# Financing a Loss

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**Abstract**

When companies have a net loss accompanied by negative operating cash flows, they must decide how to handle the financing deficit, or, stated differently, they must decide how to finance the loss. By examining a large sample of firms with net losses, we document how companies respond to the financing shock that occurs with negative cash flow. For companies with a one-year loss, current assets decrease and current liabilities increase. While we observe that leverage ratios increase during a loss year, this increase has more to do with decreasing book equity than an increase in long-term debt. However, when the loss persists into a second year, companies make more fundamental changes, often downsizing by decreasing fixed assets and by issuing longer term debt.

JEL classification codes: G30, G32, G35.

**Keywords:** Loss, Cash flow, Capital structure, Dividend policy, Working capital management

## 1. Introduction

What happens when a firm suffers a financial loss? The question may have considerable current relevance because the years 2008 and 2009 witnessed a large number of firms with net losses and negative net cash flow. One way to address this question is to examine the effect of the net loss on the firm's balance sheet. When a company has negative net income, its retained earnings and, therefore, shareholder's equity, will decrease due to the accounting treatment of the loss. Since a balance sheet, by definition, must balance, assets must decrease, liabilities must increase, dividends could be cut, or some combination of these actions could be used to offset the decrease in shareholder's equity, thereby financing the loss. We document and analyze the systematic patterns that occur to firms' balance sheets when they experience negative net income and cash flow.

We are motivated to examine the financing of a loss for two main reasons. First, the decisions made in response to a loss are especially important because firms pursue many corporate financial goals at discrete points in time, which may occur infrequently (Leary and Roberts, 2005; Strebulaev, 2007). Therefore, variables such as leverage will tend to diverge from the target level over time, only to be adjusted at discrete "refinancing points". Many tests of corporate financial policies are inadequate because they fail to distinguish whether firms' have "...different optimal ratios or because their actual ratios differ from optimal ones" (Myers, 1984, p.578). We respond to this by examining a sample of firms faced with a refinancing point that occurs as managers decide how to finance the loss. We compare these firms to profitable firms not facing this same refinancing point. Our choice of refinancing point is when a firm experiences both negative cash flow and profit.

A second major reason for this exploration is that financial theory often implicitly assumes that a company has a positive cash flow and profit. For example, the pecking order theory implies that a firm will first use its internally generated funds from retained profits before raising external sources of capital. In agency theory, the amount and the investment of free cash flow is often used to gauge the severity of the management-shareholder conflict. The presence of free cash flow

implies that the firm has profit to reinvest. While these are just examples, our point is that financial theory generally presumes a positive profit with earnings to reinvest.

In this paper we take a preliminary look at how companies choose to finance a loss (Note 1).Overall, we interpret our results as follows: Transient losses are financed through a complex rearrangement of a firm's net working capital that is not easily discerned by looking at only the level of cash. Longer-term losses are managed by liquidating a firm's fixed assets and through the issue of long-term debt. Firms rarely respond to a loss by decreasing dividends or issuing new external equity. These results supplement several strands of the existing literature by showing how financial losses drive balance sheet changes that are integral factors in the fields of capital structure theory, working capital management and dividend payout policy.

## 2. Hypothesis Development

Our basic premise is that when a firm has a loss, the loss must be financed. The loss could be financed through a reduction in working capital, changes in leverage, a decrease in fixed assets, or through a reduction in dividends. The decision on how to finance the loss intersects working capital management, capital budgeting, dividend and capital structure theory.

There are two primary capital structure theories, pecking order and optimal trade-off. We make no *a priori* judgment about the dominance of either theory nor do we plan to test either theory directly. However, we use them to help explain how a firm might finance a loss.

Hovakimian et al., (2004) find that firms do not immediately adjust their capital structure as earnings or losses begin to accumulate; the adjustment takes place over time. In developing our expectations about how firms finance a loss, it is important to distinguish between one year and multi-year losses; multi-year losses likely require greater changes to capital structure and to working capital policies.

### *2.1 Pecking Order Theory and Financing a Loss*

Myers (1984) introduced pecking order theory as an explanation for how firms make financing and capital structure decisions. The model predicts that firms will follow a pecking order of financing choices beginning with internally generated equity. When the firm's capital investment requirements exceed the available internal funds, the firm will issue debt. The issuance of debt continues until the firm reaches its debt capacity. Finally, the firm will issue new equity when there is no capacity for new debt. The pecking order occurs because the cost of issuing new securities is greater than the cost of earnings retention.

Shyam-Sunder and Myer (1999) define a firm's financing deficit as the growth in assets less the growth in current liabilities and the growth in retained earnings. The financing deficit is, therefore, the amount that must be financed with external sources. They argue that a firm will finance this deficit with new debt unless the firm is near its debt capacity. Only when a firm reaches its debt capacity will it issue equity through a stock sale.

Debt capacity can be defined as the point in which an increase in debt reduces the total market value of debt (Lemmon and Zender, 2010; Myers, 1977). Alternately, Shyam-Sunder and Myer (1999) define debt capacity as the point when adding more debt increases the cost of financial distress and the firm stops issuing debt. Under this latter definition of debt capacity, the pecking order theory would be the dominant theory for moderate capital structures but tradeoff theory becomes the primary motivator of capital structure at the extremes (Lemmon and Zender, 2010). Hence, both capital structure theories may play a role in determining a firm's capital structure.

Profitability is an important concept in pecking order theory. Chen and Zhao (2005) argue that "profitability is more than just another capital structure determinant; it plays a critical role in a firm's capital structure because it directly affects internal funds, one of the three financing sources" (p. 1). So what happens to the financing deficit and to debt capacity when a firm experiences a net loss? By focusing only on those firms with negative cash flow, we are able to isolate a sample of firms for which internal equity is unavailable. We can therefore examine the later steps of the pecking order, as well as the impact of liquidity constraints on changes in a firm's corporate financial policy.

We define the firm's financing deficit as in prior research: the growth in assets less the growth in current liabilities and the growth in retained earnings (Shyam-Sunder & Myers, 1999; Kayhan& Titman, 2007). However, we are interested in the financing mechanism for the loss, so it serves our purpose to divide the growth in assets into fixed and current assets. We define the financing deficit, *FD* in (1) below:

$$FD = \Delta FA + \Delta CA - \Delta CL - \Delta SH \qquad (1)$$

ΔFA is the change to fixed assets. When the firm has a loss this variable could be positive or negative. It would be positive when, despite the loss, the firm has profitable opportunities. For example, if the firm believes that it will lose money for

only one year, then it may make investments and fixed assets would increase. For example, despite losses in early 2009, Blockbuster planned to pen approximately 10,000 new stores by early 2010 (Talley, 2009). However, ΔFA could be negative if the firm does not have profitable investment opportunities and finances the loss with a reduction in fixed assets.

ΔCA is the change to the firm's current assets. It is likely that current assets will decrease; in particular, the cash balance would likely decrease as the firm uses cash to finance the loss. On the other hand, a firm may choose to maintain liquidity or at least to maintain the appearance of liquidity for its external monitors by keeping a stable cash balance. Alternately, other current assets such as accounts receivable could decrease to finance the loss (Molina &Preve, 2009) (Note 2).

ΔCL is the change to the firm's current liabilities. When the firm has a net loss, this term will likely become larger. That is, to maintain liquidity the firm will likely borrow short-term. Here, the firm would be using current liabilities to finance the loss.

ΔSH is the change to stockholder's equity. In the year of a loss, the change would be negative due to the accounting treatment of the loss. By subtracting the negative value of ΔSH, FD would increase as a result of the loss. However, by cutting dividends, the firm could reduce the effect of shareholder's equity on FD. Under pecking order theory, firms prefer internally generated equity over external sources of capital; so firms following a pecking order might choose to cut dividends. However, prior research has found that firms rarely cut dividends (Michaely, 2012). The financial deficit would, therefore, be caused by the drop in shareholder's equity when the firm has a net loss. If the other three terms, ΔFA, ΔCA, and ΔCL do not change, then the firm would need to finance the deficit with external sources. The pecking order would suggest that the firm would issue debt.

However, pecking order theory suggests that debt would only be issued as long as the firm has debt capacity. Debt capacity is exhausted when the cost of financial distress of adding new debt is too large. Having a net loss may increase the cost of financial distress and reduce debt capacity(Note 3). If the loss is short-lived and profitability will return the next year, financial distress costs may not yet have eliminated debt capacity. However, if the firm expects a multi-year loss, then financial distress costs may eliminate or severely curtail the firm's debt capacity and their ability to issue new debt. Therefore, we expect that firms with a one year loss will be more likely to issue long-term debt to finance their loss than firms with a multi-year loss.

*2.2 Tradeoff Theory and Financing a Loss*

Fama and French (2002) state that a firm following the tradeoff model identifies an optimal capital structure by weighing the costs and benefits of each additional dollar of debt. The benefits would be the tax deductibility of interest payments and the reduction of the free cash flow problem. The costs would include potential bankruptcy costs or costs of financial distress and costs associated with the potential agency conflict between shareholders and debtholders. At the optimum, firms issue debt until the benefits of the last dollar of debt just offset its costs. What can this theory tell us about how a firm would finance a loss (finance the financial deficit caused by the reduction of stockholder's equity)?

The DeAngelo and Masulis (1980) maintain that the government does not subsidize losses as much as it taxes profits (Note 4). As a result, more profitable firms face a higher tax rate. The tax-deductibility of interest would, therefore, be less valuable to a firm with a net loss than one with positive income. Similarly, when there is a loss, there may not be much, if any, free cash flow. So, when a firm has a net loss, the benefits from reducing the agency conflict are likely to be less. In addition, the net loss may increase the likelihood of bankruptcy and increase the expected value of bankruptcy costs.

Firms that attempt to maintain an optimal capital structure would find that issuing debt in the year of a net loss to have greater costs than benefits. However, if we look beyond the year of the net loss, future benefits from issuing debt may subsequently increase when the firm becomes profitable again. However, if the firm expects a multi-year loss the costs from issuing new debt would likely be greater than the benefits. When there are net losses, especially multi-year net losses, firms will be less likely to issue new debt to finance the financial deficit.

Graham and Harvey (2001) report that only 10% of firms that they surveyed had strict capital structure targets. In their sample, 71% of the firms reported having a flexible capital structure target. A firm following a more flexible targeting plan may issue debt in a year even if costs outweigh benefits, but they would have a plan to return to the more optimal debt level in subsequent years. Here, it is again important to distinguish between one-year and multi-year losses. With a one year loss, the firm would have the opportunity to re-adjust its capital structure when profitability returns. However, a firm expecting a multi-year loss would not have this same opportunity and would be less likely to fund the financial deficit by issuing debt.

*2.3 Dividend Policy and Financing a Loss*

There are numerous theories about dividend policy. However, empirical evidence suggests that firms are reluctant to change their dividend policy. This reluctance may be the result of a clientele effect. Miller and Modigliani (1961) first suggested dividend clienteles; they argued that each firm would attract a particular clientele consisting of investors that wanted its level of payout. Firms would be reluctant to change their dividends since their own shareholders prefer the existing level. Based on this logic, when a firm experiences a net loss, they will be unlikely to cut dividends to reduce their financial deficit.

Similarly, Fama and French (2002) argue that under pecking order theory dividends are sticky. They propose that variations in the financial deficit caused by fluctuations in earnings would likely be absorbed by debt. However, as argued above, when the costs of financial distress are sufficiently large, debt may not be a good option. We have also proposed that financial distress costs would likely be larger for firms experiencing a multi-year loss than for those experiencing a one-year loss. Hence, we propose that dividend cuts are more likely in the first year of a loss when the firm expects the loss to be multi-year.

*2.4 Working Capital Management and Financing a Loss*

Under both the pecking order and tradeoff theories a firm with a net loss is not likely to issue long-term debt because the presence of a loss may increase the firm's cost of financial distress and possibly reduce debt capacity. As a result, firms may finance the loss through working capital by decreasing current assets or increasing current liabilities. Here, the firm can quickly replenish its current assets and refinance its short-term debt when positive profitability and cash flow return.

Graham and Harvey's (2001) CFO survey finds that some CFOs believe that they can forecast future interest rates. They would issue short-term debt when they believe that long-term rates will fall in the future. This belief is likely in error; Butler et al., (2006) find that managers cannot time the debt market successfully. Managers may not have superior knowledge of debt markets and interest rates, but they may possess superior information about their firm's prospects. Diamond (1991) presents a model based on the idea that managers have superior information over debt analysts, who can only observe public information (Note 5). When the inside information about the firm's future prospects is good, the firm can lower its borrowing costs reducing the maturity of its debt. In the case of firms with a current year loss, managers may issue short-term debt, especially when they believe that the firm will soon return to profitability.

*2.5 Financing a Loss and Fixed Assets*

Firms will choose to increase fixed assets when the cash flows generated by the new assets have a positive net present value. Alternately, a firm might sell fixed assets when doing so has a positive net present value. Here, the present value from selling the assets would exceed the present value of keeping them. A net loss could create the situation in which it becomes optimal to sell fixed assets. If the loss occurs due to a reduction in sales, the firm may have over-capacity with its fixed assets. This overcapacity may be temporary in the case of a one-period loss, but it may be more permanent if the firm believes the loss will be multi-year. Selling the assets under this condition would provide at least two benefits. First, the sale would provide an influx ofcash that could reduce the currently existing financing deficit. Second, the sale of the assets may eliminate the excess capacity and may help return the firm to profitability. The sell-off of fixed assets would, therefore, be more likely when the loss occurs from a reduction in sales and when the loss is expected to be a multi-year loss.

Our results fit nicely with those of several other studies. Fazzari et al, (1988) find that firms' investment policies are sensitive to their cash flow fluctuations and that cash flow sensitivity is greater for financially constrained firms. Fazzari, *et al.*, report that firms that face tighter financing constraints have to rely more on internal cash for making investments. Bhagat et al., (2005) report that financially distressed firms with operating losses often invest more than in the previous year. Bhagat et al., find that equity claimants fund the increase in investment for these financially distressed firms to keep the firms operating in hope that the financial conditions will improve, thus increasing the value of their equity claims (i.e., a gamble for resurrection).

## 3. Methodology

*3.1 Sample and Data*

To construct a sample of firms that experience a loss, we begin by looking at firms that had negative net income in year $t$ and positive net income the previous year, $t-1$. We search the universe of COMPUSTAT for firms that satisfy this condition between years 1992 and 2003. We then calculate the cash-flow for these firms in year $t$. Our primary sample consists of those firms that have negative values for both net income and cash flow in year $t$, although we retain the positive cash flow firms for later comparison. We use the additional cash flow restriction to eliminate companies that have

a book loss but that produce a positive cash flow. Following Frank and Goyal (2003), we compute cash flow after interest and taxes, cash dividends, net investments, changes in working capital, current portion of long-term debt, net debt issued, and net equity issued:

*CF = Income before Extraordinary Items + Depreciation and Amortization + Extra. Items and Discontinued Operations + Deferred Taxes + Equity in Net Loss (Earnings) + Other Funds from Operations + Sale of PPE and Investments*

We compute these values for year $t-1$, year $t$, and year $t+1$. We delete observations that have one or more missing cash-flow components. Therefore, we require firms to have valid cash flow data over a minimum of a 3-year period, from year $t-1$ to $t+1$. Firms that are acquired through mergers or acquisitions, or which are liquidated, are not included in the sample. We delete all ADRS, financials, and utilities from the sample. This procedure results in 2,803 loss-observations in 2,329 unique firms. We then collect various balance sheet items, net investments, and dividends for these years.

For comparative purposes, we form a matched sample of firms with positive net income and cash flow in years $t-1$ and $t$. To obtain this sample, we first find all firms in the same 4-digit SIC code as the sample firm. From this list we select the observation with the closest total assets to our original firm in year $t-1$. We report yearly firm size and cash flow statistics for our loss sample and matched sample in Table 1.

*-----Insert Table 1 About Here-----*

We compute current assets as the sum of cash, accounts receivable, inventory, other current assets, and short-term investments. Fixed assets are total assets minus current assets. Similarly, we compute total current liabilities as the sum of each current liability item. We then compute other liabilities as total assets minus stockholder's equity, long-term debt, and current liabilities. We set missing values for cash, accounts receivables, inventory, other current assets, notes payable, accounts payable, taxes, other current liabilities, and long-term debt to zero. We delete any firms with missing observations for total assets, stockholder's equity, net income or cash flow.

*3.2 Empirical Analysis*

We begin with univariate comparisons of the data from year $t-1$ and year $t$. Our goal here is to document how the balance sheet of firms with a loss changes in the year of the loss, as well as how firms experiencing a loss differ from the matched sample of firms with positive cash flow and net income. Therefore, we test for systematic differences in the balance sheets of loss-making firms both over time and in the cross-section. We should stress that because we are comparing our treatment group (the loss sample) with a control group (the matched sample or the loss sample in a prior time period) our basic statistical measures should be interpreted in that context. That is, we are not looking at the absolute level of the variables for our sample firms, but how those items differ from a matched sample. In addition, because we are examining firms that experience a loss, we are limiting ourselves to a sample of firms that might be eliminated as outliers in many other studies. Therefore, it is difficult to clean the sample of anomalous firms, as the entire sample is somewhat unusual. As a result, we take care to consider statistical regression to the mean as a potential statistical explanation for some observed changes.

A particular challenge in this study is to identify an appropriate method to normalize the values of our variables in order to allow meaningful comparisons of firms both over time and across samples. Average figures for the level of most variables are misleading, as a small number of unusually large firms dominate the results. Simple medians are also troublesome as many of our variables have median values of zero. We cannot usefully compare simple dollar changes, as our sample contains firms of widely-varying size. Percentage changes are also problematic, as the nature of our sample means that many variables have negative or zero values, leading to undefined or infinite percentage changes. Comparing common-size figures, normalized by total assets or sales, also leads to problems in comparisons over time, as values may change not because of changes in our variables of interest, but only because assets or sales may change from one year to the next, or because assets or sales themselves have extreme values.

After considering these unique characteristics of our sample, the most robust and informative means of comparing changes across firms and over time is to normalize by the cash flow in year $t-1$.Although not without its problems, there are several advantages to this approach. First, lagged cash flow is restricted to be positive for all firms in the sample. We examine numerous additional methods of normalization and measurement of our variables, such as average and median dollar values of our variables, proportions of firms experiencing increases or decreases in the variables of interest, and normalization by other variables. These alternative methods produce noisy results, but do not contradict our reported findings.

The majority of our analysis focuses on the changes in balance sheet items from year $t-1$ to year $t$. Further analysis examines the post-loss changes from year $t$ to $t+1$. This allows us to classify firms according to whether the loss was a one-year occurrence and the firm becomes profitable in year $t+1$, or if the loss is a multi-year loss. We can then test for

systematic differences in the way a loss-making firm adjusts its balance sheet compared to a profitable firm. If losses lead to no systematic changes in the balance sheet then we would expect a uniform reduction in assets and increase in non-equity liabilities when compared to non-loss firms. Departures from this represent intentional changes to a firm's capital structure, liquidity position, or payout policy.

Overall, we have several ways in which to judge the relative behavior of the balance sheet for our sample of firms with a loss. First, we can compare changes for each item for both our loss and matched samples. Second, we can compare each item in year t, when the firm experiences the loss, with the performance in year $t + 1$ of firms that recover from the loss. These two control groups each have distinct advantages and disadvantages. The matched sample is measured at the same point in time as our loss sample, but may differ in ways that we are unable to control for. The recovery sample is composed of firms that are originally in the loss sample and therefore we can be sure to have held firm characteristics constant. However, the control firms may still display lingering effects of the loss when we examine their performance in the year of recovery.

In addition to our two control samples, we also have several options for partitioning our samples to facilitate our analysis. First, we decompose our loss sample based on whether the firms will ultimately become profitable in year $t+1$. Therefore, we can examine differences during the first year of a loss for firms that anticipate a recovery compared with those facing a persistent multi-year loss. Second, we can partition our loss sample based on whether or not the firms experienced a decline in sales in year t. This allows us to examine if firms with a true decline in performance are different from those that report negative cash flow for possibly more productive reasons, such as an increase in investments or due to extra-ordinary items. A third method for partitioning our sample is to examine the ex-post behavior of each balance sheet item, conditional on that item having been used as a source of financing in year t. This allows us to determine which financing sources are quickly reversed, and which adjustments lead to more permanent changes in a firm's financial structure.

To probe the factors that are most associated with financing a loss in a multivariate setting, we estimate a probit regression model. The form of the model is:

$$Loss\ indicator_j = \alpha + \sum_{i=1}^{n} \beta_i x_{i,j} + e_j$$

Where $loss\ indicator_j$ takes a value of 1 if firm $j$ experienced a loss and a value of 0 if firm $j$ is from the matched sample. $x_i$ is the vector of 1 through $n$ explanatory variables for firm $j$. Explanatory variables include changes in each balance sheet item, as well as dividends and net investments. The explanatory variables are measured over time period t-1 to t or from t to t+1. We are therefore testing if these data are significant in explaining the variation between the loss and non-loss samples of firms. This model does not forecast the probability of the firm experiencing a future loss, as firms are identified as loss-making or profitable based on their prior-period performance.

## 4. Results

### *4.1 Descriptive Statistics*

From Table 1 we can see the general characteristics of cash flow (CF) and firm size over time for the 2,803 observations in our sample. We require CF and net income to be positive in year $t-1$ and negative in year $t$. For the matched sample, we require positive CF and net income in both years $t-1$ and year $t$. Firms are allowed to re-enter our sample if they experience a loss again after recovering to positive CF. We have 2,329 unique firms in our sample (elimination of firms re-entering the sample generally does not change our results). For our main sample, CF decreases by about $21 million from year $t-1$ to year $t$, while there is almost no change for the matched sample. In year $t+1$, CF increases by about $8 million on average, although it still remains negative. For the matched sample, CF increases slightly, to about $21 million. Overall, CF for firms with a loss displays strong regression to the mean, while the matched sample displays no clear pattern of change.

When we split the loss sample based on their performance in year $t+1$, we see that about 41% (1,141 observations) of the loss sample returns to a positive CF in year $t+1$, but 59% (1,662 observations) continue with a loss in the subsequent year. This variation will allow us to classify observations as "recovering" or "persistent" with regards to their loss.

Table 2 presents summary statistics for the changes in balance sheet items from year $t-1$ to $t$, as a percentage of CF in year $t-1$. Almost all asset items decrease for the loss sample and are significantly different from the matched sample, where these items increase. The exceptions are other current assets and total assets, which both increase but are not significantly different from the matched sample.

There are large increases in all liability items for the loss sample which are significantly different from the matched sample, with the exception of taxes payable and other liabilities. Unsurprisingly, the loss sample has a large decrease in book

equity that is significantly different from the matched sample, as a result of the accounting treatment of the loss. Overall, these results confirm certain patterns of balance sheet adjustment are more likely for firms that had experienced a loss. This is driven by the mechanical shrinking of equity offset by a decrease in current assets and increases in fixed assets and liabilities. Panel B indicates that changes from year *t−1* to year *t* appear fairly similar for firms when classified according to whether their loss is one year in duration ("recovering" firms in year *t +1*) or sustained ("persistent" loss firms in year *t +1*). Some differences are that recovering firms liquidate more inventory in year *t* and are more restrained in purchasing fixed assets, as compared to firms where the loss will persist. Firms that will quickly recover are also more aggressive in writing down shareholders' equity than persistent-loss firms.

*-----Insert Table 2 About Here-----*

Table 3 displays summary statistics for the changes (as a percentage of CF in year *t−1*) in items in the year following the loss, year *t +1*. For the loss sample, almost all asset items remain lower than what they were in year *t*, and all are significantly different from the comparable figures for the matched sample. The only increase is for fixed assets, although it increases significantly less for the loss sample than for the matched sample. All liability items show increases from their level in year *t−1* and these increases are generally significantly greater for the loss sample than for the matched sample.

*-----Insert Table 3 About Here-----*

Panel B sheds more light on the evolution of the balance sheet in year *t+1* by grouping the sample of loss firms according to their status in year *t+1*. Recovering firms display an expansion of the balance sheet, with both assets and liabilities generally increasing. Short-term debt is the only balance sheet item to decrease, as it is repaid during recovery. Firms that have negative income in year *t+1* show strong differences from recovering firms. These firms continue to draw down all current asset items and to increase all forms of liabilities.

Figures 1 and 2 present the proportion of firms that use each item as a source of financing, ranked from the most common to the least. From Figure 1, we can see that dividends are one of the least popular sources of financing. These results hold if we drop the non-dividend paying firms from our sample. From Figure 2, we see that when firms recover from a loss, they return to using equity as their most popular source of financing, which is consistent with the pecking order. Comparing Figure 2 with Figure 1 shows that when firms persist with a loss, the liquidation of fixed assets rapidly moves up as a source of financing in the second year, even though this was a relatively uncommon source of financing in the first year. This finding suggests an important factor that may be overlooked in the pecking order. The asset side of firms' balance sheets does not remain static when internal equity is unavailable. Rather than moving down the pecking order in terms of liabilities and issuing debt, we instead find that the firms reduce assets, even fixed assets, when internal equity remains unavailable for an extended period of time.

*-----Insert Figures 1 and 2 About Here-----*

*4.2 Multivariate Analysis of Factors Associated with a Firm Experiencing a Loss*

In Table 4, we examine if the change in a balance sheet item, as a percentage of *t−1* CF, is associated with the probability of a firm experiencing a loss in the current period. The dependent variable is the loss indicator taking the value of 1 for loss firms and 0 for matched firms. Model 1 considers the change in these items from *t−1* to *t*, and model 2 from *t* to *t+1*.

From model 1, we observe that the estimated coefficients for dividends, net investments, accounts receivable, inventory and short-term investments are negative and significant. When these items decrease in size a firm is more likely to be suffering a loss. On the other hand, the estimated coefficient for fixed assets is positive and significant. Fixed assets increase more often when firms experience a loss. This goes somewhat against intuition, where one may expect a firm to respond to a loss by selling off fixed assets. Interestingly, we observe no significant relation between changes in cash and the probability of the firm currently experiencing a loss, indicating that the rearrangement of short-term assets is more complicated than a simple change in cash.

The estimated coefficients for the liability accounts (with the expected exceptions of taxes payable, other liabilities, and shareholders' equity) are positive and significant. As in our univariate tests, increases in liabilities are associated with loss-years.

Model 2 indicates that most of these changes continue in the year following the loss. That is, the signs of their estimated coefficients remain the same as in model 1. However, there are some differences. For example, the change in fixed assets in year *t+1* has a negative estimated coefficient. This implies that some structural changes to their balance sheet are observed more for firms that experience a loss. In addition, the estimated coefficients for taxes payable, other liabilities and shareholders' equity change signs in model 2.

*-----Insert Table 4 About Here-----*

Table 5 partitions the loss sample based on whether the firm recovered from the loss in year *t+1*, or if the loss persisted. In this table, we are still examining changes from year *t−1* to *t*, but we observe the difference over this period based on what happens the subsequent year. We assume that actions taken in year t are influenced by what the firm expects to happen in year *t+1*. Almost all balance sheet items are significantly related to the probability of a loss and some interesting patterns can be observed. The change in cash has a significant and positive estimated coefficient for the persistent loss firms, but is significant and negative for firms that are anticipating recovery. Firms expecting to recover reduce their cash balance in year *t*, but firms expecting persistent losses seem to place cash in reserve in year *t*. In addition, the estimated coefficient for long-term debt is significant and positive in model 1; firms that expect recovery are also more likely (or more able) to obtain long-term debt financing. Although the estimated coefficient for the change in shareholders' equity is significant and negative for both subsets of firms, the relation is larger and stronger for firms that will recover quickly. This implies that firms which report larger write-downs in equity are more likely to be in the group that recovers quickly. Alternatively, it could imply that firms expecting a sustained loss turn to external equity financing, which alleviates some of the decline in reported equity and is consistent with the pecking order. We examine this further in the sections below.

*-----Insert Table 5 About Here----*

*4.3 Non-Balance Sheet Items*

To further examine changes in capital structure following a loss, we now consider several additional non-balance sheet items. Table 6 presents descriptive statistics on the levels of non-balance sheet items (as a percentage of year *t−1* CF) that may impact a firm's cash flows. By comparing the results for year *t−1* and year *t*, it is apparent that loss firms experience a decrease in sales, extraordinary items, capital expenditures, investments, and acquisitions, although all remain at much higher levels relative to CF than for the matched sample. Loss firms also increase other funds from operations, to a level significantly greater than that of matched firms, which could increase cash flow.

There are also several indications of increases in leverage for firms with a loss. Interest expense is higher, both in year *t−1* and year *t,* compared to matched firms. Both debt and equity issued is far higher for loss firms than for matched firms. The overall debt ratio is identical for both samples in year *t−1*, but is significantly higher for the loss sample in year *t*. Loss firms also reduce debt more than matched firms in both years*t−1* and *t,* and they repurchase more stock in year *t−1*. Overall, loss firms increase leverage by issuing more debt, but there appears to be a large amount of debt restructuring at the same time. This corresponds well with anecdotal evidence. For example, Kodak recently issued $700 million in debt while experiencing a loss. The stated reason for issuing debt at the time was to "pay off debt" (Bulkeley and Lattman, 2009). However, in general the issuance of new debt by our sample firms is dwarfed by the decline in equity. Therefore, firms with a loss see a large increase in leverage, but only part of this increase is due to the issuance of debt.

*4.4 Reversals and Stability in the Sources of Financing*

Table 7 and Figure 3 identify sources of financing that continue to be used after the year of the loss, as well as those which are reversed, contingent on each item actually being used as a source of financing in year *t*. Unsurprisingly, cuts in dividends are less likely to be reversed by the loss sample than by the matched sample. All asset items that are used as a source of financing are less likely to be reversed by the matched sample than by the loss sample in year *t +1*. Therefore, if firms with positive CF cut assets for some reason, they usually reverse this decision in year *t +1*, while cuts in assets are more permanent for firms with negative CF. Equity financing is more likely to be reversed by the loss sample than by the matched sample. However, few firms with a loss increase equity, so instances of this reversal are fairly rare.

*-----Insert Table 7 About Here----*

*-----Insert Figure 3 About Here-----*

If we compare firms that recovered from their loss in year *t +1* with firms that have persistent negative CF, we see that the recovering firms are more likely to reverse any cuts that they made to any asset items or dividends. They are also more likely to reverse any increases in short-term debt and total current liabilities. However, they are not more likely to repay long-term debt than are firms that persist with negative CF. They are also much less likely to see a reversal in equity funding, probably because those firms that expected to quickly recover are less likely to have issued new equity than are firms with a more persistent loss.

*4.7 Robustness Checks*

We perform a wide variety of tests to help insure the robustness of our results. In general, our findings remain largely unchanged if we make moderate adjustments to our definition of cash flows. Our results are also generally robust to minor changes in our variable definitions and sample construction. Adjustments to our regressions models, such as the addition of year-specific fixed effects, do not greatly change our findings. We repeat our entire analysis using a two-year window to

examine firms before and after the year of a loss and also find similar results. For brevity we report only those results for the one-year window.

As mentioned earlier, the nature of our sample makes traditional measurement techniques difficult to interpret (techniques such as the simple calculation and comparison or means and medians of dollar values or dollar changes in items). This is because our sample consists of firms that would normally be outliers in other research, and that commonly have extreme, zero, or missing values for many items. However, we have attempted to replicate our analysis, focusing on the use of dollar values to compute means and medians. Where this analysis is possible, it generally leads to qualitatively similar results as previously reported. Because the results are more difficult to interpret in this manner, we have chosen not to report these results in the paper.

A non-parametric approach which works well for our data is to examine the proportion of firms that increase, decrease, or hold constant each balance sheet item in response to a loss. This allows us to perform chi-squared tests to examine if the actual and expected proportions of firms experiencing increases or decreases in each item are equal. We use the matched sample values to determine the "expected" values in our chi-squared tests when compared to our actual sample values. The chi-squared statistic (with 1 degree (Note 6)of freedom) is computed as:

$$\frac{(\text{expected - actual})^2}{\text{expected}} = chi^2.$$

These tests produce qualitatively similar results with the tests and analysis described above but are somewhat cumbersome to report.

About the same number of firms decrease dividends across both the sample and the matched sample (11.31% vs. 10.88%), although there are almost three times as many firms in the matched sample that increase dividends (17.47% compared to 6.06%). One implication of this that we will analyze further is that there are significantly more firms in the loss sample that hold dividends steady (about 83%) than in the matched sample (about 72%)(Note 7). We observe that for the matched sample, equity (retained earnings) is the most popular source of financing, as we would expect from the pecking order.

Some aspects of our analysis do benefit from more detailed robustness tests. Because most sample firms do not pay dividends, our results for changes in the level of dividend payments following a loss may be unreliable. We therefore repeat all analysis of the dividend variable for the subsample of firms that actually pay dividends (Note 8). This analysis leads to similar conclusions as presented for the entire sample, except we obtain greater significance levels. That is, firms are reluctant to cut dividends, and loss firms are less likely to increase dividends than matched firms and more likely to decrease or hold dividends constant.

As a further robustness test, we partition our loss sample based on potential indicators of the firm's financial condition in year $t-1$. We examine variables such as the change in sales preceding the loss, as well as the firm's capital structure, measured by the debt ratio, prior to the loss. In general, we do not find these variables useful in explaining many of the patterns we document in the loss firm's financing behavior, and we, therefore, do not present detailed results for this section of the analysis. Instead we provide below some notes of interest that arise from these robustness checks.

Firms with higher leverage are more likely to convert inventory to short-term investments. We speculate that this arises for firms to maintain their capacity to make interest payments. No other items show large differences based on variation in the firm's capital structure prior to the loss. Regarding the change in sales leading up to the loss, we find that firms with large increases or decreases in sales exhibit similar behavior when later faced with a loss, in that they convert cash, inventory, and accounts receivable into short-term investments. Firms with relatively stable sales are more likely to respond to the loss by liquidating current assets, including short-term investments. Therefore, it seems that volatile sales lead to liquidity concerns for firms facing a loss, while firms with stable sales are less cautious in maintaining liquidity.

As a final robustness check, we examine the implications of extraordinary items in causing the firm's loss in year $t$. However, we find little variation in the firm's subsequent reaction to the loss when it is caused by extraordinary items.

## 5. Conclusions

Many financial theories implicitly assume that a firm has positive cash flow. However, it has been documented that firms often implement changes in capital structure, dividend policy, and working capital management at exactly those times when cash flow is negative and derived measures such as "financing deficits" are large (Byoun, 2008). Therefore, a sample of firms experiencing negative cash flow may allow clearer examination of financial decisions than the standard samples that have been purged of firms with negative cash flow. By including the liquidity mismatch that necessarily occurs in periods of negative cash flow, we incorporate the short-term liquidity considerations that arise at precisely the times when firms may be making long-term adjustments to corporate financial policy. Our analysis provides a unique opportunity to

examine the interaction of these influences on a wide range of corporate financial decisions, covering capital structure, working capital management, and dividend policy.

Because we limit ourselves to firms with negative cash flow, our sample firms can only maintain dividends through increased liabilities or sale of assets. We can therefore make relative judgments as to the importance managers attach to maintaining dividend levels when faced with the opportunity costs of other changes to the balance sheet. We can also derive a precise ordering that managers display when choosing which asset items to liquidate or which liabilities to turn to, before cutting dividend levels. We examine firms both in the year that they experience negative cash flow, as well as the year following, when many of them reverse their loss and return to positive cash flow. We can therefore examine which changes are temporary, and which ones represent more persistent changes to a firm's capital structure, dividend policy, and working capital management.

Our methods document several consistent trends that occur when a firm experiences a loss and that could have impacts on studies of corporate finance if not corrected for: dividend payout ratios become infinite, but only because the dividends rarely change, even when net income is zero or negative; leverage increases, but mainly because equity drops, not because of new issues of debt; and, the composition of current assets changes, due to the conversion of inventory and accounts receivable into short-term investments, even though cash balances and total current assets are relatively stable.

Our empirical analysis indicates that asset items do not all respond similarly in the event of a liquidity shock. Rather than changing the overall level of current assets or cash, it seems that firms are more likely to engage in a conversion of accounts receivable and inventory into short-term investments. Other than the necessary drop in taxes payable by firms with a loss, most of the management of the right-hand side of the balance sheet concerns the drop in equity. Increases in equity, as implied by the pecking order model, appear to be fairly rare, even for firms with a persistent loss. Firms are more likely to increase short-term liabilities, especially accounts payable, than long-term debt in the event of a liquidity shock.

Increases in liabilities used to finance a loss are more permanent than are cuts in assets. Most cuts in assets used to finance a loss are reversed in year $t+1$, while most increases in liabilities are not. Firms also resist cuts to dividends when experiencing a loss. In fact, dividends are more stable to firms with a loss than for a matched sample of firms not experiencing a loss. This is consistent with an increase in asymmetric information during a period of negative CF making it undesirable for a firm to make any changes in dividend levels while experiencing a loss.

Our paper adds to the corporate finance literature on the models of optimal cash holdings. These models suggest that faced with a loss, firms temporarily use their cash balances in order to avoid using costly external financing. However, in our sample, the cash balances of loss firms are relatively stable. Our paper also adds to the simple cash flow arguments that managers tend to overinvest when they get a chance (Jensen, 1986) and that dividends are an ineffective constraint when it comes to this behavior. However, in our sample, loss firms rarely change dividends. Our findings that increases in liabilities used to finance a loss are more permanent than cuts in assets supports the arguments in studies such as DeAngelo and DeAngelo (2007) that optimal financial policies maintain debt capacity that can act as a buffer for shocks to cash flows that occur when firms are experiencing a loss.

Overall, our analysis indicates that a firm's response to a loss is dynamic, complex, and easily misunderstood if given only a cursory glance. The realignment of individual items within current assets and current liabilities appears to be more relevant for firms than overall changes in these broad categories of accounting items. Furthermore, adjustments to the asset side of the balance sheet are just as important as changes to the liabilities side; a fact easily overlooked when our view is restricted to models such as the pecking order. Together with our other results, these observations provide a broad analysis of how a firm finances a loss, thereby illustrating several aspects of corporate financial decision making that could benefit from refocused attention.

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**Notes**

Note 1. We define a net loss as both negative net income and negative net cash flow to ensure that the loss is not just a "paper" loss.

Note 2. Companies may use a variety of tactics to adjust current assets. After sustaining losses in 2008 and 2009, BMW cut its inventory in an effort to reduce its working capital (Rauwald, 2009).

Note 3.Gan (2007) finds that debt capacity falls when collateral value decreases. To the extent that collateral value is related to an asset's ability to generate income, a firm with a net loss likely has reduced debt capacity.

Note 4. Financial theorists may need to revisit this argument given the number of "bailouts" that occurred in 2008 and 2009.

Note 5. There is empirical support in large firms for Diamond's (1991) predictions (e.g. Barclay and Smith, 1995; Johnson, 2003; Faulkender and Petersen, 2006).

Note 6. Our $chi^2$ statistic has 1 degree of freedom because we use two cells, corresponding to the proportion of firms increasing and not increasing, or decreasing and not decreasing, each item. An alternative is to use a three-cell format with cells for increasing, decreasing, and not changing. We choose the two cell approach because it is more conservative, with less chance for a type I error, at the cost of slightly less power for our tests. Repeating the analysis with three-cell tests does not greatly change our results.

Note 7. Because our sample includes a large number of firms that pay no dividends, we repeat all dividend analysis (results not reported for brevity) for those firms that actually pay dividends in year t-1. This leads to similar results as reported for the overall sample, but with greater significance.

Note 8. Our measure of dividends is usually the proportion of firms increasing or decreasing the dollar level of dividends. It is not the proportion of firms changing the dividend yield. This is consistent with the rest of our analysis, and it would be problematic to look at changes in the dividend yield because there are large changes in the stock price over the sample period, which would dominate any calculation of dividend yields, as well as changes in dividend yields. Where feasible, we have attempted to examine changes in dividend yields, and we generally find that they lead to similar conclusions as we have presented. However, due to the difficult presentation and interpretation of dividend yields for this sample, we restrictour reported analysis to the dollar level of dividends.

Table 1. Sample Description: Firm Size and Cash Flow, by Year

| | Total Assets | | | Cash Flow | | | |
|---|---|---|---|---|---|---|---|
| | *t−1* | *t* | *t+1* | *t−1* | *t* | *t+1* | *N* |
| **1989** | | | | | | | |
| Loss | 140.24 | 104.16 | 82.32 | 6.4 | −3.3 | −1.64 | 218 |
| Matched | 55.08 | 63.03 | 83.44 | 5.8 | 6.38 | 4.5 | |
| **1990** | | | | | | | |
| Loss | 156.02 | 168.31 | 154.17 | 10.82 | −7.64 | −0.2 | 208 |
| Matched | 172.69 | 187.9 | 197.16 | 20.99 | 23.99 | 21.42 | |
| **1991** | | | | | | | |
| Loss | 171.1 | 147.21 | 132.32 | 9.08 | −4.33 | 1.88 | 188 |
| Matched | 73.59 | 80.48 | 88.86 | 8.99 | 9.26 | 8.87 | |
| **1992** | | | | | | | |
| Loss | 66.55 | 59.29 | 58.96 | 5.07 | −3.22 | 0.27 | 183 |
| Matched | 81.5 | 96.45 | 108.53 | 7.62 | 10.19 | 11.25 | |
| **1993** | | | | | | | |
| Loss | 86.2 | 85.87 | 84.3 | 6.08 | −4.22 | 2.58 | 195 |
| Matched | 136.24 | 152.74 | 178.52 | 17.68 | 18.87 | 21.08 | |
| **1994** | | | | | | | |
| Loss | 86.27 | 90.62 | 86.05 | 5.11 | −4.95 | 0.36 | 193 |
| Matched | 107.14 | 119.19 | 143.02 | 8.26 | 12 | 13.36 | |
| **1995** | | | | | | | |
| Loss | 157.01 | 150.65 | 143.87 | 11.08 | −6.87 | 0.75 | 219 |
| Matched | 184.34 | 204.19 | 297.78 | 22.22 | 25.12 | 27.08 | |
| **1996** | | | | | | | |
| Loss | 103.46 | 107.87 | 110.33 | 10.33 | −8.7 | −4.57 | 225 |
| Matched | 104.47 | 118.24 | 143.66 | 16.02 | 17.4 | 19.07 | |
| **1997** | | | | | | | |
| Loss | 130.66 | 129.59 | 128.01 | 10.99 | −8.69 | −1.66 | 232 |
| Matched | 76.33 | 96.42 | 121.51 | 10.7 | 13.78 | 14.25 | |
| **1998** | | | | | | | |
| Loss | 138.32 | 145.16 | 138.38 | 13.03 | −10.7 | −2.65 | 254 |
| Matched | 106.97 | 132.69 | 168.44 | 15.84 | 18.37 | 18.85 | |
| **1999** | | | | | | | |
| Loss | 204.1 | 244.35 | 294.34 | 16.12 | −10.02 | 3.5 | 190 |
| Matched | 188.89 | 214.65 | 236.51 | 23.65 | 25.37 | 26.7 | |
| **2000** | | | | | | | |
| Loss | 291.45 | 277.12 | 248.02 | 16.79 | −20.02 | −7.14 | 190 |
| Matched | 241.41 | 284.92 | 302.97 | 34.59 | 36.84 | 33.13 | |
| **2001** | | | | | | | |
| Loss | 391.15 | 371.94 | 334.18 | 33.83 | −19.73 | −7.06 | 224 |
| Matched | 333.02 | 369.59 | 386.89 | 45.77 | 45.24 | 38.67 | |
| **2002** | | | | | | | |
| Loss | 208.32 | 200.23 | 215.96 | 17.65 | −8.79 | 10.14 | 98 |
| Matched | 210.13 | 298.14 | 347.14 | 23.58 | 26.26 | 37.82 | |
| **Full Sample** | | | | | | | |
| Loss | 165.64 | 162.28 | 155.97 | 12.3 | −8.76 | −0.95 | 2803 |
| Matched | 149.64 | 173.49 | 200.6 | 19.32 | 21.21 | 21.28 | |

This table presents average total assets and cash flow (in $millions) for the loss sample of 2,803 observations that had positive CF in year *t −1* and negative CF in year *t*. For comparison, a matched sample of firms with positive CF in years *t −1* and *t* are also presented.

Table 2. Panel A: Changes from year *t −1* to year *t*

| *Cash flow items* | | Loss Sample | | Matched Sample | |
|---|---|---|---|---|---|
| | | Average | Median | Average | Median |
| | CF | −253.88%** | −179.75%** | 29.76% | 17.30% |
| | Dividends | −0.71%** | 0.00%** | 0.41% | 0.00% |
| | Net Investments | −108.27%** | −31.40%** | −6.61% | −3.48% |
| *Assets* | | | | | |
| | Cash | −14.09%** | −8.54%** | 33.87% | 6.49% |
| | Accounts Receivable | −14.24%** | −15.06%** | 44.68% | 17.04% |
| | Inventory | −13.82%** | 0.00%** | 30.41% | 4.80% |
| | Other Current Assets | 8.72% | 0.63%** | 7.96% | 3.04% |
| | ST Investments | −8.31%** | 0.00%** | 10.42% | 0.00% |
| | Current Assets | −33.83%** | −76.75%** | 143.29% | 64.19% |
| | Fixed Assets | 70.85%** | 5.89%** | 69.87% | 27.03% |
| | Total Assets | 59.83% | −67.98%** | 223.40% | 109.97% |
| *Liabilities* | | | | | |
| | ST Debt | 49.68%** | 0.91%** | 4.84% | 0.00% |
| | Accounts Payable | 20.43%* | 3.42%** | 15.86% | 4.95% |
| | Taxes Payable | −3.24%** | 0.00% | 1.48% | 0.00% |
| | Other Current Liab. | 31.64%** | 9.59%** | 14.27% | 5.78% |
| | Total Current Liabilities | 109.28%** | 37.60%** | 38.81% | 17.39% |
| | LT Debt | 23.19%** | 0.00% | 12.54% | 0.00% |
| | Other Liabilities | 3.24% | 0.00% | 3.52% | 0.00% |
| | SH Equity | −115.56%** | −122.59%** | 159.76% | 72.12% |

This table presents average and median changes (in $millions) from year *t −1* to year *t,* as a percentage of cash flow in year *t−1*. The loss sample of 2,803 observations had positive CF in year *t −1* and negative CF in year *t*. For comparison, a matched sample of firms with positive CF in both years*t −1* and *t* is also presented. Data are winsorized at the 5% level. Statistics are reported for CF, Dividends, Net Investments, and Balance Sheet items. ** indicates significance at the 99% level and * at the 95% level in a t-test for differences in means (loss sample compared to matched sample*)* and a z-test for differences in location relative to the median.


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Table 2. Panel B: Changes from year *t −1* to year *t*

| *Cash Flow Items* | | Future Recovering Firms | | Future Persistent-Loss Firms | |
|---|---|---|---|---|---|
| | | Average | Median | Average | Median |
| | CF | −212.71%** | −155.22%** | −282.14% | −205.00% |
| | Dividends | −0.75% | 0.00% | −0.69% | 0.00% |
| | Net Investments | −118.20%* | −39.40%* | −101.46% | −25.20% |
| *Assets* | | | | | |
| | Cash | −14.77% | −7.24% | −13.62% | −10.07% |
| | Accounts Receivable | −11.98% | −13.59% | −15.80% | −16.60% |
| | Inventory | −22.39%** | −1.13%** | −7.94% | 0.00% |
| | Other Current Assets | 9.60% | 1.58%* | 8.12% | 0.11% |
| | ST Investments | −6.90% | 0.00% | −9.28% | 0.00% |
| | Current Assets | −44.50% | −63.81%** | −26.51% | −87.64% |
| | Fixed Assets | 50.19%** | 1.37%* | 85.04% | 10.01% |
| | Total Assets | 25.44%* | −58.34%* | 83.45% | −76.72% |
| *Liabilities* | | | | | |
| | ST Debt | 46.57% | 2.02%* | 51.82% | 0.31% |
| | Accounts Payable | 14.01%** | 1.75% | 24.84% | 4.66% |
| | Taxes Payable | −3.15% | 0.00% | −3.30% | 0.00% |
| | Other Current Liab. | 34.04% | 11.57% | 29.99% | 7.80% |
| | Total Current Liabilities | 105.07% | 38.61% | 112.17% | 37.25% |
| | LT Debt | 20.81% | 0.00% | 24.82% | 0.00% |
| | Other Liabilities | 3.96% | 0.00% | 2.75% | 0.00% |
| | SH Equity | −133.55%* | −115.62%* | −103.21% | −128.27% |

This table presents average and median changes (in $millions) from year *t −1* to year *t,* as a percentage of cash flow in year *t−1*. The loss sample of 2,803 observations had positive CF in year *t −1* and negative CF in year *t*. The sample is then split according to if the firms will have positive (recovering) or negative (persistent-loss) CF in year *t+1*. Data are winsorized at the 5% level. Statistics are reported for CF, Dividends, Net Investments, and Balance Sheet items. ** indicates significance at the 99% level and * at the 95% level in a t-test for differences in means between subsamplesand a z-test for differences in location relative to the median.

Table 3. Panel A: Changes from year *t* to year *t+1*

| *Cash Flow Item* | | Loss Sample | | Matched Sample | |
|---|---|---|---|---|---|
| | | Average | Median | Average | Median |
| | CF | 36.88%** | 52.60%** | −18.78% | −0.38% |
| | Dividends | −0.75%** | 0.00%** | −0.09% | 0.00% |
| | Net Investments | −150.30%** | −44.53%** | −32.80% | −11.56% |
| *Assets* | | | | | |
| | Cash | −8.29%** | −1.53%** | 19.00% | 1.03% |
| | Accounts Receivable | −5.64%** | −8.82%** | 44.17% | 14.00% |
| | Inventory | −24.48%** | −0.76%** | 30.50% | 2.00% |
| | Other Current Assets | −3.46%** | −0.82%** | 9.73% | 3.31% |
| | ST Investments | −2.74%** | 0.00% | 8.19% | 0.00% |
| | Current Assets | −57.89%** | −48.68%** | 121.64% | 50.72% |
| | Fixed Assets | 16.37%** | −17.07%** | 103.78% | 26.92% |
| | Total Assets | −52.79%** | −66.65%** | 85.71% | 92.92% |
| *Liabilities* | | | | | |
| | ST Debt | 0.48%** | 0.00%** | 13.81% | 0.00% |
| | Accounts Payable | 3.29%** | −0.51%** | 6.84% | 4.88% |
| | Taxes Payable | 1.74% | 0.00% | 2.26% | 0.00% |
| | Other Current Liab. | 18.69% | 0.00%** | 26.21% | 6.85% |
| | Total Current Liabilities | 9.48%** | 0.00%** | 50.74% | 20.53% |
| | LT Debt | 8.99%** | 0.00%* | 6.12% | 0.00% |
| | Other Liabilities | 12.29% | 0.00% | 9.72% | 0.00% |
| | SH Equity | 471.49% | −45.66%** | 269.33% | 57.20% |

This table presents average and median changes (in $millions) from year *t* to year *t+1,* as a percentage of cash flow in year *t−1*, for the loss sample of 2,803 observations that had positive CF in year *t −1* and negative CF in year *t*. For comparison, a matched sample of firms with positive CF in years*t −1* and *t* are also presented. Data are winsorized at the 5% level. Statistics are reported for CF, Dividends, Net Investments, and Balance Sheet items. ** indicates significance at the 99% level and * at the 95% level in a t-test for differences in meansand a z-test for differences in location relative to the median.


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Table 3. Panel B: Changes from year *t* to year *t+1*

| *Cash Flow Items* | | Recovering Firms | | Persistent-Loss Firms | |
|---|---|---|---|---|---|
| | | Average | Median | Average | Median |
| | CF | 215.96%** | 160.57%** | −86.07% | −34.48% |
| | Dividends | −0.75% | 0.00%** | −0.76% | 0.00% |
| | Net Investments | −155.83% | −39.04%** | −146.51% | −47.96% |
| *Assets* | | | | | |
| | Cash | 18.23%** | 3.11%** | −26.49% | −7.26% |
| | Accounts Receivable | 31.58%** | 7.00%** | −31.20% | −23.18% |
| | Inventory | 1.28%** | 0.00%** | −42.15% | −6.61% |
| | Other Current Assets | 0.01%** | 0.00%** | −5.85% | −2.08% |
| | ST Investments | 2.67%** | 0.00%** | −6.45% | 0.00% |
| | Current Assets | 67.54%** | 21.85%** | −144.00% | −99.66% |
| | Fixed Assets | 33.51%** | −7.69%** | 4.61% | −24.76% |
| | Total Assets | 31.30%** | 13.47%** | −110.52% | −137.91% |
| *Liabilities* | | | | | |
| | ST Debt | −8.41%** | 0.00%** | 6.59% | 0.00% |
| | Accounts Payable | 3.38% | −0.32% | 3.23% | −0.68% |
| | Taxes Payable | 2.70%* | 0.00%** | 1.09% | 0.00% |
| | Other Current Liab. | 12.57% | 0.00% | 22.89% | 0.05% |
| | Total Current Liabilities | 2.04% | −7.79%* | 14.59% | 3.07% |
| | LT Debt | 8.37% | 0.00% | 9.41% | 0.00% |
| | Other Liabilities | 9.71% | 0.00% | 14.07% | 0.00% |
| | SH Equity | 746.88% | 36.25%** | 282.43% | −133.50% |

This table presents average and median changes (in $millions) from year *t* to year *t+1,* as a percentage of cash flow in year *t−1* for the loss sample of 2,803 observations that had positive CF in year *t −1* and negative CF in year *t*. The sample is then split according to if the firms had positive (recovering) or negative (persistent-loss) CF in year *t+1*. Data are winsorized at the 5% level. Statistics are reported for CF, Dividends, Net Investments, and Balance Sheet items. ** indicates significance at the 99% level and * at the 95% level in a t-test for differences in meansand a z-test for differences in location relative to the median.

Table 4. Probit Analysis of Firms with a Loss

| | Model 1: Change from *t−1* to *t* | | Model 2: Change from *t* to *t+1* | |
|---|---|---|---|---|
| | Coefficient | $Chi^2$ | Coefficient | $Chi^2$ |
| Intercept | −0.28** | 134.84 | −0.09** | 17.80 |
| Dividends | −11.93** | 137.54 | −7.40** | 79.82 |
| Net Investments | −0.20** | 216.19 | −0.15** | 232.49 |
| Cash | 0.02 | 1.04 | −0.13** | 75.59 |
| Acc. Rec. | −0.36** | 212.37 | −0.09** | 24.91 |
| Inventory | −0.38** | 133.14 | −0.34** | 195.37 |
| Other CA | 0.20* | 5.31 | −0.57** | 81.75 |
| ST Investments | −0.16** | 13.64 | −0.22** | 43.14 |
| Fixed Assets | 0.13** | 57.96 | −0.08** | 61.82 |
| Notes Pay. | 0.27** | 102.18 | 0.05* | 4.86 |
| Acc. Pay. | 0.39** | 95.63 | 0.23 | 3.49 |
| Tax.Pay. | −3.45** | 163.42 | 0.38** | 14.00 |
| Other CL | 0.52** | 144.64 | 0.11** | 43.16 |
| LT Debt | 0.06** | 8.05 | 0.43** | 101.61 |
| Other Liab. | −0.20* | 4.28 | 0.06** | 13.82 |
| SH Equity | −0.15** | 129.52 | 0.03** | 22.15 |

This table presents coefficient estimates and $Chi^2$ test statistics for a model explaining the balance sheet characteristics most likely to be associated with a firm experiencing a loss. The dependent variable takes a value of 1 if firm *j* experienced a loss and a value of 0 if firm *j* is from the matched sample. The independent variables include the balance sheet items plus dividends and net investments. In model 1 the independent variables are the change in each balance sheet item from period *t−1* to *t*, as a percentage of cash flow in *t−1*. In model 2 the independent variables are the change in each balance sheet item from *t* to *t+1*, as a percentage of cash flow in *t−1*. ** indicates significance at the 99% level and * at the 95% level.

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Table 5. Probit Analysis of losses, by subsequent performance

| | Model 1: Recovering Firms in *t+1* | | Model 2: Persistent Loss in *t+1* | |
|---|---|---|---|---|
| | Coefficient | $Chi^2$ | Coefficient | $Chi^2$ |
| Intercept | −0.77** | 475.50 | 0.53** | 158.22 |
| Dividends | −12.91** | 84.16 | −10.14** | 26.75 |
| Net Investments | −0.24** | 138.89 | −0.16** | 55.76 |
| Cash | −0.08* | 5.13 | 0.06* | 3.97 |
| Acc. Rec. | −0.43** | 98.52 | −0.28** | 56.66 |
| Inventory | −0.57** | 113.78 | −0.30** | 33.30 |
| Other CA | 0.47** | 11.98 | −0.03 | 0.06 |
| ST Investments | −0.26** | 12.88 | −0.14* | 4.23 |
| Fixed Assets | 0.10** | 8.00 | 0.13** | 25.18 |
| Notes Pay. | 0.36** | 63.50 | 0.18** | 20.08 |
| Acc. Pay. | 0.39** | 36.44 | 0.36** | 34.64 |
| Tax.Pay. | −3.17** | 69.05 | −2.50** | 26.07 |
| Other CL | 0.89** | 140.97 | 0.35** | 28.29 |
| LT Debt | 0.11** | 7.89 | 0.05 | 1.87 |
| Other Liab. | 0.21 | 2.11 | −0.27 | 2.71 |
| SH Equity | −0.26** | 108.48 | −0.11** | 34.66 |

This table presents coefficient estimates and $Chi^2$ test statistics for a model explaining the balance sheet characteristics most likely to be associated with a firm experiencing a loss. Firms are classified by whether their loss persists in year t+1 or if they recover to positive CF. The dependent variable takes a value of 1 if firm *j* experienced a loss in year *t* and a value of 0 if firm *j* is from the matched sample. The independent variables include the balance sheet items plus dividends and net investments. The independent variables are the change in each balance sheet item from period *t−1* to *t*, as a percentage of cash flow in *t−1*. ** indicates significance at the 99% level and * at the 95% level.

Table 6. Non-Balance Sheet Items

| | Year *t−1* | | Year *t* | |
|---|---|---|---|---|
| | Loss Sample | Matched Sample | Loss Sample | Matched Sample |
| CF | 100.00% | 100.00% | −244.76%** | 148.54% |
| Sales | 17342.36%** | 1474.03% | 3923.64% | 1791.70% |
| COGS | 12694.62%** | 990.44% | 3219.81% | 1181.07% |
| Tax Expense | 292.23%** | 26.53% | −27.60%** | 38.12% |
| Interest Expense | 401.04%** | 20.92% | 111.66%** | 23.65% |
| Income before Ex. Items | 655.91%** | 65.97% | −423.93%** | 95.20% |
| Dep. and Amortization | 569.66%** | 38.00% | 109.34%** | 47.39% |
| Ex. Items and Disc. Op. | 52.84% | 1.44% | −12.51%** | 1.79% |
| Deferred Taxes | 11.99% | −1.28% | −12.43%** | 0.31% |
| Equity in Net Loss-Earnings | −6.96% | −1.95% | 1.77% | −2.22% |
| Other Funds from Op. | 46.35% | 7.71% | 92.12%** | 11.34% |
| Gain from Sale of PPE | −99.53%* | −9.88% | 0.77% | −5.28% |
| Dividends | 118.24%** | 7.43% | 6.75% | 13.76% |
| Net Investments | 791.85%** | 54.39% | 184.92%** | 95.04% |
| Capital Expenditures | 900.20%** | 64.16% | 147.55%** | 83.93% |
| Increase in Investments | 1490.33%** | 23.35% | 107.45%** | 38.10% |
| Acquisitions | 429.20%* | 19.29% | 81.80%* | 26.93% |
| Sale of PPE | 84.43%** | 5.70% | 21.84%** | 3.56% |
| Sale of Investments | 1318.06%** | 29.92% | 89.46%** | 26.13% |
| Current Portion of LT Debt | 3466.42%** | 148.10% | 594.17%** | 176.52% |
| Net Debt Issued | 397.91%** | 12.98% | 121.96%** | 3.28% |
| LT Debt Issued | 1958.24%** | 97.67% | 406.63%** | 123.85% |
| LT Debt Reduction | 1546.18%** | 81.53% | 282.49%* | 119.80% |
| Net Equity Issued | 493.47%** | 57.83% | 320.99%** | 92.94% |
| Sale of Common Stock | 765.24%** | 73.05% | 349.69%** | 137.53% |
| Stock Repurchases | 127.64%** | 11.38% | 17.90% | 13.53% |
| Z-score | 6.01 | 4.92 | 2.50 | 5.82 |
| Debt Ratio | 13.65% | 14.20% | 15.75%** | 11.14% |

This table gives the average levels (as a percent of *t−1* CF, except for z-score and debt ratio) of non-balance sheet items. A t-test is used to see if the loss sample average is equal to the matched sample average. ** indicates significance at the 99% level and * at the 95% level.


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Table 7. Identifying temporary sources of financing

| | Loss Sample | Matched Sample | Recovering Firms | Persistent-Loss |
|---|---|---|---|---|
| Cash | 51.46% | 60.18% | 59.56%†† | 45.81% |
| Acc. Rec. | 41.34%** | 61.03% | 55.88%†† | 31.43% |
| Inventory | 34.17%** | 64.06% | 45.92%†† | 24.66% |
| Other CA | 47.80%* | 63.68% | 57.57%†† | 41.40% |
| ST Investments | 29.92% | 37.31% | 35.42%† | 26.30% |
| Curr. Assets | 37.67%** | 61.61% | 56.63%†† | 24.25% |
| Fixed Assets | 29.30%** | 58.52% | 33.98%†† | 25.74% |
| | | | | |
| ST Debt | 57.85% | 47.64% | 61.88%†† | 54.84% |
| Acc. Pay. | 55.67% | 42.30% | 56.18% | 55.33% |
| Tax. Pay. | 59.62% | 61.67% | 55.22% | 64.29% |
| Other CL | 53.32%* | 35.81% | 54.23% | 52.67% |
| Curr. Liab. | 53.43%* | 35.78% | 57.24%†† | 50.71% |
| LT Debt | 62.15% | 54.43% | 62.27% | 62.06% |
| Equity | 59.34%** | 23.30% | 23.49%†† | 75.38% |
| | | | | |
| Dividends | 7.57%** | 24.22% | 13.19%†† | 2.89% |
| Net Investments | 25.30%** | 34.19% | 27.47% | 23.66% |

This table identifies temporary sources of financing by presenting the proportion of firms that used each item as a source of financing in year $t$ and then reversed that action in year $t+1$. Percentages are given for the loss sample of 2,803 observations that had positive CF in year $t$ and negative CF in year $t-1$. The sample is then split according to if the firms had positive (recovering) or negative (persistent-loss) CF in year $t+1$. For comparison, a matched sample of firms with positive CF in years $t-1$ and $t$ are also presented. Statistics are reported for CF, Dividends, Net Investments, and Balance Sheet items. In the full sample column, a chi squared test is used to test if the actual proportion (loss sample) of firms increasing or decreasing is equal to the expected (matched sample) proportion, where ** indicates significance at the 99% level and * at the 95% level. In the "Recovering" column, a t-test is used to test if the mean proportion of recovering and persistent-loss firms is equal, where †† indicates significance at the 99% level and † at the 95% level.

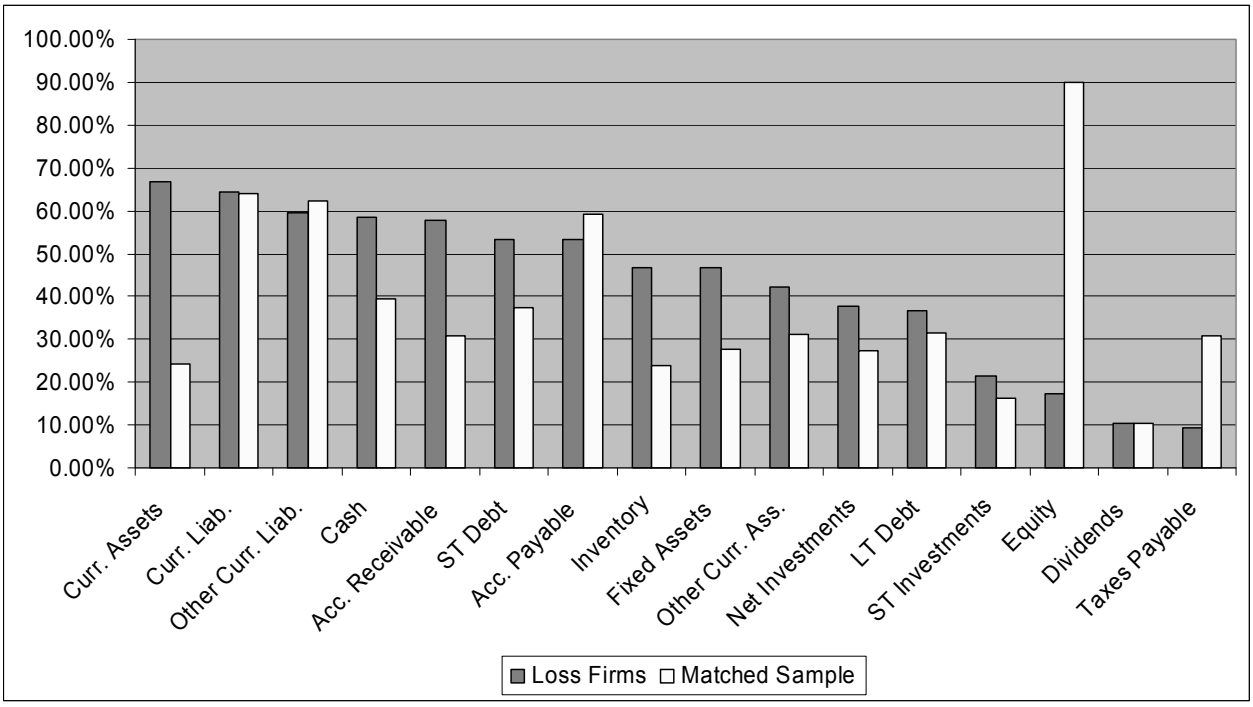


Figure 1. Sources of Financing in year *t*

This figure presents the proportion of firms that used each item as a source of financing in year *t* for the loss sample of 2,803 observations that had positive CF in year *t* and negative CF in year *t −1*. For comparison, a matched sample of firms with positive CF in both years*t −1* and *t* is also presented. Sources of financing are decreases in dividends, net investments, or assets, or increases in liabilities or equity. Percentages are reported for Dividends, Net Investments, and Balance Sheet items.

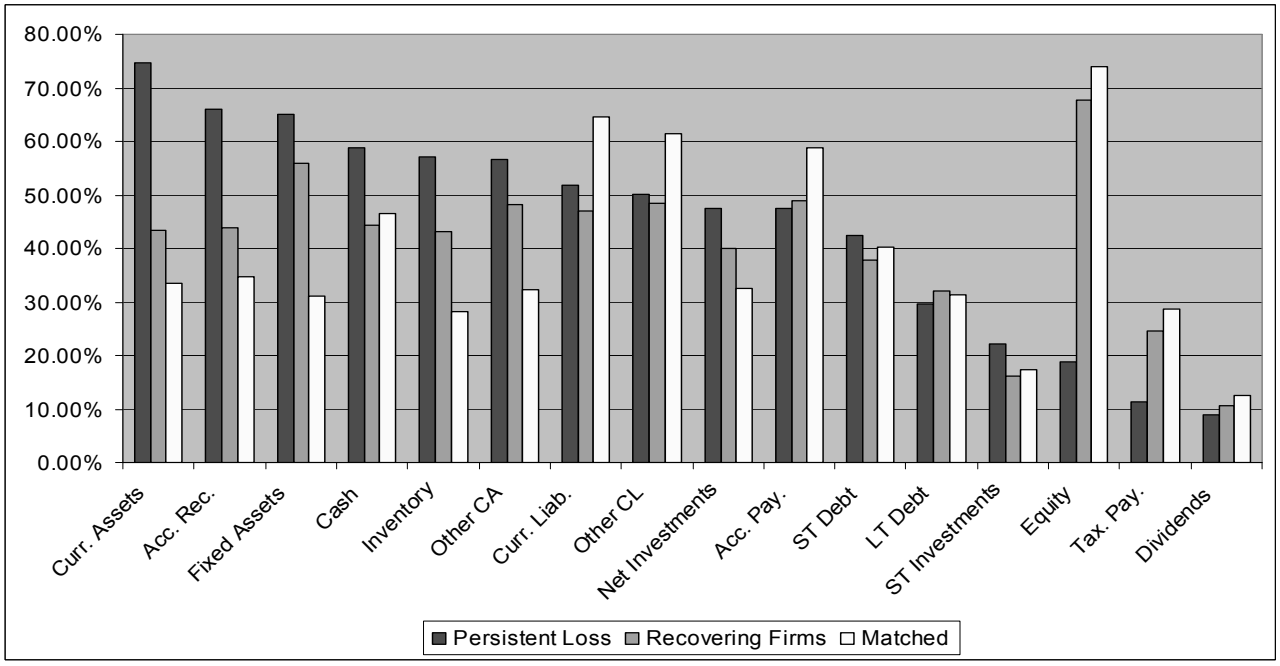


Figure 2. Sources of Financing in year *t+1*

This figure presents the proportion of firms that used each item as a source of financing in year *t+1* for sample firms that had negative CF in year t=0. Sources of financing are decreases in dividends, net investments, or assets, or increases in liabilities or equity. The sample is then split according to if the firms had positive (recovering) or negative (persistent-loss) CF in year *t+1*. For comparison, we present the sources of financing for a matched sample of firms in year *t+1* that had positive CF in year t=0.

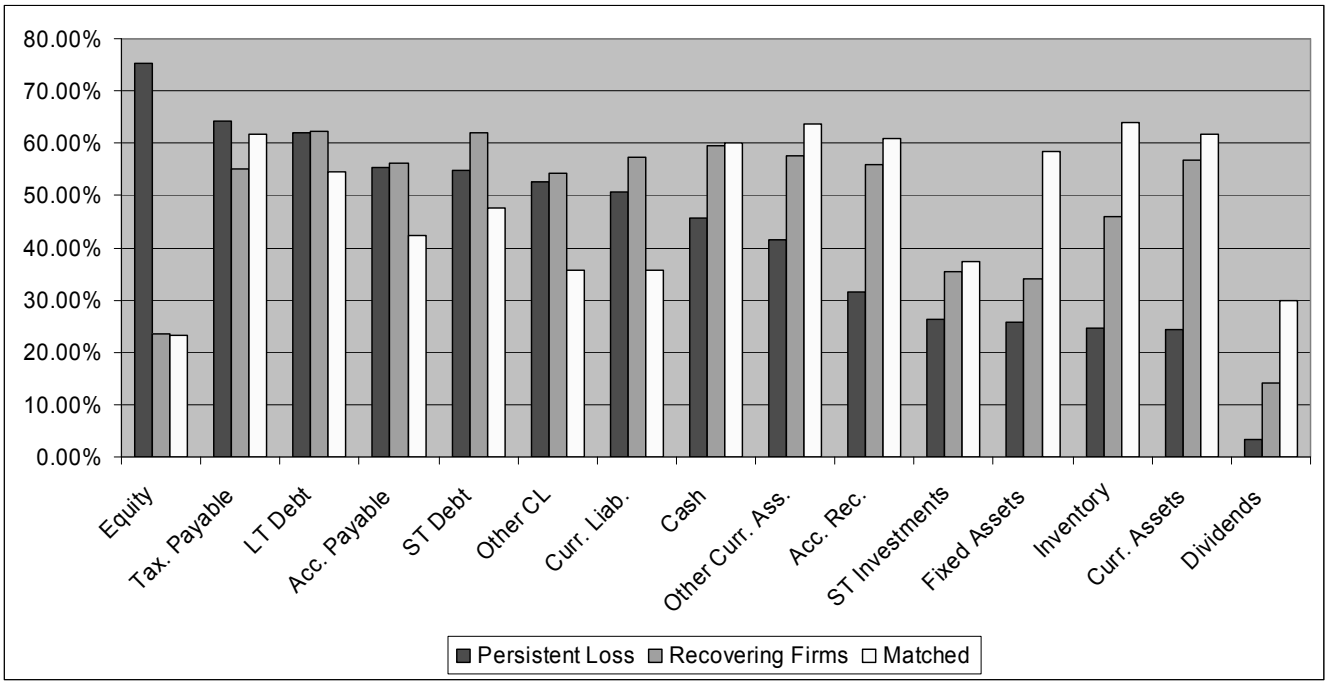


Figure 3. Sources of Financing That Are Reversed in year *t+1*

This figure presents the sources of financing that are reversed in year *t+1* for firms that used each item as a source of financing in year *t=0*. Sources of financing are decreases in dividends, net investments, or assets, or increases in liabilities or equity. The sample is split according to if the firms recover or if their loss persists in year *t+1*. For comparison, we present the matched sample of firms as well.