Wealth Transfers via Equity Transactions

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Abstract

Previous research indicates that firms issue (repurchase) shares when their stock is overpriced (underpriced). Such transactions transfer wealth from transacting stockholders to ongoing stockholders. We quantify the magnitude of these wealth transfers and analyze their implications. The wealth transfers are economically significant, averaging approximately 6% of pre-transaction market capitalization for equity issuers. They are particularly large for equity issuers with *ex ante* indications of overpricing, where they average 14% of pre-transaction market capitalization. We analyze the implications of these wealth transfers for equity valuation, corporate financial policy and value-oriented investment strategies.

Abstract

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1. Introduction

Traditional approaches to equity valuation focus on the valuation of a firm's investment opportunities, but ignore the opportunity for firms to transact in their own mispriced equity. For example, the standard textbook approach to equity valuation discounts the free cash flow from the firm's investment opportunities, subtracts the value of the firm's debt and divides by shares outstanding to arrive at equity value per share. Yet this approach to equity valuation ignores value deriving from the ability of a firm to transact in its own mispriced equity securities. A growing body of academic evidence suggests that equity securities can be mispriced and that firms systematically transact in their own equity in order to exploit this mispricing. For example, firms with overpriced equity more frequently issue new shares.[1] The popular business press is also replete with stories in which firms with weak investment opportunities are claimed to have sustained unjustifiably high stock valuations through strategic transactions in their own equity.[2]

In this paper, we provide the first evidence on the magnitude of the value created for existing stockholders through firms' strategic transactions in their own mispriced securities. We first introduce an approach for estimating the value of these wealth transfers. Using this approach, we quantify the magnitude of such wealth transfers for U.S. equities over the past 40 years. We also identify categories of securities where these wealth transfers are particularly large. Finally, we analyze the implications of these wealth transfers for equity valuation, corporate financial policy and value-oriented investment strategies.

Our findings indicate that wealth transfers via equity transactions are both economically and statistically significant. In U.S. equities markets, they aggregate over $2.2 trillion over the past 40 years. Averaging across all firm-years, the wealth transfers amount to almost 2% of pre-transaction market capitalization. For equity issuers, the

[1] Ritter (2003) provides a review of the early literature. Subsequent extensions include Daniel and Titman (2006), Bradshaw, Richardson and Sloan (2006) and Pontiff and Woodgate (2008).

[2] The most infamous of these stories is AOL's acquisition of Time-Warner in an all-stock deal at the height of the Internet 'bubble'. More recently, Einhorn (2010) emphasizes the role of ongoing equity issues in sustaining the stock price of Allied Capital from 2002 to 2009.

average is around 6%, while for equity repurchasers, it is around 1%. We also find that wealth transfers are particularly large for equity issuers with *ex ante* indicators of overpricing. For example, equity issuers in the lowest quintile of earnings-to-price ratio experience wealth transfers exceeding 14% of market capitalization.

We also report findings that have significant implications for value investors who identify mispriced securities using traditional approaches to equity valuation. First, overpriced firms issue significantly more equity than other firms. This result is particularly pronounced for firms that appear to be overpriced based on comparable earnings-to-price ratios. Second, the equity issuances significantly reduce the returns earned by the strategies. The reductions are primarily attributable to equity issuances by overpriced stocks in the short legs of the strategies. Interestingly, we find that the historically lower hedge portfolio returns to the earnings-to-price strategy relative to the book-to-market strategy are largely explained by wealth transfers associated with equity issuances in low earnings-to-price firms.

Finally, we investigate potential sources of the mispricing that facilitates wealth transfers via equity transactions. Using sell-side analysts' earnings forecasts to measure investors' expectations of future earnings, we find that investors' expectations about both short-term earnings and long-term earnings growth are systematically overoptimistic for firms that are issuing new equity. Thus, the mispricing appears to be attributable to biased forecasts of future earnings.

Our findings have implications for several interrelated areas of finance. For equity valuation, our findings suggest that the value of a share of stock is a function of both the expected value of the underlying firm's investment opportunities and the expected value of wealth transfers via equity transactions. For corporate financial policy, our findings suggest that significant value can be created for ongoing stockholders through strategic transactions in the firm's common equity. Finally, for investment management, our findings indicate that the returns to value-oriented investment strategies are significantly curtailed through firms' strategic transactions in their own equity.

The remainder of our paper is organized as follows. Section 2 motivates our research and describes our approach to quantifying wealth transfers via equity transactions. Section 3 describes data and variable measurement. Section 4 presents our results and section 5 concludes.

2. Motivation and Research Design

2.1 Motivation

Traditional approaches to equity valuation focus on the value of a firm's investment opportunities, but generally ignore the opportunity for a firm to create value for ongoing equity holders by transacting in its own mispriced equity. For example, the most common approach to equity valuation discounts the free cash flow that is expected to be generated by the firm's investment opportunities. The value of non-equity claims, such as debt, is deducted from this amount to arrive at the value of equity. The value of equity on a per share basis is then established by dividing by shares outstanding. What is potentially missing from this approach is the opportunity for a firm to create value for ongoing stockholders by strategically engaging in transactions in its own mispriced stock. A simple example illustrates this opportunity. Consider a firm with just $1 of cash, a single share of common stock and zero NPV investment opportunities. The traditional approach to equity valuation would value the share at $1. But now consider the possibility that the firm is able to convince other investors that it has positive NPV opportunities, such that the market price of its common stock, *P*, is greater than $1. In this case, the firm can create value for existing stockholders by issuing new shares of stock for *P*. If the firm is expected to issue *S* shares of common stock for *P*, then the value of the single share of common stock, *V*, becomes:

$$V = \frac{P \times S + 1}{S + 1}$$

In the case where the firm is correctly priced relative to its investment opportunities, P=\$1 and so V=\$1. But if P is greater than \$1, then V will also exceed \$1. For example, consider the case where P=\$10 and the firm is able to issue one additional share at this price, then V = \$5.50.

Note that we are considering the valuation from the perspective of an ongoing investor in the firm. The owner of the single share in the firm above could sell their share on the open market and realize \$10. But the value of the share to an ongoing stockholder is a function of both the value of the firm's investment opportunities and the value of expected wealth transfers through transactions in the firm's mispriced equity.

In the case where P<\$1, the firm is underpriced relative to the value of its investment opportunities and can create value for ongoing stockholders through stock repurchases. To illustrate the mechanics of stock repurchases, we modify the above example to consider a firm with \$2 of cash and two shares of common stock that are each held be different investors. In this case, V becomes:

$$V = \frac{P \times S + 2}{S + 2}$$

A stock repurchase implies that -2<S<0. For example, consider the case where P=\$0.50 and S=-1 and so V=\$1.5. Note that in this case, V represents the value of a share of stock to the ongoing stockholder and not the selling stockholder, who receives only \$0.50. By repurchasing a share on the open market, the firm has transferred \$0.50 from the selling stockholder to the ongoing stockholder.

The traditional approach to security valuation essentially assumes that equities markets are efficient, such that stock prices correspond to the values implied by firms' investment opportunities (i.e., P=1 in our examples). Under such conditions, there is no opportunity for firms to transfer wealth to ongoing stockholders through strategic transactions in their own equity. This approach can be traced back at least as far as the pioneering work of Miller and Modigliani (1958, 1961). Yet a considerable body of empirical body of more recent empirical evidence indicates that stocks are mispriced and

that firms time their financing transactions to exploit this mispricing. In particular, future stock returns tend to be unusually low following initial public offerings (Ritter, 1991) and seasoned equity offerings (Loughran and Ritter, 1997) and unusually high following stock repurchases (Ikenberry et al., 1995). In reviewing this research, Ritter (2003) concludes that investors are too systematically too optimistic about the prospects of issuing firms when issuances occur.

More recently, research by Daniel and Titman (2006), Bradshaw, Richardson and Sloan (2006) and Pontiff and Woodgate (2008) documents a broader 'issuance effect' whereby net equity issuance exhibits a strong cross-sectional ability to predict future stock returns. These studies conclude that managers issue (repurchase) equity when they perceive the cost of equity to be low (high). Bradshaw et al. also show that security analysts' earnings forecasts are systematically overoptimistic for issuing firms, concluding that firms engage in transaction in their own equity in order to exploit stock mispricing. Related, research by Baker and Wurgler (2000, 2002) conclude that firms' capital structures are the result of cumulative past attempts to time equity markets. Consistent with these conclusions, Graham and Harvey (2001) conduct a survey of CFOs and find that the most important reasons for deciding to issue common stock include "the magnitude of equity undervaluation/overvaluation" and "if recent stock price has increased/selling price is high".

Given the large body of evidence that firms time equity transactions to exploit the mispricing of their common stock, our purpose is to document the economic magnitude of the associated wealth transfers and analyze their implications. We document both the aggregate economic magnitude of the wealth transfers across U.S. equities markets and also the firm-level circumstances under which such transfers are particularly pronounced. We also analyze the implications of these wealth transfers for equity valuation, corporate financial policy and value-oriented investment strategies.

2.2 Quantifying Wealth Transfers via Equity Transactions

We can express the magnitude of the wealth transfers between ongoing stockholders and transacting stockholders arising from a firm's transactions in its own equity by building on the notation developed in the last section. Let:

I = the value of the firm's investment opportunities, $I>0$ (note that we assume the firm is all equity financed and we define investment opportunities to be exclusive of transactions in the firm's own common stock)

N = the number of shares of common equity before equity transactions, $N>0$

S = the number of shares issued/repurchased by the firm, $S>-N$

P = the price at which the shares are issued/repurchased, $P>0$

As a group, the **transacting stockholders** invest $P.S$ and end up with a fractional interest in the combined value of the new entity as shown below:

Pre-transaction value of investment = $P.S$

Post-transaction value of investment = $\frac{S}{S+N}(I + P.S)$

Thus, the amount of the wealth transfer from the perspective of the transacting stockholders, WT_T, is given by:

$$WT_T = P.S - \frac{S}{S+N}.(I + P.S) = \frac{-S}{S+N}.(P.N - I)$$

On the other hand, **ongoing stockholders** start with I and end up with a fractional interest in the combined value of the new entity as show below:

Pre-transaction value of investment = I

Post-transaction value of investment = $\frac{N}{S+N}(I + P.S)$

Thus, the amount of the wealth transfer from the perspective of the ongoing stockholders, WT_O, is given by:

$$WT_O = \frac{N}{S+N}(I + P.S) - I = \frac{S}{S+N}.(P.N - I)$$

These expressions illustrate the intuition behind the magnitude of the wealth transfers. First and most obviously, the wealth transfer from the transacting stockholders is of the same magnitude but opposite sign to the wealth transfer to the ongoing stockholders. Wealth is being transferred exclusively from the transacting stockholders to the ongoing stockholders, so the two must sum to zero. Given this fact, we will adopt the convention of measuring wealth transfers from the perspective of transacting stockholders, simply denoting them *WT*:

$$\boldsymbol{WT = \frac{-S}{S+N}.(P.N - I)}$$

Second, in the case of stock issues, where $S>0$, the wealth transfers to the ongoing stockholders will be positive as long as $P.N>I$. Note that $P.N$ is simply the pre-transaction market capitalization of the company. So wealth will be transferred to existing stockholders so long as the common stock is 'overpriced' in the sense that the market capitalization exceeds the value of the firm's investment opportunities. Further, the magnitude of the wealth transfer will be increasing in the magnitude of the overpricing, $(P.N-I)$, and the relative number of new shares issued, $\frac{S}{S+N}$. Thus, wealth transfers for ongoing stockholders are maximized by issuing large amounts of new stock when common equity is overpriced.

Third, in the case of stock repurchases, where $S<0$, the wealth transfers to the ongoing stockholders will be positive as long as $P.N<I$. So wealth will be transferred to existing stockholders so long as the common stock is underpriced. Further, the magnitude of the wealth transfer will be increasing in the magnitude of the underpricing, $(I-P.N)$, and the relative number of new shares repurchased, $\frac{-S}{S+N}$. Thus, wealth transfers

for ongoing stockholders are maximized by repurchasing large amounts of existing stock when common equity is underpriced.

In order to estimate the magnitude of the wealth transfers, the only key unknown that requires estimation is *I*, the value of the firm's investment opportunities prior to the equity transaction. We estimate this amount by assuming that the firm's market capitalization reverts to a level that reflects the value of underlying investment opportunities within T years of an equity transaction. Formally, we define R_T as the cumulative realized return over the T periods following the equity transaction and M_T as the 'normal' return for a similar security and assume that:

$$(P.N + P.S).(1+R_T) = (I + P.S).(1+M_T)$$

In other words, we assume that the realized cum-dividend market capitalization of the company after *T* periods reflects the sum of the intrinsic value of the company before the transaction and the amount of capital raised through the transaction, inclusive of a normal rate of return over the *T* periods. If we further define:

$$1+A_T = \frac{1+R_T}{1+M_T}$$

where A_T represents the cumulative abnormal return on the security over the *T* periods following the equity transaction, then this assumption can be expressed as:

$$I = (P.N + P.S).(1+A_T) - P.S$$

Thus, conditional on a model for estimating abnormal returns, we can now estimate *I* based on known quantities. Substituting the above expression for *I* into our expression for *WT* and simplifying gives:

$$\boldsymbol{WT = \frac{-S}{S+N}.(P.N - I) = P.S.A_T}$$

This expression has a straightforward and intuitive interpretation, as it is simply the initial amount invested by the transacting stockholders multiplied by the abnormal return that

these stockholders experience over the next *T* periods. For any individual firm, A_T is likely to reflect many idiosyncratic events, but averaged over large numbers of securities, it should be indicative of mispricing at the time of the equity transactions.

There are a number of reasons why our procedure for estimating *I* could cause us to under/overestimate wealth transfers via equity transactions. First, we assume that any mispricing at the time of the equity transactions will disappear 'on average' after *T* periods. However, it is possible that some securities could remain under/overpriced indefinitely. This would cause us to underestimate the magnitude of wealth transfers. Previous research has shown that abnormal returns following equity offerings tend to become insignificant after about 5 years. Thus, we use *T*=5 in our empirical analysis and we also conduct sensitivity analysis to make sure our results are robust with respect to this assumption. Second, we assume that there are no other equity transactions resulting in wealth transfers during the *T* period return measurement interval. If a firm is able to exploit over/underpricing of its common stock through multiple consecutive equity transactions, then our estimation method will underestimate the wealth transfers to the earlier transactions. We investigate the robustness of our results to this assumption in section 4.5 by excluding observations with subsequent equity transactions in the measurement interval. Third, we assume that the equity transactions do not change a firm's investment opportunity set. Another way of stating this assumption is that the equity transactions do not affect the future free cash flows at the firm level. Instead, they simply redistribute the cash flows between ongoing stockholders and transacting stockholders. A significant violation of this assumption likely arises when a firm issues stock to finance the acquisition of a target company at a significant premium to the target company's pre-acquisition market capitalization. To the extent that the firm overpays for the target, the amount of any wealth transfer resulting from the firm's use of its own overpriced stock is diluted. We investigate the robustness of our results to this assumption in section 4.5 by replicating our results for cash transactions.

3. Data and Variable Measurement

In this section, we describe the measurement of our key variables and related data sources. The first key variable is external financing (*EXF*), which represents the net dollar amount of common equity issued or repurchased by a firm. We measure *EXF* using the market capitalization and ex-dividend stock return data on the CRSP monthly returns file. Specifically, we estimate the dollar amount of external financing for fiscal year t as:

$$EXF_t = CAPT_t - CAPT_{t-1} * (1 + rx_t)$$

where $CAPT_t$ is the market value of common equity at the end of fiscal year *t* and rx_t is the cumulative ex-dividend stock return for fiscal year *t*. This measure is similar to the composite share issuance measure of Daniel and Titman (2006) except that they use the cum-dividend stock return, which implicitly classifies cash dividends as negative share issuances. Because cash dividends do not involve the repurchase of shares, we use the ex-dividend stock return to exclude them from our measure of external financing. One minor limitation of this measure is that it prices the new shares using the end-of-period stock price rather than the actual price at issuance. To the extent that any mispricing reverts in the intervening period, we will underestimate the magnitude of the associated wealth transfers.

Recall that our measure of wealth transfer, *WT*, is given by

$$WT = P.S.A_5$$

P.S represents the net dollar value of common equity issued or repurchased by the firm, which we estimate using *EXF*. A_5 represents the abnormal stock return over the next 5 periods. We measure abnormal stock returns in two different ways, resulting in the following two measures of wealth transfers:

$$WT1_t = \frac{EXF_t * (R_{t+1,t+5} - M_{t+1,t+5})}{1 + M_{t+1,t+5}}$$

$$WT2_t = \frac{EXF_t * (R_{t+1,t+5} - \overline{M_{t+1,t+5}})}{1 + \overline{M_{t+1,t+5}}}$$

$R_{t+1,t+5}$ is the cumulative cum-dividend stock return for the five years from the beginning of period t+1. $M_{t+1,t+5}$ is the corresponding cumulative market return over the same period. We use the value weighted return for all stocks on NYSE, AMEX and NASDAQ, as provided by CRSP as a proxy for the market returns. If a stock gets delisted, we assume that the delisting proceeds (if any) are reinvested in the market portfolio. $\overline{M_{t+1,t+5}}$ represents the mean value of $M_{t+1,t+5}$ across all years in our sample. *WT1* focusses on firm mispricing relative to contemporaneous market-wide prices, essentially ignoring any wealth transfers arising from the ability of a firm to 'time' the aggregate market. *WT2*, on the other hand, incorporates both cross-sectional mispricing and market timing. To see this, we can decompose *WT2* into two components:

$$WT2_t = \frac{EXF_t * (R_{t+1,t+5} - M_{t+1,t+5})}{1 + M_{t+1,t+5}} * \frac{1 + M_{t+1,t+5}}{1 + \overline{M_{t+1,t+5}}} + \frac{EXF_t * (M_{t+1,t+5} - \overline{M_{t+1,t+5}})}{1 + \overline{M_{t+1,t+5}}}$$

The first component is an increasing function of *WT1*. The second component is a pure market timing component. For example, if a firm issues equity ahead of unusually low market returns, the second component will be negative. Given the evidence in Baker and Wurgler (2000) that firms are able to time the market component of their returns, we expect to see evidence of larger wealth transfers using *WT2*.

In order to assess the economic significance of wealth transfers at the firm level, we also estimate two corresponding variables capturing the amount of wealth transfer as a fraction of pre-transaction market capitalization:

$$\%WT1_t = WT1_t / (CAPT_{t-1} * (1 + rx_t))$$

$$\%WT2_t = WT2_t / (CAPT_{t-1} * (1 + rx_t))$$

After excluding observations with pre-transaction market capitalization of less than $10 million, we are able to compute the above measure for 153,010 firm-years for

the sample period from 1973 to 2006. We stop in 2006 so that we can track abnormal stock returns over the next 5 years.

We also analyze wealth transfers for subsamples of firms in which we predict that such transfers will be particularly large. The obvious candidates for this analysis are firms that appear to be unusually priced using common valuation ratios at the time they engage in equity transactions. We use financial data from the Compustat Xpressfeed Fundamental Quarterly file to compute two valuation ratios, the book-to-market ratio (*BM*) and the operating income to enterprise value ratio (*EBIT/EV*). Book-to-market ratio is calculated as the ratio of the book value of common equity (Compustat data item: *CEQQ*) to the market value of common equity. In computing the ratio of operating income to enterprise value, we define operating income as earnings before interest and taxes (Compustat data item: *OIADPQ*). Enterprise value is defined as the sum of market value of common equity, and the book values of long-term debt (*DLTTQ*), short-term debt (*DLCQ*) and preferred stock (*UPSTKQ*). We estimate these valuation ratios as of the beginning of fiscal year t. In order to ensure that the relevant financial information is available by the beginning of the fiscal year t, we use book values as of the end of the third fiscal quarter of year t-1 and the trailing twelve-month operating income ending in the third fiscal quarter of year t-1. The market value of common equity is computed as of the beginning of fiscal year t. We are able to compute the two ratios for 113,735 of the firm-year observations in our sample.

Finally, to test whether the wealth transfers resulting from equity transactions are associated with overoptimistic expectations of future fundamentals, we examine biases in analysts' forecasts. Specifically, we test whether investors in firms that are issuing (repurchasing) equity tend to have over (under) optimistic expectations of future earnings, as proxied by forecast errors for analysts' two-year ahead consensus EPS forecasts and long-term EPS growth forecasts. We compute the forecast error for analysts' two year ahead forecasts as:

$$FY2ERR = (EPS2 - FY2_t)/PRC_t$$

where $FY2_t$ is analysts' consensus forecast of two year ahead annual earnings as compiled by I/B/E/S in the final month of fiscal year t, $EPS2$ is the actual two-year ahead annual EPS provided by I/B/E/S, and PRC_t is the stock price per share as of the end of fiscal year t.

Analysts' forecasts of long-term EPS growth and the corresponding realized earnings growth are also obtained from I/B/E/S. The long-term EPS growth forecast error is calculated as:

$$LTGERR = ALTG_{t+5} - LTG_t$$

where LTG_t is analysts' consensus long-term EPS growth forecast as compiled by I/B/E/S in the final month of fiscal year t. $ALTG_{t+5}$ is the actual past-five year EPS growth as calculated by I/B/E/S five years later. For our sample, we have valid $FY2ERR$ for 71,112 firm-year observations and valid $LTGERR$ for 43,724 observations.

4. Empirical results

Prior research documents that composite measures of share issuance strongly predict future stock returns (e.g. Bradshaw, Richardson and Sloan 2006; Daniel and Titman 2006; Pontiff and Woodgate 2008). We begin by replicating these results using our measure of share issuance and sample. Figure 1 plots the annual hedge portfolio returns to an investment strategy that goes long in the lowest decile of net equity issuance and short in the highest decile of net equity issuance. We measure net equity issuance as the ratio of the net amount of external financing to market capitalization. Panel A is based on deciles formed on the annual cross-sectional distribution of equity issuance, while Panel B is based on deciles formed by pooling across the entire sample period. Thus, the panel B results involve hindsight bias, but also incorporate the possibility of market timing (see Baker and Wurgler, 2000). Consistent with prior research, we see that the hedge portfolio returns are positive and economically significant for up to five

subsequent years. The hedge portfolio returns are much larger and persist for longer when equal weighting observations, indicating that smaller stocks tend to be more mispriced. The hedge portfolio returns are also generally larger in panel B when using equal weighting. Thus, there also seems to be evidence of successful market timing among the smaller firms in the sample.

These results corroborate prior research and indicate the firms tend to issue (repurchase) equity when they are overpriced (underpriced). They also corroborate our choice of a 5 year return horizon for estimating the overpricing, as there is no clear evidence of return predictability beyond 5 years.

4.1 Evidence on wealth transfers

Table 1 reports the magnitude of the wealth transfers across the entire sample using an abnormal return measurement interval from 1 to 5 years. We report the wealth transfers in both dollars (*WT*) and as a percent of pre-transaction market capitalization (*%WT*). Panel A reports the results for *WT1* and *%WT1*, the measures of wealth transfer that do not incorporate market timing. Recall that we measure the wealth transfers from the perspective of the transacting stockholders, so negative values are indicative of wealth transfers from transacting stockholders to ongoing stockholders. Using a 5-year horizon, the results show that the aggregate dollar value of the wealth transfers over our 34 year sample period exceeds -$1 trillion or an average of about -$7 million for each firm-year in our sample. As a percentage of pre-capitalization market equity, these wealth transfers represent 1% on an equal-weighted basis and -0.52% on a value weighted basis. Note that these figures represent averages across all firm-years in the sample, regardless of whether or not the firm-year involves an equity transaction. Panel B of table 2 reports the corresponding results for *WT2*, the measure of wealth transfer that incorporates market timing. The results are uniformly larger, indicating that market timing contributes substantially to the wealth transfers. Again focusing on the 5-year horizon, the aggregate dollar value of the wealth transfers exceeds -$2 trillion or over -$14 million per firm year. These wealth transfers translate to -1.97% of pre-transaction market capitalization on an equal weighted basis or -1.13% on a value-weighted basis.

One reason that the mean *%WT1* and *%WT2* are not higher is that many firm-years in the sample period do not engage in meaningful equity transactions. In order to gauge the magnitude of the wealth transfers for firms engaged in substantive equity transactions, we conduct subsample analysis focusing on two groups. The first group of firms consists of net equity issuers, where we require that *EXF* exceeds 2% of pre-transaction market capitalization. The second group consists of net equity repurchasers, where we require that EXF is less than -2% of pre-transaction market capitalization. Panel A of Figure 2 show that the fraction of firms in each of these groups over the calendar years in our sample. The proportion of issuers is always greater than the proportion of repurchasers and shows noticeable spikes in 1997-1999 and 2005-2006. In retrospect, we know that these periods preceded the collapse of the Internet bubble and the financial crisis respectively. Thus, it appears that firms were able to time these events through their equity issuance activities. The proportion of repurchases has also varied over time and shows spikes in 2000 and 2008. Panel B of Figure 2 plots the aggregate dollar value of stock issuances and repurchases for each group respectively. Equity issuance activity increased dramatically during the Internet bubble, while repurchase activity increased ahead of the financial crisis. The former is consistent with market timing, while the latter is not. Thus, the strongest evidence of market timing relates to equity issuance activity in the Internet bubble.

Table 2 reports on the magnitude of the wealth transfers for the subsample of firms that issue nontrivial equity. The format of the table corresponds to table 1, but the sample consists of only the approximately 30% of the firm-years that engaged in equity issues exceeding 2% of pre-transaction market capitalization. Panel A shows that the aggregate dollar wealth transfers using *WT1* are somewhat lower than in table 1, while the mean wealth transfers are somewhat higher. The aggregate wealth transfer is -$0.58 trillion, and averages -$11.99 million per firm-year. This translates to -1.69% of pre-transaction market capitalization on an equal-weighted basis and -1.21% on a value-weighted basis. Panel B uses *WT2* and provides evidence of strikingly high wealth transfers across all metrics. The dollar wealth transfer aggregates to over -$2.5 trillion or -$52 million per firm-year. As a percent of pre-transaction market capitalization, the

wealth transfers average -5.79% on an equal-weighted basis and -5.28% on a value-weighted basis. Based on the information in figure 1, it appears that the markedly high wealth transfers in panel B result from the spike in equity issues from 1997-2000, immediately ahead of the subsequent equity market collapse.

Table 3 reports wealth transfers for the subsample of firms that repurchase substantive equity, consisting of about 15% of the full sample. Panel A shows that the wealth transfers are similar in magnitude to those reported in table 2 for equity issuers. Thus, it seems that the wealth transfers are fairly symmetrical. Turning to panel B, however, we see that the results are quite different. The dollar amounts of wealth transfers are positive, indicating that firms tend to repurchase equity when they are overpriced and hence transfer wealth from ongoing stockholders to transacting stockholders. Measured as a percentage of equity, the wealth transfers are negative on an equal-weighted basis, but positive on a value-weighted basis. Piecing together the evidence in Figure 2 and table 3, we can see that there was a spike in the dollar value of repurchases in the 2006-2008 period preceding the financial crisis. It appears that large firms were more frequent repurchasers of equity ahead of the financial crisis and ended up transferring wealth away from ongoing stockholders and to transacting stockholders as a consequence. Thus, while there is strong evidence of market timing for equity issuers, the evidence is much weaker for equity repurchases and is concentrated in smaller firms.

4.2 Wealth transfers stratified by *ex-ante* measures of mispricing

In this section, we examine how wealth transfers via equity transactions vary with *ex ante* measure of stock mispricing. We predict that stock with *ex ante* indications of overpricing will be net equity issuers, while stocks with *ex ante* indications of underpricing will be net equity repurchasers. Moreover, because wealth transfers are facilitated by mispricing, we predict that the relative magnitude of the associated wealth transfers will be greater for these stocks. We use the book-to-market ratio and the EBIT-to-EV ratio as our *ex ante* measures of overpricing. We conduct quintile sorts of our sample on these variables, predicting that overpricing is concentrated in the lowest quintile, while underpricing is concentrated in the highest quintile.

We first examine how stock issuance and repurchase activity varies with these pricing multiples. Specifically, we sort firms into quintiles based on beginning book-to-market (*BM*) or EBIT-to-EV (*EBIT/EV*) ratios each year (designated year 0)and then track the net external financing activity over the surrounding five years (designated year -2 through +2). Figure 3 plots the mean net external financing as measured by $EXF/CAPT$. Panel A shows that firms in the lowest *BM* quintile have the highest mean net external financing in each of the five years. Net external financing peaks at over 6% of market capitalization in years -1 and 0. Net external financing decreases monotonically with increases in *BM*, dropping to about 2% for the highest *BM* quintile. The mean values of $EXF/CAPT$ are still positive, indicating that even high *B/M* firms tend to be net equity issuers. One potential reason is that high *BM* firms are often financially distressed and may lack the financial flexibility to engage in stock repurchases.

Panel B of Figure 3 reports similar results for quintiles sorted on *EBIT/EV*. The results using on *EBIT/EV* are stronger and more persistent over time. Net external financing peaks at over 7% for the lowest quintile and drops to 1% for the highest quintile. Consequently, we expect that sorting on *EBIT/EV* will reveal relatively larger wealth transfers. Overall, the results in Figure 3 confirm that firms with *ex ante* indications of overpricing are more likely to issue new equity. However, while firms with indications of underpricing are less likely to issue new equity, we do not see strong evidence of stock repurchases.

Table 4 reports the magnitude of the wealth transfers for quintiles sorted on *BM* using *WT1* (panel A) and *WT2* (panel B) respectively. As predicted, the largest wealth transfers are observed in the lowest quintiles. For the lowest *BM* quintile, the mean *WT1* is about -$30 million, which represents 3.5 percent of the pre-transaction market on an equal-weighted basis or 1.1 percent on a value-weighted basis. On the other hand, there is no systematic evidence of wealth transfers in the highest *BM* quintile. This is consistent with the finding in Figure 3 that the average firm in this group is not engaging in significant stock repurchase activity. Wealth transfers measured using *WT2* in Panel B exhibit similar results. There is strong evidence of wealth transfers for the overvalued

stocks that declines almost monotonically across BM quintiles. For the highest BM quintiles, mean *WT2* and *%WT2* become statistically insignificant.

Panel C and D provide the corresponding results for quintiles sorted on *EBIT/EV*. The results are similar to those of Panel A and B. Mean *WT1* is about -$6.8 million and mean *%WT1* is about 4.6% and 2.8% on an equal-weighted and value-weighted basis respectively for stocks in the lowest *EBIT/EV* quintile. The corresponding numbers turn positive and insignificant for stocks in the highest *EBIT/EV* quintile. Using wealth transfer measure *WT2*, provides similar but somewhat stronger results.

Table 5 provides a similar set of results to those in table 4, but focuses on the subset of firms that issue equity. Because we know that these firms issue equity, we expect to observe strong evidence of wealth transfers for the potentially overpriced securities with low valuation ratios. Panel A shows a monotonic increasing pattern in *WT1* and *%WT1* with *BM*. The mean *%WT1* is -7.69% on an equally weighted basis and -4.22% on a value-weighted basis for the lowest *BM* quintile. In contrast, the mean *%WT1* becomes positive and significant for stocks in the highest *BM* quintiles, indicating that equity issuances in underpriced firms actually transfer wealth from ongoing shareholders to transacting shareholders. The results for *WT2* are generally stronger. For the lowest *BM* quintile, mean *WT2* reaches about -$126 million and the mean *%WT2* amounts to about 12% of pre-transaction market cap on an equal-weighted basis and 8% on a value-weighted basis. In contrast, for the highest *BM* group where stocks are likely to be underpriced, equity issues do not lead to significant wealth transfers. Panels C and D presents the corresponding results for quintiles sorted on *EBIT/EV* ratio, showing even more striking results. The wealth transfers for the lowest *EBIT/EV* quintile average 10% and 14% of pre-transaction market capitalization on an equal-weighted basis using *WT1* and *WT2* respectively.

Table 6 corresponds to table 5, but focuses on the subset of firms that repurchase equity. For this sample, we predict that evidence of wealth transfers from transacting stockholders to ongoing stockholders will only exist in the high quintiles that are indicative of underpriced securities. This is because stock repurchases only transfer

wealth from transacting stockholders to ongoing stockholders in underpriced stocks. The results are generally consistent with our predictions, particularly when wealth transfers are measured as a percentage of pre-transaction market capitalization and we focus on equal-weighted means. The results sorted on *BM* are particularly strong. Focusing on the mean values of *%WT2* in panel B, we see that wealth transfers are about 1% for the lowest *BM* quintile, but climb monotonically to -2.83% for the highest quintile. In summary, while the results for wealth transfers via equity repurchases are weaker than those for wealth transfers via equity issuances, we do see evidence of significant wealth transfers in smaller stocks with *ex ante* indications of underpricing.

4.3 Source of mispricing associated with wealth transfers

The above results show that future stock returns tend to be particularly low and wealth transfers tend to be correspondingly high for firms that are issuing equity. We have attributed the low future stock returns to the overpricing of the stocks at the time of equity issuance. In order to provide additional evidence to support this interpretation of the stock returns, we test for evidence of overoptimism in analysts' forecasts of future earnings for firms that are issuing equity. Table 7 reports the mean and median forecast errors for analysts' consensus two-year ahead EPS forecasts (*FY2*) and long-term EPS growth forecasts (*LTG*) for deciles of *EXF/CAPT*. The results for *FY2* forecast errors appear in the left panel of the table. We find that *FY2* forecast errors exhibit a clear decreasing pattern with the level of *EXF/CAPT*, with the highest external financing decile having significantly greater negative future earnings surprises than the lowest decile.

We find similar results for long-term growth forecast errors. For firms in the highest external financing decile, mean realized growth is about 11.74% lower than analysts' *LTG* forecasts. In contrast, mean realized growth is only about 6.43% lower than analysts' *LTG* forecast for the lowest external financing decile. These results are both statistically and economically significant, illustrating that investors have more overoptimistic expectations for firms that are issuing equity and supporting the overpricing hypothesis.

4.4 Implications of wealth transfers for value investing

Value-oriented investment strategies profit by overweighting underpriced stocks and underweighting overpriced stocks. The wealth transfers documented in this paper have a potentially important impact on the returns to value investing. In particular, it is possible that firms with stocks that are overpriced relative to their underlying investment opportunities could create additional value through equity issuances, thus mitigating the extent of the overpricing. Such wealth transfers would limit the returns to value investors from underweighting these stocks. On the other hand, underpriced stocks could create additional value through stock repurchases, thus enhancing the returns to value investors from overweighting these stocks. Given our earlier evidence indicating that wealth transfers via equity issuances tend to be greater than wealth transfers via stock repurchases, we expect that wealth transfers will limit the returns to value investing by limiting the returns to the short legs of value strategies. In this section, we quantify the impact of wealth transfers via equity transactions on common value investing strategies.

We first calculate the cumulative market adjusted return to holding a stock over the *N* months, starting from the end of month *t* as follows:

$$A_{t+1,t+N} = \prod_{\tau=1}^{N}(1 + a_{t+\tau}) - 1$$

where $a_{t+\tau}$ represents the market-adjusted stock return for month $t + \tau$.

We then estimate the hypothetical returns to holding the same stock over the same period assuming the absence of any equity transactions during the period. Equity issuances (repurchases) dilute (magnify) the subsequent returns to ongoing shareholders. Specifically, if an investor takes a position in the stock of a company with N outstanding shares at the end of period t and the firm issues another S shares at the end of period *t+1*,

then the hypothetical cumulative abnormal return from the end of period t to the end of period *t+2* after adjusting for the effect of equity transactions is: [3]

$$A^{H}_{t+1,t+2} = (1 + a_{t+1}) * \frac{N_t + S_{t+1}}{N_t} * (1 + a_{t+2}) - 1$$

More generally, the share issuance or repurchase factor $\frac{N_t+S_{t+\tau}}{N_t}$ applicable to returns beyond month t+τ for all shares issued between the end of period t and the end of period t+τ can be computed as:

$$\frac{N_t + S_{t+\tau}}{N_t} = \frac{CAPT_{t+\tau}}{CAPT_t * (\prod_{m=1}^{\tau}(1 + rx_{t+m}))}$$

Hence, we can estimate the hypothetical cumulative abnormal returns adjusted for equity transactions as:

$$A^{H}_{t+1,t+N} = (1 + a_{t+1}) \prod_{\tau=2}^{N} \left(1 + \frac{CAPT_{t+\tau-1} * a_{t+\tau}}{CAPT_t * (\prod_{m=2}^{\tau}(1 + rx_{t+m-1}))}\right) - 1$$

Table 8 and Figure 4 report $A_{t+1,t+N}$ and $A^{H}_{t+1,t+N}$ for extreme deciles of *BM* and *EBIT/EV* for holding periods up to five years after portfolio formation. The results for extreme *BM* deciles appear on Panel A. Consistent with prior research, stocks in the lowest *BM* decile earn significantly negative cumulative market adjusted returns while those in the highest *BM* decile earn significantly positive returns. The difference in cumulative market adjusted returns across the two extreme portfolios is 48% five years after the portfolio formation date. As predicted, we also find that for both deciles, the hypothetical cumulative market adjusted returns are lower than the cumulative market adjusted returns, since these returns exclude the benefits of wealth transfers via equity transactions to ongoing stockholders. Had no stock issuance or repurchase taken place, the corresponding cumulative market adjusted returns over the future five years would have been 8.84% and 5.99% lower for the lowest and highest BM decile respectively.

[3] A negative value for S indicates a stock repurchase, in which case S must be greater than –N.

This would have increased the difference across the two extreme portfolios from 48% to 51%.

We find similar results for deciles formed on the EBIT/*EV* ratio. Both extreme portfolios would earn lower returns in absence wealth transfers via equity transactions. Consistent with our earlier findings that firms with low *EBIT/EV* ratios are much more likely to issue equity (see Figure 3), we find a very strong reduction in returns to the lowest *EBIT/EV* decile from the exclusion of wealth transfers via equity transactions. Over the five years following portfolio formation, the difference between the cumulative market adjusted returns and the hypothetical cumulative market adjusted returns is 14.43% for the lowest *EBIT/EV* portfolio. In contrast, the difference between the two cumulative return measures is only about 1.96% for the highest *EBIT/EV* decile. Thus, wealth transactions limit the return differential across extreme *EBIT/EV* to 37% from 50%. Interestingly, this means that the higher returns to the BM strategy relative to the *EBIT/EV* strategy can be attributed almost entirely to the greater impact of wealth transfers via equity transactions on the *EBIT/EV* strategy.

4.5 Robustness Tests

This section summarizes the results of robustness tests relating to two assumptions underlying the interpretation of our results. First, we implicitly assume that firms do not engage in additional equity transactions that cause additional wealth transfers during the 5 year return measurement interval. To the extent that firms engage in additional transactions that result in additional wealth transfers, our results potentially understate the magnitude of wealth transfer associated with the initial transaction. In particular the popular business press often refers to 'serial issuers' that issue overpriced stock for multiple consecutive periods in an attempt to maintain a high stock price and maximize the aggregate wealth transfer.[4] In order to investigate the robustness of our results to this assumption, we replicate our results after eliminating all observations with net equity issues or repurchases aggregating over 10% of market capitalization over the 5

[4] For example, Einhorn (2010) emphasizes the role of ongoing equity issues in sustaining the stock price of Allied Capital from 2002 to 2009.

year return measurement interval. The results (not reported) indicate that the wealth transfers are uniformly larger for the remaining observations. For example, the mean wealth transfer across the sample measured using *WT2* increases from the -1.97% reported in table 1 to -2.53% after eliminating firms with subsequent equity transactions. If we focus on equity issuers in the lowest *EBIT/EV* quintile, the wealth transfer using *WT2* increases from the 14.17% reported in table 5 to 20.68%. Thus, our primary results understate the magnitude of the wealth transfers because they ignore the dilutive impact of subsequent wealth transfers.

A second key assumption underlying our results is that the firms' investment opportunity sets are not changed by the new equity issues. In other words, we assume that the present value of the firm's free cash flows is unaltered by the equity issues. This assumption is least likely to hold for equity issued in connection with stock-based acquisitions, where evidence suggests that acquirers tend to overpay for target firms (see Fu, Lin and Officer, 2012). In order to investigate the sensitivity of our results to this assumption, we replicate our results using cash generated by net equity issues in place of the market value of net equity issues. This alternative measure of equity issues excludes equity issued in stock-based acquisitions. We measure the net cash generated by equity issues as the difference between cash generated from the sale of stock and cash used in the repurchase of stock from the annual statement of cash flows as reported by COMPUSTAT. All other elements of our analysis remain the same. The results (not reported) generally indicate that the wealth transfers are somewhat smaller. For example, the mean wealth transfer across the sample measured using *WT2* decreases from the -1.97% reported in table 1 to -1.42% after eliminating non-cash transactions. If we focus on equity issuers in the lowest *EBIT/EV* quintile, the wealth transfer using *WT2* decreases from the 14.17% reported in table 5 to 12.23%. Thus, our reported results appear to somewhat overstate the magnitude of the wealth transfers because the proceeds can be invested in value destroying acquisitions. Taken as a whole, however, these robustness tests suggest that our primary results are reasonably robust with respect to the key underlying assumptions.

5. Conclusions and Implications

We provide pervasive evidence of wealth transfers to ongoing stockholders through firms' strategic transactions in their own mispriced equity. These wealth transfers are particularly pronounced for equity issuers with ex ante indications of overpricing. Our findings have implications for equity valuation, corporate financial policy and investment management.

The traditional approach to equity valuation is based on discounting the anticipated free cash flows to the firm's investment opportunities. Missing from this approach is explicit consideration of the firm's current stock price and the ability of the firm to engage in strategic transactions at this price. Our results suggest that the value of an ongoing investment in the equity of a firm is a function of both the firm's investment opportunities and potential wealth transfers through strategic transactions in its own equity. In evaluating these wealth transfers, investors should consider the current stock price relative to the value of the firm's investment opportunities and management's intentions with regard to engaging in equity transactions.

The traditional approach to corporate financial policy ignores the potential for valuation creation through the exploitation of market inefficiencies. Instead, it focuses on taxes and transactions costs as they key determinants of corporate financial decisions. Our results demonstrate that in practice, corporate financial policy is a significant source of value creation for ongoing stockholders. By tracking the mispricing of their own common shares, management can strategically time equity transactions and create value for ongoing stockholders. This perspective on corporate financial policy also explains why firms that are issuing equity invest considerable resources in marketing their offerings through investor relations activities and investment banking services.

Finally, our findings have implications for investment management, and particularly for value-oriented investment strategies that underweight overpriced stocks. The traditional approach to value investing assumes that stock prices will revert to fundamental values 'in the long run'. Our results indicate that stock prices may never revert to fundamentals because firms can exploit this mispricing through strategic

transactions in their own equity. Thus, the value investor should consider both fundamental value and the potential for the firm to exploit the mispricing of its common stock. Indeed, our results provide a new rationale for the existence of growth-oriented investment strategies. A firm with a management team that can inflate investors' expectations about future investment opportunities and aggressively issue overpriced equity may represent a good investment opportunity even if it is overpriced relative to its investment opportunities.

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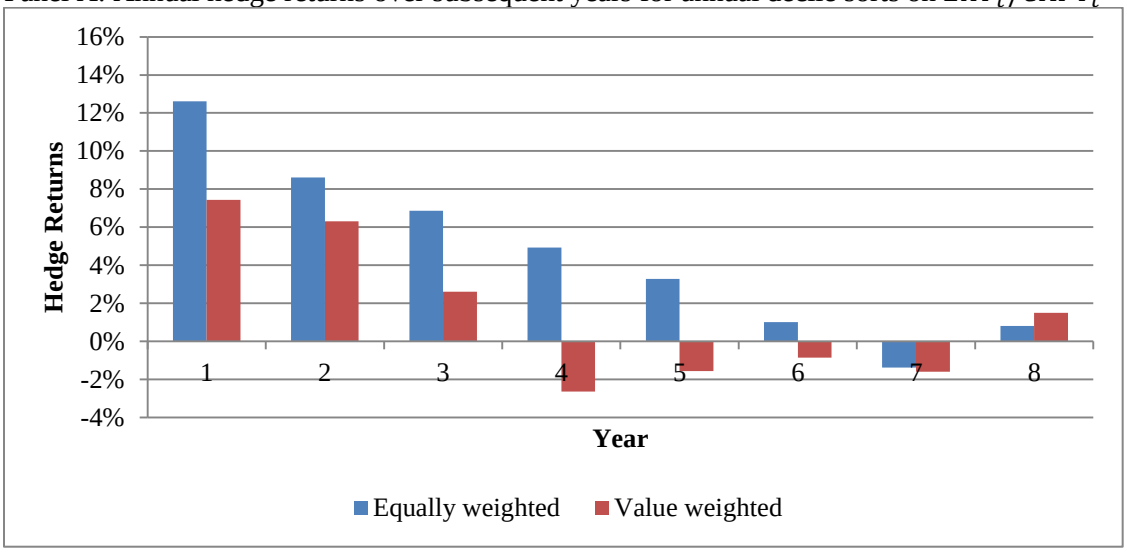
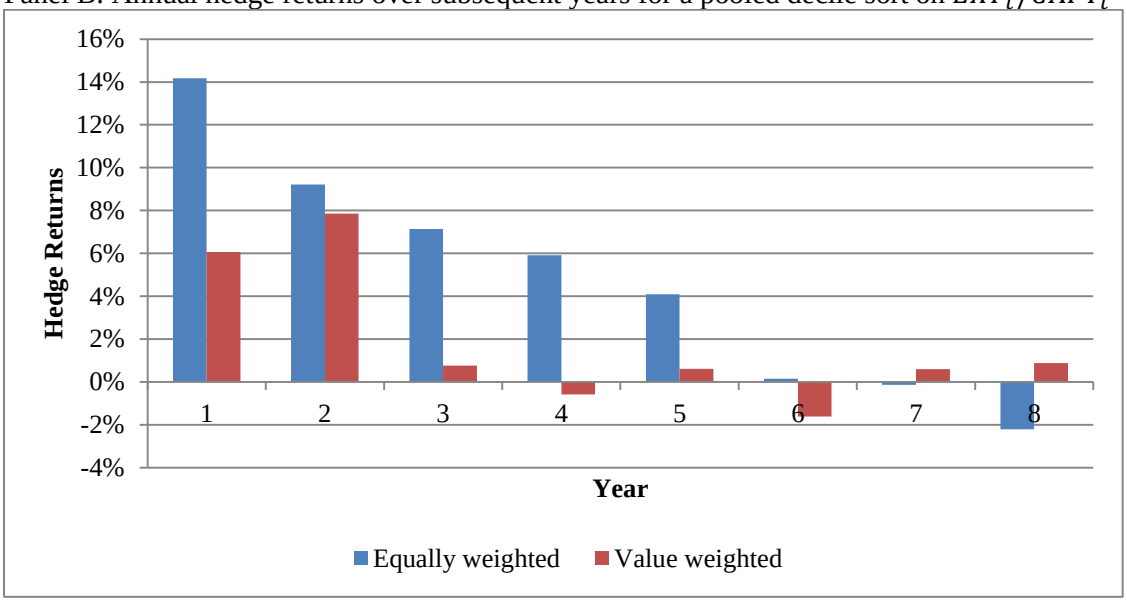
Figure 1: Hedge returns to a strategy taking a long (short) position in stocks belonging to lowest (highest) decile of common equity issuance (*EXF*)

Panel A: Annual hedge returns over subsequent years for annual decile sorts on $EXF_t/CAPT_t$



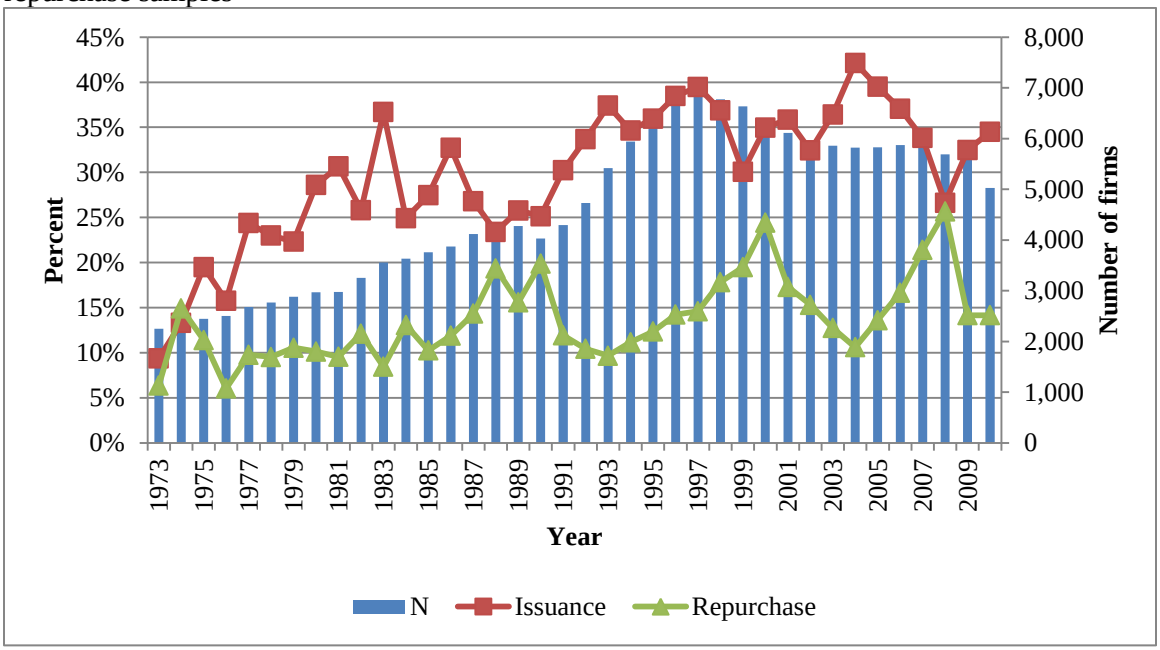
Panel B: Annual hedge returns over subsequent years for a pooled decile sort on $EXF_t/CAPT_t$



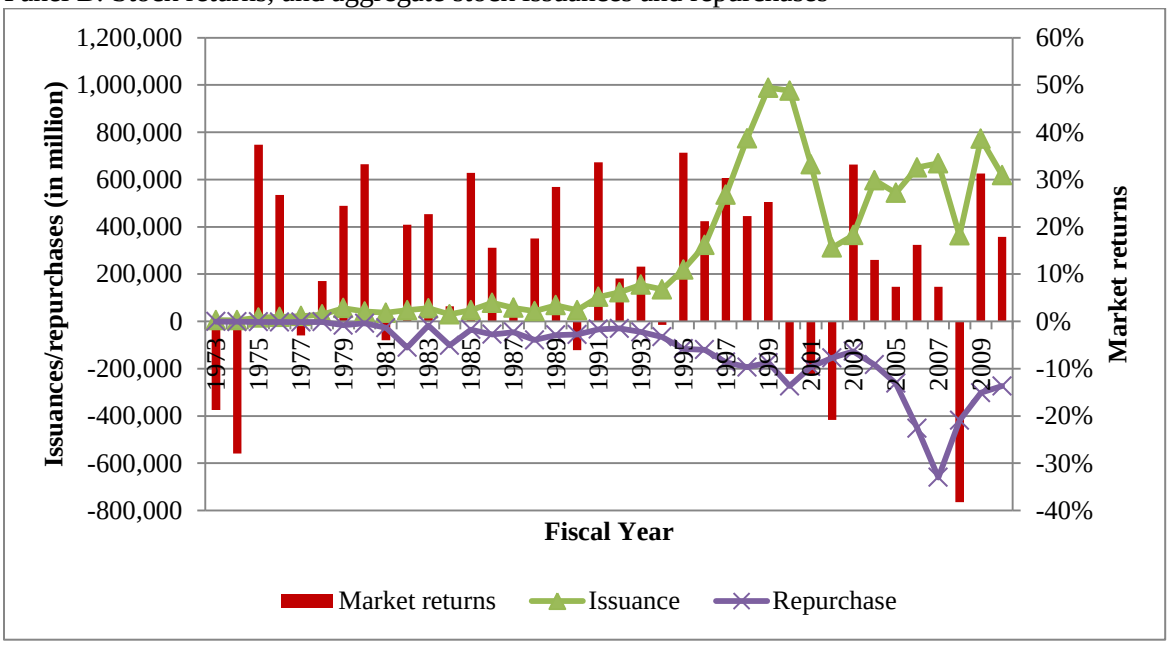
Note: External financing EXF_t is calculated as $CAPT_t - CAPT_{t-1} * (1 + rx_t)$, where $CAPT_t$ is the market value of common equity at the end of fiscal year t and rx_t is the cumulative ex-dividend stock return for fiscal year t.

Figure 2: Time-series behavior of common equity issuance and repurchase

Panel A: Number of observations in the sample and percentage of firms in the issuance and repurchase samples



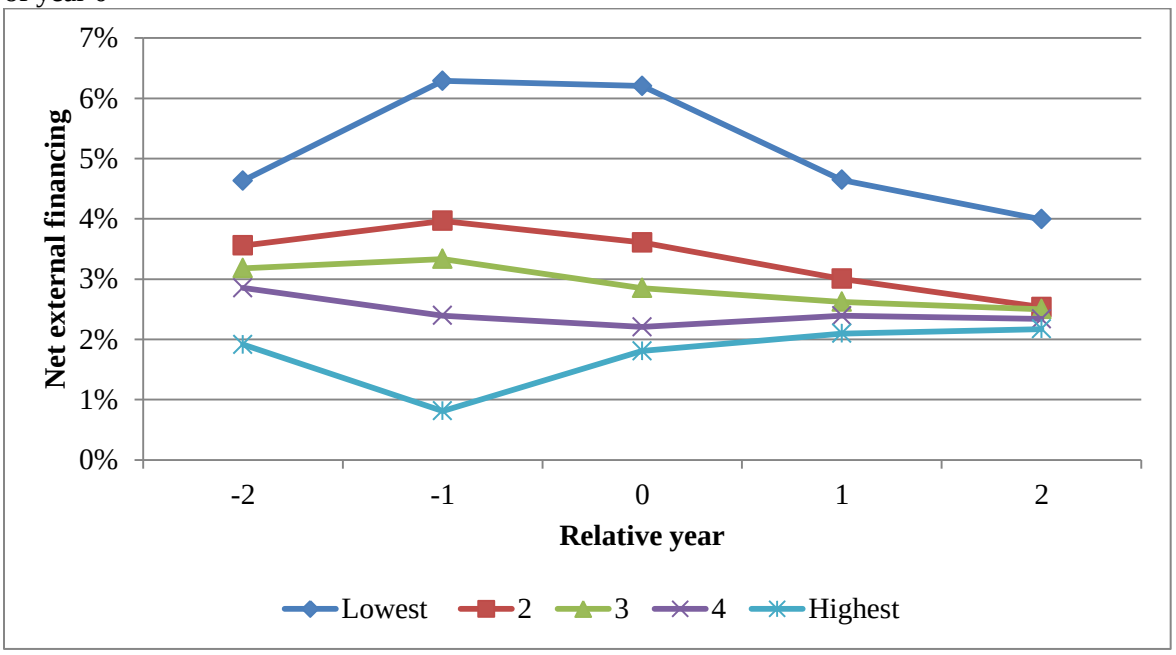
Panel B: Stock returns, and aggregate stock issuances and repurchases



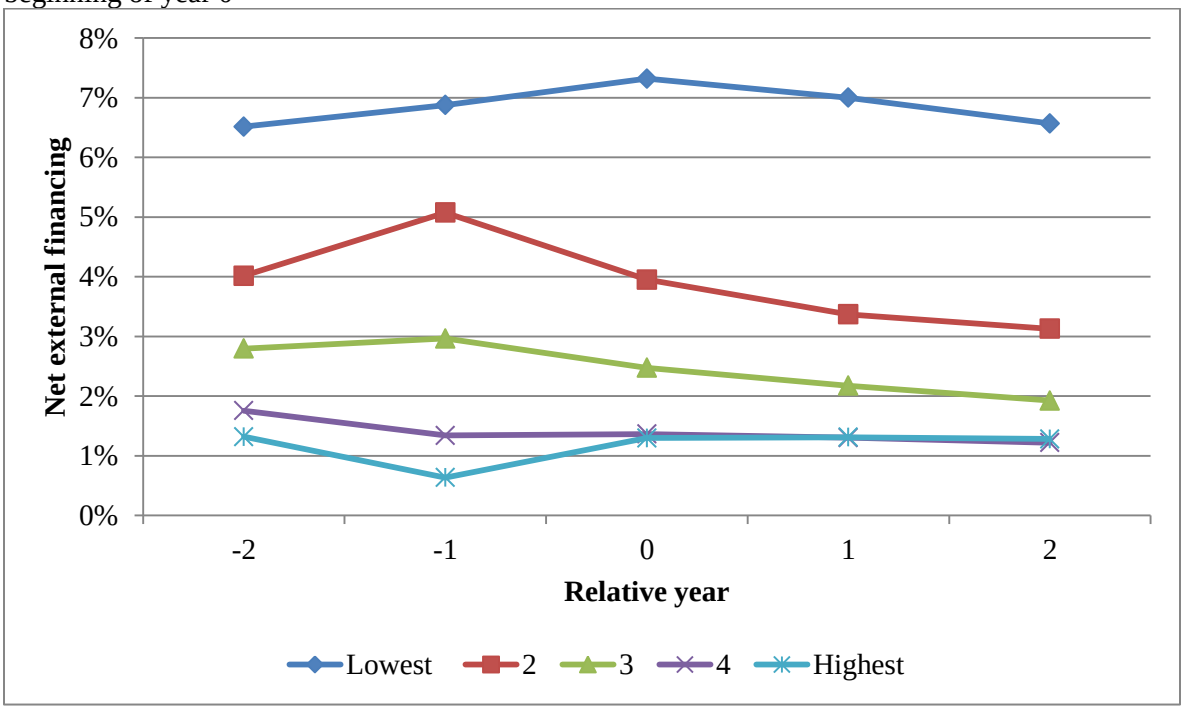
Panel A reports the number of observations in the sample and the percentage of firms with *EXF* greater than 2% of the pre-transaction market cap, i.e. equity issuers and those with *EXF* less than -2% of the pre-transaction market cap, i.e. repurchaser. Panel B report the value weighted market returns, total amount of stock issuance and repurchases over time. EXF_t is calculated as $CAPT_t - CAPT_{t-1} * (1 + rx_t)$, where $CAPT_t$ is the market value of common equity at the end of fiscal year t and rx_t is the cumulative ex-dividend stock return for fiscal year t. Pre-transaction market cap is defined as $CAPT_{t-1} * (1 + rx_t)$.

Figure 3: External financing levels for quintiles formed on valuation multiples in Year 0

Panel A: Mean net external financing ($EXF_t/CAPT_t$) for quintiles sorted on *BM* at the beginning of year 0



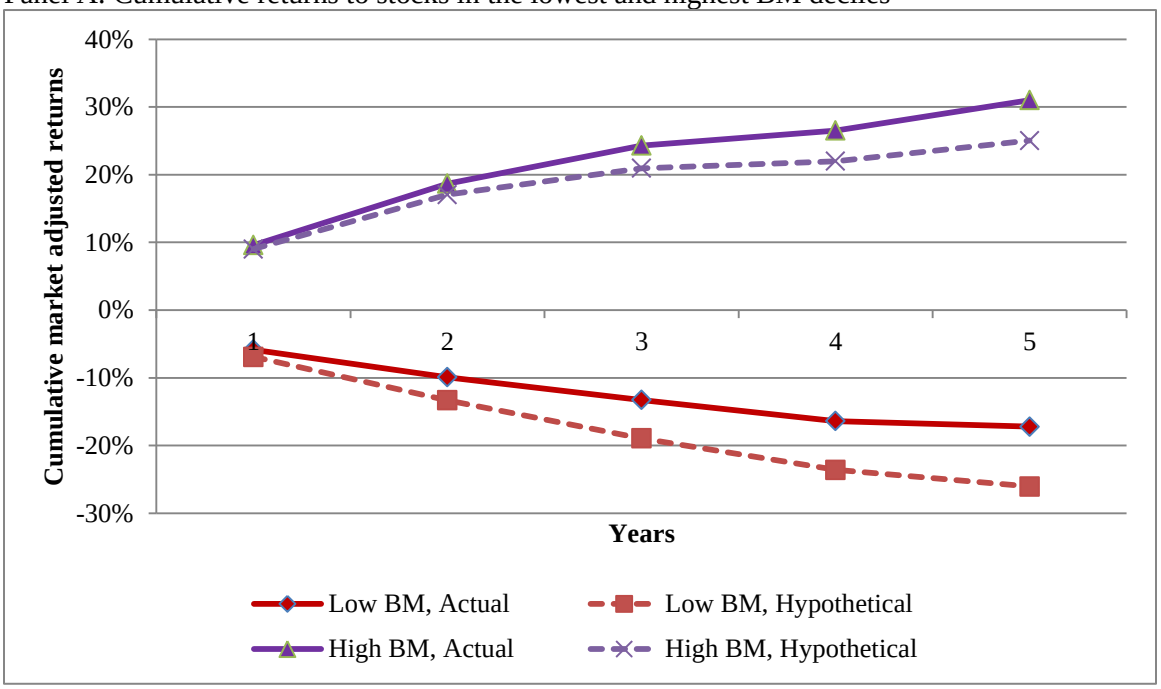
Panel B: Mean net external financing ($EXF_t/CAPT_t$) for quintiles sorted on *EBIT/EV* at the beginning of year 0



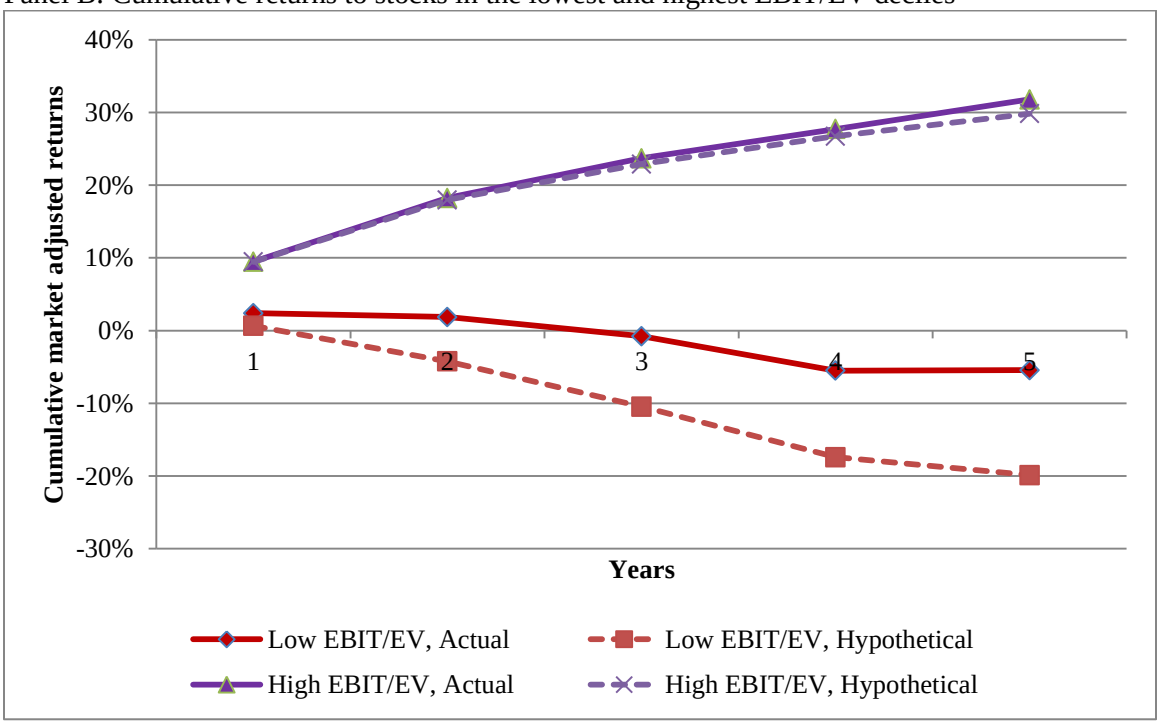
Note: EXF_t is calculated as $CAPT_t - CAPT_{t-1} * (1 + rx_t)$, where $CAPT_t$ is the market value of common equity at the end of fiscal year t and rx_t is the cumulative ex-dividend stock return for fiscal year t.

Figure 4: The effect of wealth transfers via equity transactions on the returns to portfolios of stocks with extreme valuations

Panel A: Cumulative returns to stocks in the lowest and highest BM deciles



Panel B: Cumulative returns to stocks in the lowest and highest EBIT/EV deciles



Note: This table reports the cumulative market adjusted returns and the cumulative market adjusted returns adjusted for external financing for stocks in the extreme deciles of BM and EBIT/EV.

Table 1: Wealth transfers for various horizons

Panel A: $WT1 = EXF_t * (R_{t+1,t+5} - M_{t+1,t+5})/(1 + M_{t+1,t+5})$

	Wealth Transfer (in million): WT1			Wealth Transfer as a percentage of pre-transaction market cap: %WT1			
Horizon	Sum	Mean	t-stat	Mean	t-stat	Weighted mean	t-stat
1	-699,358	-3.974	-4.96	-0.60%	-10.01	-0.27%	-12.91
2	-873,869	-5.131	-5.29	-0.82%	-11.25	-0.36%	-13.01
3	-935,126	-5.681	-5.27	-0.96%	-12.08	-0.41%	-13.81
4	-921,820	-5.803	-4.45	-0.99%	-10.68	-0.43%	-10.11
5	-1,019,105	-6.660	-4.05	-0.99%	-9.35	-0.52%	-12.41

Panel B: $WT2_t = EXF_t * (R_{t+1,t+5} - \overline{M_{t+1,t+5}})/(1 + \overline{M_{t+1,t+5}})$

	Wealth Transfer (in million): WT2			Wealth Transfer as a percentage of pre-transaction market cap: %WT2			
Horizon	Sum	Mean	t-stat	Mean	t-stat	Weighted mean	t-stat
1	-918,772	-5.220	-5.70	-0.66%	-9.33	-0.35%	-13.20
2	-1,399,911	-8.220	-7.09	-1.02%	-12.06	-0.58%	-17.49
3	-1,784,243	-10.840	-8.38	-1.43%	-17.32	-0.78%	-22.78
4	-1,970,136	-12.402	-8.13	-1.71%	-17.78	-0.91%	-18.24
5	-2,217,083	-14.490	-8.03	-1.97%	-20.25	-1.13%	-25.30

Note: This table examines the wealth transfer for the full sample. EXF_t is calculated as $CAPT_t - CAPT_{t-1} * (1 + rx_t)$, where $CAPT_t$ is the market value of common equity at the end of fiscal year t and rx_t is the cumulative ex-dividend stock return for fiscal year t. $R_{t+1,t+5}$ is the cumulative cum-dividend stock return for the five years from the beginning of period t+1. $M_{t+1,t+5}$ is the corresponding cumulative market return over the same period. We use the value weighted returns for all stocks on NYSE, AMEX and NASDAQ as prepared by the CRSP as a proxy for the market returns. If a stock gets delisted, we assume that the delisting proceeds (if any) are invested in the market portfolio subsequently. $\overline{M_{t+1,t+5}}$ is mean $M_{t+1,t+5}$ over the sample period.$\%WT1_t$ is calculated as $WT1_t/(CAPT_{t-1} * (1 + rx_t))$ and . $\%WT2_t$ is calculated as $WT2_t/(CAPT_{t-1} * (1 + rx_t))$. Weight mean is the mean value weighted by pre-transaction market cap.

Table 2: Wealth transfers for companies that issue equity

Panel A: $WT1 = EXF_t * (R_{t+1,t+5} - M_{t+1,t+5})/(1 + M_{t+1,t+5})$

	Wealth Transfer (in million): WT1			Wealth Transfer as a percentage of pre-transaction market cap: %WT1			
Horizon	Sum	Mean	t-stat	Mean	t-stat	Weighted mean	t-stat
1	-526,554	-9.384	-4.59	-1.62%	-8.71	-0.86%	-12.01
2	-695,455	-12.833	-4.70	-1.99%	-8.78	-1.22%	-12.84
3	-634,220	-12.109	-4.03	-2.12%	-8.63	-1.19%	-11.76
4	-611,958	-12.051	-3.26	-1.95%	-6.83	-1.19%	-8.06
5	-584,769	-11.985	-3.15	-1.69%	-5.19	-1.21%	-8.72

Panel B: $WT2_t = EXF_t * (R_{t+1,t+5} - \overline{M_{t+1,t+5}})/(1 + \overline{M_{t+1,t+5}})$

	Wealth Transfer (in million): WT2			Wealth Transfer as a percentage of pre-transaction market cap: %WT2			
Horizon	Sum	Mean	t-stat	Mean	t-stat	Weighted mean	t-stat
1	-1,054,465	-18.793	-7.67	-1.92%	-8.73	-1.73%	-18.42
2	-1,768,290	-32.629	-9.91	-2.98%	-11.35	-3.11%	-27.25
3	-2,181,762	-41.657	-11.77	-4.20%	-16.47	-4.08%	-34.73
4	-2,515,479	-49.534	-11.86	-5.04%	-16.95	-4.90%	-27.85
5	-2,541,711	-52.094	-12.55	-5.79%	-19.35	-5.28%	-35.39

Note: This table examines the wealth transfer for the subsample of firms that issue equity, i.e. $EXF_t/(CAPT_t - EXF_t) \geq 2\%$. EXF_t is calculated as $CAPT_t - CAPT_{t-1} * (1 + rx_t)$, where $CAPT_t$ is the market value of common equity at the end of fiscal year t and rx_t is the cumulative ex-dividend stock return for fiscal year t. $R_{t+1,t+5}$ is the cumulative cum-dividend stock return for the five years from the beginning of period t+1. $M_{t+1,t+5}$ is the corresponding cumulative market return over the same period. We use the value weighted returns for all stocks on NYSE, AMEX and NASDAQ as prepared by the CRSP as a proxy for the market returns. If a stock gets delisted, we assume that the delisting proceeds (if any) are invested in the market portfolio subsequently. $\overline{M_{t+1,t+5}}$ is mean $M_{t+1,t+5}$ over the sample period. $\%WT1_t$ is calculated as $WT1_t/(CAPT_{t-1} * (1 + rx_t))$ and . $\%WT2_t$ is calculated as $WT2_t/(CAPT_{t-1} * (1 + rx_t))$. Weight mean is the mean value weighted by pre-transaction market cap.

Table 3: Wealth transfers for companies that repurchase equity

Panel A: $WT1 = EXF_t * (R_{t+1,t+5} - M_{t+1,t+5})/(1 + M_{t+1,t+5})$

	Wealth Transfer (in million): WT1			Wealth Transfer as a percentage of pre-transaction market cap: %WT1			
Horizon	Sum	Mean	t-stat	Mean	t-stat	Weighted mean	t-stat
1	-168,518	-6.612	-2.07	-0.57%	-11.25	-0.26%	-7.28
2	-179,476	-7.269	-2.46	-1.31%	-16.61	-0.30%	-6.09
3	-296,448	-12.454	-3.64	-1.98%	-19.59	-0.52%	-9.22
4	-302,141	-13.538	-3.47	-2.59%	-22.63	-0.60%	-10.16
5	-425,813	-20.169	-2.52	-3.23%	-23.23	-1.04%	-11.66

Panel B: $WT2_t = EXF_t * (R_{t+1,t+5} - \overline{M_{t+1,t+5}})/(1 + \overline{M_{t+1,t+5}})$

	Wealth Transfer (in million): WT2			Wealth Transfer as a percentage of pre-transaction market cap: %WT2			
Horizon	Sum	Mean	t-stat	Mean	t-stat	Weighted mean	t-stat
1	143,598	5.634	1.71	-0.34%	-6.22	0.22%	5.78
2	360,586	14.605	4.31	-0.49%	-6.34	0.60%	11.20
3	383,506	16.111	3.69	-0.62%	-6.63	0.68%	11.61
4	528,953	23.701	4.55	-0.66%	-6.54	1.06%	18.08
5	306,708	14.528	1.64	-0.80%	-6.44	0.75%	8.70

Note: This table examines the wealth transfer for the subsample of firms that repurchase stocks, i.e. $EXF_t/(CAPT_t - EXF_t) \leq -2\%$. EXF_t is calculated as $CAPT_t - CAPT_{t-1} * (1 + rx_t)$, where $CAPT_t$ is the market value of common equity at the end of fiscal year t and rx_t is the cumulative ex-dividend stock return for fiscal year t. $R_{t+1,t+5}$ is the cumulative cum-dividend stock return for the five years from the beginning of period t+1. $M_{t+1,t+5}$ is the corresponding cumulative market return over the same period. We use the value weighted returns for all stocks on NYSE, AMEX and NASDAQ as prepared by the CRSP as a proxy for the market returns. If a stock gets delisted, we assume that the delisting proceeds (if any) are invested in the market portfolio subsequently. $\overline{M_{t+1,t+5}}$ is mean $M_{t+1,t+5}$ over the sample period. $\%WT1_t$ is calculated as $WT1_t/(CAPT_{t-1} * (1 + rx_t))$ and . $\%WT2_t$ is calculated as $WT2_t/(CAPT_{t-1} * (1 + rx_t))$. Weight mean is the mean value weighted by pre-transaction market cap.

Table 4: Wealth transfers stratified by valuation ratios: full sample

Panel A: Sample split based on the cross-sectional quintile ranks of BM

	Wealth Transfer (in million): WT1			Wealth Transfer as a percentage of pre-transaction market cap: %WT1			
BM rank	Sum	Mean	t-stat	Mean	t-stat	Weighted mean	t-stat
Lowest	-752,447	-29.752	-6.45	-3.51%	-18.41	-1.09%	-18.06
2	-29,259	-1.157	-0.29	-1.36%	-9.10	-0.06%	-0.91
3	18,158	0.717	0.27	-0.48%	-3.47	0.05%	0.78
4	-81,161	-3.204	-1.03	-0.53%	-3.02	-0.37%	-4.77
Highest	32,673	1.291	0.73	0.09%	0.26	0.33%	1.17
Difference		-31.043	-6.28	-3.60%	-9.59	-1.43%	-4.89

Panel B: Sample split based on the quintile ranks of BM over the overall sample

	Wealth Transfer (in million): WT2			Wealth Transfer as a percentage of pre-transaction market cap: %WT2			
BM rank	Sum	Mean	t-stat	Mean	t-stat	Weighted mean	t-stat
Lowest	-1,288,207	-51.444	-7.94	-5.35%	-26.76	-1.65%	-24.44
2	-289,012	-11.515	-4.16	-2.26%	-16.98	-0.56%	-11.23
3	-201,374	-7.943	-2.24	-1.23%	-10.21	-0.64%	-10.16
4	-57,571	-2.233	-1.78	-1.07%	-8.54	-0.32%	-4.22
Highest	-37,658	-1.490	-0.73	-0.50%	-1.56	-0.47%	-1.52
Difference		-49.954	-7.35	-4.85%	-12.90	-1.19%	-3.80

Panel C: Sample split based on the cross-sectional quintile ranks of EBIT/EV

EBIT/EV rank	Wealth Transfer (in million): WT1			Wealth Transfer as a percentage of pre-transaction market cap: %WT1			
	Sum	Mean	t-stat	Mean	t-stat	Weighted mean	t-stat
Lowest	-154,070	-6.780	-8.12	-4.64%	-17.63	-2.77%	-16.12
2	-431,989	-18.987	-4.10	-0.92%	-5.67	-0.92%	-12.78
3	-183,611	-8.063	-2.20	-0.26%	-1.80	-0.32%	-5.82
4	-74,522	-3.276	-1.26	-0.25%	-2.19	-0.18%	-3.48
Highest	69,247	3.045	0.84	0.29%	1.18	0.28%	1.91
Difference		-9.826	-2.63	-4.93%	-13.64	-3.05%	-13.47

Panel D: Sample split based on the quintile ranks of EBIT/EV over the overall sample

EBIT/EV rank	Wealth Transfer (in million): WT2			Wealth Transfer as a percentage of pre-transaction market cap: %WT2			
	Sum	Mean	t-stat	Mean	t-stat	Weighted mean	t-stat
Lowest	-494,541	-22.411	-8.10	-6.56%	-24.98	-5.62%	-36.01
2	-712,539	-32.474	-5.80	-2.11%	-13.52	-1.15%	-19.26
3	-202,139	-9.012	-2.33	-0.91%	-8.41	-0.39%	-7.05
4	-108,014	-4.624	-1.71	-0.64%	-6.83	-0.32%	-6.13
Highest	-84,535	-3.532	-1.48	-0.32%	-1.81	-0.45%	-4.07
Difference		-18.879	-5.16	-6.24%	-19.73	-5.17%	-27.04

Note: Book-to-market ratio BM is calculated as the ratio of book value of common equity as of the third fiscal quarter divided by the market value of common equity at the end of the current fiscal year. EBIT/EV is the ratio of trailing twelve months operating income after depreciation and amortization ending the third fiscal quarter, divided by enterprise value as of the end of the fiscal year. Enterprise value is the sum of market value of common equity as of the fiscal year end and the book value of debt and preferred stock as of the third fiscal quarter of the year. Definition of *WT1, WT2, %WT1* and *%WT2* can be found in Table 1.

Table 5: Wealth transfers stratified by valuation ratios: equity issuers

Panel A: Sample split based on the cross-sectional quintile ranks of BM

	Wealth Transfer (in million): WT1			Wealth Transfer as a percentage of pre-transaction market cap: %WT1			
BM rank	Sum	Mean	t-stat	Mean	t-stat	Weighted mean	t-stat
Lowest	-487,852	-57.686	-5.50	-7.69%	-15.34	-4.22%	-21.14
2	-158,607	-18.706	-1.45	-4.70%	-12.79	-1.33%	-6.66
3	-40,264	-4.747	-0.62	-2.04%	-5.14	-0.41%	-2.07
4	-5,755	-0.678	-0.07	-0.22%	-0.48	-0.07%	-0.30
Highest	78,639	9.302	1.89	3.31%	3.24	1.95%	2.49
Difference		-66.988	-5.79	-11.00%	-9.65	-6.17%	-7.63

Panel B: Sample split based on the quintile ranks of BM over the overall sample

	Wealth Transfer (in million): WT2			Wealth Transfer as a percentage of pre-transaction market cap: %WT2			
BM rank	Sum	Mean	t-stat	Mean	t-stat	Weighted mean	t-stat
Lowest	-1,072,909	-125.648	-7.61	-11.75%	-22.71	-7.66%	-36.86
2	-643,926	-75.181	-8.48	-7.52%	-21.34	-5.78%	-29.89
3	-461,335	-54.097	-4.80	-5.15%	-15.31	-4.71%	-24.87
4	-157,086	-18.390	-4.17	-3.69%	-8.81	-2.31%	-10.61
Highest	-45,743	-5.590	-1.19	-0.89%	-0.90	-1.18%	-1.51
Difference		-120.058	-6.99	-10.86%	-9.74	-6.49%	-8.06

Panel C: Sample split based on the cross-sectional quintile ranks of EBIT/EV

EBIT/EV rank	Wealth Transfer (in million): WT1			Wealth Transfer as a percentage of pre-transaction market cap: %WT1			
	Sum	Mean	t-stat	Mean	t-stat	Weighted mean	t-stat
Lowest	-79,049	-10.329	-8.98	-9.93%	-14.73	-5.31%	-12.99
2	-210,070	-27.453	-2.75	-4.66%	-10.11	-3.67%	-12.90
3	-259,091	-33.802	-3.53	-0.77%	-1.57	-1.84%	-9.76
4	-196,111	-25.579	-2.41	0.81%	2.30	-1.60%	-8.02
Highest	140,305	18.343	1.61	3.14%	4.20	1.71%	3.82
Difference		-28.672	-2.51	-13.07%	-12.99	-7.02%	-11.59

Panel D: Sample split based on the quintile ranks of EBIT/EV over the overall sample

EBIT/EV rank	Wealth Transfer (in million): WT2			Wealth Transfer as a percentage of pre-transaction market cap: %WT2			
	Sum	Mean	t-stat	Mean	t-stat	Weighted mean	t-stat
Lowest	-146,323	-19.908	-11.30	-14.17%	-21.68	-8.95%	-20.17
2	-744,696	-98.077	-7.39	-8.17%	-16.24	-7.08%	-31.73
3	-693,429	-92.187	-7.00	-4.19%	-11.24	-5.34%	-28.17
4	-350,285	-44.754	-4.69	-2.68%	-9.51	-3.64%	-20.22
Highest	-134,486	-16.823	-2.39	-0.54%	-1.01	-1.93%	-5.93
Difference		-3.085	-0.43	-13.63%	-16.15	-7.02%	-12.74

Note: Book-to-market ratio BM is calculated as the ratio of book value of common equity as of the third fiscal quarter divided by the market value of common equity at the end of the current fiscal year. EBIT/EV is the ratio of trailing twelve months operating income after depreciation and amortization ending the third fiscal quarter, divided by enterprise value as of the end of the fiscal year. Enterprise value is the sum of market value of common equity as of the fiscal year end and the book value of debt and preferred stock as of the third fiscal quarter of the year. Definition of *WT1, WT2, %WT1* and *%WT2* can be found in Table 1.

Table 6: Wealth transfers stratified by valuation ratios: equity repurchasers

Panel A: Sample split based on the cross-sectional quintile ranks of BM

	Wealth Transfer (in million): WT1			Wealth Transfer as a percentage of pre-transaction market cap: %WT1			
BM rank	Sum	Mean	t-stat	Mean	t-stat	Weighted mean	t-stat
Lowest	-74,951	-22.562	-1.78	-1.45%	-5.22	-0.44%	-3.15
2	-91,236	-27.341	-4.12	-2.51%	-7.88	-0.90%	-5.80
3	18,589	5.551	0.74	-2.87%	-9.52	0.29%	2.24
4	-18,739	-5.609	-1.42	-3.64%	-13.12	-0.56%	-3.50
Highest	-22,909	-6.867	-1.30	-4.68%	-11.01	-1.84%	-7.91
Difference		-15.695	-1.14	3.22%	6.34	1.40%	5.16

Panel B: Sample split based on the quintile ranks of BM over the overall sample

	Wealth Transfer (in million): WT2			Wealth Transfer as a percentage of pre-transaction market cap: %WT2			
BM rank	Sum	Mean	t-stat	Mean	t-stat	Weighted mean	t-stat
Lowest	293,147	97.294	6.75	1.00%	3.92	1.47%	13.93
2	129,517	39.827	4.14	0.17%	0.80	1.32%	11.69
3	90,359	26.631	3.93	-0.57%	-2.29	1.68%	12.13
4	-37,654	-10.694	-1.12	-1.14%	-4.21	-1.80%	-8.89
Highest	16,222	4.627	0.99	-2.83%	-6.97	1.49%	5.01
Difference		92.667	6.12	3.83%	7.98	-0.02%	-0.05

Panel C: Sample split based on the cross-sectional quintile ranks of EBIT/EV

EBIT/EV rank	Wealth Transfer (in million): WT1			Wealth Transfer as a percentage of pre-transaction market cap: %WT1			
	Sum	Mean	t-stat	Mean	t-stat	Weighted mean	t-stat
Lowest	-8,591	-2.863	-0.26	-2.88%	-6.04	-0.18%	-0.74
2	-19,306	-6.378	-0.90	-2.46%	-8.25	-0.18%	-1.54
3	-57,022	-18.832	-2.48	-3.08%	-10.70	-0.61%	-5.68
4	-41,132	-13.620	-1.67	-2.68%	-10.50	-0.61%	-5.85
Highest	-34,940	-11.554	-1.81	-3.57%	-11.69	-0.76%	-5.22
Difference		8.692	0.68	0.69%	1.22	0.58%	2.05

Panel D: Sample split based on the quintile ranks of EBIT/EV over the overall sample

EBIT/EV rank	Wealth Transfer (in million): WT2			Wealth Transfer as a percentage of pre-transaction market cap: %WT2			
	Sum	Mean	t-stat	Mean	t-stat	Weighted mean	t-stat
Lowest	112,783	39.366	4.43	0.55%	1.40	1.95%	12.29
2	200,758	69.975	6.24	0.00%	0.01	1.62%	15.70
3	123,349	41.323	3.60	-0.40%	-1.64	1.40%	13.98
4	37,991	11.985	2.11	-0.82%	-3.72	0.62%	6.65
Highest	-20,975	-6.532	-0.58	-2.18%	-7.84	-0.69%	-3.48
Difference		45.898	3.20	2.73%	5.70	2.64%	10.43

Note: Book-to-market ratio BM is calculated as the ratio of book value of common equity as of the third fiscal quarter divided by the market value of common equity at the end of the current fiscal year. EBIT/EV is the ratio of trailing twelve months operating income after depreciation and amortization ending the third fiscal quarter, divided by enterprise value as of the end of the fiscal year. Enterprise value is the sum of market value of common equity as of the fiscal year end and the book value of debt and preferred stock as of the third fiscal quarter of the year. Definition of *WT1, WT2, %WT1* and *%WT2* can be found in Table 1.

Table 7: Analyst forecast errors by decile of net equity issuance

	FY2 Forecast Errors			LTG Forecast Errors		
	N	Mean	Median	N	Mean	Median
Lowest	7085	-2.37%	-0.34%	4531	-6.43%	-4.77%
2	7273	-2.18%	-0.33%	4938	-4.81%	-3.79%
3	7245	-2.41%	-0.37%	4883	-5.68%	-4.34%
4	7152	-2.80%	-0.46%	4767	-6.33%	-5.28%
5	7071	-3.69%	-0.78%	4240	-7.36%	-6.74%
6	7077	-3.81%	-0.79%	4177	-8.45%	-7.67%
7	6979	-4.04%	-0.83%	4019	-9.92%	-9.39%
8	7066	-3.86%	-0.77%	4059	-11.19%	-10.03%
9	7062	-3.60%	-0.74%	4117	-11.82%	-10.14%
Highest	7102	-4.05%	-0.96%	3993	-11.74%	-10.33%
Difference		-1.68%	-0.62%		-5.31%	-5.56%
t-stat/z-stat		-9.39	-12.53		-9.89	-11.50

Note: This table presents the mean and median forecast errors of analysts two years ahead consensus EPS forecasts (FY2) and consensus long-term growth forecasts (LTG) for deciles of EXF/CAPT. FY2 forecast error is calculated as (Actual two years ahead EPS – FY2)/Stock price. LTG forecast errors are the difference between actual future five year EPS growth as calculated by IBES and the current consensus LTG forecasts.

Table 8: The effect of wealth transfers via equity transactions on the returns to stocks with extreme valuations

Panel A: Cumulative returns to stocks in the lowest and highest book-to-market deciles

Years		1	2	3	4	5
		Actual cumulative market adjusted returns				
Lowest decile	Mean	-5.84%	-9.92%	-13.27%	-16.39%	-17.22%
	T-stat	-12.24	-15.85	-18.82	-21.70	-20.51
Highest decile	Mean	9.60%	18.68%	24.29%	26.52%	31.02%
	T-stat	18.19	24.59	26.03	25.21	26.03
		Hypothetical cumulative market adjusted returns				
Lowest decile	Mean	-6.93%	-13.33%	-18.95%	-23.60%	-26.06%
	T-stat	-13.84	-20.04	-25.53	-29.15	-29.21
Highest decile	Mean	9.02%	17.06%	20.95%	22.00%	25.03%
	T-stat	16.80	21.80	21.85	20.21	20.13
		Differences				
Lowest decile	Mean	1.08%	3.41%	5.69%	7.22%	8.84%
	T-stat	12.57	20.54	25.73	27.69	28.11
Highest decile	Mean	0.58%	1.62%	3.34%	4.52%	5.99%
	T-stat	7.73	10.22	14.32	14.87	15.68

Panel B: Cumulative returns to stocks in the lowest and highest EBIT/EV deciles

Years		1	2	3	4	5
		Actual cumulative market adjusted returns				
Lowest decile	Mean	2.38%	1.86%	-0.78%	-5.52%	-5.44%
	T-stat	3.66	2.21	-0.82	-5.49	-4.84
Highest decile	Mean	9.49%	18.23%	23.69%	27.71%	31.78%
	T-stat	24.55	30.58	31.72	31.61	31.48
		Hypothetical cumulative market adjusted returns				
Lowest decile	Mean	0.65%	-4.24%	-10.46%	-17.42%	-19.87%
	T-stat	0.96	-4.85	-10.60	-16.74	-17.49
Highest decile	Mean	9.45%	17.98%	22.90%	26.72%	29.83%
	T-stat	24.11	29.20	29.50	28.72	27.81
		Differences				
Lowest decile	Mean	1.73%	6.11%	9.67%	11.91%	14.43%
	T-stat	14.62	24.62	29.63	31.11	31.63
Highest decile	Mean	0.04%	0.25%	0.79%	0.99%	1.96%
	T-stat	1.02	2.40	4.52	4.33	6.82

Note: This table reports the cumulative market adjusted returns and the hypothetical cumulative market adjusted returns adjusted for equity transactions for stocks in the extreme deciles of BM and EBIT/EV. Definition of BM and EBIT/EV can be found in Table 4. Cumulative market adjusted returns over the future m months are calculated as: $A_{t+1,t+N} = \prod_{\tau=1}^{N}(1 + a_{t+\tau}) - 1$. Hypothetical cumulative market adjusted returns are calculated as: $A^{H}_{t+1,t+N} = (1 + a_{t+1}) \prod_{\tau=2}^{N} \left(1 + \frac{CAPT_{t+\tau-1} * a_{t+\tau}}{CAPT_t * (\prod_{m=2}^{\tau}(1+rx_{t+m-1}))}\right) - 1$, where $a_{t+\tau}$ represents the market-adjusted stock return for month $t + \tau$.