The Impact of Equity Market Timing on Firm Value: A Behavioral Approach

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Using data on Seasoned Equity Offerings in the U.S. over the period 1980-2000, the effects of equity market timing on the post-issue performance of issuing firms are examined. Most prior research evaluates SEO firms as a single group and find long-run underperformance after an SEO. The approach uses the Sentiment Index (Baker & Wurgler, 2006) to extract samples of market timing firms. Then, two distinct subsets are created from this data. The *opportunity* subset consists of firms that have viable investments opportunities while the *temptation* subset consists of those that do not. The temptation subset is so called because of the hypothesis that the managers of these firms succumb to the temptation of relatively cheap equity, even though they have no viable use for it. Using a matched sample methodology (Barber and Lyon 1997), the overall sample of market timing SEO firms displaying post-issue underperformance is confirmed; however, results show that the negative impact is actually driven by the set of firms without viable investment opportunities (*temptation)* subset while the *opportunity* subset does not underperform. On reviewing the use of funds by these firms (Kim & Weisbach, 2008 model), it is confirmed that the *opportunity* firms invest more heavily in R&D, while the *temptation* firms seek to invest outside their core business. This research has strong implications for firm financing decisions, especially firms that find themselves in the position to time the market for equity, using a seasoned equity offering.

JEL Codes: G02, G10, G14, G31

1. Introduction

Equity market timing (EMT) in this study refers to the issuance of overvalued equity. Graham and Harvey (2001) showed that timing the market for equity using seasoned equity offerings (SEOs) has become accepted practice. In theory, there is support for these actions, but how does this impact the value of the firm in the long run?

One of the arguments in favor of EMT is that by timing the market, managers are able to capture the benefit of overvaluation for the current shareholders. Only managers know the true value of their firms and when they determine that the price of their company's stock is trading above its actual worth, it gives the managers a *window of opportunity* to issue stock and raise funds at a cheaper rate than would otherwise be possible. The justification that current shareholders still benefit at the expense of the new shareholders is crucial to the EMT decision.

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The study of this issue is complicated by the fact that managers have an ulterior motive to issue additional equity. Equity issuance results in a greater level of free cash flow that managers could invest in a way that would increase their own utility through "empire building", or to make entrenching investments. Also, the observed effect of EMT is that the issuing firms on average underperforms a benchmark (typically a matched sample of firms that do not issue equity), for three to five years after the event. The underperformance is usually measured in terms of stock returns. However, as Baker and Wurgler (2002) summarized, conclusions drawn from the research in this area seem to laud the underperformance as evidence of "successful" market timing. The problem with this interpretation is that it ignores the fact that underperformance could also be the result of a bad decision to issue stock without having a use for these funds.

The aim of this study is to understand the long-run impact on firms that issue overpriced equity (using market timing). Based on a summary of the theory on equity market timing -- Is it always in the best interests of the firm and its shareholders? A behavioral methodology is used to show that equity market timing is not always beneficial to issuing firms. Most past studies show that the overall set of equity market timers underperforms; that result is confirmed, but is added to the literature by showing that the subset of firms that have viable investment opportunities do not actually underperform. It is the subset of firms that get tempted into issuing equity without having a viable use for these funds which underperform to such an extent that they drag down the overall set of equity market timers. The methodology used herein confirms that the *opportunity* and *temptation* subsets yields the correct results by reviewing the uses of funds post-issue. The *opportunity* subset invests significantly in R&D, while the *temptation* subset does not.

The rest of the paper is organized as follows. Section 2 discusses related literature. Section 3 details the methodology and the model used in this study. Section 4 presents results of the main analyses as well as insights into the use of funds by the opportunity and temptation subsets. Section 5 concludes.

2. Literature Review

Myers and Majluf (1984) drew up the theoretical basis for equity market timing. They consider a situation in which a firm's managers have superior information and show that managers are able to provide benefit for the current shareholders by issuing equity when the firm's stock price is overvalued as the new shareholders subsidize the current shareholders losses when the stock price falls to its correct value.

Lakonishok, Shleifer, and Vishny (1994) reviewed value strategies (purchasing stocks that have low prices relative to measures of fundamental value). They conclude that these strategies are able to provide the higher returns because they exploit the suboptimal behavior of the typical investor, and not because they are fundamentally more risky. La Porta et al. (1997) showed that value stocks outperform glamour stocks and suggest that behavioral factors play an important role. Stein (1996) used these results and explanations to develop a model that is based on the premise that the stock market is inefficient. He shows that when equity is overpriced and if the market under-reacts to equity issues, then management maximizes the wealth of existing shareholders by issuing equity. Choe, Masulis, and Nanda (1993) found that a higher number of firms choose to issue equity when the economy is expanding. They explain that this is

because the average negative reactions to SEOs are significantly less during these periods due to lower adverse selection costs.

With regard to empirical research, most long run studies on SEO issuance and equity market timing (SEO and IPO) find long run underperformance with regard to the issuing firms. However, not all researchers are in agreement on the explanation of the underperformance. Ritter (1991) suggested that investors are periodically overoptimistic about the earnings potential of young growth companies and that firms take advantage of these *windows of opportunity* (Bayless & Chaplinsky, 1996).

Spiess and Affleck-Graves (1995) supported the notion that managers take advantage of overvaluation in both the initial and SEO markets. An alternative explanation proposed by Fama (1998) is that SEOs may appear to perform poorly only because they are not evaluated against the correct benchmark. Jegadeesh (2000) addressed Fama's criticism by considering various benchmarks. His finding that the SEO firms underperform all of them leads him to conclude that this is supportive of the theory that the underperformance of SEOs is indeed related to market over-optimism about their future prospects.

Eckbo, Masulis, and Norli (2000) claimed that there is a consistent reasoning for the underperformance. They propose that since equity issuance leads to a lowering of default and liquidity risks for issuing firms, the underperformance observed in matched-firm studies results from a failure of the methodology to matched-firm technique to provide a proper control for risk. Once appropriate control is applied, they find that the post-SEO underperformance is insignificant. Jegadeesh (2000), however, challenged their claim by pointing to the fact that that the study by Eckbo, Masulis, and Norli (2000) included IPOs in their benchmark. The inclusion of new issues in the benchmark causes the level of underperformance to be significantly understated since their benchmark would have used the new issue anomaly to partially explain itself. More recently, Carlson, Fisher, and Gimmarino (2006) proposed a real-investment explanation of post-issue underperformance. They argue that when a firm with growth opportunities (options), finances and exercises these options through investment, it causes a decline in returns. This is because the new assets (assets in place) are less risky than the growth options that they replace. Their view is supported by Li, Livdan, & Zhang (2008). Hertzel and Li (2010) disputed this view. They segregate firms by decomposing the market to book ratio into growth and misvaluation components. They find that firms with better growth opportunities invest more in capital expenditures and R&D, than firms with greater mispricing.

This study addresses the theoretical basis of equity market timing through SEOs, and most importantly shows that it is not always beneficial for the issuing firm – as summarized by Baker and Wurgler (2002). In fact, prudent firms that have viable investment avenues are confirmed to perform well, while the firms that just raise equity capital without a use for it underperform so drastically that they pull down the overall set of equity market timing firms – the result observed in prior research that studies all EMT firms as a single set. The results obtained have strong implications for firm financing decisions. The behavioral approach that is used (Sentiment index, and the insider trading activity metric), to identify and separate EMT firms into subsets is also unique.

3. Methodology and Model

The sample covers the period 1981 – 2000. The reason that this study only runs till the year 2000 is because the Ownership Reporting System database which is used to extract insider trades at the insider / firm level ceased, effective December 31, 2000. Since this study is focused on firms that had the opportunity to time the market, the years in which markets could be classified as "hot markets" are identified. For this purpose, the sentiment index is used (Baker & Wurgler, 2006). The sentiment index (SI) is constructed as a linear combination of six sentiment proxies: the closed-end fund discount, number of IPOs, raw turnover ratio, average first-day returns of IPOs, proportion of equity issues in total equity and debt issues, and the log difference of the average market-to-book ratios of dividend payers versus non-payers. The SI proxy basically identifies overvaluation at the macro-level when investors are overly optimistic and thus a time when all firms would have an equity market timing opportunity.

During the years covered by this study, the sentiment index reaches a high of 1.82 and a low of -0.65. First, all SEO issuers are selected by picking the highest sentiment years (measured as >0.5). 1981,'82, '83,'84,'96,'97,'99,'00 are the years that fit this criterion. Since the long-run performance is being examined, if a firm has more than one SEO within a five year period, it is dropped from the sample. Also excluded are regulated utilities (SIC 4900 – 4999) and financial corporations (SIC 6000 – 6999). Only those firms that have available data in CRSP and Compustat are retained. The final sample consists of 411 equity market timers. Next, two sub-sets are created from this overall sample, based on the quality of these firm's investment opportunities. The firms with good investment opportunities have a use for new funds, and given that they have the chance to raise relatively cheap equity, it would be beneficial to raise additional equity capital. However, firms that do not have a use for these funds should not be raising more capital and if they are *tempted* to do so, they would be negatively impacted

In order to determine the quality of the investment opportunity set, an ex-ante proxy is needed. The "*direction of insider trade*" meets the requirement since it is a proxy that reflects the perception of the firm's managers. This is the group of people who, according to the theory of EMT know how good or bad the firm's investment opportunity set is. Adam and Goyal (2008) noted the problem that researchers face the developing ex-ante proxies for these, since they are generally unobservable to outsiders. However, Jenter (2005) pointed out that managers' decisions on their insider trades, puts their own money at risk. If they are wrong about the fundamental value of the firm, their own wealth is affected. Thus, the trades that manager's conduct in their personal portfolio is a strong indication of whether they view their firms stock as mispriced.

The direction of insider trades variable has in past research been constructed in a variety of ways, with the simplest being the volume of shares purchased by insiders during an estimation period minus the volume of shares sold during the same period (Rozeff & Zaman, 1998). The method of Xu (2006) is used, where the basic formula is weighted by the number of shares outstanding. Previous studies on equity issuing firms have documented that a larger proportion of firms' insiders are net sellers prior to the issue. Thus, the median is used to separate the net buyers (good investment opportunities), from the net sellers (few or no good investment opportunities). The data for insider buys and insider sales on the equation that follows is gathered from the Ownership Reporting System (ORS) database.

$$\text{Direction of Insider trade} \quad = \quad \frac{\sum\limits_{t-1}^{t}(\text{Insider Buy} - \text{Insider Sell})}{\text{Number of shares outstanding}_{t-1}}$$

The time t-1 = six months prior to the equity issue. If there are no transactions, then as far as one year from the date of issue is checked. Using the direction of insider trade metric, the subsets of equity market timing firms are not classified. All firms are ranked by the direction of insider trade: firms that have net insider buying (or low levels of insider sales) are classified as *window of opportunity (WOO)* firms. Sample firms that have high levels of insider sales are classified as *window of temptation* (WOT) firms. Next, the methodology and metrics are discussed to test for long-run performance.

Figure 1: Equity Figure market timing sub-sets based on the Sentiment Index, and investment opportunities

Investment Opportunity Set (IOS)	Equity Market Timing Potential	
	High market sentiment years	Low market sentiment years
Insiders sell = Poor IOS	Overvalued (WOT firms)	No Growth
Insiders Buy = Good IOS	Growth (WOO firms)	Undervalued

To study the long-run performance of the equity market timing firms, a benchmark (matching sample of non-issuers) is created. Barber and Lyon (1997) documented the presence of three biases in long-run return studies: the new listing bias, the skewness bias and the rebalancing bias. Barber and Lyon (1997) recommended using a matched sample of non-issuers for the benchmark and the BHR as the performance measure. The specific biases and the matching methodology are covered in greater detail in the section on matched samples. The BHR is computed as: $BHR_{i\tau} = \prod\limits_{t=1}^{\tau}[1 + R_{i\tau}] - 1$, which is computed over one, two, three, four and five years from the date of the market timed SEO. The data for this measure is obtained from the CRSP daily stocks database.

For the empirical tests, both the two sample t-test and the non-parametric Wilcoxon signed-rank test are used to check differences in the post issue performance of the overall EMT set as well as the WOO and WOT subsets compared to their matched sets. In addition, a Wilcoxon rank-sum test is used to check for differences in the post-issue performance of the WOO and WOT subsets.

4. Empirical Findings

Descriptive statistics for the SI sample is presented in Table 1. When compared on size, the firms in the full sample are smaller than the matched set, both on average (1.108 billion versus 1.115 billion) and median (185.29 million versus 194.65 million). The MB ratio for the sample

firms though is larger than the matched set. The full set has a mean of 8.26 and median of 3.05 versus 7.29 and 2.77 respectively for the matched sample.

Table 1	Matched Sample Comparison - Sentiment Index Sample Performance variable = Buy-and-hold Return			
This table compares the sample firms and the matched firms. The sample SEO firms are from sample 1A, chosen from firms with a low industry adjusted debt-to-equity ratio that issued equity during hot markets, characterized by years in which the sentiment index was high. The matched sample is obtained by matching the sample firms with non-issuing firms from the same industry (2-digit SIC code) that were of similar size (MV within 70% - 130%) of the issuing firm and closest market-to-book ratio, to the issuing firm. If no suitable match was found with the 2-digit SIC, then a 1 digit, and subsequently no industry matching was used (if needed). The window of opportunity firms are those that had a level of insider trading that was above the median for the full sample. The window of temptation firms were those with a level of insider trading below the median for the overall sample.				
	Overall Sample (n = 411)			
Variables	**Sample firms**		**Match Firms**	
	Mean	**Median**	**Mean**	**Median**
Size (Mil)	1108.94	185.29	1115.78	194.65
Market-to-Book	8.26	3.05	7.29	2.77
	Window of Opportunity Firms (n = 199)			
Variables	**Sample firms**		**Match Firms**	
	Mean	**Median**	**Mean**	**Median**
Size (Mil)	1588.69	220.4	1560.04	238.95
Market-to-Book	7.06	2.75	6.46	2.62
	Window of Temptation Firms (n = 212)			
Variables	**Sample firms**		**Match Firms**	
	Mean	**Median**	**Mean**	**Median**
Size (Mil)	658.62	138.12	698.76	144.12
Market-to-Book	9.38	3.54	8.06	2.9

Reviewing the subsets, the WOO firms are larger on average (1.59 billion), but smaller at the median (220.4 million) than their matched samples (1560.04 and 238.95 respectively). The WOT subsample is smaller (mean = 658.62 million, median = 138.12 million) than its matched set (mean = 698.76 million and 144.12 million) both on average as well as at the median. With respect to the MB ratio, the WOO and WOT firms have higher MB ratios than their matched samples.

By comparing the composition of the opportunity firms with that of the temptation firms, the average WOO firm is more than double the size of the average WOT firm, although at the median they are essentially small firms. In terms of the MB ratio, the WOT firms have a higher mean (9.38) and median (3.54) than the WOO firms (mean = 7.06, median = 2.75).

Table 2: Long Run Buy-and-Hold Return Performance Comparison

This table contains matched sample tests to check for significance in the differences of sample firms' BHR and matched firms' BHR over 1, 2, 3, 4 and 5 years. The sample firms are chosen from the high sentiment years of 1981,'82,'83,'84,'96,'97,'99 and '00. The Window of Opportunity firms are those firms within the sample of matched firms with a direction of insider trade above the median for the whole sample. The Window of Temptation firms are those that are below the median. Direction of insider trade is defined as -- {Net trades by insiders in the six months prior to the issue / Number of shares outstanding at the time of the issue}. The data on insider trades was obtained from the Ownership Reporting System database. The data for return on assets and the matching was collected using Compustat.

	Number of Matched Firms	Mean Difference	Student's t - test			Sign test			Wilcoxon Signed - Rank test		
			t - Stat		Pr > |t|	M - Stat		Pr >= |M|	S - Stat		Pr >= |S|
Panel A: Full Sample											
Year 1	411	-0.042	-1.08		0.28	-8.5		0.430	-4849	**	0.044
Year 2	394	-0.036	-1.39		0.17	-19	*	0.062	-5495	**	0.015
Year 3	344	-0.029	-1.01		0.31	-34	***	<0.001	-5728	***	0.002
Year 4	300	-0.061	-1.17		0.24	-21	**	0.018	-3656	**	0.015
Year 5	271	-0.041	-1.97	**	0.05	-11		0.224	-2190	*	0.090
Panel B: WOO Firms											
Year 1	199	-0.028	-0.51		0.61	-2.5		0.777	-1071		0.189
Year 2	195	0.011	0.27		0.78	-0.5		1.000	-715		0.366
Year 3	175	0.032	0.67		0.51	-5.5		0.450	-476		0.480
Year 4	154	0.004	0.13		0.90	-10		0.126	-854		0.124
Year 5	140	-0.009	-0.33		0.74	-1		0.933	-208		0.667
Panel C: WOT Firms											
Year 1	212	-0.055	-1.01		0.31	-6		0.450	-1372		0.125
Year 2	199	-0.083	-2.48	**	0.01	-18.5	**	0.011	-2170	***	0.007
Year 3	169	-0.092	-3.04	***	0.00	-28.5	***	<0.001	-2388	***	<0.001
Year 4	146	-0.068	-1.84	*	0.07	-11	*	0.082	-961	*	0.060
Year 5	131	-0.077	-2.35	**	0.02	-9.5		0.116	-880	**	0.043

*** indicates significance at the 1% level
** indicates significance at the 5% level
* indicates significance at the 10% level

Table 2 uses the t-test and the Wilcoxon signed-rank test to check the comparative performance between the EMT firms and their matched sets. The recommended Wilcoxon signed-rank test confirms that the full sample of Equity Market Timing firms significantly underperforms a matched sample for all five years. Thus, the findings from previous research are confirmed in this area.

From Panel B, it is confirmed that the WOO firms do not underperform in any of the five years following the SEO. The WOT firms on the other hand (Panel C) significantly underperform in four of the five years following the SEO and drag down the overall set of issuers with them. The results in this table are the most significant to this study. Hertzel and Li (2010) used a MB decomposition method to create subsets of all firms issuing stock over a thirty five year horizon and show that firms are motivated to issue equity due to overvaluation as well as financing needs. This study takes the most extreme cases of equity market timing, use a behavioral approach (direction of insider trades) and confirm their findings that firms that are overvalued (temptation firms in this study) underperform to a greater degree. The result in table 2 also show that the empirical evidence goes against the established theory as summarized by Baker and Wurgler (2002).

After evaluating the performance of sample firms against their matched sample, a horse-race was conducted between the opportunity and temptation subsets, the results are in Table 3 below. A Wilcoxon rank sum test is used since these are not matched samples. The temptation firms are found to significantly underperform the opportunity firms in two of the 5 years and in the remaining years, are very close to significantly underperforming. So irrespective of a match on Size and ROA, the temptation firms still underperform.

Table 3	Performance Measure (Buy-and-Hold Return) Wilcoxon Rank Sum Test - WOO vs WOT subsets							

Wilcoxon Rank Sum test and the independent group t-test are used to check for significance in the differences in the buy-and-hold return (BHR) of the "Window of Opportunity" (WOO) firms and the Window of Temptation (WOT) firms. This table contains results pertaining to the sample of firms chosen based on a high industry adjusted MB ratio. The sample covers the high investor sentiment years of 1981,'82,'83,'84,'96,'97,'99 and '00. The buy-and-hold returns are compared for the 5 years subsequent to the market timed SEO.

Period after SEO	Number of Firms	Mean BHR	Median BHR	Wilcoxon Test			t - Test	
				Mean Score	Z - Stat	Pr > |Z|	t -Stat	Pr > |t|
1 Year								
WOO	199	-0.01	-0.15	215.45	1.56	0.12	1.01	0.31
WOT	212	-0.09	-0.19	197.13				
2 Years								
WOO	195	0.02	-0.05	212.79	2.64 ***	0.01	2.47 **	0.01
WOT	199	-0.09	-0.16	182.52				
3 Years								
WOO	175	0.05	-0.07	181.25			1.72 *	0.09
WOT	169	-0.04	-0.12	163.44	-1.66 **	0.1		
4 Years								
WOO	154	0.08	-0.03	151.31			0.82	0.41
WOT	146	0.04	-0.05	149.65	-0.16	0.87		
5 Years								
WOO	140	0.07	-0.01	142.09			1.92 *	0.06
WOT	131	0.01	-0.04	129.49	-1.32	0.19		

*** indicates significance at the 1% level

** indicates significance at the 5% level

* indicates significance at the 10% level

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Now, the WOO subset is confirmed to clearly perform better than the WOT subset and does not display the usual underperformance that is observed in post-SEO studies. The main argument is that the managers of WOO firms are tempted by the perceived window of opportunity and issued stock regardless of their ability to prudently use the funds, and this lack of foresight is the differentiating factor in the post SEO returns between the WOO and the WOT firms. To test this, the method of Kim and Weisbach (2008) is used to observe the use of the capital raised during the market timed SEO. The following regression equation is used:

$$Y = \beta_1 ln \left[\left(\frac{primary}{total\ assets_0} \right) + 1 \right] + \beta_2 ln \left[\left(\frac{other\ sources}{total\ assets_0} \right) + 1 \right] + \beta_3\ ln[total\ asssets_0] + \sum_{i=1981}^{2000} \delta_i year + \varepsilon$$

The dependent variables in the above equation, the various uses of funds (Total assets, inventory, cash, capital expenditure (CapEx), acquisition, R&D and reduction in Long-term debt) are computed as follows:

$$Y = ln\left[\left((V_t - V_0/total\ assets_0) + 1 \right) \right]\ for\ V = total\ assets, inventory, or\ cash$$

$$Y = ln \left[\left(\left(\sum_{i=1}^{t} V_i \Big/ total\ assets_0 \right) + 1 \right) \right]\ for\ V = capital\ expenditure, acquisiton, RnD\ and\ reduction\ in\ long-term\ Debt$$

$$other sources = ln \left[\left(\sum_{i=1}^{t} \frac{(total\ sources\ of\ funds_i - primary\ capital)}{total\ assets_0} \right) \right] + 1$$

Where t = 1,2,3,4,5 years after the SEO.

The results provide us once again with a clear distinction in how the opportunity and temptation subsets used the funds, post SEO. The results of the regressions are presented in Table 4. The full sample and the two subsets all show a significant increase in total assets and cash fueled by the capital generated by the SEO. This is also reflected in the two subsets.

Comparing the WOO and the WOT samples, the opportunity subset using the SEO is found to proceed to significantly increase capital expenditures and R&D expenses for 4 years. The WOT firms in this sample also the new SEO capital to significantly ramp up capital expenditure, but do not consistently concentrate on R&D spending. Hertzel and Li (2010) also find the same in their study of all SEO issuers. In addition, the WOT firms also significantly reduce their level of inventory. This could be an indication of the temptation firms using the funds to diversify and invest outside their core business. Both the WOO and the WOT firms in the Sentiment index sample significantly increase acquisition expenses, although the WOT firms are more aggressive in this regard.

Table 4		Impact of SEO proceeds on Equity Market timing firm's assets and expenditures

We follow the method of Kim & Weisbach (2008) in determining the use of the use of funds raised in the SEO for the five years following the SEO. The sample contains firms that had SEOs during the highest investor sentiment years of 1981,'82,'83,'84,'96,'97,'99 & 2000 and thus defined as market timers. We use these regressions to determine how these firms use the funds raised in market timed SEO. We further break down the samples into the Window of Opportunity (WOO) and the Window of Temptation (WOT) subsets to ascertain the cause of the differences in performance noted earlier in this study. The regressions include year fixed effects. To fit the relevant results into the table, the coefficients for year fixed effects and total assets have not been reported. The complete regression equation used is below. Statistical significance levels are indicated as ***, ** and * for significance at the 1%, 5% and 10% levels respectively, using heteroskedasticity-consistent standard errors.

$$Y = \beta_1 \, ln\left[\left(\frac{primary}{total\ assets_0}\right) + 1\right] + \beta_2 \, ln\left[\left(\frac{other\ sources}{total\ assets_0}\right) + 1\right] + \beta_3 \, ln[total\ asssets_0] + \sum_{i=1981}^{2000} \delta_i year + \varepsilon$$

Variable	t	N	ln [Primary/ TA0 + 1]			ln [Other Sources/ TA0 + 1]			R2
			β1	t-stat		β2	t-stat		
Δ Total Assets	Full Sample								
	1	336	2.121	12.64	***	0.418	7.65	***	0.75
	2	269	2.78	12.56	***	0.361	5.9	***	0.72
	3	224	3.246	10.19	***	0.394	6.33	***	0.77
	4	208	3.565	11.71	***	0.358	7.52	***	0.82
	5	179	3.327	7.63	***	0.384	6.32	***	0.8
	WOO subset								
	1	171	2.3	9.69	***	0.455	4.07	***	0.76
	2	145	3.126	9.73	***	0.289	3.34	***	0.72
	3	121	3.604	10.52	***	0.294	4.67	**	0.79
	4	115	3.884	10.51	***	0.231	4.52	***	0.82
	5	98	4.038	6.24	***	0.248	3.22	***	0.77
	WOT subset								
	1	165	1.815	6.75	***	0.377	5.31	***	0.75
	2	124	2.403	6.75	***	0.423	4.76	***	0.75
	3	103	2.736	5.65	***	0.499	4.73	***	0.78
	4	93	3.024	6.43	***	0.493	7.6	***	0.86
	5	81	2.476	3.88	***	0.533	6.75	***	0.86

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Δ Inventory	**Full Sample**								
	1	362	-0.001	-0.48		0	0.28		0.03
	2	305	0.002	0.32		0.001	1.02		0.01
	3	274	-0.006	-0.93		-0.002	-1.11		0.1
	4	264	-0.011	-1.95	*	-0.001	-1.01		0.14
	5	246	-0.008	-1.39		-0.001	-0.94		0.1
	WOO subset								
	1	143	0.002	0.34		0.001	0.43		0.01
	2	121	0.013	0.63		0.003	1.15		0.06
	3	100	0.005	0.67		-0.001	-1.41		0.15
	4	95	-0.007	-1.49		0	0.28		0.14
	5	83	0.003	0.37		0	-1.07		0.13
	WOT subset								
	1	141	-0.008	-1.67	*	-0.001	-1.5		0.25
	2	109	-0.005	-2.24	**	-0.001	-1.94	*	0.23
	3	93	-0.013	-1.21		-0.005	-1.05		0.29
	4	85	-0.015	-1.67	*	-0.004	-1.14		0.31
	5	78	-0.007	-0.69		-0.003	-0.98		0.22
Σ CAPEX	**Full Sample**								
	1	364	0.018	3.86	***	0.002	2.62	***	0.23
	2	307	0.037	3.35	***	0.002	2.17	**	0.19
	3	276	0.059	3.51	***	0.004	1.6		0.26
	4	266	0.058	3.5	***	0.004	1.78	*	0.27
	5	248	0.07	3.38	***	0.004	1.66	*	0.28
	WOO subset								
	1	184	0.024	3.25	***	0.004	2.15	**	0.25
	2	165	0.056	2.72	***	0.003	1.82	*	0.21
	3	147	0.171	2.58	**	0.003	1.38		0.22
	4	142	0.059	2.27	**	0.002	1.63		0.19
	5	135	0.07	2.17	**	0.001	1.25		0.21
	WOT subset								
	1	180	0.009	3.66	***	0.001	1.68	*	0.43
	2	142	0.019	3.33	***	0.001	1.37		0.51
	3	129	0.044	2.62	**	0.005	1.22		0.37
	4	124	0.051	3.14	***	0.006	1.47		0.41
	5	113	0.063	2.96	***	0.006	1.48		0.39

Σ Acquisiton	**Full Sample**								
		1	371	0.005	1.19		0.001	1.34		0.14
		2	307	0.02	1.97	**	0.001	1.92	**	0.19
		3	276	0.008	2.61	**	0	1.59		0.21
		4	266	0.008	2.71	***	0.001	2.39	**	0.22
		5	248	0.011	2.78	***	0	2.33	**	0.25
	WOO subset								
		1	184	0.012	1.07		0.003	1.01		0.14
		2	165	0.031	1.57		0.001	1.19		0.26
		3	147	0.004	1.84	*	0	0.76		0.16
		4	142	0.004	1.89	*	0	0.35		0.18
		5	135	0.005	1.84	*	0	-0.01		0.21
	WOT subset								
		1	184	0.002	1.44		0.001	1.07		0.15
		2	142	0.008	2.15	**	0.001	1.69	*	0.27
		3	129	0.01	2	**	0.001	1.26		0.29
		4	124	0.01	2.23	**	0.001	2.39	**	0.31
		5	113	0.014	2.33	**	0.001	2.63	**	0.35
Σ R&D	**Full Sample**								
		1	364	0.017	2.63	***	0	0.24		0.16
		2	307	0.042	2.7	***	0	0.09		0.19
		3	276	0.051	2.53	**	0	0.07		0.17
		4	266	0.06	2.5	**	0.001	0.92		0.14
		5	248	0.074	2.33	**	0	0.14		0.16
	WOO subset								
		1	184	0.022	2.14	**	0.003	1.17		0.26
		2	165	0.053	2.06	**	0.003	1.7	*	0.28
		3	147	0.052	2.16	**	0.002	1.04		0.16
		4	142	0.065	1.89	*	0.002	1.37		0.12
		5	135	0.075	1.78	*	0.001	1.28		0.13
	WOT subset								
		1	180	0.008	2.29	**	-0.002	-0.69		0.14
		2	142	0.031	1.52		-0.003	-0.69		0.19
		3	129	0.047	1.47		-0.001	-0.5		0.21
		4	124	0.05	1.59		0.001	0.54		0.23
		5	113	0.071	1.5		0	-0.2		0.24

Δ Cash	Full Sample									
		1	364	0.8	3.62	***	0.243	4.03	***	0.21
		2	307	0.876	4.53	***	0.138	4.25	***	0.26
		3	276	1.348	4.85	***	0.157	4.04	***	0.34
		4	266	1.954	5.39	***	0.156	3.29	***	0.39
		5	248	1.459	4.49	***	0.151	3.8	***	0.38
	WOO subset									
		1	171	1.066	3.62	***	0.251	2.49	**	0.41
		2	145	1.015	2.74	***	0.108	1.72	*	0.29
		3	121	1.53	3.6	***	0.152	2.73	***	0.42
		4	115	2.136	3.15	***	0.087	1.56		0.45
		5	98	2.577	4.39	***	0.099	1.74	*	0.49
	WOT subset									
		1	165	0.771	3.26	***	0.143	2.39	**	0.3
		2	124	0.755	2.99	***	0.099	2.4	**	0.32
		3	103	1.169	2.76	***	0.205	2.46	**	0.41
		4	93	1.996	3.97	***	0.197	1.84	*	0.52
		5	81	0.929	2.55	**	0.208	1.95	*	0.54
Σ LT debt reduction	Full Sample									
		1	363	0.767	4.31	***	0.263	5.28	***	0.27
		2	305	1.357	5.63	***	0.232	5.47	***	0.25
		3	273	1.522	5.32	***	0.255	5.52	***	0.28
		4	264	2.161	6.11	***	0.261	6.25	***	0.4
		5	245	1.738	4.46	***	0.257	5.73	***	0.34
	WOO subset									
		1	183	0.934	3.35	***	0.341	4.72	***	0.34
		2	165	1.534	3.99	***	0.212	4.22	***	0.23
		3	146	1.726	3.61	***	0.263	5.02	***	0.28
		4	140	2.302	3.88	***	0.219	3.73	***	0.36
		5	133	1.453	1.95	*	0.259	4.35	***	0.29
	WOT subset									
		1	180	0.544	2.76	***	0.203	3.23	***	0.24
		2	140	1.263	4.66	***	0.251	3.47	***	0.3
		3	127	1.346	3.75	***	0.257	3.15	***	0.3
		4	124	2.07	4.52	***	0.284	4.43	***	0.47
		5	112	1.928	3.63	***	0.259	3.28	***	0.42

5. Conclusions

Overvalued equity and mispricing in general have received a fair amount of attention from researchers. Since this phenomenon has strong ramifications for the efficiency of capital markets, their existence, and reasons thereof, have been significant areas of research in finance. In terms of IPOs and SEOs, most studies agree that issuing firms underperform their benchmarks in the long run. The underperformance of SEOs, with which this study is concerned, suggests that issuers time their equity issuances to coincide with instances of overvaluation. The subsequent underperformance has been used as evidence that equity market timing benefits the current shareholders at the expense of new and existing shareholders. The subsets of the EMT firms have been studied to examine if this is a valid assumption.

In order to accept the popular belief that the current shareholders benefit from equity market timing, one has to overlook the fact that the very evidence of "successful market timing" is also the same evidence that indicates failure. The argument for successful market timing arises from the belief that if a stock is overvalued and managers issue equity, then the new shareholders buy into the firm at a higher price and as the stock then decreases to its correct lower price, they cushion the fall for the existing shareholders. As stated above, the same result is exactly observed for a firm that is correctly priced or mildly overpriced, that had no business issuing equity without viable investment opportunities in hand. In this scenario, the managers would end up making sub-optimal investments with the new funds, and waste the firms' resources. The firm would then underperform a set of matching firms that did not make the same mistake. This would hardly be considered as a successful or astute management by any stretch of the imagination. It would certainly not be beneficial for current shareholders. To distinguish between these possibilities, two sets of equity timers are compared: firms that have viable investment opportunities and firms without such opportunities.

For the overall sample, in terms of the post-issue return, the results support earlier findings that EMT firms underperform significantly in the years following the SEO. However, on closer examination, it becomes clear that the temptation firms without good investment opportunities (WOT) are the ones pulling down the overall sample. The ones that had a good investment opportunity set (WOO), did not underperform in the years subsequent to the SEO. This result is the most significant contribution of this research.

Previous studies lump all SEO issuers together and most researchers find post-issue underperformance in the overall set. This study confirms earlier research findings on post-issue underperformance, but extend the literature to show that in a sample of market timing firms, those that have a use for the new funds do not underperform. It is the firms that do not have a use for additional funds that underperform, if they are tempted into raising new capital. It is also these temptation firms that are the cause of the observed underperformance in the overall set of issuers.

This result is significant because it proves that equity market timing through SEOs is not always good for the current shareholders and in some cases, managers should just let the window of temptation pass them by. Also, post-issue underperformance can be viewed more logically as

failure on the part of managers instead of success. The results of this research also make a case for the use of insider trading data in conjunction with the sentiment ratio as a proxy for the ex-ante investment opportunity set.

Since significant differences are observed in post-issue performance between the sets of market timing firms, the manner in which the funds are used are analyzed, post-SEO, in order to ascertain the reason for the difference in performance. In particular, these findings are compared to the findings in other studies that find subsets of SEO issuing firms that do not underperform, Carlson, Fisher, and Gimmarino (2008) and Hertzel and Li (2010). The results obtained herein are similar to those of Hertzel and Li (2010), since we find that the better performing firms invest more heavily in R&D, while the underperforming firms do not.

The sample used in this study was limited by the dependence on the Ownership Reporting System (discontinued after December 31, 2000) for data on insider trades. There is a data set TFN now offered over the WRDS platform that can be used for insider trades covering the time period in this study and extends till the present. Given that this methodology is now established, it is recommended that it be applied to a larger set of equity issuers to check how this behavioral approach compares to the MB decomposition method of Rhodes-Kropf, Robinson, & Vishwanathan (2005) in determining sub-samples of Overvalued firms, and Growth Firms.

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