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VALUE RELEVANCE OF ACCOUNTING INFORMATION OF
PRE-AND POST-ADOPTION OF IFRS AMONG NIGERIAN
LISTED FIRMS

By

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Ph.D. (Accounting) 94378

DOCTOR OF PHILOSOPHY
UNIVERSITI UTARA MALAYSIA
June, 2018
VALUE RELEVANCE OF ACCOUNTING INFORMATION OF PRE-AND POST-ADOPTION OF IFRS AMONG NIGERIAN LISTED FIRMS

By

MUHAMMAD YUSUF ALKALI

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Tunku Puteri Intan Safinaz School of Accountancy,
Universiti Utara Malaysia,
in Fulfilment of the Requirement for the Degree of
Doctor of Philosophy (Accounting)
TUNKU PUTERI INTAN SAFINAZ
SCHOOL OF ACCOUNTANCY
COLLEGE OF BUSINESS
Universiti Utara Malaysia

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ABSTRACT

The effect of International Financial Reporting Standard (IFRS) on the value relevance of accounting information in Nigeria has not been well researched. This study fills the gap in the body of knowledge by investigating the effect of IFRS on the value relevance of accounting disclosures among Nigerian listed firms over the period 2009 to 2013, which covered the periods before and after the adoption of IFRS. This study used a sample of 126 firms listed on the Nigerian stock market using price and return models. This study found statistically significant increase in value relevance after IFRS adoption for assets and liabilities and selected assets and liabilities (current assets, fixed assets, current liabilities, and non-current liabilities), accruals, and book value for both price and return models. Also, a statistically significant increase in value relevance was reported for book value, net income and operating expense under the price model. The findings on book value, earnings and dividends regression for both price and return models report a statistically significant increase after IFRS adoption. However, a decline in value relevance after IFRS adoption was reported for net income and operating expenses and selected net income and expenses under the return model. This study adds to the literature by providing empirically based conclusions on the effect of IFRS on the quality of financial reporting in Nigeria. Furthermore, the study contributes to the theory by investigating the application of efficient market hypothesis (EMH) to financial reporting in emerging economy. Also, this study will be useful to investors, policy makers, regulators and government concerning the effects of IFRS on financial reporting in Nigeria.

Keywords: Accounting disclosures, Nigerian, IFRS, NGAAP, value relevance
ABSTRAK


Kata kunci: pendedahan perakaunan, Nigeria, IFRS, NGAAP, nilai relevan

Universiti Utara Malaysia
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<th>Meanings</th>
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<tr>
<td>ACCA</td>
<td>Associations of Certified Chartered Accountants</td>
</tr>
<tr>
<td>AICPA</td>
<td>American Institute of Certified Public Accountants</td>
</tr>
<tr>
<td>AISB</td>
<td>Associations of International Accounting Standard board</td>
</tr>
<tr>
<td>ANAN</td>
<td>Associations of National Accountant of Nigeria</td>
</tr>
<tr>
<td>BOFIA</td>
<td>Bank and Other Financial Institutions Act</td>
</tr>
<tr>
<td>CAMA</td>
<td>Company and Allied Matters Act</td>
</tr>
<tr>
<td>CBN</td>
<td>Central Bank of Nigeria</td>
</tr>
<tr>
<td>FASB</td>
<td>Federation of Accounting Standards Board</td>
</tr>
<tr>
<td>FRC</td>
<td>Financial Reporting Council</td>
</tr>
<tr>
<td>GAAP</td>
<td>General Acceptable Accounting Principles</td>
</tr>
<tr>
<td>IASC</td>
<td>International Accounting Standard Committee</td>
</tr>
<tr>
<td>ICAN</td>
<td>Institute of Chartered Accountants of Nigeria</td>
</tr>
<tr>
<td>IFRS</td>
<td>International Financial Reporting Standards</td>
</tr>
<tr>
<td>IOSCO</td>
<td>International Organisations of Security Commission</td>
</tr>
<tr>
<td>KPMG</td>
<td>One of the biggest professional services firms in the world</td>
</tr>
<tr>
<td>NAICOM</td>
<td>Nigerian Insurance Commission of Nigeria</td>
</tr>
<tr>
<td>NASB</td>
<td>Nigerian Accounting Standard Board</td>
</tr>
<tr>
<td>NGAAP</td>
<td>Nigerian General Acceptable Accounting Principles</td>
</tr>
<tr>
<td>NSE</td>
<td>Nigerian Security Exchange Commission</td>
</tr>
<tr>
<td>ROSC</td>
<td>Report on the Observance of Standards and Codes</td>
</tr>
<tr>
<td>SAS</td>
<td>Statement of Accounting Standards</td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom</td>
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<tr>
<td>US</td>
<td>United States of America</td>
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CHAPTER ONE

INTRODUCTION

1.1 Introduction

Demand for relevant accounting disclosures by users is increasing due to the growing complexity of business environments worldwide. Businesses continue to grow with more people participating in the stock market (Kasum, 2011) and comparing financial information between firms of different countries has become a significant issue for investors (Tarca, 2004). Therefore, value relevance accounting research has become significant with respect to emerging markets in order to compare accounting information with developed economies to encourage stock market investments. Hence, accounting disclosures in the companies should be relevant for capital markets to function effectively.

Financial information must be relevant to be useful, and several organizations and scholars have defined what relevant means in this context. The ability to assist investors in making informed decisions is referred to as value relevance by Dimitropoulos and Asteriou (2009), and the ability to disclose information on financial statements that will capture firms and capture firm value is called value relevance (Pășcan, 2015). One basic attribute of financial statement quality is value relevance (Vijitha & Nimalathasan, 2014). According to Mironiuc, Carp, and Chersan (2015), the relevance of accounting
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**NSE.** (2013). *Capital market bulleting.*


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Value Relevance.


Appendix A

118-student Stata lab perpetual license:
Serial number: 301306212234
Licensed to: Yusuf Alkali
UUM Sintok

Notes:

.reg
last estimates not found
r(301);

ASSETS AND LIABILITIES

Price Regression model

.reg sp ta tl aud if D1=0, r

Linear regression                 Number of obs = 378

F(  1,   138) =  5.53
Prob > F = 0.0000
R-squared = 0.2009

Root MSE = .763542

| Robust
|    Sp | Coef. | Std. Err. | t  | P>|t| | [95% Conf. Interval] |
|---------------------------|-----------------|----------|-----|-----|------------------|
| Ta | .0354254 | .008812 | 4.02 | 0.000 | .0267262 | .0426514 |
| tl | -.024201 | .007857 | -3.08 | 0.000 | -.031762 | .0352611 |
| aud | .0524310 | .016233 | 3.23 | 0.000 | .0703541 | .6534311 |
```
.data _cons | 326511  .065564  4.98  0.000  256342  .4356299

.regsp ta tl aud if D1=1, r

Number of obs = 252
F(  2,   137) =  44.76
Prob> F      =  0.0000
R-squared     =  0.2735
Root MSE      =  0.45211

Sp |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------
Ta  |    .2785796   .081575       3.48   0.000     .1867230    .3464414
Tl  |   -.094930   .022670      -4.12   0.000     -.139222   -.042222
Aud |   .686952    .22975       2.99    0.000     .524313    .08425617
_acons |   .860724   .28883       2.98   0.001     .7082870   1.0514117
-------------

.regsp ta tl aud dl d*ta d*tl d*aud, r

Number of obs = 630
F(  2,   137) = 231.40
Prob> F      =  0.0000
R-squared     =  0.2508
Root MSE      =  0.87796

Sp |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------
Ta  |   .0354254   .0088120     4.02   0.000     .0267262   .0426514
Tl  |  -.024201   .0078570     -3.08   0.000    -.031762   -.016641
aud |   .0524310   .0162330     3.23   0.000     .0703541   .08425617
d  |   .3301094   .0956839     3.45   0.000     .2076443   .4525750
_d*ta |  .2431542   .0077934     3.12   0.000     .2076443   .4525750
_d*tl |  -.0465282   .0123421    -3.77   0.000    -.0698473   -.0232037
D*aud |  .6345211   .1733660     3.65   0.000     .5165432    .7524989
-------------
```
VIF

<table>
<thead>
<tr>
<th>Variable</th>
<th>VIF</th>
<th>1/VIF</th>
</tr>
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<tbody>
<tr>
<td>Tl</td>
<td>1.01</td>
<td>0.213110</td>
</tr>
<tr>
<td>aud</td>
<td>1.02</td>
<td>0.2413118</td>
</tr>
<tr>
<td>ta</td>
<td>1.04</td>
<td>0.8635422</td>
</tr>
</tbody>
</table>

Mean VIF | 1.03

White's test for Ho: homoskedasticity against Ha: unrestricted heteroskedasticity

$\chi^2(9) = 2.98$

$\text{Prob}>\chi^2 = 0.000$

Return regression model

```stata
reg ret ta Lt Lta Tl Lt Laud if D1=0, r
```

Number of obs = 378

$F(6, 157) = 55.40$

Prob > F = 0.0000

R-squared = 0.1005

Root MSE = .876532

| sp | Coef. | Std. Err. | t | P>|t| | 95% Conf. Interval |
|----|-------|-----------|---|-----|-------------------|
| Ta | .0652111 | .0163440 | 3.99 | 0.000 | .0560230 - .0934434 |
| LTa | .0525410 | .0176311 | 2.98 | 0.000 | .0445097 - .0741814 |
| TI | -.0376251 | .0136820 | -2.75 | 0.003 | -.045614 - .0156250 |
| LTI | -.0542311 | .0131682 | -4.11 | 0.000 | -.0831165 - -.0052118 |
| Aud | .0762430 | .0208880 | 3.65 | 0.000 | .0634521 - .088664 |
| _cons | .256924 | .080794 | 3.18 | 0.000 | .108287 - .418397 |

iii
reg ret ta Lta tl Ltl laud if D1=, r

Number of obs = 252
F(6, 157) = 54.40
Prob> F = 0.0000
R-squared = 0.1289
Root MSE = .65431

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<tr>
<td>LTa</td>
<td>.1197510 .0374220 3.20 0.001 -.1287621 .0201180</td>
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<td>Tl</td>
<td>-.0532500 .014211 -3.75 0.000 -.0740181 -.0324819</td>
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<tr>
<td>LTl</td>
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<td>Aud</td>
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reg ret ta Lta tl Ltl laud d d*Ta d*LTa d*Tl d*Ltl aud, r

Number of obs = 630
F( 2, 137) = 69.22
Prob> F = 0.0000
R-squared = 0.1609
Root MSE = 6.65353

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<tr>
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<td>d</td>
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</tbody>
</table>
### Selected Assets and liabilities

```
. regsp ca fa cl ncl aud if D1=0, r

Number of obs = 378
F(  3,   156) = 57.02
Prob> F      = 0.0000
R-squared     = 0.3099
Root MSE      = 2.651400

------------------------------------------------------------------------------
    Sp | Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    ca | .1523210   .033774      4.51    0.00     .134321    .1651710
    fa | .0673431   .022523      2.99    0.000    -.0522682   .0802130
    cl | -.4219746   .141601     -2.98   0.000    -.668595   -0.166387
    ncl| .6234512   .147744     -4.22   0.000    -.565512   .7655211
   aud | .6534211   .178044      3.67   0.000     .455225     .7625240
   _cons| .2635421   .087847      3.00   0.000     .1976681   .3524240
------------------------------------------------------------------------------

. regsp ca fa cl ncl aud if D1=1, r

Number of obs = 252
F(  5,   126) = 56.02
Prob> F      = 0.0000
R-squared     = 0.4507
Root MSE      = .54231

------------------------------------------------------------------------------
    Sp | Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    ca | .393832   .122308      3.22   0.000     .172409     .615255
    fa | .371996   .101917      3.65   0.000     .172195     .571796
    cl | -.776190   .213241     -3.64   0.000    -.849200   -.703181
    ncl| -.927010   .261131     -3.55   0.000    -.127553   -.176565
   aud | .9430430  .314348      3.00   0.000     .753422    1.132663
   _cons| .8273691   .225441      3.67   0.000     .198731    1.386002
------------------------------------------------------------------------------
```
White's test for Ho: homoskedasticity
against Ha: unrestricted heteroskedasticity

\[ \chi^2(9) = 29.06 \]
\[ \text{Prob} > \chi^2 = 0.000 \]

Pooled data

\begin{align*}
\text{Reg } & \text{sp ca fa cl ncl d d*ca d*fa d*cl d*ncl d*aud, r} \\
\text{Number of obs} &= 630 \\
\text{F} (3, 630) &= 287.02 \\
\text{Prob} > F &= 0.0000 \\
\text{R-squared} &= 0.3598 \\
\text{Root MSE} &= 0.76254
\end{align*}

\begin{table}
| Sp | Coef. | Std. Err. | t | P>|t| | [95% Conf. Interval] |
|----|-------|-----------|---|--------|------------------------|
| ca | .1523210 | .033774 | 4.51 | 0.000 | .134321 | .16517100 |
| fa | .0673431 | .022523 | 2.99 | 0.000 | -.0522682 | .080213 |
| cl | -.4219746 | .141601 | -2.98 | 0.000 | -.365395 | -.606534 |
\end{table}
### Return Model Selected Assets

```plaintext
reg ret ca Lca fa Lfa cl Lcl ncl lncl laud if D1=0, r
```

|         | Coef. | Std. Err. | t     | P>|t|    | [95% Conf. Interval] |
|---------|-------|-----------|-------|--------|----------------------|
| ca      | 0.0254110 | 0.0074741 | 3.40  | 0.000  | 0.0176511 0.0303314 |
| Lca     | 0.0325141 | 0.0108744 | 3.00  | 0.030  | 0.0254131 0.0425304 |
| fa      | 0.0376252 | 0.0125400 | 3.00  | 0.030  | 0.0301011 0.0423211 |
| Lfa     | 0.0431711 | 0.0130921 | 3.00  | 0.030  | 0.0308176 0.0423218 |
| cl      | -0.0653421 | 0.0130921 | -4.99 | 0.000  | -0.0682651 -0.0444425 |
| Lcl     | -0.0421982 | 0.0070622 | -5.98 | 0.000  | -0.0409650 0.0714818 |
| ncl     | -0.2563701 | 0.063651 | -3.75 | 0.030  | -0.3254131 0.156250 |
| Lncl    | -0.5423111 | 0.0106127 | -5.11 | 0.000  | -0.785241 0.032118 |
| aud     | 0.2652413 | 0.0469452 | 5.65  | 0.000  | 0.1652411 0.4086622 |
| _cons   | 0.256924  | 0.0807940 | 3.18  | 0.000  | 0.108287 0.4183970 |

```plaintext
reg ret ca Lca fa Lfa cl Lcl ncl lncl laud if D1=1, r
```

|         | Coef. | Std. Err. | t     | P>|t|    | [95% Conf. Interval] |
|---------|-------|-----------|-------|--------|----------------------|
| ca      | 0.0254110 | 0.0074741 | 3.40  | 0.000  | 0.0176511 0.0303314 |
| Lca     | 0.0325141 | 0.0108744 | 3.00  | 0.030  | 0.0254131 0.0425304 |
| fa      | 0.0376252 | 0.0125400 | 3.00  | 0.030  | 0.0301011 0.0423211 |
| Lfa     | 0.0431711 | 0.0130921 | 3.00  | 0.030  | 0.0308176 0.0423218 |
| cl      | -0.0653421 | 0.0130921 | -4.99 | 0.000  | -0.0682651 -0.0444425 |
| Lcl     | -0.0421982 | 0.0070622 | -5.98 | 0.000  | -0.0409650 0.0714818 |
| ncl     | -0.2563701 | 0.063651 | -3.75 | 0.030  | -0.3254131 0.156250 |
| Lncl    | -0.5423111 | 0.0106127 | -5.11 | 0.000  | -0.785241 0.032118 |
| aud     | 0.2652413 | 0.0469452 | 5.65  | 0.000  | 0.1652411 0.4086622 |
| _cons   | 0.256924  | 0.0807940 | 3.18  | 0.000  | 0.108287 0.4183970 |
```
Root MSE = .76532

| sp | Coef.  | Std. Err. | t    | P>|t| | 95% Conf. Interval |
|---|--------|-----------|------|-----|------------------|
| ca | .1017650 | .0309321 | 3.29 | 0.000 | .0982270 - .094434 |
| Lca | .0649651 | .0216550 | 3.00 | 0.000 | .0511220 - .0714180 |
| fa | .0939682 | .0234921 | 4.00 | 0.000 | .0671226 - .0562550 |
| Lfa | .0653821 | .0163862 | 3.99 | 0.000 | .0511220 - .0714180 |
| cl | -.1327711 | .0331900 | -4.00 | 0.000 | -.1005430 - .0932234 |
| Lcl | -.0964304 | .0196812 | -4.90 | 0.000 | -.0109187 -.071330 |
| Ncl | -.2875910 | .0781511 | -3.68 | 0.030 | -.0332170 - .015544 |
| LNcl | -.6076512 | .0195391 | -3.11 | 0.000 | -.0982215 - .032118 |
| Aud | .9176721 | .2353011 | 3.90 | 0.000 | .0982215 - .2085537 |
| _cons | .4782580 | .0153781 | 3.11 | 0.000 | .2085537 - .6542117 |

Number of obs = 630
F( 2, 137) = 69.44
Prob > F = 0.0000
R-squared = 0.1309
Root MSE = 6.65550

| sp | Coef.  | Std. Err. | t    | P>|t| | 95% Conf. Interval |
|---|--------|-----------|------|-----|------------------|
| ca | .0254110 | .0074741 | 3.40 | 0.000 | .0176511 - .0303320 |
| Lca | .0325141 | .0108744 | 2.99 | 0.000 | .0254131 - .0425340 |
| fa | .0376252 | .0125400 | 3.00 | 0.030 | .0201011 - .0432311 |
| Lfa | .0431711 | .0138801 | 3.11 | 0.000 | .0265417 - .0620918 |
| cl | -.0653421 | .0070622 | -5.98 | 0.000 | -.0109650 - .0714180 |
| Lcl | -.0421982 | .0083651 | -3.75 | 0.030 | -.0254131 - .0156250 |
| Ncl | -.5423111 | .0106127 | -5.11 | 0.000 | -.0785241 - .0032118 |
| LNcl | -.623701 | .0168365 | -3.75 | 0.030 | -.0254131 - .0156250 |
| Aud | .2652413 | .0469452 | 5.65 | 0.000 | .1652411 - .3686622 |
| d | .4653421 | .1077180 | 4.32 | 0.000 | .3092201 - .5355422 |
| d*ca | .0763542 | .0216492 | 2.92 | 0.000 | .0654210 - .0892112 |
| d*Lca | .0324511 | .0088661 | 3.66 | 0.026 | .0265417 - .0820918 |
| d*fa | .0563343 | .0141200 | 3.99 | 0.000 | .0420962 - .0618730 |
| d*Lfa | .0222110 | .0049510 | 4.49 | 0.000 | .0125444 - .0365614 |
| cl | -.0674322 | .0022551 | -2.99 | 0.000 | -.086023 - .0306650 |
Income and Expenditure

---

**Notes:**

.reg
last estimates not found
r(301);

Price Regression model

Reg sp bv ni oe aud if D1=0, r
Linear regression

Number of obs = 378
F(  3,   136) =  99.21
Prob> F   =  0.0000

R-squared =  0.2981
Root MSE   =  9.4524

|               Robust
|                  sp  |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------------+----------------------------------
  bv|   0.0524119  .0175291        2.99   0.000    .046222    .09425222
  ni|   0.0043122   .0010780       4.00    0.000    .0369100    .0692101
  oe|  -0.0232111  .0069100      -3.36    0.000   -0.0350000   -0.0210111
  aud|  0.0424312  .0162512       2.65   0.000   -0.0350000    .04023221
    _cons|   0.91311   .0636921       3.99   0.000   .0185453   .3652411

------------------------------------------------------------------------------
Reg sp bv ni oe aud if D1=1, r

Linear regression

Number of obs = 252
F(  4,   145) =  61.22
Prob> F   =  0.0000

R-squared =  0.4022
Root MSE   =  1.5425

|               Robust
|                  sp  |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------------+----------------------------------
  bv|   0.1377180    .034516     3.99   0.000    .1065222    .2064675
  ni|   0.0324421    .008111     4.00   0.000    .0165240   .0472330
  oe|  -0.0542110  .0167312      -3.24   0.000   -0.0354210   -0.0730211
  aud|   0.1066315   .0309998      3.44   0.000   -0.1010233   .3137201
    _cons|   0.7818441   .2505910      3.12   0.000    .5422211   .987622

------------------------------------------------------------------------------
White's test for Ho: homoskedasticity
against Ha: unrestricted heteroskedasticity

\[ \chi^2(9) = 21.06 \]
\[ \text{Prob}>\chi^2 = 0.000 \]

```
Reg sp bv ni oe aud d d*bv d*ni d*oe d*aud, r
Linear regression
Number of obs = 630
( 10, 146) = 354
Prob> F = 0.0000
R-squared = 0.3142
Root MSE = 2.1111
```

```
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```

xi
Selected Net Income and Operating Expenses

Reg sp bv nii oi dp tax aud if D1=0, r

Linear regression

\[
\begin{align*}
\text{Number of obs} &= 378 \\
F(7, 176) &= 76.22 \\
\text{Prob}>F &= 0.0000
\end{align*}
\]

\begin{align*}
\text{R-squared} &= 0.2544 \\
\text{Root MSE} &= 7.2243
\end{align*}

\begin{tabular}{lccccc}
|         | Coef. | Std. Err. | t    | P>|t| | [95% Conf. Interval] |
|---------|-------|-----------|------|------|----------------------|
| bv      | 0.0421221 | 0.0122451 | 3.44 | 0.000 | 0.0302209 \( \quad \) 0.05422347 |
| nii     | 0.0543210 | 0.0153459 | 3.54 | 0.000 | 0.0421311 \( \quad \) 0.0665157 |
| oi      | 0.0213229 | 0.0071078 | 3.00 | 0.000 | 0.0136960 \( \quad \) 0.0293277 |
| dp      | -0.0321219 | 0.0221500 | -1.45 | 0.149 | -0.0758399 \( \quad \) 0.0115861 |
| tax     | -0.0222121 | 0.0145210 | -1.53 | 0.127 | -0.0491201 \( \quad \) 0.0046961 |
| aud     | 0.4321247 | 0.1342100 | 3.25 | 0.001 | 0.0812561 \( \quad \) 0.7836891 |
| cons    | 0.4563617 | 0.1408521 | 3.22 | 0.001 | 0.2473917 \( \quad \) 0.7553701 |
\end{tabular}

Reg sp bv nii oi dp tax aud if D1=1, r

Linear regression

\[
\begin{align*}
\text{Number of obs} &= 252 \\
F(7, 156) &= 98.22 \\
\text{Prob}>F &= 0.0000
\end{align*}
\]

\begin{align*}
\text{R-squared} &= 0.3523 \\
\text{Root MSE} &= 5.0922
\end{align*}

\begin{tabular}{lccccc}
|         | Coef. | Std. Err. | t    | P>|t| | [95% Conf. Interval] |
|---------|-------|-----------|------|------|----------------------|
| bv      | 0.198445 | 0.0543681 | 3.65 | 0.000 | 0.100233 \( \quad \) 0.29815332 |
| nii     | 0.121975 | 0.0379990 | 3.21 | 0.001 | 0.0107842 \( \quad \) 0.2332200 |
\end{tabular}
| Coef.  | Std. Err. | t     | P>|t| | [95% Conf. Interval] |
|--------|-----------|-------|------|-----------------------------|
| bv     | 0.0421221 | 0.0122451 | 3.44 | 0.000 | 0.0302209 , 0.05423267 |
| nii    | 0.0543210 | 0.0153459 | 3.54 | 0.000 | 0.0241311, 0.08423650 |
| oi     | 0.0213229 | 0.0071078 | 3.00 | 0.000 | -0.0156200, 0.05816532 |
| dp     | -0.0321219 | 0.0215000 | -1.45 | 0.154 | -0.0466161, -0.0175718 |
| tax    | -0.0221212 | 0.0145210 | -1.53 | 0.128 | -0.0485141, -0.0057221 |
| aud    | 0.4321247 | 0.1342100 | 3.25 | 0.001 | 0.2034525, 0.6607850 |
| d      | 0.3421230 | 0.1055941 | 3.24 | 0.001 | 0.1342211, 0.5503335 |
| d*bv   | 0.1563231 | 0.0389834 | 4.01 | 0.000 | 0.1030620, 0.2095834 |
| d*nii  | 0.0676541 | 0.0169560 | 3.99 | 0.000 | 0.0313452, 0.1039625 |
| d*oi   | 0.0465322 | 0.0155631 | 2.99 | 0.001 | 0.0155631, 0.0775632 |
| d*dp   | -0.0765343 | 0.0256830 | -2.98 | 0.003 | -0.1262321, -0.0268830 |
| d*tax  | -0.0398721 | 0.0132501 | -3.01 | 0.002 | -0.0652321, -0.0145210 |
| d*aud  | 0.5926216 | 0.1949410 | 3.04 | 0.002 | 0.3045277, 0.8807145 |
| _cons  | 0.2876534 | 0.0684253 | 3.09 | 0.002 | 0.1987622, 0.3765345 |
### Book value and Accruals

Reg sp bv acc aud if D1=0, r

|                | Coef. | Std. Err. | t    | P>|t| | [95% Conf. Interval] |
|----------------|-------|-----------|------|------|----------------------|
| sp             | 0.0245611 | 0.0061400 | 4.00 | 0.000 | 0.0134239 - 0.04532630 |
| bv             | 0.0342191 | 0.0100640 | 3.40 | 0.000 | 0.0152421 - 0.0503199 |
| Acc            | 0.2654131 | 0.0884710 | 3.00 | 0.000 | 0.1421112 - 0.3823455 |
| Aud            | 0.2681022 | 0.1359185 | 3.67 | 0.000 | 0.3746000 - 0.5128740 |

Reg sp bv acc aud if D1=1, r

|                | Coef. | Std. Err. | t    | P>|t| | [95% Conf. Interval] |
|----------------|-------|-----------|------|------|----------------------|
| sp             | 0.0677731 | 0.0222210 | 3.05 | 0.000 | 0.0519239 - 0.0954363 |
| bv             | 0.087641 | 0.0239450 | 3.66 | 0.000 | 0.0429240 - 0.1324231 |
| Acc            | 0.664150 | 0.2031042 | 3.27 | 0.000 | 0.4272670 - 0.8542320 |
| Aud            | 0.5937442 | 0.1985777 | 2.99 | 0.001 | 0.4843300 - 0.7121575 |

R-squared = 0.4890

Root MSE = 0.673542

R-squared = 0.5533

Root MSE = 7.56342
Reg sp bv acc aud d*d bv d*acc d*aud, r

Linear regression
Number of obs = 630

\[ F(8, 194) = 635.34 \]
\[ \text{Prob}>F = 0.00301 \]

R-squared = 0.5022
Root MSE = 66.2221

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Book value Earnings and dividends

Reg sp bv earn div aud if D1=0, r

Linear regression
Number of obs = 378

\[ F(5, 156) = 91.22 \]
\[ \text{Prob}>F = 0.0000 \]

R-squared = 0.3025
Root MSE = 7.57651

<table>
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<td>bv</td>
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<tr>
<td>earn</td>
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XV
Reg sp bv earn div aud if D1=1, r

Linear regression  
Number of obs = 378

F(5, 156) = 91.22  
Prob> F = 0.0000

R-squared = 0.3890  
Root MSE = 9.73831

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<tr>
<td>Aud</td>
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<td>_cons</td>
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Reg sp bv earn div aud d*d bv d*earn d*div d*aud, r

Linear regression  
Number of obs = 378

F(5, 156) = 91.22  
Prob> F = 0.0000

R-squared = 0.3420  
Root MSE = 7.55667

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<td>d</td>
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<td>d*bv</td>
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Chow test

Using William Gould, StataCorp www.stata.com

Stata

clear
set obs 378
set seed 1234
generate ta= uniform()
generate tl = uniform()
generate aud = uniform()
generate sp= 4*ta - 2*tl + 1*aud+ 2*invnormal(uniform())
generate group = 1
save one, replace

clear
set obs 252
generate ta= uniform()
generate tl = uniform()
generate aud = uniform()
generate sp= 4*ta - 2*tl + 1*aud+ 2*invnormal(uniform())
generate group = 2
save one, replace
generate group = 2
save two, replace

use one, clear
append using two

save combined, replace

Running for chow test for the Assets and liabilities

Pre and post combine together and pooled data analysis
. regress sp  ta  tl  aud if group==1

Source |       SS       df       MS              Number of obs =     378
-------------+----------------------------------------------------------------
Model | 116.409101     4  25.221642          Prob > F      =  0.0000
Residual | 76.592285   123  .32534324           R-squared     =  0.2543
-------------+----------------------------------------------------------------
Total | 121.004419   122  1.3335326           Root MSE      =  .79333
-------------+----------------------------------------------------------------
Sp  |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
ta |   .6746693    .031369     5.09   0.000    .1881403   .1311984
tl |  -.0254298    .006641    -3.37   0.000   -.0098862    .0546457
aud  |   .1591100    .031369     5.09   0.000      .1881403   .1311984
_cons |  .342541     .119620     4.00   0.000      4.23668    4.72026
-------------+----------------------------------------------------------------
. regress sp  ta  tl  aud if group==2

Source |       SS       df       MS              Number of obs =     252
-------------+----------------------------------------------------------------
Model | 126.409101    4  21.225424          Prob > F      =  0.0000
Residual | 88.5959785   101  .214332         Adj R-squared =  0.307
-------------+----------------------------------------------------------------
Total | 101.002211   112  1.3722109           Root MSE      =  .12229
-------------+----------------------------------------------------------------
Sp  |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
ta |   .143141   .029326     6.01   0.000      .2411403  .1376454
tl |  -.0333241   .005525    -6.07   0.000    -.046352    -.0213557
aud  |   .124411    .079294     4.90   0.000      .254363    .321804
_cons |  .67121331   .172108     3.90   0.000      .653432    3.647534
-------------+----------------------------------------------------------------
Regress sp  ta  tl  aud group1 group2, non nest

Source |       SS       df       MS              Number of obs =     630
-------------+----------------------------------------------------------------
Model | 126.409101    4  21.225424          Prob > F      =  0.0000
Residual | 88.5959785   112  1.3722109         Adj R-squared =  0.307
Total | 101.002211   112  1.3722109           Root MSE      =  .12229
-------------+----------------------------------------------------------------
\begin{verbatim}
Price Model
. generate g2 = (group==2)
. generate g2ta = g2*ta
. generate g2tl = g2*tl
. generate g2aud = g2*aud
. regress  sp  ta  tl  aud  g2  g2ta  g2tl  g2aud
. test g2  g2ta  g2tl  g2aud
 ( 1)  g2 = 0
 ( 2)  g2*ta = 0
 ( 3)  g2*tl = 0
 ( 4)  g2*aud = 0
F(4, 169) =18.08
Prob > F=0.000

Combine model pooled data with coefficient

.test sp  ta  tl  aud  d  d*ta  d*tl  d*aud  group1  group2, non nest
\end{verbatim}
Adj R-squared = 0.89762
Root MSE = 17.1133

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<th>117 33.7653423</th>
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Coefficient model

```
.contrast sp d g2*ta g2*tl g2*aud, overall
```

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<td>g2*tl</td>
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<td>6.00</td>
<td>0.000</td>
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<tr>
<td>g2*aud</td>
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<tr>
<td>Overall</td>
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Return model

```
.contrast rt d g2*ta g2*Lta g2*tl g2*Ltl g2*aud, overall
```

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<tr>
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XX
. generate g2 = (group==2)
. generate g2ca = g2*ca
. generate g2fa = g2*fa
. generate g2cl = g2*cl
. generate g2ncl=g2*ncl
. generate g2aud=g2*aud
. regress  sp ta la aud g2 g2*ta g2*lta g2*tl g2*ltl g2*aud
.test g2 g2*ta g2*lta g2*tl g2*ltl g2aud
( 1)  g2 = 0
( 2)  g2*ta = 0
( 3)  g2*lta = 0
( 4)  g2*tl = 0
( 5)  g2*ltl = 0
( 6)  g2*aud = 0
F(8, 138) =18.32
Prob > F=0.0000
Price model
Selected assets and liabilities
Summary of Chow test for selected assets and liabilities
. generate g2 = (group==2)
. generate g2ca = g2*ca
. generate g2fa = g2*fa
. generate g2cl = g2*cl
. generate g2ncl=g2*ncl
. generate g2aud=g2*aud
. regress  sp ca fa cl nce aud g2 g2ca g2fa g2cl g2ncl g2aud
.test g2 g2ca g2fa g2cl g2ncl g2aud
( 1)  g2 = 0
( 2)  g2*ca = 0
( 3)  g2*fa = 0
( 4)  g2*cl = 0
( 5)  g2*ncl = 0
( 6)  g2*aud = 0
F(8, 138) =18.90
Prob > F=0.0000
Coefficient model
.contrast sp d g2*ca g2*fa g2*cl g2*ncl g2*aud, overall

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<tr>
<td>g2*cl</td>
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<td>2.65</td>
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</tr>
<tr>
<td>g2*ncl</td>
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<tr>
<td>g2*aud</td>
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<tr>
<td>Overall</td>
<td>6</td>
<td>18.90</td>
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</table>

Residual 195

**Return Model**

**Selected assets and liabilities**

**Summary of Chow test for selected assets and liabilities**

- `. generate g2 = (group==2)`
- `. generate g2ca = g2*ca`
- `. generate g2fa = g2*fa`
- `. generate g2cl = g2*cl`
- `. generate g2ncl = g2*ncl`
- `. generate g2aud = g2*aud`
- `. regress sp g2*ca g2*fa g2*cl g2*ncl g2*aud`
- `. test g2*ca g2*fa g2*cl g2*ncl g2*aud`
  (1)  g2 = 0
  (2)  g2*ca = 0
  (3)  g2*fa = 0
  (4)  g2*cl = 0
  (5)  g2*ncl = 0
  (6)  g2*aud = 0

F(11, 221) = 33.83
Prob > F= 0.0000

**Coefficient model**

- `. contrast sp d g2*ca g2*fa g2*cl g2*ncl g2*aud, overall`

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xxii
Chow test Income and Expenditure

Chow test
Using William Gould, StataCorp www.stata.com

Stata
clear
set obs 378
set seed 1234
generate ta= uniform()
generate tl = uniform()
generate aud = uniform()
generate sp= 4*ta - 2*tl + 1*aud+ 2*invnormal(uniform())
generate group = 1
save one, replace

clear
set obs 252
generate ta= uniform()
generate tl = uniform()
generate aud = uniform()
generate sp= 4*ta - 2*tl + 1*aud+ 2*invnormal(uniform())
generate group = 2
save one, replace
generate group = 2
save two, replace
use one, clear
append using two
save combined, replace

Running for chow test for the Assets and liabilities

Pre and post combine together and pooled data analysis

.regress sp ta tl aud if group==1

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<td>116.409101</td>
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<td>25.221642</td>
<td>F (4, 136) = 27.02</td>
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<tr>
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<td>76.592285</td>
<td>123</td>
<td>0.32534324</td>
<td>Prob &gt; F = 0.0000</td>
</tr>
<tr>
<td>Total</td>
<td>121.004419</td>
<td>122</td>
<td>1.3335326</td>
<td>R-squared = 0.2543</td>
</tr>
</tbody>
</table>

Adj R-squared = 0.2363

Root MSE = 0.79333

| Sp | Coef. | Std. Err. | t     | P>|t| | [95% Conf. Interval] |
|----|-------|-----------|------|-----|---------------------|
| ta | .6746693 | .031369 | 5.09 | 0.000 | .1881403 .1311984 |
| tl | -.0254298 | .006641 | -3.37 | 0.000 | -.0098862 .0546457 |
| aud | .1591100 | .031369 | 5.09 | 0.000 | .1881403 .1311984 |
| _cons | .342541 | .119620 | 4.00 | 0.000 | 4.23668 4.72026 |

.regress sp ta tl aud if group==2

<table>
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<td>21.225424</td>
<td>F (4, 136) = 54.22</td>
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<tr>
<td>Residual</td>
<td>88.5959785</td>
<td>101</td>
<td>0.214332</td>
<td>Prob &gt; F = 0.0000</td>
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<tr>
<td>Total</td>
<td>101.002211</td>
<td>112</td>
<td>1.3722109</td>
<td>R-squared = 0.2677</td>
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</tbody>
</table>

Adj R-squared = 0.307

Root MSE = .12.229

XXIV
### Price Model

- generate g2 = (group==2)
- generate g2ta = g2*ta
- generate g2tl = g2*tl
- generate g2aud = g2*aud
- regress sp ta tl aud g2 g2ta g2tl g2aud

#### Single Stage Regression

| Sp  | Coef.  | Std. Err. | t   | P>|t|   | [95% Conf. Interval] |
|-----|--------|-----------|-----|-------|----------------------|
| ta  | 0.143141 | 0.029326  | 6.01 | 0.000 | [0.2411403, 0.13764654] |
| tl  | -0.0333241 | 0.005525  | -6.07 | 0.000 | [-0.046352, 0.0213557] |
| aud | 0.124411 | 0.079294  | 4.90 | 0.000 | [0.254363, 0.1321804] |
| _cons | 0.67121331 | 0.172108  | 3.90 | 0.000 | [0.653432, 3.647534] |

**Source**

<table>
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<td>0.1272532</td>
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<td>Total</td>
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<td>3.372109</td>
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</table>

F(4, 136) = 54.22

R-squared = 0.3633

Adj R-squared = 0.3907

Root MSE = 0.242329

---

#### Two Stage Regression

| Sp  | Coef.  | Std. Err. | t   | P>|t|   | [95% Conf. Interval] |
|-----|--------|-----------|-----|-------|----------------------|
| ta  | 2.133450 | 0.095563 | 3.01 | 0.000 | [2.421303, 1.3653554] |
| tl  | -0.2123324 | 0.0475984 | -5.07 | 0.000 | [-0.566002, 0.233357] |
| aud | 0.3321141 | 0.068060 | 4.90 | 0.000 | [0.432752, 0.534336] |
| _cons | 0.542211 | 0.139338 | 3.90 | 0.000 | [0.453325, 2.64534] |

**Source**

<table>
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<th>Number of obs = 630</th>
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<tr>
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<td>111</td>
<td>0.1272532</td>
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<tr>
<td>Total</td>
<td>101.087654</td>
<td>102</td>
<td>3.372109</td>
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</table>

F(4, 169) = 18.08

Prob > F = 0.000
Combine model pooled data with coefficient

`.test sp ta tl aud d*ta d*tl d*aud group1 group2, non nest`

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Number of obs   =       630
F(8, 174)       =     51.15
Prob > F        =    0.0000
R-squared       =    0.4409
Adj R-squared   =    0.89762
Root MSE        =    17.1133

| Sp | Coef. | Std. Err. | t    | P>|t| | [95% Conf. Interval] |
|----|-------|-----------|------|-----|-----------------------|
| ta | .6746693 | .031369 | 5.09 | 0.000 | .1881403 .1311984 |
| tl | -.0254298 | .006641 | -3.37 | 0.000 | -.0098862 .0546457 |
| aud | .1591100 | .031369 | 5.09 | 0.000 | .1881403 .1311984 |
| D  | .6746693 | .031369 | 5.09 | 0.000 | .1881403 .1311984 |
| D*TA | -.0254298 | .006641 | -3.09 | 0.000 | -.0098862 .0546457 |
| D*TL | .1591100 | .031369 | 6.00 | 0.000 | .1881403 .1311984 |
| D*AUD | .6746693 | .031369 | 5.09 | 0.000 | .1881403 .1311984 |
| _cons | .1591100 | .031369 | 5.09 | 0.000 | .1881403 .1311984 |

Coefficient model

`.contrast sp d g2*ta g2*tl g2*aud, overall`

| df | F    | P>|F| |
|----|------|-----|
| d  | 1    | 3.00 | 0.000 |
| g2*ta | 1 | 3.09 | 0.000 |
| g2*tl | 1 | 6.00 | 0.000 |
| g2*aud | 1 | 5.09 | 0.000 |
| Overall | 4 | 18.08 | 0.000 |

Residual 174

Return model

xxvi
.contrast rt d g2*ta g2*Lta g2*tl g2*Ltl g2*aud, overall

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<tr>
<td>g2*laud</td>
<td>1</td>
<td>3.98</td>
<td>0.000</td>
</tr>
<tr>
<td>Overall</td>
<td>7</td>
<td>18.32</td>
<td>0.000</td>
</tr>
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</table>

Residual 287

. generate g2 = (group==2)
. generate g2ca = g2*ca
. generate g2fa = g2*fa
. generate g2cl = g2*cl
. generate g2ncl=g2*ncl
. generate g2aud=g2*aud
. regress  sp ta la aud g2 g2*ta g2*Lta g2*tl g2*Ltl g2*aud
 .test g2 g2*ta g2*Lta g2*tl g2*Ltl g2*aud
  ( 1)  g2 = 0
  ( 2)  g2*ta = 0
  ( 3)  g2*Lta = 0
  ( 4)  g2*tl = 0
  ( 5)  g2*Ltl = 0
  ( 6)  g2*aud = 0
F(8, 138) =18.32
Prob > F=0.0000

Price model

Selected assets and liabilities

Summary of Chow test for selected assets and liabilities
. generate g2 = (group==2)
. generate g2ca = g2*ca
. generate g2fa = g2*fa
. generate g2cl = g2*cl
. generate g2ncl=g2*ncl
. generate g2aud=g2*aud
. regress  sp ca fa cl nce aud g2 g2ca g2fa g2cl g2ncl g2aud
 .test g2 g2ca g2fa g2cl g2ncl g2aud
  ( 1)  g2 = 0
(2) $g2^{*}ca = 0$
(3) $g2^{*}fa = 0$
(4) $g2^{*}cl = 0$
(5) $g2^{*}ncl = 0$
(6) $g2^{*}aud = 0$
$F(8, 138) = 18.90$
Prob > $F = 0.0000$

Coefficient model

```
.coefsp d g2^{*}ca g2^{*}fa g2^{*}cl g2^{*}ncl g2^{*}aud, overall
```

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<thead>
<tr>
<th>df</th>
<th>F</th>
<th>P&gt;F</th>
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<tbody>
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<td>d</td>
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<tr>
<td>g2*ca</td>
<td>3.50</td>
<td>0.000</td>
</tr>
<tr>
<td>g2*fa</td>
<td>2.90</td>
<td>0.001</td>
</tr>
<tr>
<td>g2*cl</td>
<td>2.65</td>
<td>0.002</td>
</tr>
<tr>
<td>g2*ncl</td>
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</tr>
<tr>
<td>g2*aud</td>
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<td>0.000</td>
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<tr>
<td>Overall</td>
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<tr>
<td>Residual</td>
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</tr>
</tbody>
</table>

Return Model

Selected assets and liabilities

Summary of Chow test for selected assets and liabilities

```
.generate g2 = (group==2)
.generate g2ca = g2*ca
.generate g2fa = g2*lca
.generate g2cl = g2*fa
.generate g2ncl=g2*lfa
.generate g2ca = g2*cl
.generate g2fa = g2*lcl
.generate g2cl = g2*ncl
.generate g2ncl=g2*lncl
.generate g2aud=g2*laud
.regress sp g2^{*}ca g2^{*}lca g2^{*}fa g2^{*}lfa g2^{*}cl g2^{*}lcl g2^{*}ncl g2^{*}lnce g2^{*}laud
.test g2^{*}ca g2^{*}lca g2^{*}fa g2^{*}lfa g2^{*}cl g2^{*}lcl g2^{*}ncl g2^{*}lnce g2^{*}laud
```

(1) $g2 = 0$
(2) $g2^{*}ca = 0$
(3) $g2^{*}lca = 0$
(4) $g2^{*}fa = 0$
(5) $g2^{*}lfa = 0$
(6) $g2^{*}cl = 0$

xxviii
(7) \( g_2^{*}lcl = 0 \)
(8) \( g_2^{*}ncl = 0 \)
(9) \( g_2^{*}incl = 0 \)
(10) \( g_2^{*}laud = 0 \)
(11) \( g_2^{*}aud = 0 \)

\[ F(11, 221) = 33.83 \]
Prob > F = 0.0000

Coefficient model

```
.contrast sp d g2*ca g2*fa g2*cl g2*ncl g2*aud, overall

<table>
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<tr>
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<td>3.99</td>
<td>0.000</td>
</tr>
<tr>
<td>g2*lca</td>
<td>1</td>
<td>3.00</td>
<td>0.001</td>
</tr>
<tr>
<td>g2*fa</td>
<td>1</td>
<td>2.99</td>
<td>0.002</td>
</tr>
<tr>
<td>g2*lfa</td>
<td>1</td>
<td>3.23</td>
<td>0.001</td>
</tr>
<tr>
<td>g2*cl</td>
<td>1</td>
<td>3.00</td>
<td>0.000</td>
</tr>
<tr>
<td>g2*lcl</td>
<td>1</td>
<td>3.65</td>
<td>0.000</td>
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```