**Supplementary file -Jobmers 225**

**Article Title:** Does Size Matter? Portfolio Diversification and Financial Performance of Commercial Banks in Kenya: Testing the Moderating Effect of Bank Size

**Model 1**. Testing the effect of control variables on the financial performance.

$$FP= β\_{0}+β\_{1}CA\_{it}+β\_{2}AQ\_{it}+β\_{3}L\_{it} +ε\_{it}$$

**Model 2**. Testing the effect of independent variable on financial performance.

$$FP= β\_{0}+β\_{1}C\_{it}+β\_{2}IPD\_{it}+ε\_{it}$$

**Model 3**. Testing the moderating effect of bank size on financial performance.

$$FP= β\_{0}+β\_{1}C\_{it}+β\_{5}IPD\_{it}+β\_{6}BS\_{it}+ε\_{it}$$

**Model 4.** Introducing the first interaction term between sectorial investment portfolio diversification and bank size.

$$FP= β\_{0}+β\_{1}C\_{it}+β\_{2}IPD\_{it}+β\_{6}BS\_{it}+β\_{7}IPD\_{it}\*BS+ε\_{it}$$

Table 1: Descriptive statistics

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Variable**  | **Mean**  | **Std. Dev.** | **Min** | **Max** | **Obs.** |
| Financial Performance (ROA) | 3.872 | 3.738 | -12.31 | 12.08 | 190 |
| Investments Portfolio diversification | 0.151 | 0.118 | 0.062 | 0.217 | 190 |
| Bank Size | 11.16 | 10.17 | 10.36 | 12.05 | 190 |
| Liquidity  | 0.211 | 0.108 | 0.144 | 0.391 | 190 |
| Asset quality | 0.124 | 0.091 | 0.093 | 0.187 | 190 |
| Capital adequacy | 18.48 | 8.912 | 11.761 | 39.15 | 190 |

*Source: Field Data, 2023*

Table 2: Correlation analysis of study variables

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **SCD** | **Banc** | **DPD** | **IPD** | **Liq** | **AQ** | **CA** | **BS** | **ROA** |
| IPD | -.291\*\* | .045 | .020 | 1 |  |  |  |  |  |
| Liq | -.230\*\* | .232\*\* | .050 | .196\*\* | 1 |  |  |  |  |
| AQ | .151\* | -.129 | -.213\*\* | -.063 | -.250\*\* | 1 |  |  |  |
| CA | -.426\*\* | .044 | .075 | .338\*\* | .182\* | -.147\* | 1 |  |  |
| BS | -.348\*\* | .142\* | -.025 | .242\*\* | .215\*\* | -.150\* | .270\*\* | 1 |  |
| ROA | -.421\*\* | .080 | -.348\*\* | .456\*\* | .170\* | -.103 | .355\*\* | .279\*\* | 1 |
| \*\*. Correlation is significant at the 0.01 level (2-tailed). |
| \*. Correlation is significant at the 0.05 level (2-tailed).*Source: Field Data, 2023* |

Table 3: Effect of the control variables on financial performance

Fixed-effects (within) regression Number of obs = 190

Group variable: Bank Number of groups = 38

R-sq: Obs per group:

 within = 0.6378 min = 5

 between = 0.4165 avg = 5.0

 overall = 0.4674 max = 5

 F(3,149) = 87.47

corr(u\_i, Xb) = -0.5408 Prob > F = 0.0000

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ROA** |  **Coef.** |  **St.Err.** |  **t-value** |  **p-value** |  **[95% Conf** |  **Interval]** |
| LIQ | -.091 | .084 | -1.08 | .281 | -.258 | .076 |
| AQ | -.019 | .039 | -0.48 | .63 | -.095 | .058 |
| CA | 1.045 | .065 | 16.05 | 0.000 | .916 | 1.173 |
| Constant | 0.000 | .034 | -0.00 | 1 | -.067 | .067 |
| sigma\_u | 0.72384591sigma\_e | 0.46401466rho | 0.70875081  | (fraction of variance due to u\_i) |  |
| Mean dependent var | 0.000 | SD dependent var  | 1.000 |
| R-squared  | 0.638 | Number of obs  | 190 |
| F-test  | 87.474 | Prob > F  | 0.000 |
| F test that all u\_i=0: F(37, 149) = 7.51 Prob > F = 0.0000 |
| **Note:** *sigma\_u is the standard deviation of residuals within groups, sigma\_e is the standard deviation of residuals (overall error terms), rho is the intraclass correlation*. |

Table 4: Results for fixed effect model on direct effect

Fixed-effects (within) regression Number of obs = 190

Group variable: Bank Number of groups = 38

R-sq: Obs per group:

 within = 0.6942 min = 5

 between = 0.3963 avg = 5.0

 overall = 0.5239 max = 5

 F(7,145) = 47.02

corr(u\_i, Xb) = -0.2028 Prob > F = 0.0000

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ROA** |  **Coef.** |  **St.Err.** |  **t-value** |  **p-value** |  **[95% Conf** |  **Interval]** |
| LIQ | -.057 | .079 | -0.72 | .471 | -.214 | .099 |
| AQ | -.022 | .037 | -0.59 | .553 | -.096 | .052 |
| CA | .687 | .097 | 7.11 | 0.000 | .496 | .878 |
| IPD | .153 | .043 | 3.60 | 0.000 | .069 | .237 |
| Constant | 2.64 | .031 | 0.00 | 1 | -.062 | .062 |
| sigma\_u | 0.59544825sigma\_e | 0.43224548rho | 0.65489849 (fraction of variance due to u\_i) |
| Mean dependent var | 0.000 | SD dependent var  | 1.000 |
| R-squared  | 0.694 | Number of obs  | 190 |
| F-test  | 47.017 | Prob > F  | 0.000 |

F test that all u\_i=0: F(37, 145) = 7.80 Prob > F = 0.0000

**Note:** *sigma\_u is the standard deviation of residuals within groups, sigma\_e is the standard deviation of residuals (overall error terms), rho is the intraclass correlation*.

Table 5: Moderating effect of bank size

Fixed-effects (within) regression Number of obs = 190

Group variable: Bank Number of groups = 38

R-sq: Obs per group:

 within = 0.7155 min = 5

 between = 0.3729 avg = 5.0

 overall = 0.5000 max = 5

 F(8,144) = 45.27

corr(u\_i, Xb) = -0.3616 Prob > F = 0.0000

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  **ROA** |  **Coef.** |  **St.Err.** |  **t-value** |  **p-value** |  **[95% Conf** |  **Interval]** |
| LIQ | -.045 | .077 | -0.59 | 0.556 | -.197 | .106 |
| AQ | -.029 | .036 | -0.81 | 0.421 | -.101 | .042 |
| CA | .704 | .094 | 7.51 | 0.000 | .519 | .889 |
| IPD | .132 | .042 | 3.16 | 0.002 | .05 | .215 |
| BS | .414 | .126 | 3.29 | 0.001 | .165 | .664 |
| Constant | -8.36 | .03 | -0.00 | 1 | -.06 | .06 |
| sigma\_u | 0.65646317sigma\_e | 0.41835025rho | 0.71117451 (fraction of variance due to u\_i) |
| Mean dependent var | 0.000 | SD dependent var  | 1.000 |
| R-squared  | 0.715 | Number of obs  | 190 |
| F-test  | 45.268 | Prob > F  | 0.000 |
| F test that all u\_i=0: F(37, 144) = 8.21 Prob > F = 0.0000 |
| **Note:** *sigma\_u is the standard deviation of residuals within groups, sigma\_e is the standard deviation of residuals (overall error terms), rho is the intraclass correlation* |

Table 6: Testing the complete effect of moderation

Fixed-effects (within) regression Number of obs = 190

Group variable: Bank Number of groups = 38

R-sq: Obs per group:

 within = 0.7213 min = 5

 between = 0.3619 avg = 5.0

 overall = 0.4964 max = 5

 F(12,140) = 30.20

corr(u\_i, Xb) = -0.3570 Prob > F = 0.0000

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  **ZROA** |  **Coef.** |  **St.Err.** |  **t-value** |  **p-value** |  **[95% Conf** |  **Interval]** |
| LIQ | -.052 | .078 | -0.67 | .503 | -.205 | .101 |
| AQ | -.059 | .047 | -1.26 | .209 | -.152 | .033 |
| CA | .682 | .1 | 6.81 | .000 | .484 | .88 |
| IPD | 0.13 | .042 | 3.09 | .002 | .047 | .213 |
| BS | .434 | .131 | 3.31 | .001 | .174 | .694 |
| IPD\*BS | -.002 | .073 | -0.02 | .981 | -.147 | .143 |
| Constant | 0.000 | .032 | 0.00 | .998 | -.064 | .064 |
| sigma\_u | .66087416sigma\_e | .41992625rho | .71237947 (fraction of variance due to u\_i) |
| Mean dependent var | 0.000 | SD dependent var  | 1.000 |
| R-squared  | 0.721 | Number of obs  | 190 |
| F-test  | 30.196 | Prob > F  | 0.000 |
| F test that all u\_i=0: F(37, 140) = 7.90 |
| **Note:** *sigma\_u is the standard deviation of residuals within groups, sigma\_e is the standard deviation of residuals (overall error terms), rho is the intraclass correlation* |



**Figure 1:** Moderating Effect of Bank Size on Investment Portfolio Diversification and Financial Performance