**VIF (все переменные):**

|  |  |
| --- | --- |
| **Variable** | **ViF** |
| nps\_cluster\_1 | 2,044 |
| nps\_cluster\_2 | 1,835 |
| porfolio\_cluster\_1 | 4,708 |
| porfolio\_cluster\_2 | 3,773 |
| porfolio\_cluster\_3 | 2,543 |
| porfolio\_cluster\_4 | 4,791 |
| fin\_cluster\_1 | 3,618 |
| fin\_cluster\_2 | 2,217 |
| fin\_cluster\_3 | 3,182 |
| fin\_cluster\_4 | 11,949 |
| fin\_cluster\_5 | 2,744 |
| Н1\_CAR | 6,514 |
| Н2\_liquidity | 2,897 |
| Н3\_liquidity | 3,159 |
| ROA | 4,768 |
| ROE | 3,372 |
| NPL\_Ratio | 4,359 |
| Debt\_TotalAssets | 103,150 |
| Deposits\_TotalAssets | 12,270 |
| TotalLoans\_TotalAssets | 42,099 |
| LDR | 12,543 |
| LiquidAssetsRatio | 5,933 |
| Z\_score | 2,314 |
| LoansLE\_TotalAssets | 69,216 |
| AttractedMbcs\_TotalAssets | 86,924 |
| Capital\_assets | 98,076 |
| gos\_sobstv | 1,716 |
| foreign | 1,761 |
| system | 1,522 |
| law | 1,935 |
| strategy | 1,635 |
| nationhood | 1,962 |
| news\_cluster | 2,623 |
| A\_Shares | 1,806 |
| A\_Promissory\_notes | 1,456 |
| A\_bonds | 19,778 |
| A\_capitals | 2,821 |
| A\_corporate\_loans | 47,152 |
| A\_individuals\_loans | 64,423 |
| A\_loro\_loans | 2,085 |
| A\_fixed\_assets | 1,880 |
| A\_Mbcs | 61,175 |
| P\_deposits\_individuals | 19,440 |
| P\_corporate\_funds | 13,718 |
| P\_accounts\_individuals | 3,714 |
| P\_bonds\_promissory\_notes | 2,737 |
| P\_capitals | 6,699 |

R2 = 0.63

**Vif (финальные переменные):**

|  |  |
| --- | --- |
| **Variable** | **ViF** |
| nps\_cluster\_1 | 1,822 |
| nps\_cluster\_2 | 1,645 |
| porfolio\_cluster\_1 | 1,689 |
| porfolio\_cluster\_2 | 2,076 |
| porfolio\_cluster\_3 | 2,034 |
| porfolio\_cluster\_4 | 3,426 |
| fin\_cluster\_1 | 1,239 |
| fin\_cluster\_2 | 1,756 |
| fin\_cluster\_3 | 2,902 |
| fin\_cluster\_4 | 1,605 |
| fin\_cluster\_5 | 2,541 |
| law | 1,44 |
| nationhood | 1,672 |
| strategy | 1,308 |
| Н1\_CAR | 4,531 |
| Н2\_liquidity | 2,365 |
| Н3\_liquidity | 2,642 |
| ROA | 1,219 |
| TotalLoans\_TotalAssets | 3,696 |
| Z\_score | 1,552 |
| gos\_sobstv | 1,37 |
| foreign | 1,375 |
| system | 1,359 |
| A\_Shares | 1,396 |
| A\_bonds | 6,459 |
| A\_capitals | 1,392 |
| A\_loro\_loans | 1,448 |
| A\_fixed\_assets | 1,394 |
| P\_deposits\_individuals | 3,191 |
| P\_corporate\_funds | 2,676 |
| P\_capitals | 3,799 |

R2 = 0.53

**Тест Бранта:**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **X2** | **df** | **probability** |
| **Omnibus** | 97,73 | 93,00 | 0,35 |
| **nps\_cluster\_1** | 8,73 | 3,00 | 0,03 |
| **nps\_cluster\_2** | 526,10 | 3,00 | 0,00 |
| **porfolio\_cluster\_1** | 1,81 | 3,00 | 0,61 |
| **porfolio\_cluster\_2** | 2,62 | 3,00 | 0,45 |
| **porfolio\_cluster\_3** | 10,21 | 3,00 | 0,02 |
| **porfolio\_cluster\_4** | 0,62 | 3,00 | 0,89 |
| **fin\_cluster\_1** | 13,26 | 3,00 | 0,00 |
| **fin\_cluster\_2** | 2,95 | 3,00 | 0,40 |
| **fin\_cluster\_3** | 2,67 | 3,00 | 0,45 |
| **fin\_cluster\_4** | 0,00 | 3,00 | 1,00 |
| **fin\_cluster\_5** | 0,00 | 3,00 | 1,00 |
| **law** | 7,06 | 3,00 | 0,07 |
| **securities** | 12,37 | 3,00 | 0,01 |
| **strategy** | 6,52 | 3,00 | 0,09 |
| **Н1\_CAR** | -0,85 | 3,00 | 1,00 |
| **Н2\_liquidity** | 15,74 | 3,00 | 0,00 |
| **Н3\_liquidity** | 3,40 | 3,00 | 0,33 |
| **ROA** | 1,04 | 3,00 | 0,79 |
| **TotalLoans\_TotalAssets** | -0,98 | 3,00 | 1,00 |
| **Z\_score** | 3,44 | 3,00 | 0,33 |
| **gos\_sobstv** | 29,07 | 3,00 | 0,00 |
| **foreign** | 4,32 | 3,00 | 0,23 |
| **system** | 0,00 | 3,00 | 1,00 |
| **A\_Shares** | 2,90 | 3,00 | 0,41 |
| **A\_bonds** | -15,43 | 3,00 | 1,00 |
| **A\_capitals** | 80,39 | 3,00 | 0,00 |
| **A\_loro\_loans** | -6,78 | 3,00 | 1,00 |
| **A\_fixed\_assets** | 25,18 | 3,00 | 0,00 |
| **P\_deposits\_individuals** | 10,11 | 3,00 | 0,02 |
| **P\_corporate\_funds** | 3,95 | 3,00 | 0,27 |
| **P\_capitals** | 10,30 | 3,00 | 0,02 |

**H0: Parallel Regression Assumption holds**

**Сравнение моделей:**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **orlogit** | | **orprobit** | | **binprobit** | | **lm** | |
|  | **Estimate** | **Std\_Error** | **Estimate** | **Std\_Error** | **Estimate** | **Std\_Error** | **Estimate** | **Std\_Error** |
| **nps\_cluster\_1** | 1,42 | 2,69 | 0,04 | 0,26 | -0,30 | 0,35 | 1,42 | 2,69 |
| **nps\_cluster\_2** | -0,08 | 3,86 | 0,00 | 0,40 | -0,80 | 0,59 | -0,08 | 3,86 |
| **porfolio\_cluster\_1** | -8,41\*\* | 3,07 | -0,77\*\* | 0,29 | -0,91\* | 0,43 | -8,41 | 3,07\*\* |
| **porfolio\_cluster\_2** | -7,01 . | 3,60 | -0,95\* | 0,38 | -1,05\* | 0,51 | -7,01 | 3,60. |
| **porfolio\_cluster\_3** | -1,09 | 9,47 | -0,59 | 1,01 | 0,02 | 1,34 | -1,09 | 9,47 |
| **porfolio\_cluster\_4** | -4,05 | 4,37 | -0,63 | 0,47 | -0,79 | 0,60 | -4,05 | 4,37 |
| **fin\_cluster\_1** | 0,83 | 9,02 | -0,32 | 0,96 | 1,03 | 1,10 | 0,83 | 9,02 |
| **fin\_cluster\_2** | 5,04 | 4,24 | 0,58 | 0,48 | 0,58 | 0,59 | 5,04 | 4,24 |
| **fin\_cluster\_3** | -1,45 | 3,39 | -0,07 | 0,35 | -0,18 | 0,49 | -1,45 | 3,39 |
| **fin\_cluster\_4** | -13,86\*\* | 7,31 | -9,61\*\*\* | 1,07 | -5,27 | 414,65 | -13,86 | 7,31 . |
| **fin\_cluster\_5** | 20,47\*\*\* | 18,20 | 12,38 | 476,71 | 8,05 | 973,50 | 20,47 | 18,20 |
| **law** | -10,38 | 7,01 | -0,53 | 0,73 | 0,05 | 0,86 | 6,51 | 5,88 |
| **securities** | -16,89\* | 6,68 | -1,65\* | 0,65 | -1,08 | 0,90 | 16,89 | 6,68\* |
| **strategy** | -0,95 | 7,55 | 0,01 | 0,66 | 1,02 | 0,98 | 15,94 | 6,38 |
| **Н1\_CAR** | -7,05 . | 6,64 | -0,70 | 0,48 | -1,01 | 1,26 | -7,05 | 6,64 |
| **Н2\_liquidity** | -1,16 | 1,13 | -0,02 | 0,15 | -0,05 | 0,16 | -1,16 | 1,13 |
| **Н3\_liquidity** | 1,10 | 1,47 | 0,14 | 0,16 | 0,26 | 0,23 | 1,10 | 1,47 |
| **ROA** | -7,18 | 25,12 | -0,95 | 5,82 | 0,06 | 7,31 | -7,18 | 25,12 |
| **TotalLoans\_TotalAssets** | 16,04 | 10,04 | 0,82 | 1,43 | 0,66 | 2,15 | 16,04 | 10,04 |
| **Z\_score** | 145,43 | 58,35 | 10,30 | 7,49 | 15,49\* | 7,85 | 145,43 | 58,35\* |
| **gos\_sobstv** | 2,37 | 3,74 | 0,32 | 0,38 | 0,47 | 0,49 | 2,37 | 3,74 |
| **foreign** | 19,90\*\* | 4,18 | 2,08\*\*\* | 0,59 | 2,00\*\* | 0,64 | 19,90 | 4,18\*\*\* |
| **system** | 19,87\*\*\* | 4,34 | 2,74\*\*\* | 0,46 | 7,25 | 241,17 | 19,87 | 4,34\*\*\* |
| **A\_Shares** | 80,14 | 75,98 | 9,15 | 6,41 | 16,76 | 11,59 | 80,14 | 75,98 |
| **A\_bonds** | 6,41 | 16,07 | 0,74 | 2,12 | -0,24 | 2,60 | 6,41 | 16,07 |
| **A\_capitals** | -70,27 | 49,81 | -8,29 | 5,11 | -2,10 | 7,01 | -70,27 | 49,81 |
| **A\_loro\_loans** | -77,38 | 49,87 | -7,85 | 6,68 | -2,17 | 6,91 | -77,38 | 49,87 |
| **A\_fixed\_assets** | -6,02 | 58,21 | -5,27 | 4,43 | -10,48 | 9,12 | -6,02 | 58,21 |
| **P\_deposits\_individuals** | -17,59 . | 8,91 | -1,57 . | 0,88 | -1,56 | 1,17 | -17,59 | 8,91 . |
| **P\_corporate\_funds** | -9,14 | 10,45 | -0,35 | 1,12 | -1,49 | 1,42 | -9,14 | 10,45 |
| **P\_capitals** | 5,37 | 14,50 | 0,54 | 1,71 | 0,20 | 2,19 | 5,37 | 14,50 |
| **AIC** | 436,55 | | 441,20 | | 188,90 | | 1162,04 | |
| **BIC** | 541,22 | | 545,87 | | 284,59 | | 1260,73 | |

0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

**Предельные эффекты:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Group\_0** | **Group\_1** | **Group\_2** | **Group\_3** | **Group\_4** |
| **porfolio\_cluster\_1** | 0.18\*\* | 0.09 | -0.02 | -0.1\*\* | -0.15\*\* |
| **porfolio\_cluster\_2** | 0.15 | 0.08 | -0.01 | -0.09\* | -0.13\* |
| **fin\_cluster\_4** | 0.82 | -0.18\*\*\* | -0.22\*\*\* | -0.20\*\*\* | -0.22\*\*\* |
| **fin\_cluster\_5** | -0.18\*\*\* | -0.18\*\*\* | -0.20\*\*\* | -0.22\*\*\* | 0.78\*\*\* |
| **securities** | 0.31\* | 0.13\* | -0.02 | -0.15 . | -0.26 . |

**Гипотезы выводы:**

# Проверим гипотезу о том, что porfolio\_cluster\_1 оказывает такое же влияние на

# индекс стабильности как и porfolio\_cluster\_2

> test.1 <- delta\_method(model\_orprobit, fn = fn\_test)

> summary(test.1)

val se lwr upr p\_value

porfolio\_cluster\_1 0.18785 0.45601 -0.70592 1.0816 0.6804

> test.1 <- delta\_method(model\_orlogit, fn = fn\_test)

> summary(test.1)

val se lwr upr p\_value

porfolio\_cluster\_1 -0.09642 0.51407 -1.10397 0.9111 0.8512