

ANNEX 'A'

INVESTMENT TO TOTAL DEPOSIT

(In percentage)

| F/Y | Particular | EBL | NBBL | BOKL | Average |
|---------|------------|-------|-------|-------|---------|
| 2062/63 | Ratio % | 30.44 | 20.45 | 32.22 | |
| 2063/64 | Ratio % | 27.41 | 11.02 | 24.18 | |
| 2064/65 | Ratio % | 21.11 | 12.77 | 20.25 | |
| 2065/66 | Ratio % | 17.86 | 22.23 | 15.41 | |
| 2066/67 | Ratio % | 13.57 | 21.59 | 16.09 | |
| Mean | | 22.08 | 17.61 | 21.63 | 20.44 |
| S.D. | | 6.16 | 4.74 | 6.16 | |
| C.V. | | 27.90 | 26.92 | 28.48 | 27.77 |

LOAN AND ADVANCE TO TOTAL DEPOSIT

| F/Y | Particular | EBL | NBBL | BOKL | Average |
|---------|------------|-------|-------|-------|---------|
| 2062/63 | Ratio % | 73.44 | 49.64 | 71.42 | |
| 2063/64 | Ratio % | 77.44 | 46.97 | 78.25 | |
| 2064/65 | Ratio % | 78.56 | 50.15 | 80.51 | |
| 2065/66 | Ratio % | 73.43 | 67.06 | 82.65 | |
| 2066/67 | Ratio % | 76.24 | 61.63 | 83.90 | |
| Mean | | 75.82 | 55.09 | 79.35 | 70.09 |
| S.D. | | 2.08 | 7.82 | 4.41 | - |
| C.V. | | 2.74 | 14.19 | 5.56 | 7.50 |

LIQUID FUND TO TOTAL DEPOSIT

| F/Y | Particular | EBL | NBBL | BOKL | Average |
|---------|------------|-------|-------|-------|---------|
| 2062/63 | Ratio % | 11.74 | 13.25 | 12.62 | |
| 2063/64 | Ratio % | 13.15 | 12.93 | 12.71 | |
| 2064/65 | Ratio % | 12.57 | 17.68 | 9.56 | |
| 2065/66 | Ratio % | 18.50 | 25.73 | 13.41 | |
| 2066/67 | Ratio % | 21.17 | 21.23 | 13.44 | |
| Mean | | 15.43 | 18.16 | 12.35 | 15.31 |
| S.D. | | 3.72 | 4.87 | 1.45 | - |
| C.V. | | 24.11 | 26.82 | 11.74 | 20.89 |

RETURN ON TOTAL ASSETS

| F/Y | Particular | EBL | NBBL | BOKL | Average |
|---------|------------|-------|--------|-------|---------|
| 2062/63 | Ratio % | 1.49 | -15.35 | 1.65 | |
| 2063/64 | Ratio % | 1.39 | -14.63 | 1.80 | |
| 2064/65 | Ratio % | 1.66 | 6.35 | 2.04 | |
| 2065/66 | Ratio % | 1.73 | 18.04 | 2.25 | |
| 2066/67 | Ratio % | 2.01 | 19.10 | 2.18 | |
| Mean | | 1.66 | 2.70 | 1.984 | 2.11 |
| S.D. | | 0.21 | 15.12 | 0.23 | - |
| C.V. | | 12.90 | 559.59 | 11.59 | 194.69 |

ANNEX 'B'

INVESTMENT PORTFOLIO ANALYSIS

| Bank | 2062/63 | 2063/64 | 2064/65 | 2065/66 | 2066/67 | Mean (%) |
|-------------------|---------|---------|---------|---------|---------|----------|
| EBL | | | | | | |
| Govt. securities | 84.46% | 94.37% | 95.27% | 86.49% | 86.91% | 89.5% |
| Share & debenture | 15.54% | 5.63% | 4.73% | 13.51% | 13.09% | 10.5% |
| NRB bond | 0% | 0% | 0% | 0% | 0% | 0% |
| NBBL | | | | | | |
| Govt. securities | 81.94% | 86.56% | 94.59% | 75.50% | 99.04% | 87.53% |
| Share & debenture | 18.06% | 13.44% | 5.41% | 24.50% | 0.96% | 12.47% |
| NRB bond | 0% | 0% | 0% | 0% | 0% | 0% |
| BOKL | | | | | | |
| Govt. securities | 78.69% | 77.86% | 65.90% | 62.63% | 90.39% | 75.09% |
| Share & debenture | 21.31% | 22.14% | 34.10% | 37.37% | 9.61% | 24.91% |
| NRB bond | 0% | 0% | 0% | 0% | 0% | 0% |

ANNEX 'C'

LOAN AND ADVANCE PORTFOLIO ANALYSIS

(In percentage)

| Banks | 2062/63 | 2063/64 | 2064/65 | 2065/66 | 2066/67 | Mean(%) |
|--------------------|---------|---------|---------|---------|---------|---------|
| EBL | | | | | | |
| Govt.ent. | 1.27% | 4.56% | 0.67% | 0.48% | 0.16% | 1.43% |
| Pvt. Sect | 98.42% | 95.14% | 99.21% | 99.10% | 99.75% | 98.32% |
| Bills for P.&D | 0.30% | 0.30% | 0.12% | 0.42% | 0.09% | 0.25% |
| NBBL | | | | | | |
| Govt.ent. | 1.60% | 0.64% | 2.48% | 4.40% | 4.15% | 2.65% |
| Pvt.sect. | 91.02% | 85.84% | 93.34% | 92.54% | 91.55% | 90.86% |
| Bills for P.& D | 7.38% | 9.34% | 4.18% | 3.06% | 4.30% | 5.65% |
| BOKL | | | | | | |
| Govt.ent. | 1.08% | 2.51% | 1.86% | 1.27% | 1.51% | 1.65% |
| Pvt.sect. | 98.67% | 97.17% | 97.71% | 98.39% | 97.33% | 97.85% |
| Bills for P.& D | 0.25% | 0.32% | 0.43% | 0.35% | 1.15% | 0.50% |

ANNEX 'D'

Calculation of annual rate of return, expected returned and variance of EBL, NBBL and BOKL

Calculation of annual rate of return, expected returned and variance of EBL

| Year | MPS | CD | R _e (%) | (R _e - \bar{R}_e) | (R _e - \bar{R}_e) ² |
|---------|------|----|--------------------|---------------------------------|--|
| 2061/62 | 870 | - | - | - | - |
| 2062/63 | 1379 | 25 | 61.33% | 38.382 | 1473.18 |
| 2063/64 | 2430 | 10 | 76.94% | 53.942 | 2909.74 |
| 2064/65 | 3132 | 20 | 29.71% | 6.712 | 45.05 |
| 2065/66 | 2455 | 30 | -20.66% | -43.658 | 1906.02 |
| 2066/67 | 1630 | 30 | -32.38% | -55.378 | 3066.72 |

N=5yrs

R_e=114.94

(R_e - \bar{R}_e)²=9400.71

$$\text{Expected return}(\bar{R}_e) = \frac{\sum R_e}{N} = \frac{114.99}{5} = 23\%$$

$$\text{Standard deviation}(\sigma_e) = \sqrt{\frac{\sum (R_e - \bar{R}_e)^2}{N}} = \sqrt{\frac{9400.71}{5}} = 43.36$$

$$\text{Variance} (\sigma_e^2) = 1880.09$$

$$C.V = \frac{\sigma_e}{\bar{R}_e} = \frac{43.36}{22.998} = 188.54\%$$

Calculation of annual rate of return, expected return and variance of NBBL

| Year | MPS | CD | R_j (%) | $(R_j - \bar{R}_j)$ | $(R_j - \bar{R}_j)^2$ |
|---------|------|----|-----------|---------------------|-----------------------|
| 2061/62 | 150 | 0 | - | - | - |
| 2062/63 | 199 | 0 | 32.67% | -1.13 | 1.28 |
| 2063/64 | 550 | 0 | 176.38% | 142.58 | 20329.06 |
| 2064/65 | 1001 | 0 | 82% | 48.2 | 2323.24 |
| 2065/66 | 280 | 0 | -72.03% | -105.83 | 11199.99 |
| 2066/67 | 40 | 0 | -50% | -83.8 | 7022.44 |

$N=5$ yrs

$R_j=169.02$

$(R_j - \bar{R}_j)^2=40876.01$

$$\text{Expected return } (\bar{R}_j) = \frac{\sum R_j}{N} = \frac{169.02}{5} = 33.80\%$$

$$\text{Standard deviation } (\sigma_j) = \sqrt{\frac{\sum (R_j - \bar{R}_j)^2}{N}} = \sqrt{\frac{40876.01}{5}} = 90.42\%$$

Variance (j)² = 8175.78

$$C.V = \frac{\sigma_j}{\bar{R}_j} = \frac{90.42}{33.80} = 267.51\%$$

Calculation of annual rate of return, expected return and variance of BOKL

| Year | MPS | CD | R _b (%) | (R _b - \bar{R}_b) | (R _b - \bar{R}_b) ² |
|---------|------|------|--------------------|---------------------------------|--|
| 2061/62 | 430 | 15 | - | - | - |
| 2062/63 | 850 | 18 | 101.86% | 69.49 | 4828.86 |
| 2063/64 | 1375 | 20 | 64.12 | 31.75 | 1008.06 |
| 2064/65 | 2350 | 2.11 | 71.06 | 38.69 | 1496.92 |
| 2065/66 | 1825 | 7.37 | -22.03 | -54.4 | 2959.36 |
| 2066/67 | 840 | 15 | -53.15 | -85.52 | 7313.67 |

N=5yrs

R_b=161.86

(R_b- \bar{R}_b)²=

17606.87

$$\text{Expected return } (\bar{R}_b) = \frac{\sum R_b}{N} = \frac{161.86}{5} = 32.37\%$$

$$\text{Standard deviation } (\sigma_b) = \sqrt{\frac{\sum (R_b - \bar{R}_b)^2}{N}} = \sqrt{\frac{17606.87}{5}} = 59.34\%$$

$$\text{Variance } (\sigma_b)^2 = 3521.24$$

$$C.V = \frac{\sigma_b}{\bar{R}_b} = \frac{59.34}{32.37} = 183.32\%$$

Calculation of annual rate of return, expected return and variance of market

| year | NEPSE index (m) | R _m (%) | (R _m - \bar{R}_m) | (R _m - \bar{R}_m) ² |
|---------|--------------------|--------------------|---------------------------------|--|
| 2061/62 | 286.67 | | - | - |
| 2062/63 | 386.83 | 34.94% | 16.11 | 259.53 |
| 2063/64 | 683.95 | 76.81% | 57.98 | 3361.68 |
| 2064/65 | 963.36 | 40.85% | 22.02 | 484.88 |
| 2065/66 | 749.1 | -22.24% | -41.07 | 1686.74 |
| 2066/67 | 477.73 | -36.23% | -55.06 | 3031.60 |

N=5yrs

R_m = 94.13%

(R_m- \bar{R}_m)² = 8824.43

$$\text{Expected return on market}(\bar{R}_m) = \frac{\sum R_m}{N} = \frac{94.13}{5} = 18.83\%$$

$$\text{Standard deviation}(\sigma_m) = \sqrt{\frac{\sum (R_m - \bar{R}_m)^2}{N}} = \sqrt{\frac{8824.43}{5}} = 42.01\%$$

Variance (m)² = 1764.84

$$C.V = \frac{\sigma_m}{\bar{R}_m} = \frac{42.01}{18.83} = 223.10\%$$

ANNEX 'E'

Calculation of co-variance between market return and stock return $\text{cov}(r_i, r_m)$, correlation between market return and stock i return (ρ_{im}) and beta coefficient of market and stock i (β_{im})

| Bank | 2062/63 | 2063/64 | 2064/65 | 2065/66 | 2066/67 | Total |
|--|---------|---------|---------|---------|----------|--------------|
| EBL | | | | | | |
| $(R_e - \bar{R}_e)$ | 38.382 | 53.942 | 6.712 | -43.658 | -55.378 | |
| $(R_m - \bar{R}_m)$ | 16.11 | 57.98 | 22.02 | -41.07 | -55.06 | |
| $(R_e - \bar{R}_e)$ $(R_m - \bar{R}_m)$ | 618.33 | 3127.56 | 147.80 | 1793.03 | 3049.11 | 8735.83 |
| NBBL | | | | | | |
| $(R_j - \bar{R}_j)$ | -1.13 | 142.58 | 48.2 | -105.83 | -83.8 | |
| $(R_m - \bar{R}_m)$ | 16.11 | 57.98 | 22.02 | -41.07 | -55.06 | |
| $(R_j - \bar{R}_j)$ $(R_m - \bar{R}_m)$ | -18.20 | 8266.79 | 1061.36 | 4346.44 | 4614.028 | 18270.4 2 |
| BOKL | | | | | | |
| $(R_b - \bar{R}_b)$ | 69.49 | 31.75 | 38.69 | -54.4 | -85.52 | |
| $(R_m - \bar{R}_m)$ | 16.11 | 57.98 | 22.02 | -41.07 | -55.06 | |
| $(R_b - \bar{R}_b)$ $(R_m - \bar{R}_m)$ | 1119.48 | 1840.87 | 851.95 | 2234.21 | 4708.73 | 10755.2 4 |

ANNEX 'F'

Calculation weight (amount) invested in government securities (risk free assets) & weight (amount) invested in risky asset (share & debenture) of EBL in past 5 year

(In million)

| Year | Amt. invested in shares & debentures | Amt. invested in govt. sector | Total investment |
|---------|--------------------------------------|-------------------------------|------------------|
| 2062/63 | 652.70 | 3548.62 | 4201.32 |
| 2063/64 | 280.49 | 4704.63 | 4985.12 |
| 2064/65 | 239.55 | 4821.60 | 5061.15 |
| 2065/66 | 804.03 | 5146.05 | 5950.08 |
| 2066/67 | 655.55 | 4354.35 | 5009.90 |
| Total | 2632.32 | 22575.25 | 25207.57 |
| weight | 10.44% | 89.56% | 100% |

Now,

$$\text{Portfolio return (R}_p\text{)} = W_m R_m + W_{rf} R_{rf} = 0.1044 \times 18.83 + 0.8956 \times 13.5 = 14.06\%$$

$$\text{Portfolio risk (}\sigma_p\text{)} = W_m \sigma_m = 0.1044 \times 42.01 = 4.39\%$$

Calculation weight (amount) invested in government securities (risk free assets) & weight (amount) invested in risky asset (share & debenture) of NBBL in past 5 year

(In million)

| Year | Amt. invested in risky assets or share and debenture | Amt. invested in govt. sector | Total investment |
|---------|--|-------------------------------|------------------|
| 2062/63 | 480.73 | 2181.10 | 2661.83 |
| 2063/64 | 139.04 | 895.52 | 1034.56 |
| 2064/65 | 75.19 | 1314.71 | 1389.90 |
| 2065/66 | 544.50 | 1677.93 | 2222.43 |
| 2066/67 | 21.35 | 2202.10 | 2223.45 |
| Total | 1260.81 | 8271.36 | 9532.17 |
| Weight | 13.23% | 86.77% | 100% |

Now,

$$\text{Portfolio return } (R_p) = W_m R_m + W_{rf} R_f = 0.1323 \times 18.83 + 0.8677 \times 13.5 = 14.21$$

$$\text{Portfolio risk } (\sigma_p) = W_m \sigma_m = 0.1323 \times 42.01 = 5.56\%$$

Calculation weight (amount) invested in government securities (risk free assets) & weight (amount) invested in risky asset (share & debenture) of BOKL in past 5 year

(In million)

| Year | Amt. invested in risky asset or share and debenture | Amt. invested in govt. sector | Total investment |
|---------|---|-------------------------------|------------------|
| 2062/63 | 719.76 | 2658.37 | 3378.13 |
| 2063/64 | 663.15 | 2332.04 | 2995.19 |
| 2064/65 | 1093.60 | 2113.22 | 3206.82 |
| 2065/66 | 1041.38 | 1744.98 | 2786.36 |
| 2066/67 | 314.27 | 2954.93 | 3269.20 |
| Total | 3832.16 | 11803.54 | 15635.7 |
| Weight | 24.51% | 75.49% | 100% |

Now,

$$\text{Portfolio return (R}_p\text{)} = W_m R_m + W_{rf} R_f = 0.2451 \times 18.83 + 0.7549 \times 13.5 = 14.81$$

$$\text{Portfolio risk (}\sigma_p\text{)} = W_m \sigma_m = 0.2451 \times 42.01 = 10.30\%$$

ANNEX 'G'

Calculation of total deposit trend of EBL

Let the straight line trend be: $Y=a+bx$()

| Year (x) | Total deposit (Y) | $X=x-2064/65$ | X^2 | XY |
|----------|-------------------|---------------|----------|-------------|
| 2062/63 | 13802.44 | -2 | 4 | -27604.88 |
| 2063/64 | 18186.25 | -1 | 1 | -18186.25 |
| 2064/65 | 23976.30 | 0 | 0 | 0 |
| 2065/66 | 33322.95 | 1 | 1 | 33322.95 |
| 2066/67 | 36932.31 | 2 | 4 | 73864.62 |
| N=6 | Y=126220.25 | | $X^2=10$ | XY=61396.44 |

Now,

$$a = \frac{\sum Y}{N} = \frac{126220.25}{6} = 21036.71$$

$$b = \frac{\sum XY}{\sum X^2} = \frac{61396.44}{10} = 6139.644$$

Substituting the value of 'a' and 'b' in equation () the least square total deposit trend of EBL is $Y= 21036.71+6139.644x$

For the estimation of total deposit of EBL in year 2067/68 is:

$X=6$ [∴ in the table year 2066/67 is 5th year]

Now, $X=x-3$ [∴ the mean of year is 3th year]

2067/68= 6-3= 3

$$2068/69 = 7 - 3 = 4$$

$$2069/70 = 8 - 3 = 5$$

$$2070/71 = 9 - 3 = 6$$

$$2071/72 = 10 - 3 = 7$$

Calculation of total loan and investment trend of EBL

Let the straight line trend be: $Y = a + bx \dots\dots\dots ()$

| Year (X) | Total loan & investment (Y) | $X = x - 2064/65$ | X^2 | XY |
|----------|-----------------------------|-------------------|--------------------|-------------|
| 2062/63 | 14337.57 | -2 | 4 | -28675.14 |
| 2063/64 | 19067.81 | -1 | 1 | -19067.81 |
| 2064/65 | 23897.59 | 0 | 0 | 0 |
| 2065/66 | 30419.64 | 1 | 1 | 30419.64 |
| 2066/67 | 33166.31 | 2 | 4 | 66332.62 |
| N=5 | Y=120888.92 | | X ² =10 | XY=49009.31 |

Now,

$$a = \frac{\sum Y}{N} = \frac{120888.92}{5} = 24177.78$$

$$b = \frac{\sum XY}{\sum X^2} = \frac{49009.31}{10} = 4900.93$$

Substituting the value of 'a' and 'b' in equation () the least square loan and investment trend of EBL is

$$Y = 24177.78 + 4900.93x$$

Calculation of total deposit trend of NBBL

Let the straight line trend be $Y = a + bx \dots\dots\dots ()$

| Year (X) | Total deposit (Y) | $X = x - 2064/65$ | X^2 | XY |
|----------|-------------------|-------------------|----------|-------------|
| 2062/63 | 13015.14 | -2 | 4 | -26030.28 |
| 2063/64 | 9385.95 | -1 | 1 | -9385.95 |
| 2064/65 | 10883.65 | 0 | 0 | 0 |
| 2065/66 | 9997.70 | 1 | 1 | 9997.70 |
| 2066/67 | 10384.00 | 2 | 4 | 20768 |
| N=5 | Y=53666.44 | | $X^2=10$ | XY=-4650.53 |

Now,

$$a = \frac{\sum Y}{N} = \frac{53666.44}{5} = 10733.29$$

$$b = \frac{\sum XY}{\sum X^2} = \frac{-4650.53}{10} = -465.05$$

Substituting the value of 'a' and 'b' in equation () the least square total deposit trend of NBBL is:

$$Y = 10733.29 - 465.05x$$

Calculation of loan and investment trend of NBBL

Let the straight line trend be: $Y = a + bx$()

| Year (X) | Total loan & investment(Y) | $X = x - 2064/65$ | X^2 | XY |
|----------|----------------------------|-------------------|--------------------|-----------|
| 2062/63 | 9122.08 | -2 | 4 | -18244.16 |
| 2063/64 | 5443.57 | -1 | 1 | -5443.57 |
| 2064/65 | 6847.71 | 0 | 0 | 0 |
| 2065/66 | 8927.37 | 1 | 1 | 8927.37 |
| 2066/67 | 10047.43 | 2 | 4 | 20094.86 |
| N=5 | Y=40388.16 | | X ² =10 | XY=5334.5 |

Now,

$$a = \frac{\sum Y}{N} = \frac{40388.16}{5} = 8077.63$$

$$b = \frac{\sum XY}{\sum X^2} = \frac{5334.5}{10} = 533.45$$

Substituting the value of 'a' and 'b' in equation () the least square loan and investment trend of NBBL is:

$$Y = 8077.63 + 533.45x$$

Calculation of total deposit trend of BOKL

Let the straight line trend be: $Y = a + bx$()

| Year (X) | Total deposit (Y) | $X = x - 2064/65$ | X^2 | XY |
|----------|-------------------|-------------------|--------------------|-------------|
| 2062/63 | 10485.36 | -2 | 4 | -20970.72 |
| 2063/64 | 12388.93 | -1 | 1 | -12388.93 |
| 2064/65 | 15833.74 | 0 | 0 | 0 |
| 2065/66 | 18083.98 | 1 | 1 | 18083.98 |
| 2066/67 | 20315.83 | 2 | 4 | 40631.66 |
| N=5 | Y=77107.84 | | X ² =10 | XY=25355.99 |

Now,

$$a = \frac{\sum Y}{N} = \frac{77107.84}{5} = 15421.57$$

$$b = \frac{\sum XY}{\sum X^2} = \frac{25355.99}{10} = 2535.60$$

Substituting the value of 'a' and 'b' in equation () the least square total deposit trend of BOKL is:

$$Y = 15421.57 + 2535.60x$$

Calculation of total loan and investment trend of BOKL

Let the straight line trend be: $Y=a+bx$()

| Year (X) | Total loan and investment(Y) | $X=x-2064/65$ | X^2 | XY |
|----------|------------------------------|---------------|----------|-------------|
| 2062/63 | 10866.83 | -2 | 4 | -21733.66 |
| 2063/64 | 12689.29 | -1 | 1 | -12689.29 |
| 2064/65 | 15954.55 | 0 | 0 | 0 |
| 2065/66 | 17732.08 | 1 | 1 | 17732.08 |
| 2066/67 | 20313.50 | 2 | 4 | 40627 |
| N=5 | Y=77556.25 | | $X^2=10$ | XY=23936.13 |

Now,

$$a = \frac{\sum Y}{N} = \frac{77556.25}{5} = 15511.25$$

$$b = \frac{\sum XY}{\sum X^2} = \frac{23936.13}{10} = 2393.61$$

Substituting the value of 'a' and 'b' in equation () the least square loan and investment trend of BOKL is:

$$Y = 15511.25 + 2393.61x$$

ANNEX-H

Calculation of Testing Hypothesis

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{S^2 \left(\frac{1}{n_1} + \frac{1}{n_2} \right)}}$$

$$s^2 = \frac{n_1 s_1^2 + n_2 s_2^2}{n_1 + n_2 - 2} = \frac{5 \times 1541.95 + 5 \times 1764.84}{5 + 5 - 2} = 2066.74$$

$$t = \frac{9.05 - 18.83}{\sqrt{2066.74 \left(\frac{1}{5} + \frac{1}{5} \right)}} = -0.34$$