940
2009	1.93	0.19	0.0348
2010	2.02	0.28	0.0765
Total	10.46	0.00	1.5703
Mean	1.74		

Source: Annual Report of Sample Banks

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}} = 0.56$$

$$\text{Coefficient of Variance (C.V)} = \frac{\dagger}{x} \times 100 = \frac{0.56}{1.74} \times 100 = 32.21$$

ANNEX 15

Sample calculation of “Straight Line Trend”

Let the straight line trend between the dependent variable (Total investment) y and the independent variable x (time) to be

$$Y = a + bx$$

Thus to find the value of a and b

$$a = \frac{\sum y}{n}, \text{ and } b = \frac{\sum xy}{\sum x^2} \text{ it is only when } \sum x = 0$$

Let Fiscal year 2004/2005 be equal to 2005, FY 2005/2006 be equal to 2006 and so on. Here deviations are considered from the middle of years.

(a) Trend Analysis of Investment on Government Securities of NABIL

Year	Investment on Govt. Securities (y)	x=(t-2006.5)	xy	x ²
2005	3,672,626.00	-2.50	-9,181,565.00	6.25
2006	2,418,432.00	-1.50	-3,627,648.00	2.25
2007	2,301,464.00	-0.50	-1,150,732.00	0.25
2008	4,808,348.00	0.50	2,404,174.00	0.25
2009	4,646,883.00	1.50	6,970,324.50	2.25
2010	3,706,103.00	2.50	9,265,257.50	6.25
Total	21,553,856.00	0.00	4,679,811.00	17.50

Since $\sum x = 0$,

$$a = \frac{\sum y}{n} = \frac{21553856.00}{6} = 3592309.33, \quad b = \frac{\sum xy}{\sum x^2} = \frac{4679811.00}{17.50} = 267417.77$$

The straight line trend of government securities of NABIL is

$$Y_g = a + bx = 3592309.33 + 267417.77x$$

(b) Trend Analysis of Investment on Government Securities of NIBL

Year	Investment on Govt. Securities (y)	x=(t-2006.5)	xy	x ²
2005	2,001,100.00	-2.50	-5,002,750.00	6.25
2006	1,948,500.00	-1.50	-2,922,750.00	2.25
2007	2,522,300.00	-0.50	-1,261,150.00	0.25
2008	3,256,400.00	0.50	1,628,200.00	0.25
2009	3,155,000.00	1.50	4,732,500.00	2.25
2010	2,531,300.00	2.50	6,328,250.00	6.25
Total	15,414,600.00	0.00	3,502,300.00	17.50

Since $\sum x = 0$,

$$a = \frac{\sum y}{n} = \frac{15414600.00}{6} = 2569100.00, b = \frac{\sum xy}{\sum x^2} = \frac{3502300.00}{17.50} = 200131.43$$

The straight line trend of government securities of NIBL is

$$Y_g = a + bx = 2569100.00 + 200131.43x$$

(c) Trend Analysis of Investment on Government Securities of SCBL

Year	Investment on Govt. Securities (y)	x=(t-2006.5)	xy	x ²
2005	7,948,217.00	-2.50	-19,870,542.50	6.25
2006	7,203,066.00	-1.50	-10,804,599.00	2.25
2007	8,644,856.00	-0.50	-4,322,428.00	0.25
2008	7,107,937.00	0.50	3,553,968.50	0.25
2009	8,137,615.00	1.50	12,206,422.50	2.25
2010	9,998,754.00	2.50	24,996,885.00	6.25
Total	49,040,445.00	0.00	5,759,706.50	17.50

Since $\sum x = 0$,

$$a = \frac{\sum y}{n} = \frac{49040445.00}{6} = 8173407.50, b = \frac{\sum xy}{\sum x^2} = \frac{5759706.50}{17.50} = 329126.09$$

The straight line trend of government securities of SCBL is

$$Y_g = a + bx = 8173407.50 + 329126.09x$$

(d) Trend Analysis of Investment on Government Securities of HBL

Year	Investment on Govt. Securities (y)	x=(t-2006.5)	xy	x ²
2005	3,431,728.00	-2.50	-8,579,320.00	6.25
2006	5,469,729.00	-1.50	-8,204,593.50	2.25
2007	5,144,313.00	-0.50	-2,572,156.50	0.25
2008	6,454,873.00	0.50	3,227,436.50	0.25
2009	7,471,668.00	1.50	11,207,502.00	2.25
2010	4,212,300.00	2.50	10,530,750.00	6.25
Total	32,184,611.00	0.00	5,609,618.50	17.50

Since $\sum x = 0$,

$$a = \frac{\sum y}{n} = \frac{32184611.00}{6} = 5364101.83, b = \frac{\sum xy}{\sum x^2} = \frac{5609618.50}{17.50} = 320549.63$$

The straight line trend of government securities of HBL is

$$Y_g = a + bx = 5364101.83 + 320549.63x$$

(e) Trend Analysis of Investment on Government Securities of EBL

Year	Investment on Govt. Securities (y)	x=(t-2006.5)	xy	x ²
2005	2,466,428.00	-2.50	-6,166,070.00	6.25
2006	2,100,289.00	-1.50	-3,150,433.50	2.25
2007	3,322,443.00	-0.50	-1,661,221.50	0.25
2008	4,704,632.00	0.50	2,352,316.00	0.25
2009	4,821,605.00	1.50	7,232,407.50	2.25
2010	5,146,046.00	2.50	12,865,115.00	6.25
Total	22,561,443.00	0.00	11,472,113.50	17.50

Since $\sum x = 0$,

$$a = \frac{\sum y}{n} = \frac{22561443.00}{6} = 3760240.50, \quad b = \frac{\sum xy}{\sum x^2} = \frac{11472113.50}{17.50} = 655549.34$$

The straight line trend of government securities of EBL is

$$Y_g = a + bx = 3760240.50 + 655549.34x$$

(f) Trend Analysis of Investment on Loan and Advances of NABIL

Year	Investment on Loan and Advances (y)	x=(t-2006.5)	xy	x ²
2005	8,548,657.00	-2.50	-21,371,642.50	6.25
2006	10,946,737.00	-1.50	-16,420,105.50	2.25
2007	13,278,782.00	-0.50	-6,639,391.00	0.25
2008	15,903,024.00	0.50	7,951,512.00	0.25
2009	21,759,460.00	1.50	32,639,190.00	2.25
2010	27,999,012.00	2.50	69,997,530.00	6.25
Total	98,435,672.00	0.00	66,157,093.00	17.50

Since $\sum x = 0$,

$$a = \frac{\sum y}{n} = \frac{98435672.00}{6} = 16405945.33, \quad b = \frac{\sum xy}{\sum x^2} = \frac{66157093.00}{17.50} = 3780405.31$$

The straight line trend of loan and advances of NABIL is

$$Y_l = a + bx = 16405945.33 + 3780405.31x$$

(g) Trend Analysis of Investment on Loan and Advances of NIBL

Year	Investment on Loan and Advances (y)	x=(t-2006.5)	xy	x ²
2005	7,338,566.00	-2.50	-18,346,415.00	6.25
2006	10,453,164.00	-1.50	-15,679,746.00	2.25
2007	13,178,152.00	-0.50	-6,589,076.00	0.25
2008	17,769,100.00	0.50	8,884,550.00	0.25
2009	27,529,305.00	1.50	41,293,957.50	2.25
2010	36,827,157.00	2.50	92,067,892.50	6.25
Total	113,095,444.00	0.00	101,631,163.00	17.50

Since $\sum x = 0$,

$$a = \frac{\sum y}{n} = \frac{113095444.00}{6} = 18849240.67, \quad b = \frac{\sum xy}{\sum x^2} = \frac{101631163.00}{17.50} = 5807495.03$$

The straight line trend of loan and advances of NIBL is

$$Y_t = a + bx = 18849240.67 + 5807495.03x$$

(h) Trend Analysis of Investment on Loan and Advances of SCBL

Year	Investment on Loan and Advances (y)	x=(t-2006.5)	xy	x ²
2005	6,693,862.00	-2.50	-16,734,655.00	6.25
2006	8,420,868.00	-1.50	-12,631,302.00	2.25
2007	9,206,280.00	-0.50	-4,603,140.00	0.25
2008	10,790,148.00	0.50	5,395,074.00	0.25
2009	13,963,984.00	1.50	20,945,976.00	2.25
2010	13,880,703.00	2.50	34,701,757.50	6.25
Total	62,955,845.00	0.00	27,073,710.50	17.50

Since $\sum x = 0$,

$$a = \frac{\sum y}{n} = \frac{62955845.00}{6} = 10492640.83, \quad b = \frac{\sum xy}{\sum x^2} = \frac{27073710.50}{17.50} = 1547069.17$$

The straight line trend of loan and advances of SCBL is

$$Y_t = a + bx = 10492640.83 + 1547069.17x$$

(i) Trend Analysis of Investment on Loan and Advances of HBL

Year	Investment on Loan and Advances (y)	x=(t-2006.5)	xy	x ²
2005	12,919,631.00	-2.50	-32,299,077.50	6.25
2006	13,451,168.00	-1.50	-20,176,752.00	2.25
2007	15,761,977.00	-0.50	-7,880,988.50	0.25
2008	17,793,724.00	0.50	8,896,862.00	0.25
2009	20,179,995.00	1.50	30,269,992.50	2.25
2010	25,519,519.00	2.50	63,798,797.50	6.25
Total	105,626,014.00	0.00	42,608,834.00	17.50

Since $\sum x = 0$,

$$a = \frac{\sum y}{n} = \frac{105626014.00}{6} = 17604335.67, \quad b = \frac{\sum xy}{\sum x^2} = \frac{42608834.00}{17.50} = 2434790.51$$

The straight line trend of loan and advances of HBL is

$$Y_t = a + bx = 17604335.67 + 2434790.51x$$

(j) Trend Analysis of Investment on Loan and Advances of EBL

Year	Investment on Loan and Advances (y)	x=(t-2006.5)	xy	x ²
2005	6,095,841.00	-2.50	-15,239,602.50	6.25
2006	7,900,015.00	-1.50	-11,850,022.50	2.25
2007	10,136,254.00	-0.50	-5,068,127.00	0.25
2008	14,082,686.00	0.50	7,041,343.00	0.25
2009	18,836,432.00	1.50	28,254,648.00	2.25
2010	24,469,556.00	2.50	61,173,890.00	6.25
Total	81,520,784.00	0.00	64,312,129.00	17.50

Since $\sum x = 0$,

$$a = \frac{\sum y}{n} = \frac{81520784.00}{6} = 13586797.33, \quad b = \frac{\sum xy}{\sum x^2} = \frac{64312129.00}{17.50} = 3674978.60$$

The straight line trend of loan and advances of EBL is

$$Y_t = a + bx = 13586797.33 + 3674978.60x$$

(k) Trend Analysis of Investment on Share and Debenture of NABIL

Year	Investment on Share and Debenture (y)	x=(t-2006.5)	xy	x ²
2005	22,220.00	-2.50	-55,550.00	6.25
2006	415,724.00	-1.50	-623,586.00	2.25
2007	104,192.00	-0.50	-52,096.00	0.25
2008	286,958.00	0.50	143,479.00	0.25
2009	323,236.00	1.50	484,854.00	2.25
2010	354,931.00	2.50	887,327.50	6.25
Total	1,507,261.00	0.00	784,428.50	17.50

Since $\sum x = 0$,

$$a = \frac{\sum y}{n} = \frac{1507261.00}{6} = 251210.17, \quad b = \frac{\sum xy}{\sum x^2} = \frac{784428.50}{17.50} = 44824.49$$

The straight line trend of Share and Debenture of NABIL is

$$Y_s = a + bx = 251210.17 + 44824.49x$$

(l) Trend Analysis of Investment on Share and Debenture of NIBL

Year	Investment on Share and Debenture (y)	x=(t-2006.5)	xy	X ²
2005	13,895.00	-2.50	-34,737.50	6.25
2006	17,738.00	-1.50	-26,607.00	2.25
2007	17,738.00	-0.50	-8,869.00	0.25
2008	35,253.00	0.50	17,626.50	0.25
2009	59,945.00	1.50	89,917.50	2.25
2010	64,270.00	2.50	160,675.00	6.25
Total	208,839.00	0.00	198,005.50	17.50

Since $\sum x = 0$,

$$a = \frac{\sum y}{n} = \frac{208839.00}{6} = 34806.50, \quad b = \frac{\sum xy}{\sum x^2} = \frac{198005.50}{17.50} = 11314.60$$

The straight line trend of Share and Debenture of NIBL is

$$Y_s = a + bx = 34806.50 + 11314.60x$$

(m) Trend Analysis of Investment on Share and Debenture of SCBL

Year	Investment on Share and Debenture (y)	x=(t-2006.5)	xy	x ²
2005	11,195.00	-2.50	-27,987.50	6.25
2006	13,348.00	-1.50	-20,022.00	2.25
2007	15,343.00	-0.50	-7,671.50	0.25
2008	44,943.00	0.50	22,471.50	0.25
2009	114,536.00	1.50	171,804.00	2.25
2010	115,418.00	2.50	288,545.00	6.25
Total	314,783.00	0.00	427,139.50	17.50

Since $\sum x = 0$,

$$a = \frac{\sum y}{n} = \frac{314783.00}{6} = 52463.83, \quad b = \frac{\sum xy}{\sum x^2} = \frac{427139.50}{17.50} = 24407.97$$

The straight line trend of Share and Debenture of SCBL is

$$Y_s = a + bx = 52463.83 + 24407.97x$$

(n) Trend Analysis of Investment on Share and Debenture of HBL

Year	Investment on Share and Debenture (y)	x=(t-2006.5)	xy	X ²
2005	34,265.00	-2.50	-85,662.50	6.25
2006	39,909.00	-1.50	-59,863.50	2.25
2007	39,909.00	-0.50	-19,954.50	0.25
2008	73,424.00	0.50	36,712.00	0.25
2009	89,558.00	1.50	134,337.00	2.25
2010	93,883.00	2.50	234,707.50	6.25
Total	370,948.00	0.00	240,276.00	17.50

Since $\sum x = 0$,

$$a = \frac{\sum y}{n} = \frac{370948.00}{6} = 61824.67, b = \frac{\sum xy}{\sum x^2} = \frac{240276.00}{17.50} = 13730.06$$

The straight line trend of Share and Debenture of HBL is

$$Y_s = a + bx = 61824.67 + 13730.06x$$

(o) Trend Analysis of Investment on Share and Debenture of EBL

Year	Investment on Share and Debenture (y)	x=(t-2006.5)	xy	x ²
2005	17,114.00	-2.50	-42,785.00	6.25
2006	19,387.00	-1.50	-29,080.50	2.25
2007	19,082.00	-0.50	-9,541.00	0.25
2008	19,887.00	0.50	9,943.50	0.25
2009	101,152.00	1.50	151,728.00	2.25
2010	102,034.00	2.50	255,085.00	6.25
Total	278,656.00	0.00	335,350.00	17.50

Since $\sum x = 0$,

$$a = \frac{\sum y}{n} = \frac{278656.00}{6} = 46442.67, b = \frac{\sum xy}{\sum x^2} = \frac{335350.00}{17.50} = 19162.86$$

The straight line trend of Share and Debenture of EBL is

$$Y_s = a + bx = 46442.67 + 19162.86x$$

