

## Online Appendix

### U.S. Market Leverage Regressions

The table reports the results from estimating the following OLS equation in columns I-IV:

$$USMV Lev_{i,t} = \beta_0 + \beta_1 tax + \beta_2 sales_{i,t-1} + \beta_3 rated_{i,t} + \beta_4 ppeb_{i,t} + \beta_5 roa_{i,t} + \beta_6 divs_{i,t} + \beta_7 rd_{i,t} + \beta_8 adv_{i,t} + \beta_9 mb_{i,t} \\ + \beta_{10} depr_{i,t} + \beta_{11} ebit5_{i,t} + \sum_{i=0}^{16} \beta_{12+i} dyear(1995 + i) + \epsilon_{i,t}$$

Columns V-VIII report the results from estimation using between effects which is the OLS estimator applied to the following time-averaged equation:

$$USMV \overline{Lev}_i = \beta_0 + \beta_1 tax + \beta_2 \overline{sales}_i + \beta_3 \overline{rated}_i + \beta_4 \overline{ppeb}_i + \beta_5 \overline{roa}_i + \beta_6 \overline{divs}_i + \beta_7 \overline{rd}_i + \beta_8 \overline{adv}_i + \beta_9 \overline{mb}_i + \beta_{10} \overline{depr}_i \\ + \beta_{11} \overline{ebit5}_i + \epsilon_{i,t}$$

Where  $\overline{Lev}_i$  represents the average across time, i.e.  $\sum_{t=1}^T \frac{Lev_{i,t}}{T}$ .

The dependent variable is the U.S. market value of leverage (*USMV Lev*) for firm *i* in year *t*. *tax* is our measure of the tax rate facing each multinational firm. The base case is in Column I and V, Graham's *mtr* in Column II and VI, Blouin, Core, and Guay's *bcg\_mtr* in Column III and VII, and our new measure *firm\_efftaxrate* in Column IV and VIII. The independent variables include the natural logarithm of sales (*sales<sub>i,t</sub>*), a dummy variable to indicate if the firm has a credit rating (*rated<sub>i,t</sub>*), property, plant, and equipment over lagged book assets (*ppeb<sub>i,t</sub>*), return on assets (*roa<sub>i,t</sub>*), a dummy variable set to 1 if the firm pays a dividend (*divs<sub>i,t</sub>*), research and development expense (*rd<sub>i,t</sub>*), advertising expense (*adv<sub>i,t</sub>*), market-to-book ratio (*mb<sub>i,t</sub>*), depreciation expense (*depr<sub>i,t</sub>*), cash flow volatility (*ebit5<sub>i,t</sub>*), and finally year dummy variables (e.g. *dyear2007*). Standard errors are clustered at the firm level. Standard errors are reported in parenthesis. \*\*\*, \*\*, \* represent significance at the one percent, five percent, and ten percent levels, respectively.

|  | I                      | II                     | III                    | IV                     | V                      | VI                     | VII                    | VIII                   |
|--|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| <i>Mtr</i> <sub><i>i,t</i></sub>             |                        | -0.1664***<br>(0.0334) |                        |                        |                        | -0.2194**<br>(0.0655)  |                        |                        |
| <i>Bcg_mtr</i> <sub><i>i,t</i></sub>         |                        |                        | -0.1493**<br>(0.0726)  |                        |                        |                        | -0.1072<br>(0.0900)    |                        |
| <i>Firm_efftaxrate</i> <sub><i>i,t</i></sub> |                        |                        |                        | 0.2054**<br>(0.0615)   |                        |                        |                        | 0.3644**<br>(0.1048)   |
| <i>Sales</i> <sub><i>i,t</i></sub>           | -0.0094***<br>(0.0035) | -0.0075**<br>(0.0035)  | -0.0076**<br>(0.0036)  | -0.0085**<br>(0.0035)  | -0.0099***<br>(0.0035) | -0.0072**<br>(0.0036)  | -0.0085**<br>(0.0037)  | -0.0078**<br>(0.0035)  |
| <i>Rated</i> <sub><i>i,t</i></sub>           | 0.1179***<br>(0.0097)  | 0.1162***<br>(0.0097)  | 0.1172***<br>(0.0098)  | 0.1167***<br>(0.0097)  | 0.1396***<br>(0.0124)  | 0.1377***<br>(0.0124)  | 0.1389***<br>(0.0124)  | 0.1369***<br>(0.0124)  |
| <i>Ppeb</i> <sub><i>i,t</i></sub>            | 0.1783***<br>(0.0260)  | 0.1758***<br>(0.0259)  | 0.1794***<br>(0.0261)  | 0.1753***<br>(0.0259)  | 0.1858***<br>(0.0288)  | 0.1830***<br>(0.0287)  | 0.1880***<br>(0.0288)  | 0.1784***<br>(0.0287)  |
| <i>Roa</i> <sub><i>i,t</i></sub>             | -0.2663***<br>(0.0358) | -0.2213***<br>(0.0358) | -0.2354***<br>(0.0383) | -0.2672***<br>(0.0357) | -0.2637***<br>(0.0473) | -0.1905***<br>(0.0520) | -0.2341***<br>(0.0535) | -0.2624***<br>(0.0472) |
| <i>Divs</i> <sub><i>i,t</i></sub>            | -0.0210**<br>(0.0081)  | -0.0190**<br>(0.0081)  | -0.0203**<br>(0.0081)  | -0.0218***<br>(0.0081) | -0.0275***<br>(0.0104) | -0.0254**<br>(0.0104)  | -0.0271**<br>(0.0104)  | -0.0308***<br>(0.0104) |
| <i>Rd</i> <sub><i>i,t</i></sub>              | -0.1074**<br>(0.0438)  | -0.1152***<br>(0.0436) | -0.1142**<br>(0.0444)  | -0.1043**<br>(0.0425)  | -0.0936***<br>(0.0330) | -0.1056**<br>(0.0331)  | -0.0979***<br>(0.0332) | -0.0888***<br>(0.0329) |
| <i>Adv</i> <sub><i>i,t</i></sub>             | 0.2124<br>(0.1379)     | 0.1991<br>(0.1389)     | 0.2026<br>(0.1399)     | 0.2228<br>(0.1369)     | 0.0499<br>(0.1512)     | 0.0294<br>(0.1509)     | 0.0457<br>(0.1513)     | 0.0665<br>(0.1508)     |
| <i>Mb</i> <sub><i>i,t</i></sub>              | -0.0419***<br>(0.0032) | -0.0435***<br>(0.0032) | -0.0434***<br>(0.0032) | -0.0415***<br>(0.0032) | -0.0540***<br>(0.0052) | -0.0560***<br>(0.0052) | -0.0554***<br>(0.0054) | -0.0522***<br>(0.0052) |
| <i>Ebit5da</i> <sub><i>i,t</i></sub>         | -0.0210<br>(0.0134)    | -0.0141<br>(0.0131)    | -0.0168<br>(0.0134)    | -0.0230*<br>(0.0133)   | 0.0107<br>(0.0184)     | 0.0201<br>(0.0185)     | 0.0140<br>(0.0186)     | 0.0055<br>(0.0184)     |
| <i>Depr</i> <sub><i>i,t</i></sub>            | -0.2680*<br>(0.1490)   | -0.3461**<br>(0.1466)  | -0.3363**<br>(0.1484)  | -0.2560*<br>(0.1479)   | -0.2388<br>(0.1712)    | -0.3496**<br>(0.1738)  | -0.2970*<br>(0.1780)   | -0.2168<br>(0.1707)    |
| N  | 10,931                 | 10,931                 | 10,931                 | 10,931                 | 10,931                 | 10,931                 | 10,931                 | 10,931                 |
| R <sup>2</sup>                               | 0.1640                 | 0.2811                 | 0.2776                 | 0.2785                 | 0.2663                 | 0.2716                 | 0.2670                 | 0.2721                 |

### U.S. Net Book Leverage Regressions

The table reports the results from estimating the following OLS equation in columns I-IV:

$$USNetBV Lev_{i,t} = \beta_0 + \beta_1 tax + \beta_2 sales_{i,t-1} + \beta_3 rated_{i,t} + \beta_4 ppeb_{i,t} + \beta_5 roa_{i,t} + \beta_6 divs_{i,t} + \beta_7 rd_{i,t} + \beta_8 adv_{i,t} + \beta_9 mb_{i,t} \\ + \beta_{10} depr_{i,t} + \beta_{11} ebit5_{i,t} + \sum_{i=0}^{16} \beta_{12+i} dyear(1995 + i) + \epsilon_{i,t}$$

Columns V-VIII report the results from estimation using between effects which is the OLS estimator applied to the following time-averaged equation:

$$USNetBV \overline{Lev}_i = \beta_0 + \beta_1 tax + \beta_2 \overline{sales}_i + \beta_3 \overline{rated}_i + \beta_4 \overline{ppeb}_i + \beta_5 \overline{roa}_i + \beta_6 \overline{divs}_i + \beta_7 \overline{rd}_i + \beta_8 \overline{adv}_i + \beta_9 \overline{mb}_i + \beta_{10} \overline{depr}_i \\ + \beta_{11} \overline{ebit5}_i + \epsilon_{i,t}$$

Where  $\overline{Lev}_i$  represents the average across time, i.e.  $\sum_{t=1}^T \frac{Lev_{i,t}}{T}$ .

The dependent variable is the U.S. net book value of leverage (*USNetBV Lev*) for firm *i* in year *t*. *tax* is our measure of the tax rate facing each multinational firm. The base case is in Column I and V, Graham's *mtr* in Column II and VI, Blouin, Core, and Guay's *bcg\_mtr* in Column III and VII, and our new measure *firm\_efftaxrate* in Column IV and VIII. The independent variables include the natural logarithm of sales (*sales<sub>i,t</sub>*), a dummy variable to indicate if the firm has a credit rating (*rated<sub>i,t</sub>*), property, plant, and equipment over lagged book assets (*pp**e**b<sub>i,t</sub>*), return on assets (*roa<sub>i,t</sub>*), a dummy variable set to 1 if the firm pays a dividend (*divs<sub>i,t</sub>*), research and development expense (*rd<sub>i,t</sub>*), advertising expense (*adv<sub>i,t</sub>*), market-to-book ratio (*mb<sub>i,t</sub>*), depreciation expense (*depr<sub>i,t</sub>*), cash flow volatility (*ebit5<sub>i,t</sub>*), and finally year dummy variables (e.g. *dyear2007*). Standard errors are clustered at the firm level. Standard errors are reported in parenthesis. \*\*\*, \*\*, \* represent significance at the one percent, five percent, and ten percent levels, respectively.

|  | I                      | II                      | III                   | IV                     | V                      | VI                     | VII                    | VIII                   |
|--|------------------------|-------------------------|-----------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| <i>Mtr</i> <sub><i>i,t</i></sub>             |                        | -0.1880**<br>(0.0913)   |                       |                        |                        | -0.3247**<br>(0.1574)  |                        |                        |
| <i>Bcg_mtr</i> <sub><i>i,t</i></sub>         |                        |                         | -0.2160<br>(0.2126)   |                        |                        |                        | -0.4165*<br>(0.2149)   |                        |
| <i>Firm_efftaxrate</i> <sub><i>i,t</i></sub> |                        |                         |                       | 0.4838***<br>(0.1650)  |                        |                        |                        | 0.4686*<br>(0.2520)    |
| <i>Sales</i> <sub><i>i,t</i></sub>           | 0.0261***<br>(0.0074)  | -0.00283***<br>(0.0074) | 0.0287***<br>(0.0076) | 0.0283***<br>(0.0074)  | 0.0254***<br>(0.0083)  | 0.0293***<br>(0.0085)  | 0.0307<br>(0.0087)     | 0.0280**<br>(0.0084)   |
| <i>Rated</i> <sub><i>i,t</i></sub>           | 0.2321***<br>(0.0210)  | 0.2303***<br>(0.0209)   | 0.2311***<br>(0.0209) | 0.2292***<br>(0.0209)  | 0.2493***<br>(0.0297)  | 0.2468***<br>(0.0297)  | 0.2470***<br>(0.0297)  | 0.2457***<br>(0.0297)  |
| <i>Ppeb</i> <sub><i>i,t</i></sub>            | 0.2194***<br>(0.0555)  | 0.2166***<br>(0.0555)   | 0.2211***<br>(0.0552) | 0.2126***<br>(0.0553)  | 0.2474***<br>(0.0686)  | 0.2433***<br>(0.0686)  | 0.2566***<br>(0.0688)  | 0.2380**<br>(0.0688)   |
| <i>Roa</i> <sub><i>i,t</i></sub>             | -0.1232<br>(0.1060)    | -0.0724<br>(0.1077)     | -0.0786<br>(0.1133)   | -0.1253<br>(0.1057)    | -0.1418<br>(0.1134)    | -0.0335<br>(0.1248)    | -0.0264<br>(0.1280)    | -0.1401<br>(0.1133)    |
| <i>Divs</i> <sub><i>i,t</i></sub>            | 0.0112<br>(0.0175)     | -0.0135<br>(0.0175)     | 0.0122<br>(0.0175)    | 0.0095<br>(0.0174)     | -0.0355<br>(0.0250)    | -0.0325<br>(0.0251)    | -0.0339<br>(0.0250)    | -0.0397<br>(0.0251)    |
| <i>Rd</i> <sub><i>i,t</i></sub>              | -0.2702**<br>(0.1252)  | -0.2792**<br>(0.1260)   | -0.2803**<br>(0.1278) | -0.2630**<br>(0.1222)  | -0.3261***<br>(0.0785) | -0.3445***<br>(0.0789) | -0.3440***<br>(0.0790) | -0.3198***<br>(0.0785) |
| <i>Adv</i> <sub><i>i,t</i></sub>             | 0.3771<br>(0.3383)     | 0.3620<br>(0.3401)      | 0.3628<br>(0.3415)    | 0.4015<br>(0.3352)     | 0.1344<br>(0.3626)     | 0.1034<br>(0.3626)     | 0.1168<br>(0.3624)     | 0.1561<br>(0.3625)     |
| <i>Mb</i> <sub><i>i,t</i></sub>              | -0.0289***<br>(0.0099) | -0.0306***<br>(0.0097)  | -0.0310**<br>(0.0095) | -0.0279***<br>(0.0099) | -0.0432**<br>(0.0113)  | -0.0458***<br>(0.0113) | -0.0480***<br>(0.0115) | -0.0410***<br>(0.0113) |
| <i>Ebit5da</i> <sub><i>i,t</i></sub>         | -0.0132<br>(0.0386)    | -0.0055<br>(0.0380)     | -0.0073<br>(0.0375)   | -0.0177<br>(0.0385)    | 0.0996**<br>(0.0431)   | 0.1131***<br>(0.0435)  | 0.1117**<br>(0.0435)   | 0.0933**<br>(0.0432)   |
| <i>Depr</i> <sub><i>i,t</i></sub>            | 0.3569<br>(0.4464)     | 0.2691<br>(0.4336)      | 0.2586<br>(0.4252)    | 0.3851<br>(0.4459)     | -0.1099<br>(0.4103)    | -0.2725<br>(0.4174)    | -0.3327<br>(0.4258)    | -0.0831<br>(0.4103)    |
| N  | 10,944                 | 10,944                  | 10,944                | 10,944                 | 10,944                 | 10,944                 | 10,944                 | 10,944                 |
| R <sup>2</sup>                               | 0.2637                 | 0.2643                  | 0.2640                | 0.2649                 | 0.1874                 | 0.1897                 | 0.1894                 | 0.1892                 |

### U.S. Net Market Leverage Regressions

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Where  $\overline{Lev}_i$  represents the average across time, i.e.  $\sum_{t=1}^T \frac{Lev_{i,t}}{T}$ .

The dependent variable is the U.S. net market value of leverage (*USNetMV Lev*) for firm *i* in year *t*. *tax* is our measure of the tax rate facing each multinational firm. The base case is in Column I and V, Graham's *mtr* in Column II and VI, Blouin, Core, and Guay's *bcg\_mtr* in Column III and VII, and our new measure *firm\_efftaxrate* in Column IV and VIII. The independent variables include the natural logarithm of sales (*sales<sub>i,t</sub>*), a dummy variable to indicate if the firm has a credit rating (*rated<sub>i,t</sub>*), property, plant, and equipment over lagged book assets (*pp**e**b<sub>i,t</sub>*), return on assets (*roa<sub>i,t</sub>*), a dummy variable set to 1 if the firm pays a dividend (*divs<sub>i,t</sub>*), research and development expense (*rd<sub>i,t</sub>*), advertising expense (*adv<sub>i,t</sub>*), market-to-book ratio (*mb<sub>i,t</sub>*), depreciation expense (*depr<sub>i,t</sub>*), cash flow volatility (*ebit5<sub>i,t</sub>*), and finally year dummy variables (e.g. *dyear2007*). Standard errors are clustered at the firm level. Standard errors are reported in parenthesis. \*\*\*, \*\*, \* represent significance at the one percent, five percent, and ten percent levels, respectively.

|  | I                      | II                     | III                    | IV                     | V                      | VI                     | VII                    | VIII                   |
|--|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| <i>Mtr</i> <sub><i>i,t</i></sub>             |                        | -0.0420***<br>(0.0510) |                        |                        |                        | -0.0546<br>(0.0963)    |                        |                        |
| <i>Bcg_mtr</i> <sub><i>i,t</i></sub>         |                        |                        | 0.2104*<br>(0.1206)    |                        |                        |                        | 0.1740<br>(0.1319)     |                        |
| <i>Firm_efftaxrate</i> <sub><i>i,t</i></sub> |                        |                        |                        | 0.2529***<br>(0.0941)  |                        |                        |                        | 0.2745*<br>(0.1539)    |
| <i>Sales</i> <sub><i>i,t</i></sub>           | 0.0095**<br>(0.0048)   | 0.0100**<br>(0.0048)   | 0.0070<br>(0.0049)     | 0.0106**<br>(0.0048)   | 0.0127**<br>(0.0051)   | 0.0134**<br>(0.0052)   | 0.0105*<br>(0.0054)    | 0.0143***<br>(0.0052)  |
| <i>Rated</i> <sub><i>i,t</i></sub>           | 0.1324***<br>(0.0123)  | 0.1320***<br>(0.0124)  | 0.1334***<br>(0.0123)  | 0.1309***<br>(0.0124)  | 0.1444***<br>(0.0182)  | 0.1440***<br>(0.0182)  | 0.1455***<br>(0.0182)  | 0.1424***<br>(0.0182)  |
| <i>Ppeb</i> <sub><i>i,t</i></sub>            | 0.2487***<br>(0.0325)  | 0.2481***<br>(0.0324)  | 0.2472***<br>(0.0324)  | 0.2451***<br>(0.0324)  | 0.2689***<br>(0.0421)  | 0.2691***<br>(0.0421)  | 0.2661***<br>(0.0422)  | 0.2642***<br>(0.0422)  |
| <i>Roa</i> <sub><i>i,t</i></sub>             | -0.1455**<br>(0.0568)  | -0.1342**<br>(0.0572)  | -0.1890***<br>(0.0610) | -0.1467**<br>(0.0566)  | -0.0640<br>(0.0693)    | -0.0458<br>(0.0764)    | -0.1122<br>(0.0783)    | -0.0630<br>(0.0693)    |
| <i>Divs</i> <sub><i>i,t</i></sub>            | -0.0019<br>(0.0107)    | -0.0013<br>(0.0107)    | -0.0029<br>(0.0107)    | -0.0028<br>(0.0107)    | -0.0309**<br>(0.0153)  | -0.0304**<br>(0.0153)  | -0.0316**<br>(0.0153)  | -0.0334**<br>(0.0153)  |
| <i>Rd</i> <sub><i>i,t</i></sub>              | -0.1795***<br>(0.0643) | -0.1815***<br>(0.0644) | -0.1699***<br>(0.0642) | -0.1757***<br>(0.0627) | -0.1967***<br>(0.0484) | -0.1997***<br>(0.0487) | -0.1896***<br>(0.0486) | -0.1932***<br>(0.0484) |
| <i>Adv</i> <sub><i>i,t</i></sub>             | 0.0543<br>(0.1865)     | 0.0510<br>(0.1870)     | 0.0680<br>(0.1836)     | 0.0671<br>(0.1861)     | -0.0430<br>(0.2215)    | -0.0481<br>(0.2217)    | -0.0361<br>(0.2215)    | -0.0305<br>(0.2215)    |
| <i>Mb</i> <sub><i>i,t</i></sub>              | -0.0325***<br>(0.0041) | -0.0329***<br>(0.0041) | -0.0304***<br>(0.0042) | -0.0320***<br>(0.0041) | -0.0388***<br>(0.0077) | -0.0393***<br>(0.0077) | -0.0366***<br>(0.0078) | -0.0375***<br>(0.0077) |
| <i>Ebit5da</i> <sub><i>i,t</i></sub>         | 0.0039<br>(0.0182)     | 0.0056<br>(0.0181)     | -0.0020<br>(0.0177)    | 0.0015<br>(0.0181)     | 0.0396<br>(0.0269)     | 0.0420<br>(0.0272)     | 0.0343<br>(0.0272)     | 0.0358<br>(0.0270)     |
| <i>Depr</i> <sub><i>i,t</i></sub>            | -0.4533**<br>(0.1977)  | -0.4730**<br>(0.2000)  | -0.3569*<br>(0.2077)   | -0.4385**<br>(0.1965)  | -0.4391*<br>(0.2507)   | -0.4667*<br>(0.2555)   | -0.3450<br>(0.2606)    | -0.4226*<br>(0.2507)   |
| N  | 10,931                 | 10,931                 | 10,931                 | 10,931                 | 10,931                 | 10,931                 | 10,931                 | 10,931                 |
| R <sup>2</sup>                               | 0.2724                 | 0.2725                 | 0.2734                 | 0.2737                 | 0.2078                 | 0.2079                 | 0.2087                 | 0.2094                 |

