

# The International Evidence on the Pecking Order Hypothesis

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## **The International Evidence on the Pecking Order Hypothesis**

### **Abstract**

The pecking order hypothesis attempts to explain how capital structure choices are made. This hypothesis argues that financial managers first use internal sources of funds, then when those funds are exhausted they issue debt (first safe and then risky), and finally, as a last resort, they issue equity.

The empirical evidence has been lukewarm in its support of this hypothesis. Almost all prior research has been conducted using samples of American firms. This study attempts to ascertain how well this theory applies to firms in Germany, Britain, and Japan as well as the United States. Our empirical results find little overall support for the pecking order hypothesis for American, British, and German firms. On the other hand, the evidence is generally favorable for Japanese firms.

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# **The International Evidence on the Pecking Order Hypothesis**

## **Introduction**

A fundamental issue in corporate finance involves understanding how firms choose their capital structure. One of the leading theories attempting to explain corporate financial structure is the pecking order hypothesis. Recently there have been a number of empirical studies devoted to seeing how well this hypothesis actually fits the capital structure decisions of American firms. The results of these investigations have been inconclusive.

The purpose of our study is to examine the international evidence for the pecking order hypothesis. In addition to data from the United States, we gather relevant information for Germany, Britain, and Japan. While these countries share a high level of economic development, there are important differences in corporate cultures between these countries. Our study primarily addresses the issue of how robust the pecking order hypothesis is in explaining capital structures of firms in different environments.

The rest of this paper is as follows. Section 1 describes the pecking order hypothesis and highlights some of the relevant empirical literature. Section 2 discusses the data and methodology. The results are presented in section 3 and conclusions are offered in section 4.

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## 1. Pecking Order Hypothesis – Theory and Empirical Tests

There is no consensus theory that explains a firm's capital structure<sup>1</sup> but the tradeoff theory and the pecking order hypothesis appear to have the most support. The tradeoff theory arrives at an optimal capital structure by balancing the benefits of debt (tax and reduction of free cash flow problems) with the costs of debt (bankruptcy and agency costs between stockholders and bondholders).

The pecking order hypothesis [see Myers (1984) and Myers and Majluf (1984)] is not a theory that explains a firm's optimal capital structure per se, but describes instead a hierarchy of choices. According to the pecking order hypothesis, internally generated financing is preferred first, followed by debt (safe and then risky), and lastly outside equity. If a firm does not need much financing it may be able to satisfy its needs with internal sources (earnings). Only when a company's internal funds are exhausted will the firm issue debt. As a last resort the firm will issue equity. A firm's capital structure reflects to a large degree its need for funds (investments and dividends) and how much of those needs are satisfied by its earnings.

Myers (1984) modifies the strict pecking order hypothesis and argues that firms with a lot of future investment opportunities may decide to issue equity before it is absolutely necessary. These firms may issue equity in order to build up financial slack so that they will be able to undertake future investment opportunities.

One of the driving forces behind the pecking order hypothesis is that managers have more information about the value of their company than do outside investors. This asymmetric information problem makes managers wary of issuing equity because investors will interpret this action as bad news (investors will assume that managers are issuing stock when the price of stock is overvalued).

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<sup>1</sup> See Harris and Raviv (1991) for a summary of capital structure theories.

There have been a few major studies that have examined how well the pecking order hypothesis actually fits the data. Baskin (1989) tested a number of predictions of the pecking order hypothesis and argued that his results were consistent with the theory. More recently, Shyam-Sunder and Myers (1999) found support for the pecking order hypothesis using a sample of American firms that traded continuously over the period 1971-1989<sup>2</sup>. The authors observed that the firm's financing deficit (defined as the sum of the firm's dividend, net investment, and change in working capital minus cash flow after interest and taxes) tracked very well the amount of debt issued by the firm. Using a similar methodology to Syham-Sunder and Myers, Frank and Goyal (2003) observed little support for the pecking order hypothesis and argued instead that net equity issues are correlated more with the financing deficit than are net debt issues. Part of the discrepancy between the findings of Frank and Goyal and those of Shyam-Sunder and Myers appears to be due to the sample period. Data prior to 1990 fits the pecking order hypothesis better than data after 1990 when many small and unprofitable firms became publicly traded. Shyam-Sunder and Myers' requirement that firms have continuous data seems also to be a major factor affecting the results. Lemmon and Zender (2002) believe that the pecking order hypothesis provides a good fit to the data once debt capacity is incorporated into the model. Fama and French (2005) examined many individual financing decisions of firms and find that these decisions are often in conflict with many of the important predictions of the pecking order hypothesis. For example, equity is supposed to be the last financing alternative, yet Fama and French observe that most firms issue some sort of equity every year<sup>3</sup>.

It is tempting to think that capital structures would be quite different from one country to the next since government laws, tax policies, corporate governance practices, the roles of banks and equity markets, etc. vary between countries. For example, market based systems such as the

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<sup>2</sup> See Chirinko and Singha (2000) for a critical review of Shyam-Sunder and Myers' (1999) article.

<sup>3</sup> See also Fama and French (2002).

U.S. and the U.K. have tended to rely more on equity financing than relationship-oriented systems such as Germany and Japan<sup>4</sup>.

However, Rajan and Zingales (1995) and Wald (1999) find that at the aggregate level capital structures are fairly similar across the United States, Japan, Germany, France, and Great Britain. In addition, Rajan and Zingales (1995) and to a lesser extent, Wald (1999), observe that many “determinants” of leverage that have been found in studies of U.S. firms, have a similar impact in other countries. But as Rajan and Zingales point out the theoretical reasons for those correlations are unclear given that there are significant differences in business environments between countries.

In summary, there is quite a lot of controversy as to how well the pecking order hypothesis really explains the capital structure decisions of firms. Almost all of the major studies have examined this hypothesis using samples of U.S. firms. The purpose of this study is to see whether this hypothesis has applicability to firms in other developed countries despite some clear differences in governmental policies and corporate cultures between these countries and the U.S.

## **2. Data and Methodology**

Financial data was collected for Germany, United Kingdom, Japan, and the United States from *Worldscope*. These countries were chosen for a couple of reasons. First, all four countries are important economic powers. Second, there are significant differences in corporate governance systems (market-based vs. relationship-oriented) as well as legal systems (common vs. civil) between these countries. If the findings of our study suggest that the pecking order hypothesis applies to some countries more than others, we may be able to infer the

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<sup>4</sup> See Kaplan (1996) for a discussion of market-based systems versus relationship-oriented systems. La Porta et al. (2000) argue, on the other hand, that the legal system (the laws and their enforcement) is the primary determinant of many corporate finance decisions including capital structure.

factors/circumstances that make the pecking order hypothesis more likely to be valid.

Financial firms and regulated utilities are excluded because their capital structure decisions are often influenced by regulatory concerns. *Worldscope* has information on 973 non-financial firms for Germany, 2616 for Britain, 3781 for Japan, and 11,133 for the U.S.

There are errors in *Worldscope* that resulted in some extreme outliers and as a result, we have eliminated the top and bottom 1% of the data for all the variables used in a particular analysis. We also experimented with truncating plus and minus two percent of the data. Results using the two percent rule mirrored those when we only eliminated the top and bottom 1%.

The data represents financial information for all firms that *Worldscope* tracks. The starting point for our analysis is 1980. In some cases, twenty five years of data may be available and in other instances only five. The data includes firms that have merged or gone bankrupt, so the data does not have a definite bias in the sense of only including successful firms.

Since the data represents information over a long period of years, we have deflated all the data by the appropriate GDP deflators. 2000 is used as the base year. In the analysis below, we compare how well the pecking order holds for a sample of “small” firms. If we did not control for inflation then our sample of “small” firms would have too many observations from the beginning of the period.

## **Empirical Analysis**

Our first analysis involves examining individual financial choices by firms in each country to see whether they are generally consistent or not with the pecking order hypothesis. Since an observation represents one firm year, the total number of observations for each country is the sum of all the firm years for each country. We first compute the percentage of observations where the firm has issued new debt (new equity).

If the pecking order hypothesis is true, we would expect relatively few firms to be net issuers of stock. Firms should, on average, raise funds with debt and then “as a last resort” rely on external equity.

In this part of the analysis we also look at increases in new equity and new debt by various firm characteristics. For example, small firms are supposed to have more asymmetric information problems than large firms, and therefore according to the pecking order theory should issue less stock than large firms. Observations are classified as small (large) if they are in the bottom (top) 30% of all observations sorted by size<sup>5</sup>. In a similar vein, we divide observations into high growth (top 30% of all observations sorted by growth) and low growth (bottom 30%) and examine how well the pecking order holds for these two groups. One can argue that high growth firms may, in general, face more asymmetric information problems and therefore be expected to follow the pecking order hypothesis more than low growth firms.

We also break down the sample into whether firms pay a dividend. Under the pecking order hypothesis, it generally doesn’t make sense for firms to issue stock and also pay dividends since current stockholders would see the price of their stock decline due to information asymmetric problems as soon as new equity was issued. Current stockholders would suffer a loss in wealth as a consequence of firms paying a dividend and also issuing stock. As a result, the frequency of firms issuing stock and paying dividends should be relatively low.

We also subdivide the firms according to their operating earnings. It could be argued that firms with negative earnings might in general issue more equity since they face higher financial distress costs than firms with positive earnings.

In addition, we examine whether the existing leverage of the firm matters. If the pecking order hypothesis is the prime motivator, firms with low levels of leverage should almost always

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<sup>5</sup> By our classification, it is possible a firm could be classified as small one year and large another year. While this is unlikely, it could happen if a firm had a major acquisition or had a few years of extremely high growth rates.



issue debt before issuing equity. Firms with very high leverage may decide to issue equity instead of debt because they might worry about their ability to service their debt. To determine high and low leverages, observations were sorted by industry first and all observations above (below) the median leverage were placed in the high (low) group.

And finally, we look at whether future financing deficits matter. Myers (1984) pointed out that if firms believe they will have large external financing needs in the future they may decide to issue some equity now in order to be able to issue more debt in the future. Therefore for each observation we determine what the financing deficit for that firm was in the subsequent year. Observations in the top (bottom) 30% were classified as high (low) future financing needs. Our approach here implicitly assumes firms have a good idea of their future financing needs at least a year in advance.

While this analysis is very useful in assessing in general whether the pecking order hypothesis is valid, this analysis suffers from the lack of specific numerical predictions. For example, saying that the frequency of firms paying a dividend and issuing stock should be relatively rare begs the question as to what is the precisely the definition of rare.

Our second test allows us to have more precise predictions and examines how well the net issues of debt for a firm track a firm's financing deficit. According to the pecking order hypothesis, as a first approximation, increases in a firm's deficit should see a dollar for dollar increase in a firm's net new debt [Frank and Goyal (2003) and Shyam-Sunder and Myers (1999)]. In the following regression, the coefficient (b) on the deficit variable should be 1 and the constant term (a) should be 0 according to this version of the pecking order hypothesis.

$$dDebt_{it} = a + b Deficit_{it} + e_{it} \quad (1)$$

Where  $dDebt_{it}$  is the net debt issued for firm  $i$  for time  $t$  and it is equal to the difference between long-term borrowing and the reduction of long-term borrowing  
 $Deficit_{it}$  is the financing deficit for firm  $i$  for time  $t$ .

According to the pecking order hypothesis, the coefficients in Equation 1 should be the same (0 for the constant and 1 for the deficit variable) regardless of whether the firm has a deficit (deficit > 0) or a surplus (deficit < 0). In the case where the firm has a surplus and desires to return money to its investors, managers will want to pare down the debt first because any attempt to repurchase equity will result in a stock price increase that will dampen the desire to repurchase equity. In short, as Fama and French (2005) point out, repurchases should be relatively rare under the pecking order hypothesis.

Chirinko and Singha (2000) argue that this test (equation 1) can result in some misleading inferences concerning the validity of the pecking order hypothesis. While this test is not perfect, coefficients for the deficit variable close to 1 are generally supportive of the pecking order hypothesis and those close to 0 are not. This test will be used with others to judge the applicability of the pecking order hypothesis.

One definition for the financing deficit is as follows<sup>6</sup>:

$$\text{Deficit}_{it} = \text{DIV}_{it} + I_{it} + \text{dWC}_{it} - \text{CF}_{it} = \text{dDebt}_{it} + \text{dEquity}_{it} \quad (2)$$

Where  $\text{Deficit}_{it}$  is deficit for year t for firm i

$\text{DIV}_{it}$  is the net dividend for year t for firm i

$I_{it}$  is the net investment for year t for firm i

$\text{dWC}_{it}$  is the change in working capital for year t for firm i

$\text{CF}_{it}$  is the cash flow after interest and taxes for year t for firm i

$\text{dDebt}_{it}$  is the net debt issued for year t for firm i

$\text{dEquity}_{it}$  is the net equity issued for year t for firm i

Fama and French (2005) argue that the definition for the amount of new equity issued used by Frank and Goyal (2003) and Shyam-Sunder and Myers (1999) understate the amount of new equity issued (and by implication, understate the amount of the deficit). The definition used by Frank and Goyal and Shyam-Sunder and Myers does not include equity issued in mergers or equity issued to employees. Fama and French point out that often firms issue equity in instances

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<sup>6</sup> For more details see Frank and Goyal (2003) page 221.

where asymmetric information problems are not large or even relevant (for example, stock issued in mergers, stock issued to employees, direct purchase plans or rights offerings). This last point would appear to undermine some of the theoretical underpinnings of the pecking order hypothesis. Fama and French state that a better accounting based measure of the amount of the new equity issued ( $dSB_{it}$ ) and the financing deficit ( $Deficit2_{it}$ ) for year  $t$  for firm  $i$  would be the following:

$$Deficit2_{it} = dAssets_{it} - dRE_{it} = dL_{it} + dSB_{it} \quad (3)$$

Where  $Deficit2_{it}$  is an alternative definition for the deficit for year  $t$  for firm  $i$   
 $dAssets_{it}$  is the change in assets from year  $t-1$  to year  $t$  for firm  $i$   
 $dRE_{it}$  is the change in retained earnings from year  $t-1$  to year  $t$  for firm  $i$   
 $dL_{it}$  is the change in liabilities from year  $t-1$  to year  $t$  for firm  $i$  (a measure of net debt issued)  
 $dSB_{it}$  is the change in stockholders' equity in excess of the change in retained earnings from year  $t-1$  to year  $t$  for firm  $i$  (this is labeled as the book measure of net equity issued in our subsequent empirical tests)

In our empirical tests we employ both definitions for the financing deficit along with their accompanying definitions for net equity issued and net debt issued. Also for equation 1, we scale the financing deficit and the amount of net debt issued by the book assets for the firm. We control for industry in all of our empirical tests.

We report OLS estimates as well as fixed effect estimates for equation 1. The data is run separately for each country.

Our third test involves running the following regression equation<sup>7</sup>.

$$LEV_{it} = a + b T_{it} + c MTB_{it} + d LS_{it} + f P_{it} + g Deficit_{it} + u_{it} \quad (4)$$

Where  $LEV_{it}$  is a leverage ratio for firm  $i$  in year  $t$  (total liabilities/total assets)  
 $T_{it}$  is the tangibility of assets for firm  $i$  in year  $t$  (fixed assets/total assets)  
 $MTB_{it}$  is the market-to-book ratio for firm  $i$  in year  $t$  (the ratio of the market value of equity and the book value of debt to the book value of assets)  
 $LS_{it}$  is the size of firm  $i$  in year  $t$  (log of sales or log of assets)  
 $P_{it}$  is profitability for firm  $i$  in year  $t$  (operating income/total assets)  
 $Deficit_{it}$  is the financing deficit for firm  $i$  in year  $t$  (both definitions of the deficit are used)

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<sup>7</sup> For this specification please see Frank and Goyal (2003) or Rajan and Zingales (1995).

Tangibility, market-to-book, log sales, and profitability have been shown by a number of studies to be determinants of leverage (both in the U.S. and in other countries). If the pecking order hypothesis is true we would expect that adding the financing deficit variable would increase the  $R^2$  of the equation (relative to running the regression without this variable) and the coefficient on the deficit variable would be significantly positive. In addition, the coefficient on the variable tangibility should be negative according to the pecking order hypothesis (firms with few tangible assets might be expected to have more asymmetric problems and thus use less equity). In contrast, many traditional capital structure models stress the collateral value of tangible assets and thus debt levels could be increased with more tangibility.

Equation 4 will be analyzed for each country using both OLS and fixed effects models.

### 3. Results

For each country we present four panels. Panel A gives means and standard deviations of the important variables used in the subsequent analysis for the entire period and two sub periods. Panel B provides the percentage of firms increasing debt and equity each year. Panel C presents the basic regression results for equation 1 while Panel D does the same for equation 4. Table 1 provides definitions for all variables used in the panels.

**Table 1 - Definitions**

Variables	Definitions
Net Debt Issued	Amount of net debt issued / total assets
Net Equity Issued	Amount of net equity issued / total assets
Deficit1	Sum of net debt issued and net equity issued / total assets
Tangibility	Fixed assets / total assets
Market-to-book	(Market value of equity + book value of debt) / total assets
Profitability	Operating income / total assets
Size -Assets	In millions of local currency
Size -Sales	In millions of local currency

Change in Liabilities	$(\text{Liabilities}_t - \text{liabilities}_{t-1}) / \text{total assets}_t$
Book Measure of Net Equity Issued	$(\text{Stockholder's equity}_t - \text{retained earnings}_t - \text{stockholder's equity}_{t-1} + \text{retained earnings}_{t-1}) / \text{total assets}_t$
Deficit2	$(\text{Change in liabilities} + \text{book measure of net equity issued}) / \text{total assets}$
Change in Assets	$(\text{Total assets}_t - \text{total assets}_{t-1}) / \text{total assets}_t$
Change in Shares	$(\text{Shares outstanding}_t - \text{shares outstanding}_{t-1}) / \text{shares outstanding}_t$
Net Proceeds from Sale/Issue of Common and Preferred	$(\text{Net proceeds from sale/issue of common and preferred}) / \text{total assets}$
Common/Preferred Purchased, Retired, Converted or Redeemed	$(\text{Common/preferred purchased, retired, converted or redeemed}) / \text{total assets}_t$
Small (Large) Firms	Bottom (Top) 30% of all observations sorted by total assets
Low (High) Growth	Bottom (Top) 30% of all observations (yearly) sorted by growth in total assets
Distressed Sample	All observations with negative operating earnings
Low (High) Earnings	Bottom (Top) half of all observations with positive earnings
Dividend (Non payers)	Includes only observations of firms paying (non paying) common dividends in a year
Future Low (High) Deficits	Bottom (Top) 30% of financing deficits in year <sub>t+1</sub>
Low (High) Leverage	All observations where the leverage of the firm is less (exceeds) the industry's median

## U.S. Findings

Panel A of Table 2 reports that the real increase in assets was slightly less than two percent per year with the increases being larger in the first half of the sample period than in the second half. Real firm size decreased from the first half of the sample to the second half which reflects in part the fact that Worldscope increased its coverage of smaller firms in the later period. U.S. firms were on average profitable from 1980-1994, but were unprofitable during the period 1995-2004.

Regardless of which measure of the deficit is analyzed, the data indicates that over 80% of the deficit was financed with new issues of equity, a percentage that would appear to be inconsistent with the basic pecking order hypothesis. The predominance of new equity is evident in both time periods.

Panel B indicates that firms increased yearly the number of shares outstanding 71% of the time. The increases were at least 1% in 51% of all the observations. Both measures of net equity issued (labeled as net equity issued and as book measure of net equity issued in Panel B) show that over 58% of the time net equity was issued yearly. This statistic suggests equity increases are not rare occurrences in the U.S. and appear to undermine the pecking order hypothesis. An inspection of the sub samples shows that for all of the types of firms listed, the percentage of observations having a yearly increase in equity issued was over 44%. Firms with high asymmetric information problems (small firms and high growth firms) issue lots of equity. Dividend paying firms issue equity even though according to the pecking order hypothesis, stockholders would lose money as a result of the decision to pay dividends and also issue stock. Firms with low leverage also issue stock regularly, a finding that is in general contrary to the pecking order hypothesis.

For the entire sample, firms issued new debt 34% of the time. This is considerably lower than the frequency of issuing equity.

Slightly less than one third of the firms in any given year retired, converted or redeemed their common or preferred stock. Repurchases should be relatively rare according to the pecking order hypothesis, especially if managers have to pay a premium to buy back their stock.

The OLS findings from Panel C indicate that overall the pecking order hypothesis was not supported. These results hold whether or not the deficits are defined from the cash flow statements (deficit1) or from the balance sheet (deficit2). We have presented the t-statistics for the deficit coefficients against the null hypothesis that the coefficient is zero because that is the usual way the t-statistics are given. However, it should be evident that these coefficients are significantly different from 1, the hypothesized value under the pecking order. An inspection of the sub groups shows that the pecking order is supported better by large firms and dividend

paying firms, results that are consistent with prior research that established firms tend to follow the pecking order hypothesis more.

Interestingly, the results from the fixed effects regression support the pecking order hypothesis more than the OLS findings. From the fixed effects regressions, there are coefficients on the deficit variables that are not significantly different from 1 and many that exceed .7. On the other hand, the coefficients vary a lot (some are negative and some actually exceed 1). Using the results from the fixed effects regressions, the pecking order hypothesis seems to be supported for (1) large firms, (2) low growth firms, (3) firms with positive earnings, (4) dividend paying firms, and (5) firms with low future deficits.

Panel D gives the findings for the basic determinants for the leverage equation with the deficit variable sometimes included and sometimes excluded. The coefficients for tangibility (positive) and for profitability (negative) have the usual signs found in the literature. In this case, tangibility probably proxies for the collateral value of assets and, not, as an indicator of asymmetric information. The coefficient for the log of sales (as a proxy for size) is positive as expected. However, when assets are used instead of sales the coefficient is often significantly negative. The coefficient for the market-to-book variable is positive and that is at odds with the usual negative sign. When the deficit variable is included in the equation the  $R^2$  does not increase much at all (especially in the fixed effects results) and the coefficient is negative (contrary to expectations).

[Insert Table 2 about here]

Overall, the findings for the U.S. sample are not consistent with the pecking order hypothesis. The frequency and relative size of equity increases are large and the results of the basic test of the pecking order hypothesis do not support this hypothesis. The evidence for

certain sub groups, however, such as large firms and dividend paying firms suggest that the pecking order hypothesis is more applicable for these firms.

### **U.K. Findings**

British firms grew in real terms 2.9% per year (see Panel A of Table 3) and averaged over the period 6.2% on return on assets. Both numbers are higher than the corresponding figures for the U.S.

The firm's deficit is financed mainly by new issues of equity. Using the first definition for the deficit, over 90% is financed by new issues of equity while for the second definition; the corresponding figure is 65%. These numbers are fairly consistent across the two sub periods.

British firms increase the number of new shares yearly 66% (Panel B) of the time. Overall net equity is increased yearly a little over 60% of the time. Looking at the various sub groups of firms, equity is issued yearly at least 48% of the time for each group. British firms do not repurchase equity very often and issue new debt 31% of the time.

The OLS regression results in Panel C provide little evidence (overall and for the various sub groups) for the pecking order hypothesis. The coefficients for the deficit variables from the fixed effects results exhibit a lot of variability and in no instances do the results from both the deficit1 and deficit2 regressions show major support for the pecking order hypothesis for any of the sub groups of firms.

The findings from the basic leverage regression (Panel D) show little support for the pecking order hypothesis. The coefficients for size are positive and the coefficients for profitability are mostly negative, as expected. Similar to the U.S., the coefficients for market-to-book are positive, contrary to expectations. The coefficients for tangibility are negative for the OLS results but positive for the fixed effects ones. When the deficit variables are included in the



equations, the  $R^2$ 's do not increase much and the coefficients on the deficit variable are generally negative, contrary to expectations.

[Insert Table 3 about here]

Overall, the British results are not consistent with the pecking order hypothesis. The deficit is financing mainly by new equity, firms issue equity often and the regression results do not support the hypothesis.

### **German Results**

The German firms (Panel A in Table 4) grew on average by 2% in real terms and are on average slightly profitable for the entire time period.

The financing deficit is financed primarily by new issues of equity. Using the first definition of the deficit, about 86% of the deficit is financed by equity while for the second definition it was 70%. Equity issues played a larger role in the second sub period (1995-2004) than the first (1980-1994).

Panel B indicates that the yearly frequency of increasing the number of shares was about 25%. The yearly frequency of net equity issued was 26% and the book measure of net equity issued increased yearly by 57%. German firms do not repurchase shares very often and the frequency of new debt issued yearly is 39%. The frequency of equity issues was smaller than those for the U.S. and the U.K. while the frequency of debt issues was higher.

The overall regression findings (both OLS and fixed effects) from Panel C are not consistent with the pecking order hypothesis. The findings based on the sub samples for large firms and firms with high leverage provide, however, some support for the pecking order hypothesis.

The findings from the basic leverage equation (Panel D) are generally consistent with the literature. The coefficients for tangibility (positive), profitability (negative), and size (positive) have the usual signs. For market-to-book, the coefficient is negative for OLS regressions (expected) but positive for the fixed effects regressions. While the coefficients for the deficit variable are significant they are negative (contrary to expectations) and the  $R^2$ 's do not increase much when the deficit variable is added to the equation.

[Insert Table 4 about here]

In summary, the findings for Germany are not consistent with the pecking order hypothesis. Most of the deficit is financed with equity, though the frequency of new equity issues is less than the frequency of new debt issues. The regression results suggest that overall the pecking order hypothesis is not supported but there is some support for the hypothesis for large firms and firms with high leverage.

## **Japanese Results**

Table 5 (Panel A) indicates that Japanese firms increased real assets by 2.5% a year over the sample period with a greater increase during the 1980-1994 period. Profitability (return on assets) was 4.6% over the entire period and there was not much difference in profitability between the two sub periods.

The Japanese pattern of financing the deficit is the most complicated of the four countries. For the second definition of the deficit, the book measure of net equity issued financed 62% of the deficit over the entire period. However, in the first sub period (1980-1994), the change in liabilities financed the majority of the deficit. For the first definition of the deficit, net issues of equity financed 107% of the deficit as net issues of debt were on average negative. In the first sub period, net debt issued financed 70% of the deficit while in the second sub period

both net debt issued and the financing deficit were negative (firms, on average, had a financing surplus and firms were, on average “retiring” debt).

Panel B of Table 5 indicates the frequency of a yearly increase in the number of shares outstanding was 47%. The frequency of a yearly net equity issue was 21% and the frequency of the book measure of net equity issued was 66%. The data suggests that many of these yearly increases were small as the 1% changes were small relative to the total changes. Net debt is issued yearly about 35% of the time. About 37% of the time, common or preferred stock is “retired” yearly.

Panel C indicates that there is quite a bit of support for the pecking order hypothesis (especially from the OLS regressions). In particular the pecking order hypothesis seems a reasonable first order approximation for large firms, low positive earnings firms, firms with low future deficits, and firms with high leverage. As stated earlier, the pecking order hypothesis suggests that when firms have a deficit they will finance first with debt and when they have a surplus, debt will be paid first.

The basic leverage regression provides some support for the pecking order hypothesis. The deficit coefficients are positive. However, the  $R^2$ 's do not increase much with the inclusion of the deficit variable. The coefficients for the main determinants have the usual signs with the exception of the market-to-book ratio which has a positive sign.

[Insert Table 5 about here]

In summary, of the four countries studied, the findings of the Japanese sample are the only ones to provide support for the pecking order hypothesis. When Japanese firms have a deficit, debt is issued more often than equity and when these firms have a surplus debt is “retired” first. In addition, the regression results provide overall results consistent with the pecking order hypothesis.

#### **4. Conclusions**

The purpose of this paper is to examine the pecking order hypothesis using samples of firms from four countries – U.S., U.K., Germany, and Japan. The evidence from prior U.S. studies for this theory has been mixed. Some studies suggest it may be applicable for large or established firms and others conclude that there is little evidence to support the theory at all. We are unaware of any major study that has examined the applicability of the pecking order hypothesis that has simultaneously tested this theory using samples of firms from a number of different countries.

With the exception of Japan, our findings are not consistent with the pecking order hypothesis. Firms in the U.S., U.K., and Germany finance a lot of their deficit with new issues of equity and issue equity frequently. Our regression results also do not support the basic predictions of this theory. There is some marginal support for this theory when the samples (U.S. and German) are restricted to large or established firms.

The Japanese findings are more complicated. From 1980-1994 Japanese firms, on average, had a financing deficit that was financed mainly by net debt. From 1995-2004 our sample of firms had a financing surplus (definition 1) that was used in part to reduce the amount of debt. Overall, our findings provide general support for the pecking order hypothesis. Japanese firms increase the number of shares outstanding yearly almost 50% of the time, a result that appears on the surface contradictory to the pecking order hypothesis. On the other hand, the regression results suggest that net debt tracks the firms financing deficit reasonably well for a broad set of firms. In many cases, Japanese firms have a surplus as opposed to a financing deficit and they use the surplus to pare down their debt.

Our results do not allow us to make meaningful generalizations as to when the pecking order hypothesis applies and when it does not. All four countries have reasonable investor

protection laws so no generalizations are possible based on legal systems and their enforcement. For distinctions based on market-based systems and relationship-oriented systems we have samples of only two for each group. All we can say is that based on a sample of two there is no evidence that the pecking order hypothesis holds for market-based systems.

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**TABLE 2 - U.S. RESULTS**

Financial data is gathered from Worldscope for the period 1980-2004. The top and bottom 1% of the data are eliminated for all the variables used in a particular analysis. All the data is deflated by the appropriate GDP deflators (2000 is the base year). Definitions for the variables are given in Table 1.

**Panel A – Means and (Standard Deviations) of the Variables.**

Variables	Total Sample		1980-1994		1995-2004	
<b>Net Debt Issued</b>	0.014	(0.097)	0.011	(0.085)	0.015	(0.104)
<b>Net Equity Issued</b>	0.059	(0.197)	0.023	(0.098)	0.081	(0.236)
<b>Deficit1</b>	0.073	(0.218)	0.034	(0.126)	0.096	(0.256)
<b>Tangibility</b>	0.289	(0.217)	0.336	(0.205)	0.260	(0.219)
<b>Market-to-Book</b>	2.154	(3.652)	1.406	(1.145)	2.618	(4.499)
<b>Profitability</b>	-0.022	(0.428)	0.081	(0.134)	-0.087	(0.524)
<b>Size-Assets (mil. US Dollar)</b>	1,024	(2,967)	1,243	(3,097)	887.287	(2,875)
<b>Size –Sales (mil. US Dollar)</b>	996.821	(2,354)	1,296	(2,610)	810.873	(2,160)
<b>Change in Liabilities</b>	0.027	(0.273)	0.006	(0.189)	0.032	(0.289)
<b>Book Measure of Net Equity Issued</b>	0.118	(0.475)	0.032	(0.155)	0.138	(0.522)
<b>Deficit2</b>	0.145	(0.558)	0.038	(0.246)	0.170	(0.607)
<b>Change in Assets</b>	0.018	(0.409)	0.039	(0.303)	0.004	(0.462)
<b># of Observations</b>	69,019		26,439		42,580	

**Panel B – The Percent of Firms Increasing the Amounts of Debt and Equity.**

The first row indicates any changes and the second row shows only 1% or more changes.

Variable	Total Sample	Size Samples Small (large)	Growth Samples Low (High)	Distressed Sample	Positive Earnings Samples Low (High)	Dividend Samples Payers (Non- payers)	Future Deficits Samples Low (High)	Leverage Samples Low (High)
<b>Change in Shares</b>	0.711	0.721(0.680)	0.691(0.807)	0.779	0.681(0.663)	0.751(0.585)	0.617(0.819)	0.730(0.696)
	0.510	0.596(0.426)	0.500(0.635)	0.642	0.423(0.443)	0.579(0.288)	0.383(0.687)	0.535(0.466)
<b>Net Equity Issued</b>	0.584	0.614(0.512)	0.534(0.697)	0.673	0.533(0.547)	0.458(0.640)	0.446(0.717)	0.639(0.548)
	0.333	0.466(0.213)	0.306(0.423)	0.506	0.227(0.267)	0.144(0.416)	0.182(0.512)	0.399(0.257)
<b>Book Measure of Net Equity Issued</b>	0.723	0.787(0.643)	0.712(0.799)	0.813	0.675(0.666)	0.770(0.574)	0.611(0.838)	0.753(0.683)
	0.518	0.638(0.419)	0.517(0.637)	0.680	0.400(0.447)	0.585(0.302)	0.367(0.713)	0.567(0.439)
<b>Change in Liabilities</b>	0.613	0.560(0.665)	0.482(0.692)	0.589	0.610(0.644)	0.604(0.643)	0.532(0.764)	0.588(0.636)
	0.567	0.528(0.613)	0.442(0.653)	0.554	0.558(0.592)	0.564(0.578)	0.487(0.641)	0.524(0.601)
<b>Net debt issued</b>	0.340	0.253(0.445)	0.247(0.391)	0.291	0.404(0.331)	0.309(0.412)	0.339(0.416)	0.223(0.456)
	0.294	0.230(0.375)	0.214(0.346)	0.260	0.349(0.277)	0.274(0.340)	0.293(0.375)	0.176(0.405)
<b>Net Proceeds from Sale/Issue of Common and Preferred</b>	0.725	0.658(0.749)	0.649(0.831)	0.719	0.683(0.769)	0.701(0.736)	0.677(0.797)	0.787(0.707)
	0.375	0.481(0.297)	0.344(0.478)	0.522	0.263(0.356)	0.216(0.454)	0.259(0.539)	0.458(0.303)
<b>Common/Preferred Purchased, Retired, Converted or Redeemed</b>	0.310	0.148(0.298)	0.260(0.225)	0.158	0.352(0.415)	0.485(0.234)	0.436(0.225)	0.324(0.344)
	0.166	0.080(0.253)	0.139(0.157)	0.074	0.157(0.260)	0.262(0.124)	0.265(0.111)	0.187(0.171)

**Panel C – Basic Regression Results**

The dependent variable is Net Debt Issued for all regression equations. Industry effects are controlled at OLS regressions. Firms and time effects are controlled at Fixed Effect regressions.

Variable	Total Sample	Small Firms	Large Firms	Low Growth Firms	High Growth Firms	Distressed Firms	Low Positive Earnings Firms	High Positive Earnings Firms	Non-dividend Paying Firms	Dividend Paying Firms	Low Future Deficits Firms	High Future Deficits Firms	Low Leverage Firms	High Leverage Firms
<b>OLS RESULTS</b>														
<b>Constant</b>	0.005 (2.72)	-0.006 (-1.37)	0.000 (0.34)	-0.010 (-2.75)	0.026 (6.08)	0.002 (0.06)	0.003 (1.39)	-0.005 (0.002)	-0.001 (-0.17)	-0.000 (-0.73)	-0.001 (-0.32)	0.021 (4.27)	-0.001 (-0.12)	0.002 (0.30)
<b>Deficit1</b>	0.129 (111.1)	0.073 (46.23)	0.641 (220.4)	0.148 (64.22)	0.141 (53.71)	0.076 (46.32)	0.447 (146.6)	0.324 (102.1)	0.113 (84.45)	0.614 (202.1)	0.378 (114.1)	0.087 (41.71)	0.039 (35.42)	0.325 (140.1)
<b>Adjusted R<sup>2</sup></b>	0.125	0.076	0.649	0.165	0.129	0.078	0.419	0.258	0.110	0.598	0.358	0.078	0.035	0.335
<b>Constant</b>	0.0004 (0.04)	-0.005 (-0.22)	0.010 (0.87)	-0.052 (-2.03)	-0.021 (-0.97)	0.013 (0.61)	-0.007 (-0.72)	-0.023 (-2.03)	-0.018 (-1.23)	0.023 (3.26)	-0.041 (-2.42)	0.076 (2.48)	0.003 (0.16)	0.020 (1.12)
<b>Deficit2</b>	0.226 (146.6)	0.199 (74.03)	0.587 (190.1)	0.231 (70.34)	0.211 (78.26)	0.201 (80.50)	0.630 (197.9)	0.626 (181.6)	0.220 (125.0)	0.691 (208.7)	0.418 (115.3)	0.169 (58.42)	0.114 (55.26)	0.312 (117.0)
<b>Adjusted R<sup>2</sup></b>	0.253	0.224	0.655	0.227	0.268	0.226	0.657	0.616	0.246	0.739	0.450	0.177	0.096	0.325
<b>FIXED EFFECT RESULTS</b>														
<b>Constant</b>	0.091 (0.01)	-3.28 (-0.02)	0.030 (1.29)	-0.274 (-0.04)	-3.72 (-0.03)	-2.818 (-0.02)	-0.002 (-0.01)	-0.005 (-0.19)	-0.747 (-0.04)	0.005 (0.33)	-0.008 (-0.12)	-1.781 (-0.03)	0.379 (0.03)	0.670 (0.32)
<b>Deficit1</b>	0.421 (697.7)	0.764 (366.7)	0.644 (206.4)	0.749 (252.7)	0.408 (158.9)	0.763 (410.8)	0.986 (1968)	0.701 (305.9)	0.617 (811.7)	0.695 (218.8)	1.000 (26239)	0.405 (249.5)	0.798 (1228)	0.323 (81.10)
<b>Adjusted R<sup>2</sup></b>	0.554	0.841	0.623	0.784	0.635	0.840	0.989	0.693	0.617	0.645	1.000	0.632	0.993	0.419
<b>Constant</b>	-8.044 (-0.06)	-56.27 (-0.19)	0.043 (0.41)	-48.97 (-0.35)	-6.58 (-0.02)	-48.05 (-0.11)	-0.720 (-0.09)	-0.108 (-0.29)	-8.89 (-0.11)	0.001 (0.03)	-4.562 (-0.11)	-36.68 (-0.18)	-1.241 (-0.09)	-27.19 (-0.21)
<b>Deficit2</b>	0.744 (2416)	0.384 (98.11)	0.822 (394.4)	0.612 (89.87)	-0.068 (-14.5)	0.381 (115.1)	0.825 (711.9)	1.016 (537.0)	0.323 (111.3)	0.870 (348.2)	0.793 (286.1)	0.493 (154.5)	0.100 (507.7)	1.076 (279.0)
<b>Adjusted R<sup>2</sup></b>	0.729	0.447	0.888	0.448	0.204	0.445	0.949	0.923	0.416	0.889	0.751	0.537	0.971	0.910



### Panel D – Leverage Regression Results

The dependent variable is the ratio of total liabilities to total assets. Industry effects are controlled at OLS regressions. Firms and time effects are controlled at Fixed Effect regressions.

Variable	Coefficients (t-statistic)	Coefficients (t-statistic)	Coefficients (t-statistic)	Coefficients (t-statistic)	Coefficients (t-statistic)	Coefficients (t-statistic)
<b>Intercept</b>	0.374 (13.32)	0.410 (14.77)	0.377 (13.43)	0.499 (17.57)	0.518 (18.50)	0.499 (17.58)
<b>Tangibility</b>	0.256 (22.38)	0.238 (20.99)	0.253 (22.12)	0.310 (27.00)	0.281 (24.72)	0.307 (26.68)
<b>Market-to-Book</b>	0.012 (20.41)	0.016 (26.45)	0.013 (21.53)	0.010 (17.75)	0.015 (24.81)	0.011 (18.82)
<b>Profitability</b>	-0.562 (-92.92)	-0.628 (-99.82)	-0.591 (-85.57)	-0.481 (-81.20)	-0.567 (-90.28)	-0.509 (-73.90)
<b>Size - Log of Sales</b>	0.032 (27.80)	0.026 (22.93)	0.032 (27.97)			
<b>Size – Log of Assets</b>				-0.002 (-1.73)	-0.003 (-2.38)	-0.001 (-1.08)
<b>Deficit - 1</b>		-0.353 (-33.93)			-0.388 (-37.45)	
<b>Deficit - 2</b>			-0.047 (-8.57)			-0.004 (-7.89)
<b>Adjusted R<sup>2</sup></b>	0.194	0.211	0.195	0.182	0.203	0.183
<b>FIXED EFFECT RESULTS</b>						
<b>Intercept</b>	0.162 (1.68)	0.197 (1.90)	0.165 (1.69)	0.598 (4.69)	0.600 (4.70)	0.598 (4.69)
<b>Tangibility</b>	0.136 (7.30)	0.111 (6.00)	0.126 (6.77)	0.127 (6.95)	0.105 (5.75)	0.128 (6.98)
<b>Market-to-Book</b>	0.009 (14.22)	0.010 (16.04)	0.009 (14.61)	0.006 (9.30)	0.007 (11.16)	0.005 (9.14)
<b>Profitability</b>	-0.462 (-62.70)	-0.474 (-64.09)	-0.471 (-62.69)	-0.403 (-55.49)	-0.417 (-56.86)	-0.403 (-53.95)
<b>Size - Log of Sales</b>	0.022 (9.06)	0.019 (7.81)	0.023 (9.22)			
<b>Size – Log of Assets</b>				-0.007 (-25.6)	-0.007 (-24.39)	-0.072 (-25.11)
<b>Deficit - 1</b>		-0.118 (-13.26)			-0.104 (-11.73)	
<b>Deficit - 2</b>			-0.025 (-5.12)			0.004 (0.83)
<b>Adjusted R<sup>2</sup></b>	0.683	0.684	0.683	0.688	0.689	0.688

**TABLE 3 – U.K. RESULTS**

Financial data is gathered from Worldscope for the period 1980-2004. The top and bottom 1% of the data are eliminated for all the variables used in a particular analysis. All the data is deflated by the appropriate GDP deflators (2000 is the base year). Definitions for the variables are given in Table 1.

**Panel A – Means and (Standard Deviations) of the Variables.**

Variables	Total Sample		1980-1994		1995-2004	
<b>Net Debt Issued</b>	0.003	(0.063)	0.004	(0.058)	0.003	(0.067)
<b>Net Equity Issued</b>	0.046	(0.130)	0.045	(0.117)	0.046	(0.138)
<b>Deficit1</b>	0.049	(0.142)	0.050	(0.130)	0.048	(0.151)
<b>Tangibility</b>	0.346	(0.225)	0.371	(0.203)	0.328	(0.238)
<b>Market-to-Book</b>	1.532	(1.053)	1.288	(0.627)	1.712	(1.250)
<b>Profitability</b>	0.062	(0.137)	0.090	(0.089)	0.042	(0.161)
<b>Size-Assets (mil. Sterling)</b>	453.780	(1,325)	441.821	(1,139)	462.624	(1,448)
<b>Size –Sales (mil. Sterling)</b>	469.142	(1,134)	491.227	(1,134)	452.808	(1,135)
<b>Change in Liabilities</b>	0.016	(0.173)	0.013	(0.170)	0.018	(0.174)
<b>Book Measure of Net Equity Issued</b>	0.030	(0.156)	0.019	(0.121)	0.036	(0.174)
<b>Deficit2</b>	0.046	(0.241)	0.032	(0.216)	0.054	(0.254)
<b>Change in Assets</b>	0.029	(0.259)	0.033	(0.229)	0.026	(0.280)
<b># of Observations</b>	16,620		7,066		10,454	

**Panel B – The Percent of Firms Increasing the Amounts of Debt and Equity.**

The first row indicates any changes and the second row shows only 1% or more changes.

Variable	Total Sample	Size Samples Small (large)	Growth Samples Low (High)	Distressed Sample	Positive Earnings Samples Low (High)	Dividend Samples Payers (Non-payers)	Future Deficits Samples Low (High)	Leverage Samples Low (High)
<b>Change in Shares</b>	0.658	0.510(0.804)	0.578(0.760)	0.605	0.628(0.719)	0.676(0.609)	0.622(0.719)	0.626(0.695)
<b>Net Equity Issued</b>	0.357	0.380(0.324)	0.310(0.463)	0.458	0.315(0.347)	0.315(0.479)	0.323(0.470)	0.328(0.381)
<b>Book Measure of Net Equity Issued</b>	0.605	0.484(0.725)	0.487(0.703)	0.562	0.558(0.672)	0.619(0.565)	0.554(0.697)	0.597(0.623)
<b>Change in Liabilities</b>	0.264	0.353(0.189)	0.215(0.312)	0.429	0.200(0.243)	0.202(0.442)	0.198(0.386)	0.270(0.253)
<b>Net debt issued</b>	0.644	0.643(0.646)	0.574(0.708)	0.667	0.599(0.678)	0.637(0.665)	0.594(0.711)	0.664(0.625)
<b>Net Proceeds from Sale/Issue of Common and Preferred</b>	0.367	0.411(0.323)	0.324(0.435)	0.501	0.329(0.335)	0.321(0.498)	0.337(0.477)	0.378(0.350)
<b>Common/Preferred Purchased, Retired, Converted or Redeemed</b>	0.615	0.563(0.646)	0.482(0.688)	0.526	0.618(0.675)	0.643(0.536)	0.565(0.688)	0.568(0.669)
	0.573	0.523(0.599)	0.440(0.651)	0.486	0.559(0.635)	0.599(0.499)	0.531(0.652)	0.511(0.638)
	0.309	0.193(0.442)	0.240(0.367)	0.215	0.361(0.305)	0.335(0.233)	0.335(0.380)	0.224(0.390)
	0.252	0.157(0.364)	0.195(0.307)	0.183	0.294(0.245)	0.271(0.197)	0.289(0.316)	0.172(0.325)
	0.631	0.489(0.777)	0.516(0.724)	0.331	0.584(0.707)	0.651(0.716)	0.589(0.429)	0.620(0.652)
	0.266	0.355(0.192)	0.217(0.313)	0.267	0.203(0.247)	0.204(0.389)	0.202(0.043)	0.272(0.257)
	0.076	0.043(0.099)	0.080(0.055)	0.030	0.082(0.066)	0.089(0.060)	0.102(0.261)	0.075(0.080)
	0.041	0.029(0.049)	0.049(0.023)	0.018	0.038(0.052)	0.058(0.030)	0.044(0.022)	0.042(0.040)

**Panel C – Basic Regression Results**

The dependent variable is Net Debt Issued for all regression equations. Industry effects are controlled at OLS regressions. Firms and time effects are controlled at Fixed Effect regressions.

Variable	Total Sample	Small Firms	Large Firms	Low Growth Firms	High Growth Firms	Distressed Firms	Low Positive Earnings Firms	High Positive Earnings Firms	Non-dividend Paying Firms	Dividend Paying Firms	Low Future Deficits Firms	High Future Deficits Firms	Low Leverage Firms	High Leverage Firms
<b>OLS RESULTS</b>														
<b>Constant</b>	-0.008 (-2.10)	-0.012 (-3.97)	-0.004 (-1.43)	-0.016 (-2.15)	-0.012 (-1.36)	-0.003 (-0.32)	-0.006 (-1.23)	-0.016 (-2.17)	-0.007 (-2.07)	-0.006 (-1.57)	-0.005 (-0.67)	0.003 (0.29)	0.001 (0.19)	-0.008 (-1.12)
<b>Deficit1</b>	0.130 (52.48)	0.059 (18.43)	0.414 (65.23)	0.142 (28.27)	0.204 (36.13)	0.050 (13.03)	0.270 (54.15)	0.231 (47.93)	0.065 (17.36)	0.290 (79.40)	0.258 (41.65)	0.096 (21.30)	0.067 (24.42)	0.280 (61.14)
<b>Adjusted R<sup>2</sup></b>	0.124	0.056	0.418	0.137	0.210	0.051	0.269	0.222	0.064	0.296	0.252	0.088	0.064	0.283
<b>Constant</b>	-0.007 (-0.83)	-0.050 (-5.92)	0.001 (0.22)	-0.004 (-0.21)	-0.018 (-0.78)	0.0003 (0.01)	-0.005 (-0.60)	-0.012 (-0.79)	-0.022 (-0.85)	-0.004 (-0.57)	-0.011 (-0.69)	0.011 (0.50)	0.003 (0.30)	0.004 (0.36)
<b>Deficit2</b>	0.495 (145.6)	0.414 (65.80)	0.620 (108.9)	0.490 (73.56)	0.469 (60.05)	0.353 (46.31)	0.585 (123.9)	0.635 (123.8)	0.381 (57.10)	0.638 (190.0)	0.572 (90.74)	0.427 (63.25)	0.376 (83.76)	0.670 (152.0)
<b>Adjusted R<sup>2</sup></b>	0.535	0.440	0.685	0.522	0.525	0.387	0.677	0.675	0.431	0.700	0.630	0.456	0.449	0.723
<b>FIXED EFFECT RESULTS</b>														
<b>Constant</b>	0.011 (0.02)	0.032 (0.04)	0.029 (1.07)	-0.079 (-1.22)	-0.211 (-0.55)	0.015 (0.03)	-0.154 (-3.91)	-0.123 (-1.56)	0.035 (0.03)	-0.198 (-3.78)	0.024 (0.36)	-0.002 (-0.03)	0.075 (1.07)	0.013 (0.21)
<b>Deficit1</b>	0.009 (8.79)	0.009 (5.66)	0.783 (431.8)	0.146 (34.08)	0.604 (132.5)	0.004 (3.44)	0.413 (31.03)	0.452 (28.60)	0.009 (4.02)	0.699 (171.8)	0.956 (147.8)	-0.00002 (-0.13)	0.661 (71.35)	0.539 (41.68)
<b>Adjusted R<sup>2</sup></b>	0.079	0.079	0.967	0.283	0.789	0.157	0.510	0.460	0.092	0.710	0.955	0.154	0.663	0.494
<b>Constant</b>	-0.157 (-0.19)	-0.199 (-0.16)	-0.010 (-0.14)	-0.166 (-1.10)	-0.439 (-0.53)	-0.466 (-0.18)	-0.249 (-3.42)	-0.013 (-0.31)	-0.281 (-0.11)	-0.275 (-3.08)	0.090 (0.33)	0.060 (-0.43)	0.009 (0.13)	0.077 (0.34)
<b>Deficit2</b>	1.029 (997.1)	1.030 (650.3)	0.374 (63.19)	0.039 (12.09)	0.963 (497.2)	0.620 (44.23)	0.466 (43.48)	0.445 (34.34)	1.030 (475.1)	0.536 (123.4)	0.257 (16.73)	0.052 (21.77)	0.253 (31.22)	0.918 (185.66)
<b>Adjusted R<sup>2</sup></b>	0.985	0.985	0.421	0.131	0.983	0.518	0.648	0.582	0.986	0.619	0.278	0.357	0.364	0.946

### Panel D – Leverage Regression Results

The dependent variable is the ratio of total liabilities to total assets. Industry effects are controlled at OLS regressions. Firms and time effects are controlled at Fixed Effect regressions.

Variable	Coefficients (t-statistic)	Coefficients (t-statistic)	Coefficients (t-statistic)	Coefficients (t-statistic)	Coefficients (t-statistic)	Coefficients (t-statistic)
<b>Intercept</b>	0.319 (18.63)	0.319 (18.66)	0.319 (18.62)	0.360 (20.04)	0.360 (20.05)	0.358 (19.97)
<b>Tangibility</b>	-0.074 (-9.60)	-0.074 (-9.59)	-0.074 (-9.62)	-0.086 (-10.74)	-0.086 (-10.71)	-0.087 (-10.81)
<b>Market-to-Book</b>	0.004 (2.47)	0.005 (3.27)	0.004 (2.58)	0.001 (0.87)	0.004 (2.46)	0.003 (1.55)
<b>Profitability</b>	-0.094 (-7.53)	-0.102 (-8.08)	-0.094 (-7.54)	0.034 (2.72)	0.015 (1.20)	0.033 (2.59)
<b>Size - Log of Sales</b>	0.040 (42.51)	0.040 (41.96)	0.040 (42.39)			
<b>Size – Log of Assets</b>				0.021 (20.34)	0.020 (20.13)	0.021 (20.40)
<b>Deficit - 1</b>		-0.046 (-3.79)			-0.087 (-6.96)	
<b>Deficit - 2</b>			-0.006 (-0.80)			-0.025 (-3.48)
<b>Adjusted R<sup>2</sup></b>	0.141	0.142	0.141	0.065	0.068	0.066
<b>FIXED EFFECT RESULTS</b>						
<b>Intercept</b>	0.081 (1.35)	0.081 (1.35)	0.082 (1.37)	0.168 (2.74)	0.161 (2.64)	0.173 (2.82)
<b>Tangibility</b>	0.094 (7.98)	0.089 (7.57)	0.096 (8.09)	0.076 (6.31)	0.071 (5.94)	0.077 (6.39)
<b>Market-to-Book</b>	0.015 (10.44)	0.018 (11.76)	0.015 (9.99)	0.013 (8.75)	0.016 (10.47)	0.013 (8.18)
<b>Profitability</b>	-0.304 (-22.80)	-0.311 (-23.34)	-0.305 (-22.86)	-0.226 (-16.97)	-0.239 (-17.90)	-0.226 (-16.98)
<b>Size - Log of Sales</b>	0.051 (24.22)	0.050 (23.65)	0.051 (24.10)			
<b>Size – Log of Assets</b>				0.005 (2.17)	0.007 (2.99)	0.003 (1.43)
<b>Deficit - 1</b>		-0.074 (-8.46)			-0.090 (-10.10)	
<b>Deficit - 2</b>			0.014 (2.76)			0.017 (3.20)
<b>Adjusted R<sup>2</sup></b>	0.713	0.715	0.713	0.700	0.703	0.701

**TABLE 4 – GERMAN RESULTS**

Financial data is gathered from Worldscope for the period 1980-2004. The top and bottom 1% of the data are eliminated for all the variables used in a particular analysis. All the data is deflated by the appropriate GDP deflators (2000 is the base year). Definitions for the variables are given in Table 1.

**Panel A – Means and (Standard Deviations) of the Variables.**

Variables	Total Sample		1980-1994		1995-2004	
<b>Net Debt Issued</b>	0.003	(0.056)	0.006	(0.045)	0.002	(0.059)
<b>Net Equity Issued</b>	0.019	(0.078)	0.021	(0.059)	0.019	(0.083)
<b>Deficit1</b>	0.022	(0.096)	0.027	(0.078)	0.021	(0.101)
<b>Tangibility</b>	0.281	(0.173)	0.313	(0.154)	0.271	(0.178)
<b>Market-to-Book</b>	1.404	(0.774)	1.318	(0.462)	1.430	(0.844)
<b>Profitability</b>	0.006	(0.110)	0.023	(0.085)	0.001	(0.116)
<b>Size-Assets (mil. Euro)</b>	1,971	(6,251)	2,545	(4,820)	1,798	(6,612)
<b>Size –Sales (mil. Euro)</b>	2,183	(4,796)	3,377	(5,884)	1,824	(4,318)
<b>Change in Liabilities</b>	0.011	(0.157)	0.010	(0.148)	0.012	(0.160)
<b>Book Measure of Net Equity Issued</b>	0.026	(0.134)	0.009	(0.089)	0.032	(0.148)
<b>Deficit2</b>	0.037	(0.213)	0.019	(0.180)	0.044	(0.607)
<b>Change in Assets</b>	0.020	(0.214)	0.024	(0.162)	0.018	(0.224)
<b># of Observations</b>	5,796		1,660		4,136	

**Panel B – The Percent of Firms Increasing the Amounts of Debt and Equity.**

The first row indicates any changes and the second row shows only 1% or more changes.

Variable	Total Sample	Size Samples Small (large)	Growth Samples Low (High)	Distressed Sample	Positive Earnings Samples Low (High)	Dividend Samples Payers (Non-payers)	Future Deficits Samples Low (High)	Leverage Samples Low (High)
<b>Change in Shares</b>	0.250	0.195(0.304)	0.194(0.367)	0.243	0.248(0.269)	0.255(0.261)	0.225(0.324)	0.268(0.232)
<b>Net Equity Issued</b>	0.181	0.167(0.182)	0.137(0.291)	0.183	0.163(0.199)	0.166(0.212)	0.153(0.261)	0.201(0.185)
<b>Book Measure of Net Equity Issued</b>	0.261	0.251(0.291)	0.193(0.382)	0.253	0.235(0.301)	0.251(0.285)	0.203(0.338)	0.287(0.234)
<b>Change in Liabilities</b>	0.153	0.203(0.128)	0.117(0.256)	0.159	0.118(0.180)	0.127(0.207)	0.117(0.208)	0.176(0.128)
<b>Net debt issued</b>	0.569	0.579(0.570)	0.489(0.642)	0.526	0.571(0.644)	0.565(0.579)	0.515(0.669)	0.605(0.534)
<b>Net Proceeds from Sale/Issue of Common and Preferred</b>	0.320	0.351(0.280)	0.235(0.435)	0.312	0.282(0.373)	0.296(0.357)	0.287(0.434)	0.363(0.274)
<b>Common/Preferred Purchased, Retired, Converted or Redeemed</b>	0.598	0.521(0.670)	0.455(0.680)	0.557	0.624(0.646)	0.662(0.513)	0.538(0.704)	0.574(0.632)
	0.552	0.485(0.615)	0.402(0.644)	0.514	0.572(0.602)	0.610(0.472)	0.499(0.670)	0.518(0.598)
	0.385	0.224(0.452)	0.292(0.432)	0.381	0.423(0.359)	0.425(0.382)	0.373(0.551)	0.354(0.420)
	0.299	0.173(0.341)	0.223(0.351)	0.298	0.323(0.283)	0.332(0.236)	0.310(0.438)	0.263(0.339)
	0.266	0.248(0.298)	0.199(0.390)	0.250	0.244(0.316)	0.258(0.287)	0.216(0.342)	0.294(0.238)
	0.153	0.197(0.128)	0.115(0.256)	0.156	0.118(0.184)	0.127(0.206)	0.111(0.210)	0.176(0.128)
	0.061	0.063(0.049)	0.076(0.076)	0.046	0.070(0.069)	0.059(0.067)	0.071(0.044)	0.078(0.043)
	0.026	0.030(0.026)	0.035(0.030)	0.016	0.025(0.043)	0.030(0.020)	0.044(0.017)	0.037(0.016)

**Panel C – Basic Regression Results**

The dependent variable is Net Debt Issued for all regression equations. Industry effects are controlled at OLS regressions. Firms and time effects are controlled at Fixed Effect regressions.

Variable	Total Sample	Small Firms	Large Firms	Low Growth Firms	High Growth Firms	Distressed Firms	Low Positive Earnings Firms	High Positive Earnings Firms	Non-dividend Paying Firms	Dividend Paying Firms	Low Future Deficits Firms	High Future Deficits Firms	Low Leverage Firms	High Leverage Firms
<b>OLS RESULTS</b>														
<b>Constant</b>	-0.009 (-1.01)	-0.003 (-0.47)	-0.016 (-1.78)	-0.0003 (-0.03)	-0.011 (-0.37)	-0.016 (-1.07)	-0.0003 (-0.02)	-0.019 (-0.82)	-0.0001 (-0.01)	-0.012 (-1.25)	-0.004 (-0.39)	-0.001 (-0.03)	-0.004 (-0.36)	-0.0002 (-0.02)
<b>Deficit1</b>	0.306 (33.28)	0.234 (19.79)	0.713 (38.81)	0.538 (30.10)	0.198 (12.47)	0.346 (25.02)	0.329 (17.93)	0.231 (13.79)	0.197 (14.50)	0.482 (39.32)	0.295 (18.78)	0.260 (15.72)	0.170 (16.32)	0.807 (73.53)
<b>Adjusted R<sup>2</sup></b>	0.321	0.254	0.694	0.578	0.188	0.397	0.317	0.214	0.211	0.500	0.303	0.244	0.186	0.829
<b>Constant</b>	-0.001 (-0.07)	-0.034 (-3.40)	-0.135 (-7.27)	0.006 (0.37)	0.014 (0.50)	-0.009 (-0.61)	0.002 (0.15)	0.009 (0.56)	-0.017 (-0.72)	0.005 (0.59)	0.002 (0.15)	-0.010 (-0.69)	-0.010 (-0.78)	0.006 (0.77)
<b>Deficit2</b>	0.539 (100.9)	0.480 (63.33)	0.784 (105.9)	0.703 (74.84)	0.425 (40.10)	0.521 (66.77)	0.575 (56.81)	0.531 (46.53)	0.475 (56.10)	0.646 (90.83)	0.596 (76.05)	0.473 (53.98)	0.331 (47.59)	0.829 (155.2)
<b>Adjusted R<sup>2</sup></b>	0.583	0.527	0.838	0.740	0.454	0.582	0.622	0.529	0.546	0.669	0.644	0.488	0.380	0.878
<b>FIXED EFFECT RESULTS</b>														
<b>Constant</b>	0.007 (0.16)	0.024 (0.58)	-0.0001 (-1.00)	-0.000 (-0.00)	0.023 (0.65)	0.011 (0.23)	0.007 (0.32)	0.012 (0.47)	0.007 (0.15)	0.006 (0.29)	0.008 (0.24)	-0.007 (-0.30)	0.004 (0.17)	0.009 (0.23)
<b>Deficit1</b>	0.369 (32.19)	0.279 (15.42)	0.722 (39.17)	0.425 (17.66)	0.279 (12.29)	0.381 (24.53)	0.563 (32.68)	0.375 (21.03)	0.318 (19.96)	0.508 (37.73)	0.481 (34.69)	0.400 (27.20)	0.286 (21.66)	0.499 (31.63)
<b>Adjusted R<sup>2</sup></b>	0.524	0.497	0.759	0.574	0.413	0.522	0.627	0.484	0.506	0.599	0.596	0.493	0.469	0.593
<b>Constant</b>	0.076 (0.84)	0.066 (0.83)	0.034 (0.17)	0.002 (0.01)	0.024 (0.11)	0.090 (0.83)	0.022 (0.29)	0.093 (1.47)	0.090 (0.76)	0.044 (1.18)	0.124 (1.44)	0.058 (0.91)	0.010 (0.06)	0.001 (0.02)
<b>Deficit2</b>	0.291 (56.78)	0.246 (31.38)	0.802 (97.68)	0.152 (23.21)	0.680 (62.41)	0.274 (46.26)	0.790 (127.7)	0.625 (75.31)	0.276 (42.78)	0.806 (139.1)	0.446 (71.97)	0.315 (54.46)	0.159 (36.04)	0.853 (167.3)
<b>Adjusted R<sup>2</sup></b>	0.437	0.410	0.839	0.378	0.738	0.422	0.822	0.676	0.426	0.818	0.553	0.418	0.315	0.882

### Panel D – Leverage Regression Results

The dependent variable is the ratio of total liabilities to total assets. Industry effects are controlled at OLS regressions. Firms and time effects are controlled at Fixed Effect regressions.

Variable	Coefficients (t-statistic)	Coefficients (t-statistic)	Coefficients (t-statistic)	Coefficients (t-statistic)	Coefficients (t-statistic)	Coefficients (t-statistic)
<b>Intercept</b>	0.368 (13.89)	0.371 (13.98)	0.368 (13.91)	0.406 (14.62)	0.409 (14.72)	0.406 (14.61)
<b>Tangibility</b>	0.152 (5.91)	0.151 (5.86)	0.150 (5.85)	0.150 (5.69)	0.148 (5.63)	0.148 (5.61)
<b>Market-to-Book</b>	-0.024 (-4.45)	-0.021 (-3.75)	-0.023 (-4.04)	-0.026 (-4.72)	-0.022 (-3.79)	-0.024 (-4.14)
<b>Profitability</b>	-0.385 (-9.21)	-0.391 (-9.33)	-0.384 (-9.18)	-0.346 (-8.11)	-0.355 (-8.31)	-0.345 (-8.08)
<b>Size - Log of Sales</b>	0.035 (13.95)	0.034 (13.76)	0.035 (13.91)			
<b>Size – Log of Assets</b>				0.027 (10.05)	0.026 (9.97)	0.027 (10.09)
<b>Deficit - 1</b>		-0.080 (-1.87)			-0.113 (-2.58)	
<b>Deficit - 2</b>			-0.026 (-1.19)			-0.041 (-1.81)
<b>Adjusted R<sup>2</sup></b>	0.266	0.267	0.266	0.230	0.232	0.231
<b>FIXED EFFECT RESULTS</b>						
<b>Intercept</b>	0.477 (6.80)	0.477 (6.82)	0.482 (6.88)	0.602 (8.03)	0.583 (7.78)	0.614 (8.09)
<b>Tangibility</b>	0.258 (6.57)	0.257 (6.55)	0.260 (6.63)	0.295 (7.45)	0.282 (7.40)	0.297 (7.48)
<b>Market-to-Book</b>	0.013 (2.94)	0.015 (3.33)	0.012 (2.71)	0.013 (2.95)	0.016 (3.54)	0.013 (2.75)
<b>Profitability</b>	-0.387 (-11.39)	-0.394 (-11.57)	-0.388 (-11.43)	-0.351 (-10.29)	-0.363 (-10.63)	-0.352 (-10.30)
<b>Size - Log of Sales</b>	0.049 (7.77)	0.047 (7.48)	0.048 (7.76)			
<b>Size – Log of Assets</b>				0.028 (3.94)	0.028 (4.06)	0.026 (3.67)
<b>Deficit - 1</b>		-0.065 (-2.43)			-0.090 (-3.32)	
<b>Deficit - 2</b>			0.023 (1.73)			0.014 (1.04)
<b>Adjusted R<sup>2</sup></b>	0.876	0.877	0.877	0.872	0.873	0.872

**TABLE 5 – JAPANESE RESULTS**

Financial data is gathered from Worldscope for the period 1980-2004. The top and bottom 1% of the data are eliminated for all the variables used in a particular analysis. All the data is deflated by the appropriate GDP deflators (2000 is the base year). Definitions for the variables are given in Table 1.

**Panel A – Means and (Standard Deviations) of the Variables.**

Variables	Total Sample		1980-1994		1995-2004	
<b>Net Debt Issued</b>	-0.0002	(0.042)	0.023	(0.056)	-0.005	(0.037)
<b>Net Equity Issued</b>	0.003	(0.021)	0.010	(0.026)	0.002	(0.020)
<b>Deficit1</b>	0.0028	(0.047)	0.033	(0.061)	-0.003	(0.041)
<b>Tangibility</b>	0.309	(0.149)	0.262	(0.126)	0.319	(0.178)
<b>Market-to-Book</b>	1.217	(0.526)	1.592	(0.506)	1.140	(0.496)
<b>Profitability</b>	0.046	(0.041)	0.048	(0.036)	0.046	(0.042)
<b>Size-Assets (mil. Yen)</b>	314.499	(494.707)	475.850	(579.354)	281.637	(468.912)
<b>Size –Sales (mil. Yen)</b>	285.853	(437.741)	418.067	(507.993)	258.925	(416.933)
<b>Change in Liabilities</b>	0.005	(0.079)	0.011	(0.085)	0.003	(0.078)
<b>Book Measure of Net Equity Issued</b>	0.008	(0.032)	0.008	(0.031)	0.008	(0.032)
<b>Deficit2</b>	0.013	(0.086)	0.019	(0.899)	0.011	(0.085)
<b>Change in Assets</b>	0.025	(0.095)	0.046	(0.094)	0.021	(0.095)
<b># of Observations</b>	31,185		7,635		23,550	

**Panel B – The Percent of Firms Increasing the Amounts of Debt and Equity.**

The first row indicates any changes and the second row shows only 1% or more changes.

Variable	Total Sample	Size Samples Small (large)	Growth Samples Low (High)	Distressed Sample	Positive Earnings Samples Low (High)	Dividend Samples Payers (Non-payers)	Future Deficits Samples Low (High)	Leverage Samples Low (High)
<b>Change in Shares</b>	0.468	0.382(0.562)	0.363(0.579)	0.419	0.444(0.505)	0.476(0.426)	0.475(0.532)	0.451(0.486)
<b>Net Equity Issued</b>	0.138	0.145(0.142)	0.082(0.220)	0.098	0.089(0.197)	0.138(0.133)	0.117(0.196)	0.142(0.132)
<b>Book Measure of Net Equity Issued</b>	0.212	0.354(0.210)	0.128(0.324)	0.133	0.166(0.264)	0.212(0.211)	0.192(0.311)	0.196(0.230)
<b>Change in Liabilities</b>	0.097	0.248(0.082)	0.051(0.154)	0.065	0.057(0.138)	0.092(0.134)	0.081(0.159)	0.096(0.098)
<b>Net debt issued</b>	0.660	0.643(0.661)	0.558(0.744)	0.553	0.638(0.709)	0.687(0.517)	0.642(0.668)	0.667(0.656)
<b>Net Proceeds from Sale/Issue of Common and Preferred</b>	0.193	0.197(0.202)	0.163(0.257)	0.156	0.144(0.252)	0.191(0.198)	0.176(0.217)	0.209(0.175)
<b>Common/Preferred Purchased, Retired, Converted or Redeemed</b>	0.492	0.466(0.524)	0.413(0.559)	0.413	0.473(0.531)	0.514(0.375)	0.438(0.571)	0.471(0.518)
	0.427	0.405(0.454)	0.350(0.504)	0.366	0.407(0.462)	0.445(0.328)	0.426(0.511)	0.395(0.464)
	0.348	0.266(0.399)	0.270(0.440)	0.392	0.383(0.309)	0.360(0.267)	0.295(0.508)	0.271(0.438)
	0.249	0.222(0.283)	0.179(0.339)	0.306	0.269(0.222)	0.256(0.197)	0.217(0.388)	0.172(0.339)
	0.270	0.396(0.261)	0.186(0.383)	0.183	0.213(0.333)	0.274(0.242)	0.253(0.356)	0.269(0.271)
	0.101	0.253(0.086)	0.053(0.161)	0.066	0.058(0.145)	0.096(0.137)	0.083(0.168)	0.100(0.102)
	0.373	0.401(0.299)	0.460(0.306)	0.373	0.354(0.390)	0.387(0.283)	0.381(0.248)	0.466(0.266)
	0.071	0.075(0.063)	0.076(0.064)	0.039	0.046(0.098)	0.081(0.011)	0.089(0.040)	0.115(0.021)



**Panel C – Basic Regression Results**

The dependent variable is Net Debt Issued for all regression equations. Industry effects are controlled at OLS regressions. Firms and time effects are controlled at Fixed Effect regressions.

Variable	Total Sample	Small Firms	Large Firms	Low Growth Firms	High Growth Firms	Distressed Firms	Low Positive Earnings Firms	High Positive Earnings Firms	Non-dividend Paying Firms	Dividend Paying Firms	Low Future Deficits Firms	High Future Deficits Firms	Low Leverage Firms	High Leverage Firms
<b>OLS RESULTS</b>														
<b>Constant</b>	0.001 (0.19)	-0.007 (-0.59)	0.002 (0.71)	0.001 (0.22)	-0.001 (-0.16)	0.001 (0.16)	0.001 (0.23)	-0.004 (-0.37)	-0.002 (-0.24)	0.002 (0.46)	0.0001 (0.02)	0.004 (0.46)	-0.005 (-0.64)	0.002 (0.36)
<b>Deficit1</b>	0.769 (177.7)	0.625 (67.93)	0.897 (153.3)	0.843 (120.1)	0.719 (84.47)	0.899 (75.26)	0.887 (199.3)	0.676 (93.93)	0.730 (55.73)	0.770 (168.8)	0.813 (119.6)	0.733 (103.2)	0.678 (102.1)	0.850 (160.7)
<b>Adjusted R<sup>2</sup></b>	0.763	0.612	0.890	0.835	0.716	0.896	0.897	0.660	0.718	0.769	0.786	0.732	0.668	0.851
<b>Constant</b>	-0.003 (-0.93)	-0.005 (-0.77)	-0.003 (-0.64)	-0.0003 (-0.10)	-0.005 (-0.90)	-0.005 (-0.55)	-0.006 (-1.58)	0.002 (0.29)	-0.002 (-0.20)	-0.005 (-1.20)	-0.003 (-0.70)	-0.002 (-0.37)	-0.006 (-1.15)	0.001 (0.19)
<b>Deficit2</b>	0.843 (455.8)	0.803 (212.6)	0.879 (313.2)	0.872 (285.2)	0.826 (219.1)	0.864 (169.6)	0.898 (424.6)	0.795 (242.7)	0.805 (161.4)	0.852 (425.4)	0.864 (337.1)	0.829 (279.0)	0.782 (261.6)	0.894 (421.5)
<b>Adjusted R<sup>2</sup></b>	0.861	0.818	0.906	0.895	0.838	0.891	0.923	0.798	0.849	0.863	0.882	0.840	0.793	0.919
<b>FIXED EFFECT RESULTS</b>														
<b>Constant</b>	0.014 (1.42)	0.022 (1.56)	-0.004 (-0.47)	0.016 (1.27)	-0.012 (-0.55)	0.031 (0.10)	-0.004 (-0.44)	-0.011 (-0.51)	-0.007 (-0.62)	0.013 (1.57)	0.009 (1.33)	0.001 (0.17)	0.022 (2.19)	-0.006 (-1.19)
<b>Deficit1</b>	0.687 (126.6)	0.635 (64.73)	0.861 (110.7)	0.870 (115.8)	0.402 (37.64)	0.518 (34.12)	0.810 (90.00)	0.441 (32.38)	0.582 (47.50)	0.717 (128.3)	0.861 (147.1)	0.786 (115.2)	0.452 (38.01)	0.858 (113.8)
<b>Adjusted R<sup>2</sup></b>	0.752	0.730	0.861	0.891	0.548	0.655	0.866	0.561	0.696	0.752	0.864	0.801	0.512	0.894
<b>Constant</b>	-0.001 (-0.01)	0.005 (0.06)	-0.010 (-1.04)	-0.002 (-0.07)	-0.008 (-0.06)	-0.010 (-0.19)	-0.017 (-0.57)	0.004 (0.15)	-0.018 (-0.33)	-0.006 (-0.25)	0.002 (0.11)	0.002 (0.08)	0.007 (0.28)	-0.016 (-0.93)
<b>Deficit2</b>	0.463 (130.6)	0.357 (56.88)	0.872 (275.6)	0.397 (82.46)	0.448 (57.27)	0.535 (68.82)	0.790 (128.0)	0.557 (63.91)	0.494 (67.12)	0.699 (258.4)	0.712 (257.7)	0.585 (131.5)	0.426 (79.72)	0.672 (141.6)
<b>Adjusted R<sup>2</sup></b>	0.437	0.328	0.896	0.522	0.350	0.418	0.830	0.610	0.409	0.737	0.765	0.483	0.497	0.742

### Panel D – Leverage Regression Results

The dependent variable is the ratio of total liabilities to total assets. Industry effects are controlled at OLS regressions. Firms and time effects are controlled at Fixed Effect regressions.

Variable	Coefficients (t-statistic)	Coefficients (t-statistic)	Coefficients (t-statistic)	Coefficients (t-statistic)	Coefficients (t-statistic)	Coefficients (t-statistic)
<b>Intercept</b>	0.033 (0.75)	0.033 (0.74)	0.034 (0.76)	0.156 (3.48)	0.158 (3.51)	0.159 (3.54)
<b>Tangibility</b>	0.180 (12.19)	0.186 (12.63)	0.185 (12.55)	0.152 (10.11)	0.157 (10.47)	0.156 (10.40)
<b>Market-to-Book</b>	0.043 (9.71)	0.037 (8.25)	0.039 (8.83)	0.042 (9.28)	0.036 (7.97)	0.039 (8.53)
<b>Profitability</b>	-2.103 (-38.60)	-2.068 (-37.88)	-2.107 (-38.77)	-2.052 (-36.75)	-2.020 (-36.08)	-2.057 (-36.88)
<b>Size - Log of Sales</b>	0.047 (31.24)	0.048 (31.65)	0.048 (31.53)			
<b>Size – Log of Assets</b>				0.039 (25.33)	0.040 (25.62)	0.040 (25.46)
<b>Deficit - 1</b>		0.287 (6.72)			0.260 (5.97)	
<b>Deficit - 2</b>			0.139 (6.05)			0.122 (5.19)
<b>Adjusted R<sup>2</sup></b>	0.309	0.313	0.312	0.283	0.286	0.285
<b>FIXED EFFECT RESULTS</b>						
<b>Intercept</b>	0.065 (1.45)	0.070 (1.56)	0.095 (2.17)	-0.033 (-0.68)	0.002 (0.04)	0.116 (2.40)
<b>Tangibility</b>	0.072 (4.41)	0.087 (5.32)	0.113 (6.95)	0.086 (5.18)	0.097 (5.86)	0.113 (6.89)
<b>Market-to-Book</b>	0.006 (2.58)	0.004 (1.69)	0.004 (1.76)	0.006 (2.79)	0.004 (1.88)	0.004 (1.72)
<b>Profitability</b>	-0.308 (-10.01)	-0.283 (-9.22)	-0.286 (-9.48)	-0.263 (-9.04)	-0.240 (-8.24)	-0.248 (-8.65)
<b>Size - Log of Sales</b>	0.023 (7.77)	0.022 (5.34)	0.018 (4.49)			
<b>Size – Log of Assets</b>				0.030 (7.13)	0.027 (6.36)	0.015 (3.57)
<b>Deficit - 1</b>		0.140 (9.28)			0.132 (8.76)	
<b>Deficit - 2</b>			0.137 (16.94)			0.133 (16.02)
<b>Adjusted R<sup>2</sup></b>	0.950	0.951	0.952	0.950	0.951	0.952