Accounting Earnings and Free Cash Flow

Peter Easton
Center for Accounting Research and Education
University of Notre Dame

Peter Vassallo
Adelaide Business School
University of Adelaide

Eric Weisbrod
School of Business Administration
University of Miami

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Abstract

The extant literature has focused on the relation between earnings and returns (i.e., change in value). Yet change in firm value arises from two sources: (1) return on the assets in place; and, (2) cash flows to/from debt holders, equity holders, and/or cash reserves (i.e., free cash flow). The primary contribution of our paper is to add analysis of the relation between earnings and free cash flow. We show that: (1) free cash flow explains more of operating income than is explained by returns; (2) the difference in the portion of negative cf. positive *enterprise* returns captured in operating income is similar to the portion of negative cf. positive *equity* returns captured in earnings reported in the extant literature and this portion is different if there is net cash inflow vs. net cash outflow; (3) the portion of each source of change in value captured in operating income changes with leverage, thus, we extend the extant literature on the effect of leverage on "conservative" accounting; (4) leverage varies with type of investment and, since the accounting varies with the type of investment, the portions of change in value captured in operating income varies, thus, we provide an alternative explanation for the relation between leverage and the degree of conservatism in accounting.

Keywords: Firm Growth, Free Cash Flows, Earnings Return Relation, NOPAT, Valuation

I. Introduction

Operating income, which is the accounting measure of change in value of the firm, captures a portion of this change in value and this portion depends on the source of change in value.[1] Change in firm value arises from two sources:

(1) investment (and disinvestment) of cash by the firm's capital providers (i.e., debt and equity holders); we argue and show that the portion of free cash flow that is captured in operating income reflects accounting rules, which require expensing of the investment rather than capitalizing into book value.[2] Importantly, this expensing results in a reduction in operating income even though the free cash flow *per se* does not change profitability,[3]and,

(2) change in the value of the firm's operating assets, which reflects change in profitability of the current period and change in expectations of future profitability; only the former portion is captured in concurrent operating income.

The analyses in the extant literature, which has examined the portion of *equity* returns that is captured in earnings, is quite similar to our analyses of the portion of *firm-level* returns that is captured in operating income. The extant literature has not, however, recognized the fact that operating income (and earnings) is also affected by the accounting for the other source of change

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[1] The method of calculation of operating income, which is the income from the enterprise operations of the firm is shown in the Appendix. Operating income is sometimes referred to as net operating profit after tax (NOPAT).

[2] Free cash flow is the operating income of the firm in excess of the investment in maintaining or expanding the enterprise assets. This free cash flow goes to equity holders (in the form of dividends and stock repurchases), to debt holders (in the form of interest payments and debt repayments) and to build up cash reserves. Of course, free cash flow will be negative if growth in operating assets is greater than operating profits. The method of calculation of free cash flow is shown in the Appendix.

[3] After the cash is invested in the firm, it, of course, becomes part of the assets in the firm and may affect both current and future profitability.

in value – free cash flow. We show that growth through free cash flow explains as much of cross-sectional variation in operating income as is explained by returns and that the accounting for this growth in operating income identifies, conceptually and empirically, distinct forms of accounting for firm level change in value. Also, we predict and show that the portion of returns that is captured in concurrent operating income depends on the sign of both returns and free cash flow. In doing so, we provide a significant new dimension to the vast literature on the relation between earnings and returns.

In order to illustrate the importance of: (1) focusing on operating income and firm returns rather than earnings and equity returns as in the extant literature; and, (2) adding free cash flow to the earnings/return regression, we also partition our sample on the debt/equity ratio and show how the type of firm assets differs across these partitions and, in turn, the accounting (i.e., the portion of return and free cash flow that is captured in operating income) differs. An implication of our results is that conclusions in the extant literature regarding the influence of debt/equity ownership on the earnings/returns relation may reflect no more than differences in the accounting for different assets (e.g., full expensing of investment in R&D, which tends to be the primary form of investment when the firm is mostly owned by equity holders vs. capitalizing investment in property, plant and equipment, which tends to be the primary form of investment when the firm is owned by debt holders).

A vast literature, starting with Ball and Brown (1967, 1968), has examined the relation between earnings and change in value of existing investments. The more recent literature, particularly since Basu (1997), argues and shows that the portion of decrease in the market value of existing assets that is captured in concurrent earnings is greater than the portion of increase in value that is captured in concurrent earnings. The extant literature has not analyzed the relation between earnings and the change in value due to the provision of new capital (that is cash flow). This analysis is the primary contribution of our paper.

We ask two questions regarding the relation between operating income and the two sources of change in value. First, how and why does the portion of change in value that is captured in concurrent operating income differ across the two sources of change in value? Second, how and why does the *interaction* between these two sources of change in firm value affect the portion of the change in firm value that is captured in concurrent operating income?

We argue, for example, that capital providers will tend to provide cash to the firm when they think that negative returns are due to shorter run issues but they will tend to remove cash when the negative returns reflect more permanent changes. It follows that, when there is cash inflow to the firm, the portion of negative returns that is captured in concurrent operating income will be greater than when there is cash outflow.

Further, we ask: how does the portion of change in firm value that is captured in concurrent operating income change with firm leverage? How does this portion differ across the two sources of change in value? How does the type of assets in which the firm invests affect these portions? We show that leverage varies with type of investment (capital intensive firms tend to have higher leverage than R&D intensive firms) and, since the accounting varies with the type of investment, the portions of change in value captured in concurrent operating income vary with leverage and investment type.

How and why do the portions of change in value that is captured in concurrent earnings vary with the source and sign of the change in value? We begin by providing short answers to this question for each of the sources of change in value and for increase and decrease in firm value arising from these sources.

The portion of the change in value arising from cash flow *from* capital providers (i.e., cash *inflow*), which is recorded in operating income, varies from zero to one depending on the type of investment. If the investment is in R&D, generally, *all* of the cash investment will be expensed in operating income. If the investment is in property, plant and equipment the only effect on operating income for the fiscal period will be the depreciation of the asset over the rest of the fiscal period with the remaining effect of the cash flow being recorded as an increase in book value; if there is no depreciation, *none* of the cash investment will be expensed in operating income.

The portion of the change in value arising when there is cash flow *to* capital providers (i.e., cash *outflow*), which is recorded in operating income, also varies with the type of investment. To illustrate, compare a firm that is R&D intensive and a firm that is capital intensive. R&D firms must generate cash outflow from the operating income of the current period; i.e., *all* of the cash outflow will arise from current operating income. But, a firm that is capital intensive may sell assets to generate cash outflow. If all of the cash outflow is generated by the asset sales and the book value of these assets is the same as the market value *none* of the cash outflow will be associated with operating income of the period. On the other hand, if the book value of the assets is zero, there will be a "gain on sale" recorded in operating income; *all* of the cash outflow will be recorded in operating income.

The portion of the change in the market value of existing operating assets, which is captured in concurrent earnings, will reflect the portion that arises from earnings of the current period rather than from changes in expectations of earnings of future periods. This portion will, generally, range from zero, if all of the change in value is due to change in expected future earnings, to one, if all of the change in value is due to earnings of the current period. Accounting for the change in value of *equity* returns has received much attention in the recent literature, which focuses on the difference in the portion of positive *equity* returns that is captured in current earnings vis-à-vis the portion of negative *equity* returns that is captured in current earnings (e.g., Basu 1997). We show similar results when we examine the portion of positive vs. negative *enterprise* returns that is captured in operating (enterprise) income.[4] We predict and show, however, that these portions (of both positive and negative returns) differ considerably between samples where the owners are injecting further cash into the enterprise (implicitly they are confident in their expectations regarding future growth) and samples where cash is being removed (implicitly the owners are removing cash and investing it elsewhere).[5]

Our analyses are based on a multiple regression of operating income on contemporaneous returns and free cash flow. The estimates of the coefficients on returns and free cash flow capture

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[4] We use the term enterprise to describe the entity (sometimes called the firm) that is jointly owned by the capital providers (i.e., the debt and equity holders). Enterprise return is the sum of the change in the market value of equity, the change in the market value of debt, and cash flows (in the form of dividends payments, interest payments, proceeds from new stock issues and new debt, etc.) to/from the capital providers.

[5] There are two reasons for our focus on the enterprise rather than on the equity ownership of the enterprise, as in most of the extant literature. First, the book value of financial assets and financial liabilities is generally close to the market value of these financial assets and financial liabilities but the book value of enterprise assets usually is much less than the market value of these assets; and the accounting for enterprise revenue and expenses is likely to be less than dollar-for-dollar, while the accounting for interest income and expenses is, as a first approximation, dollar-for-dollar. In short, analyses at the enterprise level focus on the entity where the mapping from change in value to accounting numbers is not simply dollar-for-dollar. In contrast, analyses of accounting at the equity level is based on earnings that are a combination of enterprise earnings, which are accounted for conservatively, and financial expenses, which are not accounted for conservatively. Second, when the enterprise is the entity of interest, cash contributions/distributions come from/go to the owners of the enterprise (viz., debt and equity holders) in to/out of the enterprise. On the other hand, dividends and stock repurchases may be funded from cash reserves (financial assets) or extra debt (financial liabilities); in other words, dividends may represent transactions between the owners of the enterprise and there is no conservatism in the accounting for these transactions.

the portion of these sources of change in value captured in contemporaneous earnings. Although the effect on operating income (earnings) of firm growth (change in value) due to investment/disinvestment of cash by the capital providers has received little attention in the extant literature, we show that it explains at least as much of operating income as is explained by returns, and in some cases more.[6] In essence, we show that accounting measures of firm value change are often more strongly associated with value change arising from transactions between the firm and its capital providers during the period than with returns of the period.

In short, we argue and show that: (1) the accounting for growth (i.e., value change) differs according to the source of the growth; (2) free cash flows to/from the capital providers to the enterprise explain at least as much of the cross-sectional variation in operating income as is explained by returns on assets in place; and, (3) the portion of returns and the portion of free cash flow that is captured in concurrent operating income differ according to the sign of returns (i.e., whether the assets in place are increasing or decreasing in value) and according to the sign of free cash flow (i.e., whether the capital providers to the firm are providing more cash or removing cash).[7]

[6] Our analysis of free cash flow departs from the extant literature that considers the mapping from changes in value to cash flows rather than the mapping from cash flows to earnings (e.g., Collins, Hribar, and Tian 2014, who examine the mapping from equity returns to operating cash flows, and Penman and Yehuda 2004, who examine the mapping from free cash flows to change in enterprise value). As far as we are aware, the mapping from *FCF* to *OI*, which explains much of the cross-sectional variation in operating income, has not yet been considered in the literature on accounting for value change.

[7] Unreported analyses show that the coefficient relating equity earnings to equity returns also differs considerably from the coefficient relating earnings to net transactions with equity holders (i.e., “dividends”) and that “dividends” has significant incremental explanatory power for earnings over returns. We do not report these results because (as we have argued in footnote 5) these results reflect a mixture of accounting for the enterprise, which tends to be conservative, and accounting for debt, which tends not to be conservative.

The remainder of the paper proceeds as follows. We begin, in Section II by presenting our motivation and the empirical model. In doing so, we demonstrate our reasons for our focus on accounting at the enterprise level and for the addition of free cash flow. We present our predictions in Section III. We describe our sample selection procedure in Section IV, and discuss selected descriptive statistics. Section V analyzes and compares partitions of the data based on whether enterprise value is increasing or decreasing and on the source of this value increase/decrease. In Section VI, we examine whether the empirical manifestation of change in enterprise value in the financial statements differs as expected with change in leverage and enterprise asset types. Section VII presents a summary and conclusions.

II. Motivation and Model Development

There are two sources of change in the market value of the firm and the accounting (and hence the portion of change in value that is captured in operating income) differs across these two sources. The two sources are: (1) returns on existing assets and on new investments; and, (2) transactions with capital providers (i.e., free cash flow).[8] We will discuss the accounting for each source of change in the market value of the firm separately, beginning with (1), which is the focus of prior literature on the accounting for change in equity value.

The question at the heart of the empirical literature, which considers accounting measurement of value and change in value is: what portion of equity returns is captured in

[8] While the term free cash flow contains the word "cash," *FCF* inflows and outflows include all forms of value flowing between the enterprise and the owners of the enterprise. For example, *FCF* includes contributions from the owners of an acquired company where the acquisition currency is shares in the newly-formed enterprise (e.g., the 2006 acquisition of Gillette by Procter and Gamble).

concurrent earnings? This literature, particularly since Beaver, Lambert, and Ryan (1987) and more recently, Basu (1997), is generally based on a regression of earnings on returns; the estimates of the earnings/returns coefficients reflect the portion of the returns that are captured in earnings of the return period. The extant literature provides accounting-related explanations for more or less of this return being captured in earnings of the current period. If there is no conservatism in the accounting for return on equity, earnings will capture all of the return, but conservative accounting implies that only a portion of the return is captured in current earnings; the *smaller* the portion of this return that is captured in current earnings, the more conservative the accounting.[9]

The key premise of our study is that, under conservative accounting, capital contributed by or distributed to the providers of capital during the period may be recorded in operating income of the period, *regardless of the underlying economic performance* of the invested assets. To see this, note that when capital providers contribute cash (in the form of new loans or new stock issues), the market value of the firm changes by the nominal amount of the cash contributed, plus or minus the net present value of the investments made with the contributed cash. If there is no accounting conservatism, the book value of the firm will increase by this same amount, while operating income changes only by the net present value of the investments made. But, if accounting is conservative (R&D expenditure, for example, is immediately expensed), some (or all) of the cash contribution is recorded as an effect on operating income, and only the remainder is recorded as a change in net operating assets. The clean surplus relation ensures that the entire amount of the cash contribution by the capital providers will be recorded in either operating

[9] We use the term "conservative" accounting to describe accounting which does not record value and value change equal to the intrinsic value and intrinsic value change. We use market values as an indication of intrinsic value.

income (as an expense) or in net operating assets (as an asset); the more conservative the accounting, the *greater* the portion of the cash contribution that is captured in concurrent operating income.

Similarly, when there is a payment to the capital providers (in the form of dividends, stock repurchases, interest and/or loan repayments) and there is no conservatism, the book value of the firm (net operating assets) decreases by the cash payment and there is no effect on operating income. But, if accounting is conservative, the decrease in the book value of net operating assets (i.e., *NOA*) associated with the cash payment will be understated, and, as a result, operating income (i.e., *OI*) will be overstated, relative to the no conservatism case. For example, if the depreciated value of assets sold to generate the cash payment is less than the sale value, *NOA* will decrease by the book value of the sold asset, but the remainder of the cash flow will be recorded in *OI* as a gain on sale. Again, the clean surplus relation ensures that the entire amount of the cash distribution to the capital providers will be recorded in either *OI* or in ΔNOA (as a decline in asset value); and, again, the more conservative the accounting, the *greater* the portion of the cash distribution that is captured in current *OI*.

Furthermore, under conservative accounting, the association between *OI* and *FCF* will occur in the same period as *FCF*, even if the investment of the *FCF* is transaction is zero-NPV or the economic performance that generates the expense or gain on sale was recognized in market value in a different period. We continue the asset sale example to illustrate this point. Increases in the market value of an asset in prior periods would have been captured in the returns of those prior periods, but the gain on sale will be captured in *OI* during the period in which the asset is liquidated (i.e., the period in which the cash payment is made to the capital providers).

The key point of this discussion is that the accounting for growth due to the provision of cash (i.e., *FCF*) may lead to an association between *FCF* and *OI* of the period, *independent of current period returns*; this suggests that we may gain additional insights if we add *FCF* to the regression of operating income on returns:

$$\frac{OI_{it}}{EV_{it-1}} = \beta_{0t} + \beta_{1t} RETent_{it} + \beta_{2t} \frac{FCF_{it}}{EV_{it-1}} + \varepsilon_{1it} \quad (1)$$

where OI_{it} is the operating income of firm *i* for year *t*, EV_{it} is the market value of the firm (enterprise operations) of firm *i* at time *t*, $RETent_{it}$ is the returns on the firm for the period ending at *t*, and FCF_{it} is free cash flow to/from the providers of capital to the firm (i.e., equity and net debt holders). Henceforth, for ease of exposition, we also drop subscripts and denominators when referring to the measures of *OI* and *FCF* used in our analyses.[10]

III. Empirical Predictions

Most of our empirical analyses are based on regression (1). In the absence of conservatism, $OI = \Delta EV + FCF$ and it follows that the estimates of the coefficient relating *OI* to RET_{ent} would be one and the coefficient relating *OI* to *FCF* would be zero. We show, however, that, in the presence of conservatism, the estimates of the coefficients differ from these baselines of one and zero in predictable ways, according to the signs of RET_{ent} and *FCF.* The two coefficients capture distinct aspects of accounting, with more conservative accounting generating smaller coefficients (i.e., less than one) on RET_{ent} and larger coefficients (i.e., greater than zero) on *FCF.*

[10] Easton (2016) provides a detailed discussion of the relations between regression (1) at the equity level and regression (1) at the enterprise level.

The relation between *OI* and RET_{ent}

First, consider a scenario in which there is a change in the value of assets in place (i.e., ΔEV) and there is no *FCF* (i.e., the capital providers are neither contributing nor removing cash, $FCF = 0$). If there is no conservatism in the accounting, $OI = RET_{ent}$; if accounting is conservative, *OI* will be less than RET_{ent} and it follows that the coefficient relating *OI* to RET_{ent} will differ from one.

Positive enterprise returns (i.e., positive RET_{ent}) due to such things as discovery of new technology, acquisition of new contracts, which may be serviced with the existing enterprise assets, effective cost-cutting, re-investment of internally generated cash in positive NPV projects, etc., may affect both current *OI* and future *OI*. RET_{ent} will reflect the present value of the effect on current and future *OI*. The relation between current *OI* and positive RET_{ent} will capture *the portion of* the increase in value that is captured in current *OI*.

Negative enterprise returns (i.e., negative RET_{ent}) due to such things as loss of comparative technological advantage, loss of market share, cost increases, etc., may affect both current *OI* and future *OI*. Since these effects are more likely to be transitory rather than permanent on average (otherwise the firm will go out of business), the mapping from negative RET_{ent} to *OI* is likely to be greater than the mapping from positive RET_{ent} to *OI*. Further, generally accepted accounting principles place greater verification thresholds on increases in value recorded in *OI* than on decreases in value recorded in *OI*, which can also contribute to a greater portion of RET_{ent} being recognized in current-period *OI* when RET_{ent} is negative.[11]

[11] In other words, negative RET_{ent} may be recognized for accounting purposes before the decreases in expected future enterprise value are realized (e.g., asset write-downs), while increases in expected enterprise value are not recognized for accounting purposes until the expected outcomes are realized. These ideas are also captured in what

The relation between *OI* and *FCF*

If there is no conservatism in the accounting, $OI = RET_{ent}$, and the coefficient relating *OI* to *FCF* would be zero. When *FCF* is negative, indicating that the capital providers are contributing cash to the firm and there is no conservatism in the accounting for the associated investment, $\Delta NOA = - FCF$ plus the NPV of the investment. The NPV of the *FCF* investment will be part of RET_{ent} and like other sources of RET_{ent} only the portion of the NPV that is related to current change in profit will be recorded in *OI*. But, if mandatory accounting rules require conservative expensing of *FCF* investments, (R&D expenditure, for example, is immediately expensed), some (or all, if the expenditure is on R&D) of the nominal amount of *FCF* will be captured in *OI* (regardless of the NPV of the investment); the more conservative the accounting, the *greater* the portion of the *FCF* that is captured in *OI*.

Similarly, if *FCF* is positive and there is no conservatism, $\Delta NOA = - FCF$ and there is no *OI*. But, if accounting is conservative (e.g., the depreciated value of assets sold to generate the cash is less than the sale value), *NOA* will decrease by the book value of the sold asset and remainder of the *FCF* will be recorded as a gain on sale in *OI*. Again, the more conservative the accounting, the *greater* the portion of change in firm value due to *FCF* that is captured in current *OI*. The accumulated effects of accounting from the past will lead to lower recorded asset value (i.e., the "gain on sale", which will be recorded in operating income, increases, *ceteris paribus,* with accounting conservatism) as well as lower expenses matched to sales of the period

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Roychowdhury and Watts (2007) refer to as "rents" and Ball, Kothari and Nikolaev (2013) label as the *g* component of stock returns (which is associated with "revisions in the value of growth options or un-booked intangibles"), as well as "curtailment", which is the focus of Lawrence et al. (2015). Returns may also be generated from investment of *FCF* in non-zero NPV projects, modelled in Feltham and Ohlson (1995) and (1999).

(because, for example, the R&D and advertising that affects the sales of the current period have been expensed in a prior period and accelerated depreciation is matched to sales of an earlier period rather than sales of the current period): in turn, the portion of positive *FCF* that is associated with *OI* will increase.

It follows that conservatism will be captured by the extent to which the coefficient relating *OI* to *FCF* differs from zero, for both negative and positive *FCF.* In the case of negative *FCF*, the coefficient relating *OI* to *FCF* captures conservative expensing of current-period *FCF* investments into *OI*. In the case of positive *FCF*, the coefficient relating *OI* to *FCF* captures the cumulative effects of accelerated expensing (and/or lack of capitalization) in prior periods. We predict that, due to the cumulative effect of conservative accounting for *FCF*, the coefficient on *FCF* in regression (1) will be larger when *FCF* is positive than when *FCF* is negative.[12] As is evident from our discussion of the effects of conservative accounting for *FCF*, the coefficient on *FCF* in regression (1) is also expected to vary depending on whether *FCF* is invested in projects such as R&D, which are accounted for more conservatively, or projects focused on tangible assets such as PP&E, which are accounted for less conservatively. We discuss the effects of these firm characteristics on the relation between *OI* and *FCF* in Sections 5 & 6.

The importance of both the sign and the source of change in firm value

We have discussed how the accounting for change in firm value due to return on the assets in place (RET_{ent}) differs with the sign of RET_{ent} and how the accounting for change in enterprise

[12] See examples in textbook materials such as Penman (2012) and Gode and Ohlson (2013), as well as studies such as Feltham and Ohlson (1996), Easton and Pae (2004), Easton (2009), and Ohlson (2009).

value due to the contribution/distribution of cash to/from the firm (*FCF*) varies with the sign of *FCF*. We now discuss the interaction between these effects.

The coefficient on RET_{ent} will be higher when a greater portion of changes in expectations about enterprise value relate to the current period. We predict that, when RET_{ent} is positive, the coefficient on RET_{ent} will be positively associated with the sign of *FCF* (i.e., higher when *FCF* is positive) because the capital providers are more likely to be injecting cash to support more growth in the future, and removing cash if the growth is not expected to be as long-lived. In contrast, when RET_{ent} is negative, we predict that the coefficient on RET_{ent} will be negatively associated with the sign of *FCF* (i.e., higher when *FCF* is negative) because the capital providers are more likely to be injecting cash when the negative economic performance captured in RET_{ent} relates more to current earnings than to future earnings. In other words, when economic performance is poor, *FCF* injections go towards stemming the tide of current losses, rather than investing for the future.

Similarly, the coefficient on *FCF* is expected to vary with the sign of RET_{ent}. The economic performance of the firm will affect the investment opportunities, and the degree to which *FCF* is sourced from (or goes to) *OI* or *NOA*. As discussed above, if the capital providers are injecting *FCF* to stem the tide of current losses, *FCF* is more likely to go towards covering expenses in current earnings, rather than being capitalized into *NOA*. Similarly, if cash is extracted from firms where assets are declining in value, there is likely little earnings that can be extracted as cash – rather the cash will come from the liquidation of *NOA* at or below book value, so that the coefficient relating *OI* to *FCF* will be small.

The reasoning above suggests that the estimates of the coefficients on RET_{ent} and FCF in regression (1) will differ across partitions based on the sign of RET_{ent} and the sign of FCF. This suggests analysis of a simple two-by-two partition of the sample according to the signs of RET_{ent} and FCF. We observe, however, two somewhat unusual scenarios in which, because of the sign of the FCF, the overall firm growth (i.e., ΔEV) has the opposite sign to the sign of RET_{ent}: (1) FCF is so negative that firm value decreases even though RET_{ent} is positive; and, (2) FCF is so positive that firm value increases even though RET_{ent} is negative. Although these cases are relatively rare, we examine them separately to understand how the odd growth patterns for these firms are reflected in the accounting for *OI*.

Accordingly, we examine partitions formed on the sign of each independent variable in equation (1) (i.e., RET_{ent} and FCF) as well as the sign of the overall change in firm value (ΔEV), resulting in a total of six sub-samples:[13]

(1) *Firm Growth, Positive Returns, Net Cash Inflow* ($+\Delta EV$, $+ RET_{ent}$, *FCF in*): there is growth on every dimension (i.e., all is going well and there is a further injection of cash);

(2) *Firm Growth, Positive Returns, Net Cash Outflow* ($+\Delta EV$, $+ RET_{ent}$, *FCF out*): the firm is growing but there is net cash outflow (i.e., all is going well and there is a removal of cash);

(3) *Firm Growth, Negative Returns, Net Cash Inflow* ($+\Delta EV$, $- RET_{ent}$, *FCF in*): the firm is growing because of net cash inflow despite negative return on existing assets (i.e., the firm growth is due to the injection of cash by its capital providers);

[13] There are two empty sets with: (1) positive ΔEV and negative RET_{ent} and FCF outflow; and, (2) negative ΔEV and positive RET_{ent} and FCF inflow.

(4) *Firm Contraction, Positive Returns, Net Cash Outflow* ($-\Delta EV$, + RET_{ent}, *FCF out*): the firm is contracting because net cash outflow is greater than the return on existing assets (i.e., generated growth is not large enough to replace the value that the capital providers are taking out of the firm);

(5) *Firm Contraction, Negative Returns, Net Cash Inflow* ($-\Delta EV$, - RET_{ent}, *FCF in*): the firm is contracting despite net cash inflow (i.e., the firm is fairing badly and there is an injection of cash) and,

(6) *Firm Contraction, Negative Returns, Net Cash Outflow* ($-\Delta EV$, - RET_{ent}, *FCF out*): there is contraction on every dimension (i.e., the firm is fairing badly and there is removal of cash).

We provide a detailed description and we estimate regression (1) for each of these sub-samples. We draw comparisons across the sub-samples to determine whether the estimated coefficients in regression (1) vary with both the sign and source of change in firm value, consistent with our predictions.

IV. Sample Selection and Selected Descriptive Statistics

We obtain annual financial statement data from the Compustat (Xpressfeed) database for fiscal years 1963 – 2012. We match this with stock return data from the CRSP database. The sample period begins in 1963 in order to ensure data availability in Compustat. We exclude foreign incorporated firms (we require that Compustat FIC=USA), financial institutions (SIC codes 6000 – 6900), utilities (SIC codes 4900 – 4999), observations with negative market value or total assets (potential data errors), and observations with beginning-of-fiscal-year stock prices less than one dollar. Following the method in several textbooks on financial statement analysis and valuation, net distributions, *FCF,* are calculated from income statement and balance sheet data as operating income, *OI,* minus the change in net operating assets, *ΔNOA*.[14] We require that all observations included in the sample have sufficient data available for the calculation of all variables in Table 1. To mitigate the influence of extreme observations on our results, we truncate observations that fall in the top or bottom 1 percent of any of the variables included in the primary regression equation (1).

Table 1 provides descriptive statistics for our sample of 128,269 observations. Initial evidence that accounting records a dollar of change in firm value (i.e., growth) at less than a dollar is seen in the fact that the mean (median) change in enterprise value as a percentage of opening enterprise value (*ΔEV*) is greater (0.160 (0.051) than the mean (median) change in the book value of the firm as a percentage of opening firm value (*ΔNOA*) (0.064 (0.036)). The mean *OI* is less than the mean *ΔNOA* (0.034 compared with 0.064) and the mean (median) *FCF* is -0.029 (0.002). The mean (median) R&D plus advertising (*RDADV*) is 0.052 (0.018) of enterprise value; 66.06 percent of observations have non-zero (positive) R&D and advertising.[15] Mean (median) capital expenditures are 0.084 (0.051) of enterprise value. The mean (median) ratio of the market value of net financial liabilities to opening enterprise value is 0.099 (0.102) and 35.82 percent of sample observations exhibit negative values of net financial liabilities, indicating that these observations have net financial assets.[16]

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[14] See, for example, Easton, McAnally, Sommers, and Zhang (2015), Gode and Ohlson (2013), Penman (2012), and Wahlen, Baginski, and Bradshaw (2015). Our calculation of this variable amounts to the same calculation as seen in other texts such as Damodaran (2012) and White, Sondhi, and Fried (2003), where earnings after taxes are adjusted for accruals and for capital expenditure. To see the equivalence, note that changes in accruals are in both *OI* and change in book value of net operating assets (*ΔNOA*) and capital expenditure is part of *ΔNOA*; the calculation, *FCF* = *OI* - *ΔNOA* removes the accruals from *OI* and the remainder is "free cash flow." In our empirical analyses, *OI* and *ΔNOA* are calculated following the appendix to Nissim and Penman (2001).

[15] This result is not tabulated.

[16] For example, at the end of fiscal-year 2012, Apple had net financial assets of $121.25 billion, in the form of cash and short- and long-term marketable securities; in other words, the operations of Apple are, essentially, owned by

Table 2 reports correlations among key variables. We discuss some highlights from the Spearman correlations. As expected the correlations between *OI* and RET_{ent} and *OI* and *FCF* are both positive (0.418 and 0.284) and highly significant. The correlation between RET_{ent} and *FCF* is significantly positive (0.157); that is, in general, higher firm returns are associated with more cash outflow. We will refer back to this table when correlations among other variables become pertinent to subsequent analyses and discussions.

V. Results: the Importance of Both the Source and Sign of Change in Firm Value

A basic premise of our paper is that the accounting for change in the market value of the firm (i.e., growth) depends upon both the sign of the growth (i.e., growth vs. contraction) and the source of the growth. To shed light on this premise we partition the sample into the six sub-samples described in section III. Descriptive statistics and regression results for each of the six sub-samples are summarized in Table 3. Panel A presents descriptive statistics for the sub-samples. Panel B presents simple Spearman correlations. Panel C presents regression results from estimating regression (1).

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equity investors, who also own the net financial assets. We have heard arguments that this excess cash may be considered by some as part of the enterprise of Apple. We do not take this perspective because, again, we wish to focus on the entity where the change in value is not reported in the accounting at dollar-for-dollar. Elaborating further on this example, in 2012 Apple increased its cash dividend 10-fold acknowledging that it was returning some of the excess cash to the equity shareholders and in 2014, it returned $17 billion of its cash to equity holders in the form of share buy-backs. Neither of these transactions affected free cash flows; they were flows of funds from cash (which may be viewed as negative debt) to the equity shareholders who owned both the enterprise (i.e., the entity that produces smart phones, etc.) and the "pile of cash."

Our primary contribution to the empirical understanding of recording of value change in accounting earnings is through the introduction of cash flow to/from the capital providers to the enterprise. There are several key results.

The relative magnitude of the effects of RET_{ent} and *FCF* on *OI*

The magnitude of the effect of *FCF* on recorded *OI* is, in many cases, equal to or greater than the magnitude of the effect of returns on *OI*. We summarize these effects in Figure 1. We plot the marginal effects of one-standard-deviation changes in RET_{ent} and *FCF* for each regression sample, relative to one standard deviation of *OI* in each sample.[17] In all but sub-sample (6), where the firm is contracting on all dimensions and the coefficient relating *OI* to *FCF* is not significantly different from zero, a one standard deviation change in *FCF* contributes substantially to *OI*. In fact, for the full sample, the estimated effect of a one-standard deviation change in *FCF* is slightly larger than the estimated effect of a one standard-deviation change in RET_{ent}, such that a one standard deviation change in *FCF* is associated with a change of 30.30 percent of a standard deviation of OI while an equivalent change in RET_{ent} is associated with a change of 17.90 percent. These estimated marginal effects are not statistically different from one another, indicating that *FCF* explains a similar amount of *EPAT* variation as is explained by RET_{ent} for the full sample.[18] As further illustrated in Figure 1, the marginal effect of an *FCF*

[17] Note that this is equivalent to normalizing the regression (1) variables to have a mean of zero and standard deviation of one within each regression sample and then plotting the absolute value of the normalized regression coefficients for RET_{ent} and *FCF*.

[18] This is likely a conservative statement with respect to the relative importance of *FCF* in the full sample. The full-sample normalized coefficient on *FCF* is significantly different (two-tailed) from the normalized coefficient on RET_{ent} with high levels of statistical significance ($p < 0.0000$) when statistical significance is computed using a) unadjusted OLS standard errors, b) standard errors clustered by firm, or c) standard errors clustered by firm with fiscal year fixed effects included in the regression. Thus, *FCF* likely explains a greater portion of *OI* than RET_{ent} in the relevant population. Nevertheless, consistent with all other results presented in the paper, we report results based on standard errors clustered by both firm and year estimated using the "cluster2 ado" package in Stata.

change is significantly lower than that of an RET_{ent} change in sub-samples (3), (4), and (6), roughly equivalent to that of an RET_{ent} change in sub-samples (1) and (5), and significantly greater than (almost four times as much as) an RET_{ent} change in sub-sample (2). In short, variation in *FCF*, which has been, by and large, omitted from previous studies of the mapping from returns to accounting earnings, explains much of the observed variation in *OI*.

Results: Discussion of analysis of sub-samples (1) to (6)

Firm value increasing and value generation

We begin with a comparison of the two sub-samples of observations where the firm value is increasing and returns are positive (i.e., sub-samples (1) and (2)). The results for these sub-samples are summarized in the first two columns of Table 3. In sub-sample (1), with 31,349 observations, the capital providers have contributed to firm value change via *FCF* inflow while in sub-sample (2), which has 33,060 observations, value has been distributed to the capital providers via *FCF* outflow.

Sub-sample (1) is comprised of firms that are increasing in value due to both positive returns and cash inflow from the capital providers. Consistent with this, the median ΔEV (0.455) reported in Panel A is the highest among the six sub-samples. Sub-sample (2) firms have a similar median RET_{ent} (0.291 cf. 0.315), but are distributing some of the firm value back to the capital providers, resulting in a lower median ΔEV of 0.226, which is still the second-highest firm value change among the six sub-samples. Panel A also shows that, while both sub-samples with increasing firm value report positive median current-period *OI*, they are still investing in both intangibles (the median *RDADV* for sub-sample (1) is similar to the median for sub-sample (2), 0.019 cf. 0.020) and fixed assets (the median *PPE* for sub-sample (1) is similar to the median for sub-sample (2), 0.318 cf. 0.307). Most of the cash inflow in sub-sample (1) comes from debt holders (median *FCF* of -0.098 and *ΔNFL* of 0.086) and much of the cash outflow in sub-sample (2) goes to debt holders (median *FCF* of 0.059 and *ΔNFL* of -0.036). The firms that are distributing cash to the capital providers are more than twice the size of those receiving cash (median *EV* of $0.207 billion cf. $0.095 billion).

Turning to the simple correlations presented in Panel B, it is notable that the correlation between *OI* and RET_{ent} is not significantly different from zero (-0.004) for sub-sample (1), but positive and significant (0.256) for sub-sample (2). The correlation between *OI* and *FCF* for sub-sample (1) is the lowest (0.058) among the six sub-samples, while the correlation between *OI* and *FCF* for sub-sample (2) is the highest among the six sub-samples (0.315).

A summary of the results from the estimation of regression (1) is presented in Panel C. We continue the comparison of the two sub-samples of observations where firm value is increasing and returns are positive. The coefficient on RET_{ent} for sub-sample (1) is the smallest (i.e., least positive) of the six sub-samples consistent with the notion that, in this sample where growth is most evident, accounting captures net expenses (the estimate of the coefficient relating *OI* to RET_{ent} is significantly negative, -0.038 with a t-statistic of -4.03), which are associated with the generation of profits in future periods rather than in the current period. Further, we note that, while the estimate of the coefficient on RET_{ent} is significantly negative for sub-sample (1), where there is cash inflow, it is significantly positive for sub-sample (2) (0.016), when there is cash outflow.[19]

[19] The coefficient relating earnings to positive returns is generally not significantly different from zero in the analyses reported in the extant literature; our results of a significant negative coefficient when there is FCF inflow

The estimate of the coefficient on *FCF* (i.e., 0.123) in sub-sample (1) implies that accounting records, in *OI*, 0.123 per dollar of *FCF* inflow. The estimate of the coefficient on *FCF* in sub-sample (2), where *FCF* is positive, (i.e., there is net cash outflow) is much higher than in sub-sample (1) (0.318 vs. 0.123); the higher coefficient in sub-sample (2) shows that accounting records in *OI* more of cash *out*flows of firms that are increasing in value than of cash *in*flows for firms that are increasing in value. Note that the inclusion of RET_{ent} in the regression means that the estimate of the these coefficients on *FCF* capture the effect of the accounting in reported *OI*. Absent conservative accounting, the coefficient would be zero; that is, conservative accounting leads to 0.123 per dollar of *FCF* of expenses recorded in *OI* when there is *FCF* inflow and 0.318 of additional reported income when there is *FCF* outflow. This 0.318 of additional income arises because expenses are lower relative to sales (that is, income is higher) due to conservative accounting, which has booked the related costs (R&D, advertising, depreciation, etc.) in earlier periods (and, hence, expenses are conservatively low in the current period).

In other words, the over-statement of the *OI* (i.e., net expense) effect of the *FCF* inflow is less than the overstatement of the *OI* (i.e., net profit) effect when there is *FCF* outflow. The characteristics of these sub-samples (see Panel A) provide indications of reasons for this difference. A possible explanation is the fact that, although the firm value is increasing in both sub-samples, the observations in sub-sample (1) have a median increase in *NOA* of 15.6 percent of firm value while those in sub-sample (2) have virtually no change in *NOA* (0.015); that is, much of the cash inflow is going to build assets but, not surprisingly (in light of the fact that the

(suggesting that expenses are greater than sales in the current period despite positive returns, which are indicating expectations of higher (and positive) changes in future profits) is an interesting addition to this literature.

firms in sub-sample (2) are also growing), cash outflow is not coming from sale of assets – rather it is coming from *OI* of the period. This is consistent with the accumulation of the effects of conservatism over time. That is, *OI* is overstated (and *NOA* understated) due to prior accelerated depreciation of, or disallowed capitalization of, assets.

Firm contraction and value loss

Next we compare the two sub-samples (5 and 6) of observations where the firm value is decreasing and returns are negative. In sub-sample (5), with 24,278 observations, the capital providers have contributed to value change via *FCF* inflow; while in sub-sample (6), with 23,300 observations, *FCF* has been distributed to the capital providers. The results for sub-samples (5) and (6) are summarized in the last two columns of Table 3.

The firms in sub-sample (5) are contracting due to loss in value of assets, but they continue to receive support from the capital providers via *FCF* inflows. These are relatively small firms (median *EV* of $0.094 billion compared with $0.145 for sub-sample (6)). These firms are, on average, the most unprofitable across all six sub-samples (median *OI* of 0.003); they have higher intangible intensity and much lower property plant and equipment than firms in sub-sample (6) (median *RDADV* of 0.023 cf. 0.014 and mean *PPE* of 0.158 cf. 0.230). These firms have the lowest mean *BTM* (0.385) of any of the six sub-samples; that is, the cumulative effects of conservatism, as manifested in the balance sheet in relatively low book values, is greatest for these firms. Consistent with the contraction experienced by these firms, they exhibit the highest correlation between *OI* and RET_{ent} of the six sub-samples (0.416).

Moving to Panel C, the estimate of the coefficient on RET_{ent} in regression (1) of 0.174 for sub-sample (5) indicates that there is a 17.4 cent loss in the current period per dollar of return, while the estimate of this coefficient for sub-sample (6) is smaller (0.127); in other words, more of the value lost relates to current earnings for the sub-sample of firms for which the capital providers are contributing cash (presumably the capital providers see the loss in value as more temporary and hence they are willing to contribute cash because of expected future return to profitability) relative to those where the capital providers are removing cash. The striking feature in the comparison across the results from sub-samples (5) and (6) is the difference in the coefficients on *FCF* across these two samples of contracting firms. Much of cash inflow is expensed in the current period (coefficient of 0.464), likely because it is going to research and development, whereas there appears to be no evidence of conservatism in the accounting for cash outflow (the estimate of the coefficient on *FCF* is not significantly different from zero).

Firm growth, value loss, net cash inflow

The results for sub-sample (3) are summarized in column (3) of Table 3. While firm growth (contraction) is driven by returns for most firms, the firms in sub-sample (3) are experiencing value increase due to large injections of cash by the capital providers despite experiencing negative returns during the fiscal year. This is an unusual situation, evidenced by the fact that sub-sample (3) is the smallest of the six sub-samples and only contains 5.81 percent of the observations in the full sample (see Table 1, Panel B). The mean levels of *EV* in Panel A indicate that sub-sample (3) contains, on average, the smallest firms in the sample, consistent with these firms' small market capitalization serving as a contributing factor in their ability to grow the value of the firm by attracting additional capital despite experiencing value loss.

These firms are relatively unprofitable (median *OI* of 0.037), they invest little in intangibles (lowest median *RDADV* of 0.013), and heavily in fixed assets (median *PPE* of 0.366). Because of their high asset tangibility, these firms are able to raise a high percentage of their market value from *FCF* inflows (most negative median *FCF* across all sub-samples, -0.212), resulting in large increases in leverage (median *ΔNFL* of 0.191).

The results from estimation of regression (1) are summarized in Panel C. The estimate of the coefficient on RET_{ent} (0.330) indicates that there is a 33.0 cent *OI* loss in the current period per dollar of return. It is also interesting to note that the annual equity return is negative (i.e., in Basu 1997 parlance, there is bad news) for most of the observations (7,043 of 7,449) in sub-sample (3). Consistent with prior literature (e.g., Basu 1997), the estimate of the coefficients on RET_{ent} is much higher (0.330, with a t-statistic of 8.91) for this sub-sample than for sub-samples (1) and (2) where RET_{ent} was positive.[20]

The estimate of the coefficient on *FCF* (0.062) implies that there is little conservatism in the accounting for *FCF* for these observations. This is consistent with the high levels of *PPE* in these firms and indicates that the majority of the financing raised by these firms goes towards investments that are capitalized into *NOA* (the implied coefficient relating *ΔNOA* to *FCF*, i.e. one minus the estimated *OI* to *FCF* coefficient of 0.062, is 0.938).

Firm contraction, value generation, net cash outflow

The results for the analysis of sub-sample (4) are summarized in column (4) of Table 3. Similar to sub-sample (3) this sub-sample is comprised of firms where the overall growth pattern runs counter to return. In this case the firm is contracting despite positive returns, a somewhat rare occurrence indicated by the fact that only 6.89 percent of our observations are in sub-sample (4). Sub-sample (4) firms have high beginning-of-period leverage (median *NFL* of 0.362, which

[20] These results are not tabulated.

is the highest among the six sub-samples). Despite experiencing positive median RET_{ent} of 0.058, these firms are contracting due to large cash outflows to the capital providers, generally resulting in a deleveraging of the firm by returning capital to debt holders (median ΔNFL of -0.094).

The results from estimation of regression (1) are reported in Panel C. The estimate of the coefficient on RET_{ent} (0.256) indicates that there is a 25.6 cent profit in the current period per dollar of generated value change. It is interesting to note that the coefficient on RET_{ent} is significantly positive and relatively high (0.256, with t-statistics of 8.06); this, perhaps, seems odd because RET_{ent} is positive (i.e., there is "good" news) and this, following the arguments in Basu (1997) would suggest a lower RET_{ent} coefficient. In un-tabulated analysis, we penetrated this result further by running the earnings/return regression as specified by Basu (1997); that is, with an intercept and slope dummy, which is one if returns are negative, zero otherwise. The estimate of the coefficient on positive returns is, contrary to the prediction in Basu (1997) significantly positive (0.148 with a t-statistic of 2.89); that is, by considering the direction of net transactions with the capital providers (positive vs. negative *FCF*), we have isolated a sample of observations where equity returns are *positive* and there is a substantial estimated coefficient relating earnings to return. In other words, for this sub-sample, the fact that cash is being paid back to capital providers suggests that the positive return is due to more transitory changes in profitability (and hence the high earnings/return coefficient).[21] The key characteristic of this sample is that the firms are contracting due to cash outflow despite returns, highlighting the

[21] Note that the estimate of the RET_{ent} coefficient is lower in the other sub-samples in which RET_{ent} is positive (i.e., sub-samples (1) and (2)).

importance of considering *overall* firm growth as well as the direction of *FCF* in the analysis of the mapping from change in value to accounting numbers.

The estimate of the coefficient on *FCF* (i.e., 0.046) implies that for each dollar of cash outflow there is little conservatism in the accounting for *OI* for these observations. Perhaps the most relevant comparison for this coefficient is that of sub-sample (2). Both sub-samples are comprised of firms with positive returns, which are distributing cash to capital providers; firms in sub-sample (4), however, are somewhat less profitable and make larger payouts that shrink the size of the firm. Accordingly, firms in sub-sample (2) are able to source a larger percentage of cash outflows from current *OI* relative to sub-sample (4) firms.

A summary of the results, which highlight the importance of consideration of the sign of *FCF*

First, as highlighted in the comparison of sub-samples (5) and (6) where the firm is contracting, there is loss in value of the existing assets, and there is either cash outflow or cash inflow, the extent to which cash flow affects the recording of *OI* varies a great deal (0.464 when there is cash inflow and not significantly different from zero when there is cash outflow).

Second, the direction of cash flow affects the sign and magnitude of the coefficient relating *OI* to RET_{ent}; in other words, identifying the direction of contributed/distributed value (*FCF*) helps our understanding of the accounting for returns. This effect is best seen in the comparison of the estimates of the coefficients relating *OI* to RET_{ent} across sub-samples (1) and (2), where there is firm growth and generation of value from existing assets, and across sub-samples (5) and (6), where there the firm is contracting and the is loss of value of the existing assets. Partitioning growing firms (sub-samples (1) and (2)) on the sign of cash flow facilitates identification of a significantly negative relation between *OI* and RET_{ent} when there is cash inflow (coefficient estimate of -0.038 with a t-statistic of -4.03) and a significantly positive relation when there is cash outflow (coefficient estimate of 0.016 with a t-statistic of 2.58). Partitioning contracting firms (sub-samples (5) and (6)) on the sign of cash flow facilitates identification of a significantly higher coefficient relating *OI* to RET_{ent} when there is cash inflow (0.174) than when there is cash outflow (0.127); the (un-tabulated) t-statistic for the differences between these two coefficient estimates is 2.71.

Third, our results highlight the role of overall firm growth/contraction in accounting for value change when compared with the extant literature, which generally focuses on the relation between accounting and equity returns. This point is best illustrated by sub-sample (4), which isolates a sample of observations where equity returns are generally positive, but the estimated coefficient relating *OI* to RET_{ent} is significantly positive and relatively high (0.256, with t-statistics of 8.06). The key characteristic of this sample is that there is *overall* contraction due to cash outflow despite positive RET_{ent}.

VI. Accounting for Change in Firm Value and Firm Characteristics: Leverage and the type of assets in which the firm invests

Motivation and research design

In this section, we show how the relation between *OI* and RET_{ent} and *FCF* varies with key firm characteristics. Much work has been done on the effect of debt on the coefficient relating earnings to returns. This work focuses on this coefficient when returns are negative (i.e., news is bad); see, for example, Ball, Robin, and Sadka (2008), Khan and Watts (2009), and Roychowdhury and Watts (2007). A larger coefficient relating earnings to negative returns is generally observed when the debt level is higher.

Following this prior research, we also examine the role of debt (leverage) on the coefficients relating *OI* to RET_{ent} and *FCF*. We will show that, when the firm is primarily owned by equity holders (i.e., the debt/equity ratio is low), investment is primarily in intangibles (i.e., R&D and advertising) and, when the firm is primarily owned by debt holders, investment is primarily in property plant and equipment. This observation affects our predictions regarding the coefficients relating *OI* to RET_{ent} and *FCF* across partitions of the data based on the ratio of debt to equity ownership, and demonstrates that analyses based on the effects of debt capture differences in a number of relevant characteristics; in particular differences in the types of investment and difference in the accounting for different types of investments.

We perform two sets of analyses. First, by fiscal year, we partition the full sample into leverage (*NFL/EV*) deciles. Within each decile, we report decile means and medians of relevant firm characteristics. We also estimate regression (1) within each leverage decile. The results of these analyses are presented in Table 4, and serve to demonstrate the general effects of leverage on enterprise characteristics and on the relation between *OI* and changes in firm value.

We also examine the effects of leverage within each of the sub-samples (1) to (6) described in section 3, since, as we have shown, the relation between *OI* and changes in firm value is also affected by the sign and source of firm value change. These additional analyses are based on regressions where we add interaction terms to regression (1). We interact each term in regression (1) with *DEC_NFL*, the leverage decile ranking of the observation (as in Table 4), scaled to have a mean of zero and a range of one.[22] The formal regression specification is as follows:

$$OI_{it} = \beta_1 + \beta_2 RET_{ent_{it}} + \beta_3 FCF_{it} + \beta_4 DEC\_NFL_{it} + \beta_5 RET_{ent_{it}} * DEC\_NFL_{it} + \beta_6 FCF_{it} * DEC\_NFL_{it} + \varepsilon_{it} \quad (2)$$

The interpretation of the estimates of the coefficients β_5 and β_6 on the decile interaction terms is that a coefficient estimate of, say, 0.1 on $RET_{ent_{it}} * DEC\_NFL_{it}$ implies the mapping from RET_{ent} to *OI* increases/decreases by 0.01 for each decile of leverage above/below the mean sample leverage. The results of these regressions are summarized in Table 5 for each of the sub-samples (1) to (6) described in section III.

Results

Table 4, Panel A presents means and medians of key variables for each leverage decile. The mean (median) portion of firm capital funded by debtholders (*NFL/EV*) increases from -0.64 (-0.45) in decile 1, indicative of net financial assets, to 0.65 (0.65) in decile 10. The descriptive statistics clearly indicate that investment in intangibles is highest when the firm is primarily owned by equity holders. Mean (median) *RDADV* decreases monotonically from 0.13 (0.06) to 0.03 (0.00) as leverage increases from the lowest to highest decile. The descriptive statistics also indicate that, when the firm is primarily owned by debt holders, investment is primarily in property plant and equipment. The mean (median) *PPE* increases almost monotonically from

[22] Specifically all observations in the lowest decile are coded -0.5, those in the next decile, -0.389, then -0.278, -0.167, -0.056, 0.056,….., 0.5. This decile rank transformation mitigates the effect of extreme observations and facilitates interpretation of the regression coefficients.

0.25 (0.13) in decile 2 to 0.56 (0.48) in decile 10. Finally, firm book-to-market (BTM) shows a similar increase from 0.43 (0.29) in decile 2 to 1.02 (1.00) in decile 10.

Table 4, Panel B, presents the results of estimating regression (1) for each decile of *NFL/EV*. The leverage effect documented in prior literature is clearly evident at the firm level, demonstrated by the coefficients relating *OI* to RET_{ent} increasing monotonically from an insignificant 0.14 in decile 1 to a highly significant 0.136 (t-statistic 8.19) in decile 10. However, this result is unlikely to be driven solely by an increased demand for timeliness of negative information by debtholders, which is the reason hypothesized in the extant literature. The percentage of negative returns is fairly stable across deciles, and it *decreases* slightly between lower and higher deciles of debt. In un-tabulated analyses, we also confirmed that the documented increase in the RET_{ent} coefficient remains statistically and economically significant when the sample is confined to only observations with *positive* returns. Furthermore, the results in Panel B also demonstrate that the coefficient relating *OI* to *FCF* declines monotonically from 0.438 (t-statistic 13.56) in decile 1 to an insignificant 0.001 in decile 10. This is consistent with firms with low leverage and high intangibles intensity in decile 1 expensing a high proportion of *FCF* investments into *OI*, while the highly leveraged firms with more tangible *FCF* investments in decile 10 do not expense investments of *FCF* into *OI*, rather they capitalize a higher proportion of *FCF* investments in *NOA*.[23]

It is possible that these same differences in intangibles intensity and asset tangibility also contribute to the increasing coefficient on RET_{ent} across leverage deciles discussed above.

[23] The insignificant coefficient on *FCF* in decile 10 is also consistent with the *BTM* ratio for decile 10, which is close to 1 (Panel A), indicating that the book values of the enterprise assets for the firms in decile 10 are close to their market values.

Investments in intangibles are generally long-term investments with uncertain benefits and time horizons, such that almost none of the value generated from these investments is recognized in current income. On the other hand, investments in tangible assets may be associated with shorter investment horizons, and some portion of the generated value from such projects may accrue to current period earnings.

Table 5, Panel A, presents the results of estimating regression (2) including interaction terms with *DEC_NFL* for each of our six growth partitions. Prior work focuses particularly on the effect of leverage on the relation between earnings and returns when returns are negative (i.e., news is bad); see, for example, Ball, Robin, and Sadka (2008) and Khan and Watts (2009). This work generally observes a larger coefficient relating earnings to negative returns when the debt level is higher. We observe a similar pattern for the coefficient relating *OI* to RET_{ent}. This is evidenced by the positive coefficient on RET_{ent} **DEC_NFL* in sub-sample (6), where RET_{ent} is negative (coefficient estimate of 0.143, with a t-statistic of 7.48). Interestingly, a new insight emerges from a comparison of sub-sample (5), where RET_{ent} is negative and there is cash inflow, with sub-sample (6), where RET_{ent} is negative but there is cash outflow; in contrast to the estimate of the coefficient on RET_{ent} **DEC_NFL* when there is cash outflow, the estimate of this coefficient when there is cash inflow is not significantly different from zero (0.019 with a t-statistic of 0.56). Since the amount of debt is much smaller for this sub-sample, (median *NFL/EV* of 0.003 compared with 0.139), this result may serve as evidence of the effect of debt postulated in the literature (i.e., the greater the debt, the greater the demand for accounting conservatism); on the other hand, this coefficient may reflect the fact that there is almost twice as much R&D in subsample (5) compared with sub-sample (6) – (0.023 cf. 0.014) and much less property, plant and equipment (0.158 cf. 0.230).

The estimated coefficients on RET_{ent} *DEC_NFL are also significantly positive (0.079 and 0.039) for sub-samples (1) and (2) where RET_{ent} is positive. This result is new to the literature as far as we are aware; the extent to which returns are captured in current *OI* increases with debt level when the firm is doing well *and* when the firm is doing poorly.

The estimates of the coefficient on *FCF*DEC_NFL* are negative and significant for all six sub-samples. This suggests that, when firms have higher levels of debt, *FCF* inflows are more likely to be capitalized into *NOA* than expensed to *OI*, and that *FCF* outflows are more likely to come from liquidating *NOA* than from current *OI,* consistent with the results discussed above in Table 4.

VII. Summary and conclusions

We focus on the recording of change in firm value in the financial statements. This motivates two fundamental changes to the methodology at the core of the vast empirical literature examining the extent to which accounting captures concurrent changes in market value. First, we bring the focus to the part of the earnings/returns relation that is not dollar-for-dollar because, at best, the part that is recorded dollar-for-dollar is uninteresting empirically and, at worst, including this part may lead to incorrect inferences. Second, we suggest the inclusion of cash flows in the earnings/change in value relation. This additional variable captures an aspect of accounting that has not been examined in prior studies, the accounting for growth/contraction due to transactions with capital providers.

We show that this additional source of value change explains a considerable portion of operating income; in fact, for the sub-sample of observations where there is growth due to change in the value of assets in place yet there is net cash outflow to the capital providers, free cash flow explains almost four times that which is explained by returns Adding this dimension of change in value may considerably enhance studies which have to-date relied on the earnings-return relation. Vassallo and Taylor (2015), for example, show that the estimates of the coefficients relating operating income to both returns and free cash flows vary, as expected, with audit quality.

Much of our analysis focuses on partitions of the data based on the sign and source of change in value. We argue and show that accounting for value change (growth) depends, not only on the direction (expansion vs. contraction) of the value change, but also on the source of the value change.

We illustrate the importance of: (1) focusing on operating income and change in firm value; and, (2) adding free cash flow to the earnings/return regression, by partitioning on the debt/equity ratio and showing how the firm assets differ across these partitions and, in turn, the accounting (i.e., the portion of returns and free cash flow that is captured in operating income) differs. An implication of this finding is that conclusions in the extant literature regarding the influence of, for example, contracting, may be premature; the difference may reflect no more than differences in the accounting for different assets (e.g., full expensing of investment in R&D, which tends to be the primary form of investment when the firm is mostly owned by equity holders) vs. capitalizing investment in property, plant and equipment, which tends to be the primary form of investment when the firm is owned by debt holders).

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Appendix: Variable Definitions

= Compustat Data Item.

Δ = Change between current and prior fiscal year.

BTM = Enterprise Book-to-Market = Beginning-of-period Net Operating Assets (NOA_{t-1}) divided by beginning-of-period Enterprise Value (EV_{t-1}).

CNFI = Comprehensive Net Financial Income = Comprehensive Net Income (***CNI***) minus Enterprise Profit After Tax (***OI***).

CNI = Comprehensive Net Income = Net Income (#NI) minus preferred dividends (#DVP) plus Clean Surplus Adjustment to Net Income (***CSA***).

CSA = Clean Surplus Adjustment to Net Income = marketable securities adjustment (#MSA) minus lag marketable securities adjustment (#MSA_{t-1}) plus cumulative translation adjustment (#RECTA) minus lag cumulative translation adjustment (#$RECTA_{t-1}$).

CSE = Common Stockholders' Equity = Common equity (#CEQ) plus preferred treasury stock (#TSTKP) minus preferred dividends in arrears (#DVPA).

EV = Enterprise Value = Market Value of Equity (***MVE***) plus Net Financial Liabilities (***NFL***).

FA = Financial Assets = Cash and short term investments (#CHE) plus investments and advances-other (#IVAO).

FCF = Free Cash Flow = Operating Income (***OI***) minus change in Net Operating Assets Assets (ΔNOA). Scaled by beginning-of-period enterprise value (EV_{t-1}).

FL = Financial Liabilities = Debt in current liabilities (#DLC) plus long term debt (#DLTT) plus preferred stock (#PSTK) minus preferred treasury stock (#TSTKP) plus preferred dividends in arrears (#DVPA).

Marginal Tax Rate = The top statutory federal corporate tax rate plus 2% average state corporate tax rate. The top statutory federal corporate tax rate was 52% in 1963, 50% in 1964, 48% in 1965 – 1967, 52.8% in 1968 – 1969, 49.2% in 1970, 48% in 1971 – 1978, 46% in 1979 – 1986, 40% in 1987, 34% in 1988 – 1992 and 35% in all sample years thereafter.

MVE = Market Value of Equity = Fiscal year end price (#PRCC_F) times common shares outstanding (#CSHO), from Compustat. Scaled by beginning-of-period enterprise value (EV_{t-1}).

NFE = Net Financial Expense = After-tax interest expense ((#XINT)*(1 – marginal tax rate)) plus preferred dividends (#DVP) minus after tax interest income ((#IDIT)*(1-marginal tax rate)) plus unusual financial expense ((#MSA_{t-1})-(#MSA)).

NFL = Net Financial Liabilities = Financial Liabilities (***FL***) minus Financial Assets (***FA***). Scaled by beginning-of-period enterprise value (EV_{t-1}).

NOA = Net Operating Assets = Net Financial Liabilities (***NFL***) plus Common Stockholders' Equity (***CSE***) plus Minority Interest (#MIB). Scaled by beginning-of-period enterprise value (EV_{t-1}).

OI **=** Operating Income = Comprehensive Net Income (***CNI***) plus Net Financial Expense (***NFE***) plus minority interest in income (#MII). Scaled by beginning-of-period enterprise value (EV_{t-1}).

PPE = Property Plant and Equipment = Property plant and equipment, net of accumulated depreciation (#PPENT). Scaled by beginning-of-period enterprise value (EV_{t-1}).

RDADV = Research, Development, and Advertising = R&D Expense (#XRD) plus Advertising Expense (#XAD). Scaled by beginning-of-period enterprise value (EV_{t-1}).

RET_{ent} = Enterprise (firm) Return = Change in Enterprise Value (ΔEV) plus Free Cash Flow (***FCF***). Scaled by beginning-of-period enterprise value (EV_{t-1}).

Table 1

Descriptive Statistics

Panel A: Full sample descriptive statistics

	N	Mean	σ	p1	p25	Median	p75	p99
EV ($ Bil.)	128,269	1.761	11.705	0.003	0.032	0.120	0.574	29.387
ΔEV	128,269	0.160	0.628	-0.761	-0.175	0.051	0.341	2.401
ΔNOA	128,269	0.064	0.207	-0.434	-0.020	0.036	0.124	0.830
OI	128,269	0.034	0.136	-0.479	0.007	0.057	0.096	0.297
RET_{ent}	128,269	0.131	0.596	-0.853	-0.171	0.056	0.309	2.225
FCF	128,269	-0.029	0.203	-0.802	-0.090	0.002	0.068	0.402
RDADV	128,269	0.052	0.110	0.000	0.000	0.018	0.063	0.449
CAPX	128,269	0.084	0.111	0.000	0.022	0.051	0.104	0.525
PPE	128,269	0.386	0.389	0.005	0.107	0.272	0.544	1.694
NFL	128,269	0.099	0.426	-1.194	-0.071	0.102	0.332	0.821
ΔNFL	128,269	0.027	0.194	-0.431	-0.054	0.008	0.085	0.722
BTM	128,269	0.679	0.516	-0.039	0.309	0.613	0.957	2.227
$\lvert NFE \rvert / MVE$	128,269	0.034	0.079	0.000	0.003	0.012	0.035	0.312

Panel B: Frequencies among firm growth sub-samples

	(1)	(2)	(3)	(4)	(5)	(6)	
	+ ΔEV + RET_{ent} *FCF in*	+ ΔEV + RET_{ent} *FCF out*	+ ΔEV - RET_{ent} *FCF in*	- ΔEV + RET_{ent} *FCF out*	- ΔEV - RET_{ent} *FCF in*	- ΔEV - RET_{ent} *FCF out*	Total
N	31,349	33,060	7,449	8,833	24,278	23,300	128,269
Pct (%)	24.44	25.77	5.81	6.89	18.93	18.16	100

This table presents descriptive statistics for the full sample of observations used in our analysis. Panel A presents sample statistics. σ and p denote the sample standard deviation and percentiles, respectively. Panel B presents frequencies of observations within each enterprise growth sub-sample used in our empirical analyses. As described in Section III of the text, we partition the full sample into six enterprise growth sub-samples based on the sign of ΔEV, RET_{ent}, and *FCF*. A positive (negative) sign denotes that observations in the sub-sample are restricted to those where the corresponding variable is greater than or equal to zero (less than zero). All variables are defined in Appendix A.

Table 2

Correlations Among Key Measures

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
[1] *EV*		0.009	-0.011	0.023	0.019	0.026	-0.029	-0.031	0.012	-0.010	-0.070
[2] *ΔEV*	0.195		0.358	0.074	0.946	-0.315	0.174	0.104	-0.172	0.121	0.036
[3] *ΔNOA*	0.032	0.392		0.357	0.111	-0.780	-0.025	0.207	-0.069	0.684	-0.038
[4] *OI*	0.049	0.323	0.357		0.182	0.305	-0.203	0.209	0.162	-0.120	0.167
[6] RET_{ent}	0.207	0.902	0.122	0.418		0.008	0.146	0.086	-0.120	-0.137	0.089
[7] *FCF*	0.066	-0.197	-0.687	0.284	0.157		-0.111	-0.071	0.179	-0.778	0.151
[10] *RDADV*	-0.066	0.034	-0.066	-0.073	0.028	-0.039		-0.020	-0.329	0.042	0.089
[11] *PPE*	-0.030	0.168	0.163	0.337	0.174	0.072	-0.176		0.182	0.182	0.622
[12] *NFL*	0.060	-0.020	-0.087	0.111	0.046	0.195	-0.223	0.424		-0.130	0.226
[13] *ΔNFL*	-0.028	0.120	0.636	-0.113	-0.180	-0.788	-0.027	0.110	-0.075		0.021
[14] *BTM*	-0.219	0.078	-0.046	0.303	0.154	0.242	-0.079	0.680	0.561	-0.025	

This table presents Pearson (above diagonal) and Spearman (below diagonal) correlations among key variables in the sample. All variables are defined in Appendix A. Correlation coefficients with an absolute magnitude greater than 0.007 are statistically significant at the 1 percent level.

Table 3

Summary of Results by Sub-Sample

	(1) + ΔEV + RET_{ent} *FCF in*	(2) + ΔEV + RET_{ent} *FCF out*	(3) + ΔEV - RET_{ent} *FCF in*	(4) - ΔEV + RET_{ent} *FCF out*	(5) - ΔEV - RET_{ent} *FCF in*	(6) - ΔEV - RET_{ent} *FCF out*
Panel A: Sample Medians for Key Measures						
EV ($ Bil.)	0.095	0.207	0.069	0.109	0.094	0.145
ΔEV	0.455	0.226	0.098	-0.062	-0.250	-0.244
ΔNOA	0.156	0.015	0.215	-0.066	0.059	-0.011
OI	0.066	0.083	0.037	0.075	0.003	0.045
RET_{ent}	0.291	0.315	-0.082	0.058	-0.355	-0.158
FCF	-0.098	0.064	-0.212	0.141	-0.066	0.052
RDADV	0.019	0.020	0.013	0.013	0.023	0.014
PPE	0.318	0.307	0.366	0.401	0.158	0.230
NFL	0.092	0.121	0.130	0.362	0.003	0.139
ΔNFL	0.086	-0.039	0.191	-0.094	0.062	-0.028
BTM	0.602	0.686	0.656	0.979	0.385	0.633
$\lvert NFE \rvert / MVE$	0.013	0.011	0.020	0.031	0.007	0.011
Panel B: Spearman Correlations between Key Measures						
OI & RET_{ent}	-0.004	**0.256**	**0.209**	**0.270**	**0.416**	**0.238**
OI & *FCF*	**0.058**	**0.315**	**0.130**	**0.207**	**0.258**	**0.119**
RET_{ent} & *FCF*	**-0.151**	**0.343**	**0.632**	**0.609**	**0.395**	**0.181**
RET_{ent} & *RDADV*	**0.112**	**0.123**	**-0.057**	**0.045**	**-0.157**	**-0.062**
RET_{ent} & *PPE*	**-0.151**	**-0.080**	0.020	**0.128**	**0.349**	**0.309**
RET_{ent} & *NFL*	**-0.303**	**-0.288**	**0.275**	0.032	**0.432**	**0.342**
RET_{ent} & ΔNFL	**-0.196**	**-0.373**	**-0.247**	**-0.474**	**-0.071**	**-0.024**
RET_{ent} & *BTM*	**-0.212**	**-0.043**	**0.137**	**0.302**	**0.369**	**0.306**
FCF & *RDADV*	**-0.021**	**0.075**	-0.035	0.025	**-0.139**	**-0.022**
FCF & *PPE*	**-0.119**	**0.171**	**-0.071**	**0.152**	0.017	**0.174**
FCF & *NFL*	**0.068**	**0.021**	**0.200**	**0.157**	**0.229**	**0.206**
FCF & ΔNFL	**-0.417**	**-0.619**	**-0.422**	**-0.755**	**-0.482**	**-0.703**
FCF & *BTM*	**-0.055**	**0.311**	**0.051**	**0.428**	**0.067**	**0.385**
PPE & *RDADV*	**-0.223**	**-0.123**	**-0.251**	**-0.079**	**-0.256**	**-0.155**
PPE & *NFL*	**0.423**	**0.411**	**0.362**	**0.287**	**0.445**	**0.394**
PPE & ΔNFL	**0.394**	**0.066**	**0.322**	**-0.056**	**0.286**	0.016
PPE & *BTM*	**0.678**	**0.696**	**0.599**	**0.558**	**0.700**	**0.638**
NFL & ΔNFL	**0.186**	**0.059**	**0.080**	**-0.149**	0.013	**-0.120**
NFL & *BTM*	**0.534**	**0.524**	**0.500**	**0.503**	**0.526**	**0.575**
ΔNFL & *BTM*	**0.419**	**-0.039**	**0.315**	**-0.311**	**0.283**	**-0.169**
EV & *BTM*	**-0.234**	**-0.407**	**-0.141**	**-0.458**	**-0.070**	**-0.318**
Observations	31,349	33,060	7,449	8,833	24,278	23,300

Table 3 (continued)

Summary of Results by Sub-Sample

	(1)	(2)	(3)	(4)	(5)	(6)
	+ *ΔEV*	+ *ΔEV*	+ *ΔEV*	- *ΔEV*	- *ΔEV*	- *ΔEV*
	+ RET_{ent}	+ RET_{ent}	- RET_{ent}	+ RET_{ent}	- RET_{ent}	- RET_{ent}
	FCF in	*FCF out*	*FCF in*	*FCF out*	*FCF in*	*FCF out*
Panel C: Estimates of Regression (1)						
Intercept	0.079***	0.056***	0.039***	0.045***	0.075***	0.056***
	(9.92)	(14.82)	(4.80)	(11.37)	(9.74)	(16.87)
RET_{ent}	-0.038***	0.016***	0.330***	0.256***	0.174***	0.127***
	(-4.03)	(2.58)	(8.91)	(8.06)	(11.93)	(8.80)
FCF	0.123***	0.318***	0.062***	0.046*	0.464***	-0.054
	(4.65)	(7.01)	(3.44)	(1.89)	(10.93)	(-1.50)
Adjusted R^2	0.076	0.121	0.101	0.081	0.268	0.043

This table provides descriptive statistics and OLS regression estimates for each firm growth sub-sample. Each column presents results for one of the firm growth sub-samples (1) – (6) defined in Table 1. Panel A presents the sub-sample medians for key variables. Panel B presents univariate correlations between key variables within each sub-sample. Correlations presented in bold typeface are statistically significant at the 1 percent level. Panel C reports the estimated coefficients and adjusted R^2 from estimating regression (1) on each sub-sample. The dependent measure in these regressions is *OI*. All variables are defined in Appendix A. t-statistics reported in parenthesis are calculated using two-way clustered standard errors, clustered by firm and year. *, ** and *** indicate (two-tailed) significance at the 10 percent, 5 percent and 1 percent levels respectively.

Table 4
Effects of Leverage

	NFL Deciles									
	Low Leverage	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	High Leverage
Panel A: Decile Means (Medians) for Key Measures										
NFL	-0.64	-0.17	-0.07	0.00	0.07	0.14	0.23	0.33	0.45	0.65
	(-0.45)	(-0.17)	(-0.07)	(-0.01)	(0.05)	(0.13)	(0.21)	(0.32)	(0.44)	(0.65)
RDADV	0.13	0.07	0.05	0.04	0.04	0.04	0.04	0.03	0.03	0.03
	(0.06)	(0.04)	(0.03)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.00)
CAPX	0.10	0.07	0.07	0.07	0.08	0.09	0.09	0.10	0.10	0.09
	(0.05)	(0.04)	(0.04)	(0.04)	(0.05)	(0.06)	(0.06)	(0.07)	(0.06)	(0.05)
PPE	0.38	0.25	0.24	0.27	0.32	0.37	0.44	0.50	0.54	0.56
	(0.21)	(0.13)	(0.14)	(0.16)	(0.22)	(0.29)	(0.35)	(0.42)	(0.45)	(0.48)
BTM	0.68	0.43	0.41	0.46	0.55	0.66	0.76	0.86	0.96	1.02
	(0.45)	(0.29)	(0.29)	(0.35)	(0.46)	(0.57)	(0.68)	(0.79)	(0.91)	(1.00)
Panel B: Estimates of Regression (1)										
Intercept	0.041***	0.032***	0.034***	0.040***	0.044***	0.045***	0.043***	0.036***	0.028***	0.017***
	(3.31)	(4.70)	(5.44)	(6.81)	(8.02)	(8.50)	(9.08)	(7.49)	(5.78)	(3.82)
RET_{ent}	0.014	0.031***	0.040***	0.045***	0.050***	0.068***	0.077***	0.096***	0.110***	0.136***
	(0.86)	(2.83)	(3.77)	(4.53)	(3.86)	(7.06)	(7.93)	(8.30)	(7.76)	(8.19)
FCF	0.438***	0.341***	0.274***	0.208***	0.186***	0.117***	0.089***	0.062***	0.041***	0.001
	(13.56)	(12.60)	(13.32)	(12.31)	(10.82)	(8.83)	(9.47)	(6.93)	(5.06)	(0.16)
Adjusted R^2	0.267	0.219	0.184	0.161	0.149	0.137	0.113	0.114	0.105	0.108
Observations	12,806	12,832	12,832	12,830	12,821	12,844	12,831	12,831	12,833	12,809

This table provides descriptive statistics and OLS regression estimates within each decile of *NFL* in the full sample. Observations are ranked into deciles each fiscal year. Panel A presents decile means (medians) for key variables. Panel B reports the estimated coefficients and adjusted R^2 from estimating regression (1) within each decile. The dependent measure in these regressions is *EPAT*. All variables are defined in Appendix A. t-statistics reported in parenthesis in Panel B are calculated using two-way clustered standard errors, clustered by firm and year. *, ** and *** indicate (two-tailed) significance at the 10 percent, 5 percent and 1 percent levels respectively.

Table 5

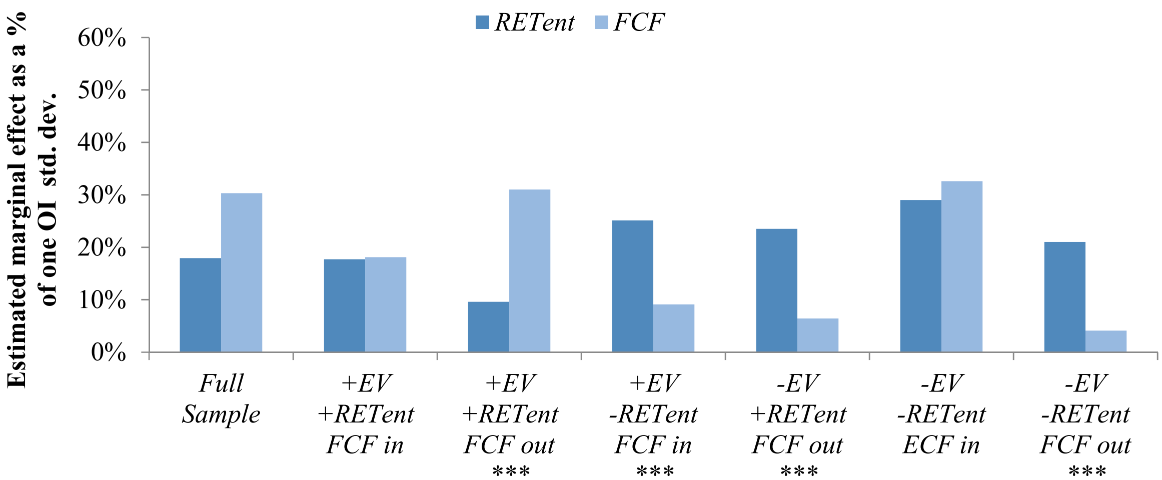
Interaction Tests of Leverage Effects, by Sub-sample

	(1) + *ΔEV* + RET_{ent} *FCF in*	(2) + *ΔEV* + RET_{ent} *FCF out*	(3) + *ΔEV* - RET_{ent} *FCF in*	(4) - *ΔEV* + RET_{ent} *FCF out*	(5) - *ΔEV* - RET_{ent} *FCF in*	(6) - *ΔEV* - RET_{ent} *FCF out*
Panel A: Estimates of Regression (2)						
Intercept	0.067***	0.060***	0.030***	0.054***	0.068***	0.067***
	(9.90)	(15.61)	(3.45)	(14.25)	(9.56)	(19.25)
DEC_NFL	-0.038***	-0.020***	0.029*	-0.035***	-0.080***	-0.044***
	(-2.73)	(-4.14)	(1.88)	(-4.44)	(-5.66)	(-6.89)
RET_{ent}	-0.005	0.017***	0.252***	0.196***	0.190***	0.189***
	(-0.98)	(3.69)	(7.22)	(5.46)	(14.41)	(15.76)
RET_{ent}*DEC_NFL*	0.079***	0.039***	-0.077	0.006	0.019	0.143***
	(3.76)	(5.24)	(-0.82)	(0.08)	(0.56)	(7.48)
FCF	0.105***	0.280***	0.060***	0.107***	0.314***	0.016
	(5.95)	(8.09)	(3.42)	(3.70)	(8.60)	(0.45)
*FCF*DEC_NFL*	-0.359***	-0.416***	-0.127**	-0.256***	-0.650***	-0.335***
	(-6.06)	(-8.41)	(-2.22)	(-4.99)	(-10.70)	(-6.55)
Adjusted R^2	0.137	0.163	0.123	0.168	0.284	0.133

This table presents estimates from the same sub-sample OLS regressions described in Table 3, with the addition of interaction terms between each regression variable and *DEC_NFL*. *DEC_NFL* is the scaled decile ranking of *NFL*. We sort all observations in the full sample into deciles by fiscal year. Decile ranks are then scaled to have a mean of zero and range of one. All other variables are defined in Appendix A. Panel A reports the estimated coefficients and adjusted R^2 from estimating regression (1) on each sub-sample. The dependent measure in these regressions is *EPAT*. t-statistics reported in parenthesis are calculated using two-way clustered standard errors, clustered by firm and year. *, ** and *** indicate (two-tailed) significance at the 10 percent, 5 percent and 1 percent levels respectively.

Figure 1

Normalized marginal effects of changes in enterprise value on estimated *EPAT*



This figure presents the marginal effects of a one standard deviation change in enterprise value on *OI*. Each column plots the magnitude of the effect of a one standard deviation change in RET_{ent} or *FCF* on *OI* based on the estimated coefficients from regression (2) for each regression sample listed along the horizontal axis. The regression sub-samples are defined in Table 1. The height of each column is scaled by the standard deviation of *OI* for the corresponding sample, facilitating comparison across sub-samples. This is equivalent to normalizing all regression variables within each regression sample and plotting the (absolute) normalized coefficients. *, ** and *** indicate that the heights of the two columns for the corresponding sample are significantly different at the (two-tailed) 10 percent, 5 percent and 1 percent levels respectively, based on Wald tests of the corresponding normalized regression coefficients.