Market Timing or Growth Opportunities: Evidence from Australia

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Abstract

The theory of market timing introduced by Baker and Wurgler (2002) received enormous attention in recent years. Since the authors found positive evidence for the theory of market timing in US firms, this aspect of empirical literature is expanding though there is little research completed using Australian firms. This empirical study analyses the market timing behaviour on Australian capital structure considering 1438 available firms over the period of 1997-2005. We find that the effect on leverage explained by the market-to-book ratio comes through net equity issues as market timing theory implies. We also document that the results are sensitive to filter choice with variation in the strength of the negative relationship observed between external finance weighted average/past market-to-book (EFWAMB) and leverage. This is inconsistent with the findings of Baker and Wurgler (2002) *and suggests that while market timing appears to affect capital structure choice, it does not support the hypothesis that past market timing decisions have a long lasting impact on Australian firm capital structure. Further, we extend the research following Hovakimian (2006). And contrary to Baker and Wurgler (2002) we find that the importance of EFWAMB on leverage does not reflect the past equity market timing rather it shows that the past market-to-book ratio has significant impact on current financing decisions because it contains information about growth opportunities not captured by the current market-to-book ratio. Hence, our results support the Hovakimian's argument that the growth opportunities provide a reasonable explanation for the past market-to-book ratio effect for Australian firms.*

Keywords: *market timing, capital structure, historical average/past market-to-book (EFWAMB), growth opportunities, leverage.*

EFM Classification: 140
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1. Introduction

The determinant of capital structure is a well-documented phenomenon in the finance literature. It has been argued that, in the presence of frictions, firms adjust their capital structure occasionally. Thus the empirical evidence on capital structure is mixed (Hovakimian 2006). Inevitably analysis of optimal capital structure theory begins with Modigliani and Miller (1958) who show that in a perfectly competitive market with no transaction costs, the costs of different types of capital do not vary independently so there is no gain in shifting from debt to equity or vice versa. While Modigliani and Miller's (1958) theory may be appropriate for a perfect capital market, in practice capital markets are not perfect and the literature shows that financing decisions do matter for the capital structure of a firm in an imperfect market[1]. Traditional theories explain that firm capital structure is the result of either the trade-off between costs and benefits of debt and equity (Fischer, Heinkel & Zechner 1989; Jensen & Meckling 1976; Modigliani & Miller 1958; Ross 1977; Stulz 1990), or the result of the pecking order theory (Myers & Majluf 1984). The later theory states that when external finance is needed, firms prefer external debt to equity (Fama & French 2002). Recent studies of Baker and Wurgler (2002) suggest that choice of financing is hard to explain within the traditional theories. Yet, it is argued that equity market timing is an important aspect of corporate financial decision-making. This involves the exercise of issuing equity at a high price and repurchasing equity at a low price (Baker & Wurgler 2002; Bie & Haan 2007; Elliott, Koeter-Kant

[1] Static trade-off theory says that the firm chooses a debt level where the benefits of tax shields offset financial distress costs (Fischer, Heinkel and Zechner 1989). The pecking order theory says that when internal funds are not adequate the firm will issue debt first and then equity (Myers 1984 & Myers and Majluf 1984). The free cash flow theory suggests that increasing debt may increase value, despite increasing the risk of financial distress, when operating cash flows of firm significantly surpass the opportunities for profitable investment (Jensen and Meckling 1976).

& Warr 2007; Kayhan & Titman 2007) and so management beliefs about the value of the company relative to its price may influence real corporate financial policy (Baker & Wurgler 2002). Baker and Wurgler (2002) show that market timing has a very large and persistent effect on the capital structure of US firms. They argue that firms do not participate in capital structure rebalancing subsequent to issuing equity. Further, they show that historical/past market-to-book ratios have a statistically significant impact on current capital structure (Bie & Haan 2007; Faulkender 2005; Hovakimian 2006). The authors argue that the persistent impact of past market-to-book on leverage is not due to the trade-off or pecking order theories but to equity market timing. As a result, capital structure is the cumulative outcome of past attempts at equity market timing (Baker & Wurgler 2002; Bie & Haan 2007; Hovakimian 2006; Huang & Ritter 2005) Baker and Wurgler's (2002) empirical results are also supported by the survey of US corporate executives conducted by Graham and Harvey (2001)

It has been observed that leverage is related to firm size, growth opportunities, liquidation, and value of assets and this is consistent with the predictions of trade-off theories (Chang & Dasgupta 2003; Rajan & Zingales 1995; Titman & Wessels 1988). The studies that report the importance of target leverage as a determinant of debt/equity choice are also supportive of the trade-off hypothesis (Hovakimian, Opler & Titman 2001; Jalilvand & Harris 1984; Marsh 1982). On the other hand, the pecking order model generally outperforms the trade-off model while explaining the time series variation in leverage (Shyam-Sunder & Myers 1999). Then, Baker and Wurgler (2002) introduce a theory of market timing to explain observed corporate capital structure. They conclude that capital structure is the cumulative outcome of past attempts at equity market timing. A more recent study of capital

structure questions the long run impact of market timing and its economic significance (Alti 2006; Hovakimian 2006; Leary & Roberts 2005). Leary and Roberts (2005) in their recent study of capital structure dynamics reject the market timing argument and show that the persistence of shocks to leverage is related to transaction costs, though firms still actively rebalance their capital structure. It is argued that shocks to equity valuation persist for varying periods of time (Elliott, Koeter-Kant & Warr 2007; Leary & Roberts 2005). Leary and Roberts (2005) also argue that firms take part in rebalancing in response to equity issuance and equity price shocks within two to four years and so the effect of equity issues on leverage is not long lasting. The authors conclude that their results favour dynamic rebalancing, supporting the persistent effect of past market-to-book ratio on leverage. By decomposing Baker and Wurgler's (2002) market timing measure into short term (to capture yearly timing of financing activities) and long term components (to capture persistence in market-to-book ratios) Kayhan and Titman (2007) find that the persistence in market-to-book ratios drive the results reported in Baker and Wurgler (2002) rather than timing.

Reaction to external economic shocks varies differently between firm with high leverage and firm with low leverage (Strebulaev 2007). Hovakimian, Opler and Titman (2001) employ a two stage estimation procedure that allows them to test whether firms adjust toward a target debt ratio when they adjust their capital structures. Their test documents that as firms change over time, their target debt ratio also changes. Hovakimian (2004) extends the previous research (Hovakimian, Opler & Titman 2001) and finds evidence that firms with target debt ratios can engage in timing the equity market as only debt reductions or debt issues have significant long lasting impact on capital structure. Further, Hovakimian (2006) in his recent study

questions Baker and Wurgler's (2002) conclusion and finds evidence that the effect of past market-to-book ratio reflects growth opportunities rather than market timing. The author develops new evidence that suggests re-evaluation of the Baker and Wurgler's (2002) conclusion about capital structure policy. Contrary to Baker and Wurgler (2002), Hovakimian (2006) find that the past market-to-book ratios do not have long lasting effects on capital structure. Rather, his results are consistent with the hypothesis that past market-to-book ratio contains information about growth opportunities that can not be captured by current capital structure. Recent studies of capital structure policy reach similar conclusions to Hovakimian (Welch 2004). Welch (2004) shows that once dividend payments are excluded from equity issues the effect of timing patterns disappear. The result suggests that stock price has a long-lasting impact on capital structure as stock price changes affect the choice of financing.

The literature dealing with the theory of market timing and determinants of capital structure using US firms is expanding. Several studies explore this dynamic phenomenon in an Australian context as well. Most previous research based on Australian firms supports both the pecking order hypothesis and the optimal capital structure theory (Allen 1991; Gatward & Sharpe 1996; Twite 2001). Allen (1991) investigates the broad determinants of Australian capital structure by examining 48 listed Australian companies financial managers' perceptions. His results are consistent with Donaldson's (1984) findings which appear to follow the pecking order theory when external finance is needed. Further, Allen investigates this theory based on a sample of mature Australian listed companies (Allen 1993). The pecking order theory suggests that there should be a negative relationship in cross-section

between corporate profitability and debt ratios. Allen finds evidence to support the existence of the pecking order hypothesis in Australian firms.

Gatward and Sharpe (1996) examine the financial structure decisions of Australian firms assuming the existence of dynamic capital structure choice. A new methodological approach is used in the study of interrelated equity and debt financing decisions and the study reveals that capital structure decisions are interrelated. Gatward and Sharpe (1996) also find evidence of interdependence of investment and financing decisions and slow adjustment toward a target capital structure. Other prior studies have examined capital structure choice around changes in tax rates that effect the decision towards debt financing. Recent study by Twite (2001) introduces the dividend imputation tax system on Australian capital structure to see the subsequent impact. And the study reveals that the introduction of dividend imputation tax system provides an incentive for firms to reduce the debt financing depending on the level of corporate tax rates and increase the level external financing by issuing equity. However, the market timing behaviour around the capital structure choice of Australian firms is limited. This paper examines the unexplored aspects of financing decision for Australian firms.

We use three data sets for our analyses. The first is the full data set and this is referred as the unfiltered data set. Second and third are filtered data sets using Baker and Wurgler (2002) filter and the four standard deviation filter designed to reduce the effect of outliers. Our initial empirical analysis following Baker and Wurgler (2002) using unfiltered data set and Baker and Wurgler (2002) filtered data set suggests that Australian firms are influenced by market-timing and that past market-to-book has a statistically significant effect on leverage. However, we find some variation in the results when using four standard deviation filtered data. The results show that the

effect of the past market-to-book ratio becomes insignificant when we change the filter choice. In addition, in contrast with the Baker and Wurgler (2002) findings, the result also shows that the current market-to-book is more important in explaining the cross section in leverage. This suggests that the effect of equity market timing is not long lasting and is supportive of the trade-off theories.

Further, we extend the research to evaluate Hovakimian's (2006) argument. This study shows that there is significant negative effect of external finance weighted average market-to-book (EFWAMB) on leverage even after controlling for the cumulative effect of past net debt and net equity issues. This is not consistent with the market timing hypothesis because this hypothesis says there should be no effect for EFWAMB if we control for cumulative net debt and net equity issues in the past. But if it contains information about growth opportunities then the effect of EFWAMB on leverage should remain significant regardless of past financing activity. Furthermore, our analysis shows that the negative affect on leverage and changes in leverage can be obtained using a weighted average market-to-book ratio based on future rather than past market-to-book. This result is consistent with the hypothesis that both historical and future average market-to-book ratio reflect the long-term growth opportunities for a firm. Overall, our results are similar to the findings of Hovakimian (2006) and this suggests that equity market timing is an unlikely explanation for the results noted by Baker and Wurgler (2002).

The remainder of this paper is structured as follows. Section 2 presents the data and describes the descriptive statistics. Section 3 examines the Baker and Wurgler's (2002) timing hypothesis and presents the result, while section 4 demonstrates the analysis of the Hovakimian (2006) argument that EFWAMB contains information about firm's growth opportunities. Section 5 concludes.

2. Data

The sample consists of all listed and delisted companies from FinAnalysis and DatAnalysis for the period of 1997-2005 provided by Aspect Huntley. Fin Analysis historical data are available from 1989 for some companies but we take data from the year 1997 because there is not adequate coverage of Australian firms prior to this year. Financial companies are excluded from the study due to a lack of critical data, and also to be consistent with previous research. Table 1 summarises the final sample size for each filtered data set included in statistical tests for the full period. We use the full data set and two different filtered data sets for our analysis. The full data set is referred as the unfiltered data set. The first of the filtered data sets follows the Baker and Wurgler (2002) filter. Following Baker and Wurgler (2002), we drop firm year observations where book leverage is above 1, minimum book value of assets is below $10 million[2], the market-to-book ratio is greater than 10 and also exclude firms when external finance weighted average market-to-book (EFWAMB) is above 10. The second filter is a four standard deviation filter designed to reduce the effect of outliers.

(Insert Table 1 about here)

Previous literature (Baker & Wurgler 2002; Ritter 1991) analyse the capital structure choice of a firm using the IPO date as the first date for data collection because IPO listing is an important financing decision point that is connected to the market-to-book ratio. While this approach helps our understanding of the gradual development of leverage from initial listing of the firm, this approach is not appropriate for Australian analysis. Australian data is limited in terms of the number

[2] Baker and Wurgler (2002) drop firm year observation when minimum book value of assets is below US $10 million. We consider Australian $10 million as a minimum value to drop firm year observation for our sample

and size of IPO issues**.** For example for the period 1997-2005 the highest no. of IPO issued in a year was 247 (recorded in 2004)[3].

Year	IPO Issues	Year	IPO Issues
1997	86	2002	115
1998	53	2003	157
1999	166	2004	247
2000	238	2005	195
2001	119		

Further, Australian IPO's data is subject to survivorship biases. Indeed in the Baker and Wurgler (2002) study many IPO's failed to survive to the end of the study period. This effect is much more severe for Australian IPO's. One way of getting around this problem, is to consider a more general approach, that of examining the financing activities of all available Australian firms using listed and delisted firms over a reasonably long period of time. Rather than starting with the IPO decision which results in a small sample of start up firms, the study is based on available firms over the study period from 1997-2005 (Kayhan & Titman 2007; Titman & Wessels 1988).

2.1 *Summary statistics and capital structure*

We document the impact of the firm's history of market-to-book ratios on its capital structure. The prime question that is asked here is whether market-to-book affects leverage through net equity issues as the market timing theory implies. The results of initial analyses are reported in Table 2. We focus on the Baker and Wurgler (2002) filtered results in this section.

[3] IPO issues are collected from the Connect 4 Data base using the company prospectus information.

We define book debt (D) as the total assets minus book equity where book equity (E) is assets minus liabilities. Then we define book value of leverage $\left(D/A\right)$, as book debt to assets, Market value leverage $\left(D/A\right)'$, as book debt divided by total assets minus book equity plus market value of equity. Market value of equity (E′) is ordinary share price × shares outstanding. We define net equity issues $\left(e/A\right)$, as change in book equity minus the change in retained profits divided by total assets, net debt issues $\left(d/A\right)$, as residual change in assets divided by assets and newly retained profit $\left(\Delta RE/A\right)$, as change in retained earnings divided by assets. The important variable is the market-to-book ratio $\left(M/B\right)$ which is used as a proxy for market timing. It is defined as assets minus book equity plus market equity all divided by total assets. We include three additional control variables to be consistent with the prior literature. We define fixed asset tangibility $\left(PPE/A\right)$, as net property, plant and equipment divided by total assets, profitability $\left(EBITDA/A\right)$, as earnings before interest, taxes and depreciation divided by total assets and finally firm size that is defined $\left(Log(s)\right)$, as natural logarithm of total revenue.

(Insert Table 2 about here)

Table 2 is based on the Baker and Wurgler (2002) filter. The Baker and Wurgler (2002) filter has some restrictions that may not be appropriate in an Australian context, especially the exclusion of firm year observations when the book value of assets falls below $10 million. By restricting the sample using this assumption we drop a large number of firms because many Australian listed firms are relatively small in terms of book value of assets. The result shows that net debt issues and net equity issues tend to exhibit similar trends over the study period. In particular

net debt and net equity issues both increase after 2003. Baker and Wurgler's (2002) US based results are consistent with these findings. A decrease in market leverage and an increase in market valuation (M/B ratio) prevail over the period. The increase in equity issues from 2003 suggests the possibility of market timing. Book leverage tends to decrease throughout the period. Unfiltered and a four standard deviation filtered data are also suggestive of market timing which shows a decrease in market leverage, an average increase in equity issues and a decrease in retained earnings. Thus these results are not reported separately.

3. Capital Structure and Past market Valuations

For the purpose of the analysis we use both pooled ordinary least squares regression (OLS) and fixed effect panel data analysis to test the Baker and Wurgler (2002) market timing hypothesis that leverage is negatively correlated with past market value.

3.1 *Determinants of annual changes in leverage*

In this section we document the relationship between market-to-book and annual changes in leverage. We then decompose the changes in leverage into three components: net equity issues, newly retained earnings and growth in assets, following Baker and Wurgler (2002), to examine whether the effect comes from net equity issues as market timing implies.

Discussion in this section is primarily based on the Baker and Wurgler (2002) filtered data. The net effect of market-to-book ratio on changes in leverage is apparent in summary statistics reported in Table 2, where leverage fell over the period while market-to-book tended to rise over the period. Though this suggests the existence of

equity market timing, the effect of market-to-book ratio on changes in leverage is not proven. For instance, firms with high market-to-book ratio may decide to issue both debt and equity. Here, we regress the change in leverage on market-to-book as well as the control variables to assess the impact of the alternative hypotheses on Australian firm leverage.

$$\left(\frac{D}{A}\right)_t - \left(\frac{D}{A}\right)_{t-1} = a + b\left(\frac{M}{B}\right)_{t-1} + c\left(\frac{PPE}{A}\right)_{t-1} + d\left(\frac{EBITDA}{A}\right)_{t-1} + e\log(S)_{t-1} + f\left(\frac{D}{A}\right)_{t-1} + u_t \quad (1)$$

In (1) the dependent variable leverage is defined as book debt to total assets. This is also known as current leverage. And the change in leverage is the difference between the current leverage and leverage in year t through (t-1). The control variables consist of firm characteristics used in previous research (Baker & Wurgler 2002; Fama & French 2002; Frank & Goyal 2003; Hovakimian 2006; Rajan & Zingales 1995).Though our primary focus is on the market-to-book ratio we include three control variables in the model that are correlated with leverage (Fama & MacBeth 1973). These variables are fixed asset tangibility, profitability and firm size. Asset tangibility (PPE / A_{t-1}) is the ratio of net plant, property and equipment to total assets. Tangible assets may be used as collateral and so the expected relationship between fixed asset tangibility and changes in leverage is positive. In contrast, profitability $(EBITDA/A_{t-1})$ is defined as earnings before interest, taxes, depreciation and amortization and this approximates the availability of internal funds. Thus an inverse relationship between leverage and profitability is expected under the pecking order theory. As large firms are less likely to face financial distress, size ($Log\ (S)_{t-1}$) is expected to have positive impact on leverage (Baker & Wurgler 2002). We use total revenue as a proxy for firm size. The last control variable, lagged leverage is

included in the model to capture time series effects and to be consistent with Baker and Wurgler (2002)[4]. Lagged leverage often enters the analysis with a negative sign and this is consistent with the tendency for leverage to revert toward a long run equilibrium value over time.

We run pooled regression over the 981 companies for the period from 1997 to 2005 as well as for 3-year sub periods. Results of this analysis are reported in Table 3, Panel A, and they are consistent with Baker and Wurgler (2002) and with theoretical priors (Marsh, 1982). Market-to-book is negatively related with leverage using both pooled OLS and fixed effect specification in the full period analysis though there is some variation in the sub-period analyses[5]. Asset tangibility is generally positively related with leverage. Profitability is generally negatively related with leverage. Leverage also tends to increase with firm size.

(Insert Table 3 about here)

Using pooled OLS estimates over the full period, 1997-2005, a one standard deviation increase in market-to-book is associated with a 0.44 percent decrease in leverage. This is consistent with the idea that firm will increase equity when market valuation is high but this could also result from a decrease in debt or an increase in retained earnings. The other columns of Panel A Table 3 show that fixed asset tangibility tends to increase leverage by 0.44 percent for a one standard deviation increase, profitability tends to reduce leverage by 0.34 percent for a one standard deviation increase and firm size tends to increase leverage by 1.34 percent for a one standard deviation increase[6]. There is evidence that when market valuation is high

[4] See Baker and Wurgler (2002).
[5] See the result of 1997-1999 in Panel A Table 3.
[6] -0.44 = -0.004 * 1.10 where 1.10 is the standard deviation of lagged market-to-book ratio. 0.44 = .007 * 0.63 where 0.63 is the standard deviation of lagged asset tangibility. 0.34 = -0.020 * 0.17 where 0.20

firms tend to issue equity and thus decrease leverage and this is consistent with market timing. When we conduct the regression using the 3-year sub periods we get similar results though the level of significance and the parameter signs vary somewhat (Table 3, Panel A). It should be noted that 3-year sub period analysis are only used in estimation of equations (1) and (2) to provide some indication of the statistics of the results over time.

We also decompose the change in leverage to focus on the actual sources of change (equity issues, retained earnings and asset growth). The results for the Baker and Wurgler (2002) filtered data set are reported in Table 3 (Panels B, C and D). The decomposition takes the following form[7].

$$\left(\frac{D}{A}\right)_t - \left(\frac{D}{A}\right)_{t-1} = -\left[\left(\frac{E}{A}\right)_t - \left(\frac{E}{A}\right)_{t-1}\right] = -\left(\frac{e}{A}\right)_t - \left(\frac{\Delta RE}{A}\right)_t - \left[E_{t-1}\left(\frac{1}{A_t} - \frac{1}{A_{t-1}}\right)\right] \quad (2)$$

In equation (2) the change in leverage is divided into net equity issues, newly retained earnings and the residual changes in leverage (also known as total growth in assets). Panel B, C and D of Table 3 present the results when we regress each of these

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is the standard deviation of lagged profitability. 1.34 = 0.011 * 1.22 where 1.22 is the standard deviation of lagged log total revenue.

[7] Derivation of this decomposition are:

$$\left(\frac{D}{A}\right)_t - \left(\frac{D}{A}\right)_{t-1} = -\left(\frac{e}{A}\right)_t - \left(\frac{\Delta RE}{A}\right)_t - \left[E_{t-1}\left(\frac{1}{A_t} - \frac{1}{A_{t-1}}\right)\right]$$

$$= -\left(\frac{E_t - E_{t-1} - RE_t + RE_{t-1}}{A_t}\right) - \left(\frac{RE_t - RE_{t-1}}{A_t}\right) - \left(\frac{E_{t-1}}{A_t} + \frac{E_{t-1}}{A_{t-1}}\right)$$

$$= -\frac{E_t - E_{t-1}}{A_t} + \frac{RE_t - RE_{t-1}}{A_t} - \frac{RE_t - RE_{t-1}}{A_t} - \frac{E_{t-1}}{A_t} + \frac{E_{t-1}}{A_{t-1}}$$

$$= -\left(\frac{E}{A}\right)_t + \frac{E_{t-1}}{A_t} - \frac{E_{t-1}}{A_t} + \frac{E_{t-1}}{A_{t-1}}$$

$$= -\left[\left(\frac{E}{A}\right)_t - \left(\frac{E}{A}\right)_{t-1}\right]$$

three components of changes in leverage on market-to-book ratio and the other independent variables. Here, net equity issues is defined as the change in book equity minus the change in balance sheet retained earnings divided by total assets and denoted as $\left[-\left(\frac{e}{A}\right)_t\right]$. Newly retained earnings is defined as the change in retained earnings divided by total assets and denoted by $\left[-\left(\frac{\Delta RE}{A}\right)_t\right]$. Finally, the residual changes in leverage also known as growth in assets is defined as the lagged book equity divided by total assets minus lagged book equity divided by lagged total assets and denoted as $\left[-\left(\frac{E_{t-1}}{A_t}-\frac{E_{t-1}}{A_{t-1}}\right)\right]$.

Decomposition results in Panel B of Table 3 illustrate that market-to-book is negatively related with net equity issues (note that the dependent variable has a negative sign) both using pooled OLS and the fixed effect specification, suggesting that higher valuation in the market leads to the issue of equity (Marsh, 1982). There is a statistically insignificant relationship between market-to-book and retained earnings as can be seen from Panel C and pooled OLS estimation shows statistically insignificant positive coefficients in the later sub periods, particularly in 2003-2005 (Table 3, Panel C). So, the possibility that the market-to-book affects leverage because it might be used to predict earnings is not supported. From Panel D we see that market-to-book is positively related with growth in assets as expected. Hence, we find that market-to-book effects leverage through net equity issues and asset growth. In Table 3, Panel A, we also note that profitability appears to reduce leverage, though the coefficients are rarely statistically significant. Consistent with pecking order theory we find that this relationship is explained by the availability of retained

earnings rather than fresh issues of equity (Myers & Majluf 1984). However, profitability result of Table 3, Panel C relates to panel B though the sign and significance of the coefficient vary with statistical method. The remaining coefficients are broadly consistent with those reported in Baker and Wurgler (2002). In general, using unfiltered and a four standard deviation filtered data set we get similar findings as to those of Baker and Wurgler (2002) filtered results in terms of testing market timing hypothesis which supports the argument that market-to-book effects leverage through net equity issues. Therefore, we do not report these separately in this paper[8].

3.2. *External finance weighted average market-to-book and Capital Structure*

So far we have observed that the effect of market-to-book on leverage comes through net equity issues. Market timing may have a persistent impact if managers do not rebalance to some target leverage ratio and thus past market valuation may help our understanding of the variation in leverage. In this section, we regress leverage on external finance weighted average market-to-book ratio (EFWAMB) to address the question of whether the effect of market-to-book ratio on leverage is persistent. EFWAMB is used as a proxy for past equity market timing and it is defined as:

$$EFWAMB_t = \sum_{s=0}^{t-1} \frac{e_s + d_s}{\sum_{r=0}^{t-1} e_r + d_r} \times \left(\frac{M}{B}\right)_s \qquad (3)$$

The parameter, e and d, denote net equity and net debt issues respectively. Net equity issues (e) are defined as the change in book equity minus change in retained earnings. Net debt issues (d) are defined as the residual change in assets. Market-to-book ratio is assets minus book equity plus market equity all divided by total assets, as mentioned above.

[8] These tables are available on request from the authors.

We set the minimum weight for market-to-book ratio at zero to avoid the negative weights problem (Baker & Wurgler 2002; Hovakimian 2006). A zero weight is used when there is no information about the market valuation for that year. Observed at time t, EFWAMB is the weighted average of a time series of past market-to-book ratio that started with a first observation available in the sample and ended with the market-to-book ratio at (t-1). The weight is defined as the ratio of external financing divided by the total external financing raised by the firm in year t through (t-1). Thus, when firms issue equity when their market-to-book ratios are high EFWAMB will also be high. And, following Baker and Wurgler (2002) we drop firm year observations when EFWAMB exceeds 10. The equation used in the analysis is as follows:

$$\left(\frac{D}{A}\right)_t = a + b(EFWAMB)_t + c\left(\frac{M}{B}\right)_{t-1} + d\left(\frac{PPE}{A}\right)_{t-1} + e\left(\frac{EBITDA}{A}\right)_{t-1} + f\log(S)_{t-1} + u_t \quad (4)$$

Here, the dependent variable, leverage, is defined in two ways: book value of leverage that is book debt to total assets and market value of leverage that is defined as book debt divided by total assets minus book equity plus market value of equity. Other control variables are defined previously. Lagged leverage is not included in this equation to be consistent with Baker and Wurgler (2002). We use pooled regression for the period from 1997 to 2005 (Table 4). Baker and Wurgler (2002) contend that there is a negative relationship between EFWAMB and leverage. Essentially a relatively high market-to-book ratio leads to equity issues and thus induces a negative relationship between market-to-book ratio and leverage (Hovakimian 2006). Table 4 shows the results from the analysis using the weighted average market-to-book ratio and the other four control variables that were included in previous regressions (Fama

& French 2002; Frank & Goyal 2003; Rajan & Zingales 1995). The results in Table 4 are consistent with Baker and Wurgler (2002)[9]. We find that the effect of the EFWAMB is more strongly correlated with book leverage than the market-to-book ratio ($(M/B)_{t-1}$). However, market-to-book exhibits a more significant negative relationship with market leverage than the EFWAMB. For example, in Table 4, using pooled ordinary least squares estimates we observe a 1.00 and 2.23 percentage point decrease in book leverage and market leverage respectively per standard deviation increase in EFWAMB[10]. On the other hand we observe 0.77 and 8.36 percentage point decrease in book leverage and market leverage respectively per standard deviation increase in lagged market-to-book[11]. It is also worth noting that a one standard deviation increase in firm size is associated with 11.47 percentage point increase in book leverage and 8.42 percentage point increase in market leverage[12] Overall the results of Table 4 show that EFWAMB and market-to-book are both important in explaining the variation in leverage and this is not supportive of Baker and Wurgler's (2002) original argument. They contend that the EFWAMB is the single most important economic variable to explain the cross sectional variation in leverage compared to other variables. These overall results could be interpreted as suggesting that the effect of market-to-book is not as persistent for Australian firms as it appears to be for US firms

(Insert Table 4 about here)

[9] See Baker and Wurgler's (2002), Table III, p.16.
[10] For example: -1.00 = 1.24 * -0.008 and -2.23 = 1.24 * -0.018 where 1.24 is the standard deviation of EFWAMB. See Baker and Wurgler's (2002) comparative statics in page 17, footnote 10.
[11] For example: -0.77 = 1.10 * -0.007 and -8.36 = 1.10 * -0.076 where 1.10 is the standard deviation of lagged market-to-book
[12] For example: 11.47 = 1.22 * 0.094 and 8.42 = 1.22 * 0.069 where 1.22 is the standard deviation of lagged log sales.

There was little difference between Baker and Wurgler (2002) filtered results and unfiltered results so we do not report this separately. However, the analysis of the four standard deviation filtered data set, reported in Table 5, shows that the market-to-book ($(M/B)_{t-1}$) has a stronger impact on leverage than the EFWAMB (past market-to-book) and both $(M/B)_{t-1}$ and EFWAMB exhibit insignificant positive relationship with book leverage. $(M/B)_{t-1}$ reflects a significant negative relationship with market leverage. This result is not consistent with the hypothesis of market timing. Rather, it suggests that the effect of historical equity valuation on leverage may not be persistent or higher valuation may not always leads to equity issues or debt reduction.

(Insert Table 5 about here)

4. Is the EFWAMB Related to Growth Opportunities?

In this section we evaluate Hovakimian's (2006) argument using the same sample for the period from 1997 to 2005 and same filters, to see whether the relationship between past/historical market-to-book ratios reflects the growth opportunities as proposed by Hovakimian (2006).

4.1 *Capital Structure and Past Market Valuations: Baseline Results*

The test reported in Table 4 assumes that the effect of past market-to-book has significant negative relationship with leverage. However, the result reported in Table 5 shows that the result appears to be sensitive to the filter choice. Before proceeding to the Hovakimian's (2006) tests, we rerun the test reported in Table 4 using all filters as a robustness check followed by Hovakimian (2006). However, the definition of leverage, and net debt issued is changed in regression (4) following Hovakimian (2006). Leverage has been defined as the long-term debt plus short-term debt over

total assets and net debt issued is defined as the change in long-term debt plus short-term debt. Baker and Wurgler (2002) defined leverage in two ways: Book leverage that is book debt to total assets and Market leverage that is book debt divided by the total assets minus book equity plus market equity. Further, net debt issued is defined as the residual change in assets[13].

Both Baker and Wurgler (2002) and Hovakimian (2006) observe a significant negative relationship between EFWAMB and leverage. Our results also show a significant negative relationship between EFWAMB and leverage using the Baker and Wurgler (2002) filtered results. Unfiltered results are similar to the Baker and Wurgler (2002) filtered results though the level of significance vary somewhat. However, the results are sensitive to the filter choice used in the analysis. When we use a four standard deviation filtered data set, the results for pooled OLS show that EFWAMB has an insignificant positive effect on leverage and this is not consistent with the market-timing hypothesis. Thus, even when market valuation is high a firm may not increase its equity issues. Thus the results imply that past attempts at market timing appears to be short lived and need not always lead to debt reduction. Thus, the result shows that when we change the filter choice the results changes. In summary, it can be said that our analysis exhibit similar findings as reported previously and suggest that the results are robust, as changes in the definition of the dependent variable and one of the key control variables dose not affect the results[14].

[13] See the definitions in Baker and Wurgler (2002), page 5.
[14] Results are not reported separately here as it has little difference with previous findings but can be available on request from the authors.

4.2 *Market timing and Leverage*

In this section, we test the hypothesis that the external finance weighted average market-to-book (EFWAMB) or past market timing is related to the current leverage $\left(\frac{LT+ST}{A}\right)_t$ because it complements the current market-to-book ratio ($(M/B)_{t-1}$) as a proxy for growth opportunities.

According to the market-timing hypothesis, firms do not have a target debt ratio. Therefore, the relationship between market-to-book and observed leverage is driven by increases in net equity issued with high market-to-book ratio that ultimately leads to a leverage reduction. If we hold other things equal, increases in net equity issues and decreases in net debt issues should result in lower leverage. Thus a negative relation between market-to-book and leverage is expected (Hovakimian 2006). This implies that current leverage should not depend on how well these issues were timed. Hence, Hovakimian (2006) argued that EFWAMB should not have any effect on leverage if the value of net equity and net debt issued are controlled for. He also argued that the observed debt ratio will be related to EFWAMB even after controlling for the value of net equity and net debt if it reflects growth opportunities. He argues that firms with high growth opportunities are reluctant to take on higher debt ratios. We test these hypotheses to see whether EFWAMB is a measure of growth opportunities by including two additional variables in regression (4).

$$\left(\frac{LT+ST}{A}\right)_t = a + b(EFWAMB)^*_t + c\left(\frac{M}{B}\right)_{t-1} + d\left(\frac{PPE}{A}\right)_{t-1} + e\left(\frac{EBITDA}{A}\right)_{t-1} + fLog(S)_{t-1} + g(EqIs)_{t-1} + h(DbIs)_{t-1} + u_t \quad (5)$$

In (5) leverage is the dependent variable and it is defined as long-term debt plus short-term debt over total assets for the period t. This is also known as current

leverage. The control variables consist of the firm characteristics used in previous research. The only exception is that the external finance weighted average market-to-book, introduced previously as a proxy for past market timing, is denoted with a star here, $(EFWAMB)^*_t$, to highlight the difference in the calculation of these two numbers. The difference comes from the calculation of net debt issues that is used to calculate the weight in the EFWAMB* measure. In this case net debt issues are defined as the change in long-term + short-term debt. EqIs and DbIs are the cumulative net equity issued and the cumulative net debt issued respectively over the period from 1997-2005. Cumulative net equity issued is the net equity issued divided by total assets cumulated over all years preceding the current year (net equity issued is measured as the change in book equity minus the change in retained earnings) and defined as:

$$EqIs = \sum_{i=1}^{t-1} e_i / A \tag{6}$$

Cumulative net debt issued is the net debt issued divided by total assets cumulated over all years preceding the current year (net debt issued is measured as the change in long term plus short term debt) and defined as:

$$DbIs = \sum_{i=1}^{t-1} d_i / A \tag{7}$$

The results of equation (5) are reported in Table 6. Table 6 Panel A, the Baker and Wurgler (2002) filtered results show that the effect of net debt issued on leverage (0.170) is statistically much stronger than the effect of net equity issued (-0.011) on leverage. The results also show that the effect of EFWAMB* remains significantly negative after controlling for cumulative net debt and net equity issued on leverage.

This result is consistent with the findings of Hovakimian (2006)[15] but not consistent with the market timing hypothesis. As the effect of EFWAMB* remains significantly negative this suggests factors other than timing such as growth opportunities most likely explain the results (Hovakimian 2006).

(Insert Table 6 about here)

The unfiltered results reported in Table 6, Panel B, show that the effect of net equity issued is much stronger than the effect of net debt issued. Further, the effect of EFWAMB* on leverage is insignificant, consistent with the previous result though the parameter signs vary somewhat. This may be due to the presence of outliers. We also re-estimate regression (5) using the four standard deviation filtered data reported in Table 6, Panel C. It shows similar results to the unfiltered data. The effect of net equity issued has a statistically significant impact on leverage. The effect of EFWAMB* remains insignificant using pooled OLS estimates. However, the fixed effect model exhibit significant negative effect of EFWAMB* and insignificant effect of both EqIs and DbIs. Table 6, Panel C pooled OLS results implies that after controlling for past net equity and past net debt issued, EFWAMB* is not significantly related with leverage (similar to the Table 5 result). This is not consistent with the findings of Hovakimian (2006). Because, if the EFWAMB* is a measure of growth opportunities then even after controlling for the value of net equity and net debt, EFWAMB* should be significantly negatively related to leverage (Hovakimian 2006). Hence, this result casts some doubt over the Hovakimian (2006) explanation. It is possible that the past market-to-book is not a good proxy for growth opportunities for Australian firms and so the effect of this past market timing will not always lead to equity issues or debt reduction for Australian firms. However, when

[15] See Hovakimian (2006) Table 6, page 234.

we select different analytical method it shows similar results as to those of Hovakimian (2006).

4.3. *Determinants of changes in leverage*

It is argued that if past market-to-book ratio is a proxy for past market timing then it will have no effect on changes in current leverage while we control for the market-to-book ratio and other relevant factors. On the other hand, if the past market-to-book ratio is associated with growth opportunity it will have significant impact on current capital financing decisions (Hovakimian 2006). In this section, we regress the change in leverage on the independent variables that are also used in regression (1). We also include lagged leverage as an independent variable to be consistent with previous research (Baker & Wurgler 2002; Hovakimian 2006).

$$\Delta\left(\frac{LT+ST}{A}\right)_t = a + b(EFWAMB)_t + c\left(\frac{M}{B}\right)_{t-1} + d\left(\frac{PPE}{A}\right)_{t-1} + e\left(\frac{EBITDA}{A}\right)_{t-1} + fLog(S)_{t-1} + g\left(\frac{LT+ST}{A}\right)_{t-1} + u_t \quad (8)$$

Here, the dependent variable, change in leverage, is defined as leverage (t) minus leverage (t-1). Baker and Wurgler (2002) also estimate the change in leverage regression similar to the regression in Table 7 except that EFWAMB* was not included in their regression[16].

(Insert Table 7 about here)

The results in Table 7 Panel A show that changes in leverage are positively related to asset tangibility, firm size and negatively related to market-to-book ratio, EFWAMB* and lagged leverage using Baker and Wurgler (2002) filter. This result is similar to those of Hovakimian (2006) though the statistically significant negative

[16] See Baker and Wurgler's (2002), Table II, Panel A

coefficient on EFWAMB* is not consistent with the Baker and Wurgler's (2002) timing hypothesis. The Table 7 Panel A result suggest the existence of a direct EFWAMB* effect on current capital structure that can not be explained by the persistence of market-to-book ratio. Hence it is consistent with the hypothesis that the EFWAMB* is negatively related to the observed leverage because it proxies for growth opportunities. Unfiltered results reported in Table 7, Panel B are similar to the Baker and Wurgler (2002) filtered results and Hovakimian (2006), and so are not discussed separately though the parameter signs vary somewhat for other control variables.

The results in Panel C (Table 7) show that changes in leverage are positively related to asset tangibility, firm size and EFWAMB* but negatively related to market-to-book ratios and lagged leverage using four standard deviation filtered data. This result is not consistent with that of Hovakimian (2006). It shows an insignificant positive effect of EFWAMB* on leverage and this is inconsistent with both the Baker and Wurgler (2002) filtered results and with Hovakimian's (2006) hypothesis. Table 7, Panel C show that the results are sensitive to the filter choice used in data set selection.

4.4. *Future Market-to-book/Market Timing and Leverage*

In this section, following Hovakimian (2006) we re-estimate the leverage regression (4) as well as the change in leverage regression (8) using future external finance weighted average market-to-book (FEFWAMB) as a proxy for future market timing and external finance rather than past market timing. FEFWAMB is defined as:

$$FEFWAMB_t = \sum_{s=t+1}^{t+n} \frac{e_s + d_s}{\sum_{r=t+1}^{t+n} e_r + d_r} \times \left(\frac{M}{B}\right)_s \qquad (9)$$

FEFWAMB is the weighted average of a time series of future market-to-book ratio that started with the observation available in the sample (t + 1) and ended with the market-to-book ratio at (t + n). Hovakimian (2006) argued that if firm growth opportunity changes slowly, then both EFWAMB* and FEFWAMB will be the proxies for long-term growth opportunities and that is why he substitutes FEFWAMB for the EFWAMB*. This implies that the effects of both of these variables on capital structure should be similar. Yet, if EFWAMB* is a proxy for past market timing then FEFWAMB should be a proxy for future market timing and therefore, it should have no effect on current leverage. In contrast, if it is associated with the growth opportunities then it will have a significant impact on current leverage (Hovakimian 2006). The results of the following regressions are reported in Tables 8 and 9.

$$\left(\frac{LT+ST}{A}\right)_t = a + b(FEFWAMB)_t + c\left(\frac{M}{B}\right)_{t-1} + d\left(\frac{PPE}{A}\right)_{t-1} + e\left(\frac{EBITDA}{A}\right)_{t-1} + fLog(S)_{t-1} + u_t \quad (10)$$

(Insert Table 8 about here)

The Baker and Wurgler (2002) filtered results in Table 8 Panel A, are consistent with Hovakimian (2006) and the hypothesis that the weighted average market-to-book ratio is a proxy for growth opportunities because FEFWAMB exhibits a significant negative impact on leverage. Like previous regressions we control for recent market-to-book ratio and so it is argued that the effect of both EFWAMB* and FEFWAMB can not be ascribed to the correlation between these time series averages and current market-to-book ratio. Further, unfiltered results and four standard deviation filtered results reported in Table 8 Panel B and C also show the similar results to Baker and Wurgler (2002) filtered results and the results reported by Hovakimian (2006) though the pooled OLS estimates coefficient of FEFWAMB is not significant using the unfiltered data set. Overall, based on the

Table 8 results we conclude that the significant impact of future market-to-book ratio on capital structure reflects growth opportunities rather than equity market timing.

We then estimate the changes in leverage regression on the same independent variables to see whether FEFWAMB has any effect on changes in leverage.

$$\Delta\left(\frac{LT+ST}{A}\right)_t = a + b(FEFWAMB\ )_t + c\left(\frac{M}{B}\right)_{t-1} + d\left(\frac{PPE}{A}\right)_{t-1} + e\left(\frac{EBITDA}{A}\right)_{t-1} + fLog\ (S)_{t-1} + g\left(\frac{LT+ST}{A}\right)_{t-1} + u_t \quad (11)$$

(Insert Table 9 about here)

The results in Table 9 for all filters are similar to those of Table 8, that show a statistically significant effect of FEFWAMB on firm's capital structure. Overall it suggests that the impact of future external weighted average market-to-book is unlikely to be due to equity market timing and this is consistent with the Hovakimian (2006) hypothesis.

4.5. *Discussion*

Previous results following Hovakimian (2006) and Baker and Wurgler (2002), show that past market-to-book has a significant impact on current leverage and current changes in leverage. It also shows that when we substitute the weighted average future market-to-book ratios for the weighted average of past market-to-book ratios the relationship between the weighted average market-to-book and current capital structure remains. The Baker and Wurgler (2002) filtered data set results reported in Table 6 Panel A are consistent with the market timing hypothesis, with a negative effect of EFWAMB and this suggests firms with higher EFWAMB choose to issue equity. Thus leverage is reduced to ensure that the firm can take advantage of market timing opportunities in the future. However, unfiltered and four standard deviation

filtered data sets from Panel B and C of Table 6 shows statistically insignificant EFWAMB coefficient in general. This suggests that past market timing has not always led to equity issues or debt reductions for Australian firms when there is need for external financing.

Furthermore, the Table 7 Panel A and Panel B results (using Baker and Wurgler (2002) filtered and unfiltered data) show a statistically significant effect for EFWAMB*. It is argued that higher values of EFWAMB* imply that when market-to-book is high firms are able to raise external finance. Thus, for a given value of current market-to-book, the higher the value of EFWAMB*, it is less likely that a firm would issue equity. Yet, firms with higher past EFWAMB* have a higher incidence of issuing equity than firms with lower EFWAMB* (Hovakimian 2006). The four standard deviation filtered data from Panel C of Table 7 shows an insignificant positive effect for EFWAMB*. This is consistent with past market timing being not persistent.

Finally, if the FEFWAMB reflects future market timing opportunities then firms with higher FEFWAMB should be reluctant to issue equity now if we hold current market-to-book ratios constant. That is, FEFWAMB should have positive impact on leverage and changes in leverage in Tables 8 and 9 rather than a negative impact if market timing applies. We observe a negative effect for FEFWMB with respect to leverage. Given that future weighted average market-to-book contains information for growth opportunities, this result rejects the market timing argument. Overall, our results are consistent with the hypothesis that historical average/past market-to-book contains information about growth opportunities that can not be captured by current market-to-book ratio and that the relationship observed between

this variable and leverage leads to rejection of the Baker and Wurgler's (2002) market timing hypothesis.

5. Conclusion

Following Modigliani and Miller's (1958) theory, a large number of literature have been developed to explain the capital structure policy by introducing frictions omitted in the original Modigliani and Miller framework (Chrinko & Singha 2000). But capital structure still remains unexplained. The theory of market timing seems to have explanatory power over capital structure (Huang & Ritter 2005; Jenter 2005) in US studies though there is little research completed using Australian firms. Therefore, one major contribution of the study is that it considers a new data set and finds some support for the hypothesis that market timing appears to have an impact on the capital structure choice of Australian firms. Another contribution is that the study reveals that the results are sensitive to filter choice with variation in the strength of the negative relationship observed between past market-to-book and leverage. This suggests that while market timing appears to affect capital structure choice, it does not support the hypothesis that past market timing decision has a long lasting impact on Australian firm capital structure. Hence, the market timing result may not be as robust as initially thought, consistent with some of the more recent literature.

Further, we extend our research in number of ways by evaluating Hovakimian's (2006) argument. First, we test the hypothesis that past weighted average market-to-book ratio is related to leverage because it contains information for growth opportunities. We find that the EFWAMB* has a statistically significant negative effect on leverage even after controlling for cumulative past net debt and net equity. This is not consistent with the market timing hypothesis. In contrast, if it is a

measure of growth opportunities then its impact should remain significant regardless of past financing activity. Another contribution of this study is the evidence that the negative effect on leverage and changes in leverage can be explained by future weighted average market-to-book (FEFWAMB). These results are consistent with the hypothesis that both past and future weighted average market-to-book are related to leverage as they reflect growth opportunities but are not consistent with equity market timing.

Our results provide some insight into capital structure choice of Australian firms in the presence of market timing. We find that the market timing theory of Baker and Wurgler (2002) appears to provide one explanation for financial policy in Australia. In addition, our results support the Hovakimian's argument which suggests that the capital structure choice is unlikely to be due to equity market timing but it would appear growth opportunities provide a reasonable explanation for the past market-to-book ratio effect noted by Baker and Wurgler (2002).

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Table 1
Sample Size for each data set (1997-2005)

Here, unfiltered refers to the data set that includes all available data, 4SD refers to the four Standard Deviation (SD) filtered data and BW refers to the Baker and Wurgler filtered (2002) data. When we use 4SD filtered data, sample firms reduced from 1438 to 1146 (292 firms dropped) and when we use BW filtered data, sample firms reduced from 1438 to 981 (457 firms dropped).

Panel 1: Number of firms (included in descriptive statistics and equations 1 & 2)

	Unfiltered	**4SD filter**	**BW filter**
Available firms	1438	1146	981
Total panel observations	**4939**	**4681**	**3612**

Panel 2: Number of firms (included in equations 3 to 11)

	Unfiltered	**4SD filter**	**BW filter**
Available firms	1438	1146	981
Total panel observations	**4939**	**4681**	**3595**[17]

[17] We dropped firm year observations when EFWAMB exceed the value over 10.

Table 2
Year wise descriptive statistics (Baker and Wurgler (2002) filtered data)

Mean, Standard Deviation, Minimum and Maximum values are documented for Book value of leverage ($\frac{D}{A}$, book debt to assets), Market value leverage (D/A, book debt divided by total assets minus book equity plus market equity), Net equity issues (e/A, change in book equity minus the change in retained profits divided by assets), Net debt issues (d/A, residual changes in assets divided by assets), Market-to-book ratio (M/B Ratio, assets minus book equity plus market equity all divided by assets), Firm size ($\log(S)$, log of total revenue), Fixed asset tangibility (PPE/A, net property, plant and equipment divided by assets), Profitability ($EBITDA/A$, operating income before interest, taxes and depreciation divided by assets) and newly retained profit $\Delta RE/A$, change in retained earnings divided by assets), The sample consists of non-financial industry data for the period from 1997 to 2005*

	Total	1998	1999	2000	2001	2002	2003	2004	2005
Firm year observations	3612	123	350	416	516	543	529	537	598
Book Leverage									
Mean	0.43	0.52	0.47	0.45	0.45	0.44	0.42	0.40	0.40
Standard Deviation	0.22	0.16	0.21	0.22	0.23	0.22	0.22	0.22	0.22
Minimum	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Maximum	1.00	0.99	0.98	0.95	0.98	0.99	1.00	0.99	0.95
Market Leverage									
Mean	0.36	0.41	0.42	0.41	0.41	0.38	0.36	0.30	0.30
Standard Deviation	0.23	0.18	0.22	0.24	0.25	0.24	0.22	0.21	0.21
Minimum	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum	0.97	0.97	0.96	0.95	0.96	0.96	0.96	0.93	0.89
Net Debt Issues									
Mean	0.07	0.12	0.05	0.12	0.09	0.02	0.00	0.05	0.13
Standard Deviation	0.60	0.28	0.28	0.29	0.37	0.37	0.59	1.20	0.43
Minimum	-27.20	-1.90	-1.96	-2.18	-2.49	-4.48	-10.49	-27.20	-7.27
Maximum	3.66	0.79	0.80	0.95	3.66	1.08	1.36	0.86	1.34
Net Equity Issues									
Mean	0.05	0.02	0.01	0.09	0.08	0.04	0.01	0.03	0.07
Standard Deviation	0.56	0.22	0.21	0.22	0.30	0.21	0.53	1.19	0.40
Minimum	-27.21	-2.07	-1.95	-2.03	-2.08	-1.76	-10.42	-27.21	-7.38
Maximum	3.88	0.38	0.75	1.12	3.88	1.13	0.86	0.97	1.07
M/B Ratio									
Mean	1.55	1.72	1.22	1.42	1.64	1.49	1.50	1.55	1.79
Standard Deviation	1.10	0.73	0.63	1.04	1.31	1.17	1.01	1.09	1.18
Minimum	0.09	0.84	0.19	0.13	0.16	0.09	0.23	0.17	0.29
Maximum	9.59	5.00	5.07	8.99	9.47	9.59	8.19	9.29	9.42

Firm size									
Mean	7.73	8.35	7.78	7.71	7.68	7.72	7.72	7.76	7.65
Standard Deviation	1.22	0.95	1.14	1.22	1.17	1.21	1.27	1.24	1.30
Minimum	1.32	4.70	3.85	3.28	3.14	3.61	2.97	1.32	3.00
Maximum	10.66	10.31	10.39	10.36	10.62	10.65	10.55	10.66	10.53
Fixed asset tangibility									
Mean	0.32	0.32	0.38	0.36	0.32	0.28	0.31	0.34	0.27
Standard Deviation	0.63	0.25	0.88	0.29	0.28	0.25	0.29	1.32	0.27
Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum	30.24	1.13	16.02	2.00	2.36	1.35	2.73	30.24	1.96
Profitability									
Mean	0.08	0.13	0.10	0.09	0.09	0.05	0.07	0.08	0.08
Standard Deviation	0.17	0.09	0.12	0.14	0.15	0.21	0.17	0.20	0.18
Minimum	-2.16	-0.14	-0.50	-0.67	-0.69	-2.16	-0.79	-1.91	-1.07
Maximum	1.14	0.39	0.60	0.62	0.98	0.68	1.14	0.92	0.78
Newly retained profit									
Mean	-0.05	0.07	-0.01	-0.07	-0.18	-0.09	0.01	-0.01	-0.03
Standard Deviation	0.56	0.38	0.24	0.44	1.03	0.31	0.63	0.40	0.45
Minimum	-16.62	-0.31	-0.69	-5.08	-16.62	-2.63	-1.26	-1.23	-1.48
Maximum	10.03	1.81	1.69	2.31	0.61	1.20	10.03	6.59	6.86

* Due to use of lagged value, no data are included for 1997.

Table 3

Baker and Wurgler (2002) filter: Determinants of change in leverage and components (full period and 3 year sub periods)

Analysis of annual changes in leverage and its components with respect to market-to-book ratio, fixed assets, profitability, firm size and lagged leverage using Baker and Wurgler (2002) filtered data. Both pooled ordinary least squares and fixed effects panel analysis are used for the model below.

$$\left(\frac{D}{A}\right)_t - \left(\frac{D}{A}\right)_{t-1} = -\left(\frac{e_t}{A_t}\right) - \left(\frac{\Delta RE_t}{A_t}\right) - \left[E_{t-1}\left(\frac{1}{A_t} - \frac{1}{A_{t-1}}\right)\right] = a + b\left(\frac{M}{B}\right)_{t-1} + c\left(\frac{PPE}{A}\right)_{t-1} + d\left(\frac{EBITDA}{A}\right)_{t-1} + e\log(S)_{t-1} + f\left(\frac{D}{A}\right)_{t-1} + u_t$$

The intercept, a, is not reported. N is the number of observations used in the analysis. Book value of leverage is defined as book debt to assets $\left(\frac{D}{A}\right)_t$ at time t. The market-to-book ratio $\left(\frac{M}{B}\right)$ is equal to assets minus book equity plus market equity divided by assets. Fixed assets tangibility $\left(\frac{PPE}{A}\right)$ is defined as net property, plant and equipment divided by assets. Profitability $\left(\frac{EBITDA}{A}\right)$ is defined as operating income before interest, taxes, depreciation and amortization divided by total assets. Firm size is defined as the log of total revenue, ($Log(S)_{t-1}$). The explanatory variables are measured at time, t-1. Panel A reports the annual change in leverage. Effect of net equity issues is reported in panel B where net equity issues, $\left(\frac{e_t}{A_t}\right)$ is defined as the change in book equity minus the change in retained earnings divided by assets. The newly retained earnings component is reported in Panel C and it is $\left(\frac{\Delta RE_t}{A_t}\right)$ defined as the change in retained earnings divided by assets. Finally, panel D reports the components of residual change in leverage $E_{t-1}\left(\frac{1}{A_t} - \frac{1}{A_{t-1}}\right)$ that depend on the total growth in assets[18]. Robust *t*-statistics are reported in parentheses.

[18] The total growth in assets is the combination of net equity issues, net debt issues and newly retained earnings

Different Estimates	N	b	$t(b)$	c	$t(c)$	d	$t(d)$	e	$t(e)$	f	$t(f)$	R^2
		M/B_{t-1}		PPE/A_{t-1}		$EBITDA/A_{t-1}$		$Log(S)_{t-1}$		$(D/A)_{t-1}$		
						Panel A: Changes in Book Leverage $(\Delta(D/A)_t)$						
Pooled OLS												
1997-2005	3612	-0.004	(-1.81)	0.007	(1.40)	-0.019	(-0.82)	0.011	(5.46)	-0.186	(-15.70)	0.08
1997-1999	474	0.001	(0.76)	-0.008	(-1.31)	-0.040	(-0.83)	0.005	(1.03)	-0.153	(-13.76)	0.07
2000-2002	1475	-0.006	(-3.32)	0.017	(2.23)	-0.020	(-0.88)	0.015	(12.78)	-0.211	(-8.80)	0.10
2003-2005	1663	-0.001	(-0.40)	0.010	(7.53)	-0.027	(-1.51)	0.010	(2.75)	-0.183	(-23.92)	0.08
Fixed effects												
1997-2005	3612	-0.003	(-1.54)	0.007	(1.58)	-0.027	(-1.25)	0.012	(6.55)	-0.193	(-11.49)	0.28
1997-1999	474	-0.023	(-2.80)	0.056	(1.06)	-0.032	(-0.40)	-0.005	(-0.74)	-0.118	(-7.82)	0.75
2000-2002	1475	-0.003	(-1.09)	0.029	(4.39)	0.041	(1.01)	0.013	(1.81)	-0.214	(-5.93)	0.63
2003-2005	1663	0.001	(0.64)	0.009	(8.14)	-0.039	(-2.12)	0.015	(5.40)	-0.188	(-8.47)	0.56
						Panel B: Changes in Book Leverage through Net Equity Issues $(-e/A_t)$						
Pooled OLS												
1997-2005	3612	-0.049	(-6.40)	-0.008	(-0.85)	0.105	(1.92)	0.040	(6.21)	-0.134	(-2.22)	0.02
1997-1999	474	-0.018	(-1.36)	-0.0003	(-0.03)	-0.237	(-2.45)	0.019	(1.40)	0.006	(0.12)	0.02
2000-2002	1475	-0.053	(-5.37)	-0.042	(-1.93)	0.123	(1.26)	0.039	(4.67)	-0.019	(-0.44)	0.12
2003-2005	1663	-0.051	(-6.92)	-0.006	(-0.50)	0.124	(1.23)	0.045	(8.40)	-0.269	(-2.96)	0.01
Fixed effects												
1997-2005	3612	-0.044	(-7.89)	-0.012	(-1.12)	0.102	(2.14)	0.047	(7.06)	-0.169	(-2.29)	0.21
1997-1999	474	-0.108	(-2.69)	-0.221	(-5.77)	0.069	(4.24)	0.061	(1.52)	0.046	(0.35)	0.74
2000-2002	1475	-0.053	(-3.56)	-0.017	(-0.63)	0.107	(0.87)	0.067	(19.44)	-0.094	(-1.92)	0.61
2003-2005	1663	-0.060	(-5.34)	0.002	(0.28)	0.124	(1.50)	0.098	(3.27)	-0.588	(-2.47)	0.51

Different Estimates		M/B_{t-1}		PPE/A_{t-1}		$EBITDA/A_{t-1}$		$Log(S)_{t-1}$		$(D/A)_{t-1}$		
	N	*b*	*t(b)*	*c*	*t(c)*	*d*	*t(d)*	*e*	*t(e)*	*f*	*t(f)*	R^2
Panel C: Changes in Book Leverage through Newly Retained Earnings $\left(-\left(\Delta RE / A_t\right)\right)$												
Pooled OLS												
1997-2005	3612	-0.005	(-0.62)	-0.001	(-1.12)	0.076	(1.95)	-0.007	(-0.81)	-0.067	(-0.87)	0.001
1997-1999	474	-0.010	(-0.27)	0.018	(0.81)	-0.049	(-0.26)	-0.031	(-2.55)	0.028	(0.46)	0.02
2000-2002	1475	-0.008	(-0.81)	-0.004	(-21.21)	0.118	(2.48)	-0.013	(-1.19)	-0.026	(-2.11)	0.01
2003-2005	1663	0.002	(0.83)	0.003	(1.76)	0.040	(0.98)	0.006	(0.30)	-0.143	(-1.05)	0.002
Fixed effects												
1997-2005	3612	-0.009	(-1.02)	-0.002	(0.89)	0.085	(-2.43)	0.004	(-0.35)	-0.061	(0.77)	0.29
1997-1999	474	0.007	(0.26)	0.113	(0.66)	-0.294	(-0.82)	0.017	(0.43)	-0.158	(-0.96)	0.98
2000-2002	1475	0.013	(1.17)	0.003	(4.86)	0.077	(1.71)	-0.003	(-0.11)	0.044	(2.34)	0.88
2003-2005	1663	0.015	(1.27)	-0.003	(-1.13)	0.034	(0.67)	0.037	(2.21)	-0.300	(-1.79)	0.63
Panel D: Changes in Book Leverage through Growth in Assets $-\left[E_{t-1}\left(\frac{1}{A_t}-\frac{1}{A_{t-1}}\right)\right]$												
Pooled OLS												
1997-2005	3612	0.032	(3.50)	0.017	(1.25)	0.147	(2.84)	-0.016	(-2.58)	0.057	(1.35)	0.01
1997-1999	474	0.033	(1.95)	-0.008	(-0.55)	0.136	(1.12)	-0.001	(-0.12)	-0.002	(-0.04)	0.04
2000-2002	1475	0.036	(2.51)	0.196	(8.23)	0.172	(2.37)	-0.020	(-4.40)	0.100	(1.96)	0.01
2003-2005	1663	0.031	(6.02)	0.005	(0.78)	0.096	(1.36)	-0.022	(-3.06)	0.018	(0.25)	0.01
Fixed effects												
1997-2005	3612	0.040	(2.29)	0.013	(1.10)	0.115	(1.56)	-0.014	(-1.24)	0.008	(0.15)	0.20
1997-1999	474	0.006	(0.21)	0.137	(3.03)	0.268	(5.03)	-0.004	(-0.09)	-0.023	(-0.48)	0.75
2000-2002	1475	0.013	(0.85)	0.084	(7.26)	0.229	(4.42)	-0.023	(-1.33)	0.088	(1.21)	0.65
2003-2005	1663	0.024	(5.08)	-0.005	(-1.20)	0.104	(2.98)	-0.019	(-0.89)	-0.124	(-3.14)	0.40

Table 4
Baker and Wurgler filter: Determinants of leverage (For full period)

Analysis on book leverage and market leverage with respect to the market-to-book ratio, asset tangibility, profitability and firm size using Baker and Wurgler (2002) filtered data for the full period of 1997 to 2005. Both pooled ordinary least squares and fixed effects panel analysis are used for the model below.

$$\left(\frac{D}{A}\right)_t = a + b\left(EFWAMB\right)_t + c\left(\frac{M}{B}\right)_{t-1} + d\left(\frac{PPE}{A}\right)_{t-1} + e\left(\frac{EBITDA}{A}\right)_{t-1} + f\log\left(S\right)_{t-1} + u_t$$

The intercept, a, is not reported. N is the number of observations used in the analysis. Leverage, is defined in two ways, book debt to assets (book value) and book debt to the results of total assets minus book equity plus market equity (market value) both at times t. The market-to-book ratio is also defined in two ways. The first one is weighted average market-to-book ratio from the year 1997 to year t-1. These weights consider as the external finance raise in each year that is defined as the combination of net equity and net debt issues. The weight set to zero if this is negative. And the second is the market-to-book ratio in year t-1, which is defined as assets minus book equity plus market equity all divided by assets. Fixed assets tangibility is defined as net property, plant and equipment divided by assets. Profitability is defined as operating income before interest, taxes, depreciation and amortization. Firm size is defined as the log of total revenue which is the proxy for firm size. The explanatory variables are measured at time, t-1. We drop firm year observations where external finance weighted average market-to-book ratio or EFWAMB exceeds 10. Panel A report the results for book value of leverage and panel B reports the results for market value of leverage. Robust *t*-statistics are reported in parentheses.

		$(EFWAMB)_t$		M/B_{t-1}		PPE/A_{t-1}		$EBITDA/A_{t-1}$		$Log(S)_{t-1}$		
	*N**	*b*	*t(b)*	*c*	*t(c)*	*d*	*t(d)*	*e*	*t(e)*	*f*	*t(f)*	R^2
						Panel A: Book Leverage						
Pooled OLS	3595	-0.008	(-4.05)	-0.007	(-2.86)	0.024	(2.35)	-0.025	(-1.24)	0.094	(30.49)	0.28
Fixed effects	3595	0.0003	(0.11)	-0.008	(-2.71)	0.027	(3.15)	-0.036	(-1.22)	0.092	(23.66)	0.45
						Panel B: Market Leverage						
Pooled OLS	3595	-0.018	(-9.25)	-0.076	(-16.21)	0.023	(2.26)	-0.080	(-3.85)	0.069	(24.77)	0.30
Fixed effects	3595	-0.007	(-5.45)	-0.079	(-19.65)	0.024	(2.64)	-0.081	(-2.53)	0.068	(17.37)	0.48

* If $(EFWAMB)_t$ >10, firm year observations dropped from 3612 to 3595.

Table 5
Four Standard Deviation Filter: Determinants of leverage (For full period)

Analysis on book leverage and market leverage with respect to market-to-book ratio, asset tangibility, profitability and firm size using a four standard deviation filtered data for the full period of 1997 to 2005. Both pooled ordinary least squares and fixed effects panel analysis are used for the model below.

$$\left(\frac{D}{A}\right)_t = a + b(EFWAMB)_t + c\left(\frac{M}{B}\right)_{t-1} + d\left(\frac{PPE}{A}\right)_{t-1} + e\left(\frac{EBITDA}{A}\right)_{t-1} + f\log(S)_{t-1} + u_t$$

Refer to the above table for variable definitions.

		$(EFWAMB)_t$		M/B_{t-1}		PPE/A_{t-1}		$EBITDA/A_{t-1}$		$Log(S)_{t-1}$		
	N	*b*	*t(b)*	*c*	*t(c)*	*d*	*t(d)*	*e*	*t(e)*	*f*	*t(f)*	R^2
						Panel A: Book Leverage						
Pooled OLS	4681	0.002	(0.73)	0.014	(2.98)	0.080	(3.05)	-0.029	(-0.85)	0.084	(12.66)	0.08
Fixed effects	4681	0.003	(0.95)	0.014	(3.98)	0.780	(3.72)	-0.028	(-0.92)	0.080	(16.44)	0.23
						Panel B: Market Leverage						
Pooled OLS	4681	-0.003	(-1.27)	-0.014	(-7.22)	0.091	(8.86)	-0.008	(-1.78)	0.070	(39.05)	0.29
Fixed effects	4681	-0.0003	(-0.14)	-0.014	(-8.12)	0.086	(8.61)	-0.009	(-1.96)	0.071	(34.42)	0.44

Table 6
Determinants of Leverage (For Full Period): All Filters

Both pooled ordinary least squares and fixed effects panel analysis are used below for the analysis on leverage with respect to the market-to-book ratio, fixed assets, profitability and firm size using all filters for the period of 1997 to 2005.

$$\left(\frac{LT+ST}{A}\right)_t = a + b(EFWAMB)_t + c\left(\frac{M}{B}\right)_{t-1} + d\left(\frac{PPE}{A}\right)_{t-1} + e\left(\frac{EBITDA}{A}\right)_{t-1} + fLog(S)_{t-1} + g(EqIs)_{t-1} + h(DbIs)_{t-1} + u_t$$

Refer to the table 4 for variable definitions. Leverage is defined as long-term debt + short-term debt over total assets. Cumulative net equity issued is the net equity issued divided by total assets cumulated over all years preceding the current year and cumulative net debt issued is the net debt issued divided by total assets cumulated over all years preceding the current year (net debt issued is measured as the change in long term plus short term debt). Robust t-statistics are in parenthesis.

		$(EFWAMB)_t$		M/B_{t-1}		PPE/A_{t-1}		$EBITDA/A_{t-1}$		$Log(S)_{t-1}$		$EqIs$		$DbIs$		
Different Estimates	*N*	*b*	*t(b)*	*c*	*t(c)*	*d*	*t(d)*	*e*	*t(e)*	*f*	*t(f)*	*g*	*t(g)*	*h*	*t(h)*	R^2
Panel A: Baker Wurgler filter																
Pooled OLS	3595	-0.006	(-3.50)	-0.013	(-4.19)	0.039	(2.91)	-0.041	(-1.73)	0.042	(17.0)	-0.011	(-1.78)	0.170	(4.14)	0.20
Fixed effects	3595	0.0001	(0.06)	-0.012	(-4.38)	0.039	(3.66)	-0.045	(-1.90)	0.042	(13.91)	-0.006	(-0.96)	0.179	(4.75)	0.41
Panel B: Unfiltered																
Pooled OLS	4939	-0.023	(-1.33)	-0.003	(-0.31)	-0.0001	(-0.02)	-0.671	(-16.31)	0.053	(0.59)	0.162	(20.23)	0.188	(1.23)	0.57
Fixed effects	4939	-0.026	(-1.41)	-0.003	(-0.25)	0.0004	(0.09)	-0.668	(-16.93)	0.015	(0.13)	0.161	(20.13)	0.215	(1.38)	0.66
Panel C: Four Standard Deviation filter																
Pooled OLS	4681	0.009	(1.79)	-0.004	(-2.79)	0.125	(10.9)	-0.016	(-0.64)	0.036	(8.65)	0.0001	(5.21)	-0.001	(-0.38)	0.05
Fixed effects	4681	0.014	(2.22)	-0.006	(-2.96)	0.122	(8.01)	-0.016	(-0.70)	0.037	(6.92)	0.0007	(0.67)	-0.002	(-0.52)	0.21

Table 7
Determinants of Changes in Leverage (For Full Period): All Filters

Both pooled ordinary least squares and fixed effects panel analysis are used below for the analysis on changes in leverage with respect to the market-to-book ratio, fixed assets, profitability, firm size and lagged leverage using all filters for the period of 1997 to 2005.

$$\Delta\left(\frac{LT+ST}{A}\right)_t = a + b(EFWAMB)_t + c\left(\frac{M}{B}\right)_{t-1} + d\left(\frac{PPE}{A}\right)_{t-1} + e\left(\frac{EBITDA}{A}\right)_{t-1} + fLog(S)_{t-1} + g\left(\frac{LT+ST}{A}\right)_{t-1} + u_t$$

Refer to the table 4 for variable definitions. Change in leverage is defined as leverage (t) minus leverage (t-1). Robust t-statistics are in parenthesis.

		$(EFWAMB)_t$		M/B_{t-1}		PPE/A_{t-1}		$EBITDA/A_{t-1}$		$Log(S)_{t-1}$		$\left(\frac{LT+ST}{A}\right)_{t-1}$		
Different Estimates	*N*	*b*	*t(b)*	*c*	*t(c)*	*d*	*t(d)*	*e*	*t(e)*	*f*	*t(f)*	*g*	*t(g)*	R^2
						Panel A: Baker Wurgler filter								
Pooled OLS	3595	-0.005	(-7.36))	-0.001	(-0.37)	0.014	(3.36)	-0.015	(-1.23)	0.011	(5.37)	-0.281	(-8.20)	0.13
Fixed effects	3595	-0.003	(-2.14)	0.000	(0.003)	0.015	(3.34)	-0.022	(-1.38)	0.013	(4.84)	-0.285	(-8.23)	0.34
						Panel B: Unfiltered								
Pooled OLS	4939	-0.440	(-5.05)	0.011	(0.27)	-0.021	(-2.50)	-0.244	(-1.89)	-0.149	(-1.53)	0.113	(0.39)	0.52
Fixed effects	4939	-0.474	(-6.38)	0.021	(0.57)	-0.016	(-1.74)	-0.224	(-1.93)	-0.118	(-1.15)	0.165	(0.65)	0.62
						Panel C: Four Standard Deviation filter								
Pooled OLS	4681	0.002	(0.46)	-0.005	(-2.58)	0.038	(0.93)	0.012	(0.46)	0.019	(4.29)	-0.547	(-4.21)	0.26
Fixed effects	4681	0.004	(1.07)	-0.006	(-3.09)	0.035	(0.79)	0.011	(0.53)	0.021	(4.50)	-0.551	(-4.58)	0.39

Table 8
Future EFWAMB and Capital Structure (For Full Period): All Filters

Both pooled ordinary least squares and fixed effects panel analysis are used below for the analysis on leverage with respect to the market-to-book ratio, fixed assets, profitability, firm size using all filters for the period of 1997 to 2005.

$$\left(\frac{LT+ST}{A}\right)_t = a + b\left(FEFWAMB\right)_t + c\left(\frac{M}{B}\right)_{t-1} + d\left(\frac{PPE}{A}\right)_{t-1} + e\left(\frac{EBITDA}{A}\right)_{t-1} + fLog(S)_{t-1} + u_t$$

Refer to the table 4 for variable definitions. The FEFWAMB is external finance weighted average of future market-to-book ratio. Robust t-statistics are in parenthesis.

		$FEFWAMB_t$		M/B_{t-1}		PPE/A_{t-1}		$EBITDA/A_{t-1}$		$Log(S)_{t-1}$		
Different Estimates	*N*	*b*	*t(b)*	*c*	*t(c)*	*d*	*t(d)*	*e*	*t(e)*	*f*	*t(f)*	R^2
						Panel A: Baker Wurgler filter						
Pooled OLS	3595	-0.006	(-2.07)	-0.014	(-3.45)	0.041	(3.28)	0.023	(-0.66)	0.042	(13.71)	0.12
Fixed effects	3595	-0.008	(-2.29)	-0.008	(-2.23)	0.041	(4.09)	-0.035	(-1.01)	0.044	(10.64)	0.33
						Panel B: Unfiltered						
Pooled OLS	4939	-0.001	(-1.50)	-0.003	(-0.17)	0.000	(-0.08)	-0.674	(-15.23)	0.012	(0.11)	0.57
Fixed effects	4939	-0.002	(-2.99)	-0.002	(-0.15)	0.001	(0.12)	-0.671	(-15.93)	-0.030	(-0.22)	0.66
						Panel C: Four Standard Deviation filter						
Pooled OLS	4681	-0.006	(-4.17)	0.002	(0.50)	0.112	(9.02)	-0.023	(-0.72)	0.037	(7.88)	0.04
Fixed effects	4681	-0.007	(-4.97)	0.002	(0.59)	0.112	(7.04)	-0.024	(-0.80)	0.040	(6.47)	0.20

Table 9
Determinants of Changes in Leverage with Future EFWAMB (For Full Period): All Filters

Both pooled ordinary least squares and fixed effects panel analysis are used below for the analysis on changes in leverage with respect to the market-to-book ratio, fixed assets, profitability, firm size using all filters for the period of 1997 to 2005.

$$\Delta\left(\frac{LT+ST}{A}\right)_t = a + b(FEFWAMB)_t + c\left(\frac{M}{B}\right)_{t-1} + d\left(\frac{PPE}{A}\right)_{t-1} + e\left(\frac{EBITDA}{A}\right)_{t-1} + fLog(S)_{t-1} + g\left(\frac{LT+ST}{A}\right)_{t-1} + u_t$$

Refer to the table 4 for variable definitions. The FEFWAMB is external finance weighted average of future market-to-book ratio. Robust t-statistics are in parenthesis.

	$FEFWAMB_t$			M/B_{t-1}		PPE/A_{t-1}		$EBITDA/A_{t-1}$		$Log(S)_{t-1}$		$\left(\frac{LT+ST}{A}\right)_{t-1}$		
Different Estimates	*N*	*b*	*t(b)*	*c*	*t(c)*	*d*	*t(d)*	*e*	*t(e)*	*f*	*t(f)*	*g*	*t(g)*	R^2
Panel A: Baker Wurgler filter														
Pooled OLS	3595	-0.002	(-2.10)	-0.001	(-0.74)	0.009	(2.12)	-0.010	(-0.68	0.004	(3.94)	-0.181	(-7.16)	0.06
Fixed effects	3595	-0.003	(-2.55)	0.001	(0.21)	0.010	(2.03)	-0.017	(-0.99)	0.006	(2.90)	-0.185	(-6.46)	0.27
Panel B: Unfiltered														
Pooled OLS	4939	-0.001	(-1.29)	-0.006	(-0.95)	-0.008	(-1.22)	0.050	(0.88)	-0.139	(-1.19)	0.327	(3.12)	0.05
Fixed effects	4939	-0.002	(-1.92)	-0.006	(-1.05)	-0.005	(-1.14)	0.057	(1.00)	-0.170	(-1.20)	0.339	(3.32)	0.24
Panel C: Four Standard Deviation filter														
Pooled OLS	4681	-0.002	(-3.58)	-0.004	(-2.54)	0.013	(0.25)	-0.007	(-0.25)	0.018	(3.30)	-0.465	(-3.42)	0.18
Fixed effects	4681	-0.002	(-1.00)	-0.005	(-3.07)	0.009	(0.17)	-0.008	(-0.31)	0.020	(3.18)	-0.466	(-3.56)	0.31