On Russell Index Reconstitution

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Abstract

This paper investigates whether abnormal returns exist due to transparent changes in domestic U.S. Russell equity indexes. Newly-listed (delisted) companies in the Russell 1000 and Russell 2000 indexes have significant positive (negative) abnormal returns in May and June but not in July. Newly-listed companies in these Russell indexes have significant positive abnormal returns on the reconstitution date, not on the announcement date. This may be due to the reticence of money managers to rebalance their portfolios prior to the reconstitution date in order to avoid tracking error. This study provides evidence that some firm attributes are changed when a company is added or deleted from the Russell indexes. In addition, changes in attributes predict the excess returns associated with index reconstitution. Finally, using intraday data from TAQ, we find that Russell inclusion and deletion is associated with some permanent changes in liquidity.

Russell, along with Dow Jones and McGraw-Hill's Standard & Poor's unit, are among the best-known providers of equity indexes, which are used to track broad portions of the stock market. S&P indexes are not rules-based while Russell indexes are. All changes in the S&P indexes are fully discretionary and are determined by the Index Committee based upon public information. However, the inclusion and deletion of firms for the Russell indexes are more transparent and are reconstituted every June 30 based on stocks' May 31 total market capitalization. It is well established in the literature that when a stock is added to the S&P 500 index, it earns positive abnormal returns on the order of about 3% and experiences increased trading volume.[1] By contrast, Russell indexes have received little attention despite the fact that a significant amount of assets under management are specifically tied to these Russell indexes. As of May, 2001, there was approximately $130 billion in assets benchmarked to the Russell indexes.[2] To fill this gap in the literature, this study empirically addresses the Russell index reconstitution effect.[3]

Because of their concerns about excessive tracking error, investment managers tied to the Russell indexes closely watch potential additions and deletions to these indexes. Other portfolio managers may follow the reconstitution closely to try to profit from return movements around the index reconstitution date. In fact, such an intention has attracted attention from the financial press.[4] In addition, since Russell index composition is based on May 31 market capitalization and is highly predictable, reconstitution return movements provide insights regarding market efficiency. To rigorously address such an important issue, this study, using data from 1979 to 1997, consider a broader spectrum of possible Russell index transitions such as stocks moving

[1] See Shleifer (1986), Harris and Gurel (1986), Dhillon and Houston (1991), Beneish and Whaley (1996), and Lynch and Mendenhall (1997).
[2] Lauricella and Brown, "What Constitutes a Russell 2000 Stock Is No Small Matter", *The Wall Street Journal*, May 31, 2001.
[3] A contemporary work on Russell index inclusion by Madhavan (2001) examines additions and deletions to the Russell 2000 and Russell 3000 indexes from 1996 to 2001. Madhavan only shows the total returns of the additions and deletions as well as the spread between these two, but fails to show if such returns are abnormal.
[4] Terzah Ewing, "Russell's Success Poses Headache For Managers", *The Wall Street Journal*, January 31, 2000. Terzah Ewing, "Remaking Russell 2000 Shakes Up Small Stocks", *The Wall Street Journal*, June 26, 2000.

from the Russell 1000 growth index to the Russell 1000 value index or from the Russell 1000 to the Russell 2000.

The rest of the paper is organized as follows. Section I describes the sample and the data. Section II summarizes average equity returns around index reconstitution. Section III evaluates whether the abnormal returns are associated individual firm attributes. Section IV shows the liquidity changes due to index reconstitution, and Section V summarizes our conclusions.

I. The sample and the data

We obtain the detailed stock holdings of the Russell 1000, Russell 1000 Growth, Russell 1000 Value, Russell 2000, Russell 2000 Growth, and Russell 2000 Value indexes since 1979 from the Frank Russell Company. Stock returns are extracted from CRSP while accounting data for these issues are from the annual Compustat files. For each firm, we construct a rank score of market capitalization and book-to-market ratio every year. A company in the universe (NYSE, Amex, and NASDAQ) is assigned a size and book-to-market score of 0 (the smallest) to 1 (the largest) according to its market capitalization and book-to-market ratio, respectively. Firms with negative book value or with a price below $1 at the time of portfolio formation are excluded from our calculations.[5] To avoid using information not available to market participants, this study restricts itself to using the accounting numbers starting four months after the end of the latest fiscal year. In addition, we retrieve the number of analysts covering the stock from the IBES summary file, the fractional institutional ownership from CDA Spectrum, and the intraday data needed to estimate various liquidity measures from the TAQ database.

The Russell 1000 Index contains the largest 1000 domestic companies and Russell 2000 Index contains the next largest 2000 domestic firms. Within each size category, a firm is further assigned to Russell style indexes. Since Russell uses a non-linear probability function based on a stock's price-to-book ratio and its average IBES long-term growth forecast to assign a stock to growth and value indexes, many stock are assigned to Russell growth and Russell value indexes simultaneously. To avoid

[5] This ensures that our results are not driven by extreme price movements in these low price stocks. It also avoids any confounding effect associated with stocks with negative book value being arbitrarily assigned to the value category.

confounding factors associated with this partial growth-value assignment, this study only includes stocks that are assigned to a unique Russell style indexes.

Table 1 provides sample statistics. In 1979, the average market capitalization for stocks in the Russell 1000 Growth index was $889 million, and the average size for stocks in the Russell 2000 Growth was $47 million. By 1979, the average size increased to $8.74 billion for stocks in the Russell 1000 Growth and $466 million for stocks in the Russell 2000 Growth. In 1979, there were 992 stocks in the Russell 2000 uniquely assigned to either the Russell 2000 Growth or the Russell 2000 Value, while there were 1,474 stocks in 1997. Panel C shows the transition matrix average number of compositions in Russell style indexes. By transition matrix, we mean a tally of firms that move from one index to another, say the Russell 2000 Growth to the Russell 1000 Growth. We see relatively few switches that involve changes of both size and book-to-market style dimensions. For example, on average only four companies switch from the Russell 1000 Growth to the Russell 2000 Value index, and only two companies switch from the Russell 2000 Growth to the Russell 1000 Value index. Throughout this study, we will focus on cells of the transition matrix that are reasonably well-populated and have at least 10 firms per year on average. Panels D and E show that the Russell size and growth-value classification is coherent to our rank scores of size and book-to-market. Few big companies are deleted from the Russell 1000 indexes as shown in Panel C and Panel D. Most of these delistings are due to mergers and acquisitions, not to bankruptcy. To avoid confounding effect between the index deletion and the mergers as well as few number of Russell 1000 firms that become delisted from the Russell 1000 and 2000 indexes altogether, these deletions are excluded in our analysis.

II. Do abnormal returns exist in the transparent Russell index reconstitution?

Since Russell changes the composition of its indexes every June in a very transparent manner, proponents of market efficiency will expect no abnormal returns on the announcement and reconstitution dates. However, Amihud and Mendelson (1986) show that asset values are inversely related to transaction costs. If index inclusion is associated with permanent increases in trading volume or other important dimensions of liquidity, these reduced future trading costs may translate into a permanent increase in intrinsic

value. From an information perspective, index inclusion may be associated with changes in analyst coverage that affects the degree of information asymmetry and trading costs, thereby affecting returns. This paper will first address the issue of whether abnormal returns exist in Russell index reconstitution.

In an event study, the abnormal return is usually measured against the market expected return typically using a single index regression method over a pre-event period. One of key drawbacks of this method is that the measurement errors associated with the beta estimate may affect the result dramatically. We sidestep this potentially difficult issue by measuring the abnormal return of each stock as its return minus the return of the relevant Russell style indexes. For a company included in a Russell index both before and after the reconstitution date, its return benchmark in May, June, and July is its associated Russell index during that month. For a company added to a Russell index, its return benchmark prior to index inclusion is assigned as its post-reconstitution date Russell index. For a company delisted from a Russell index, its return benchmark is its previously assigned Russell index over these three months.

Table 2 reports the average abnormal return of firms for each Russell index transition around index reconstitution in May, June, and July. Newly-listed companies in the Russell style indexes have significant positive abnormal returns in May and June but not in July. Delisted companies in the Russell indexes suffer significant negative abnormal returns in May and June but not in July. For switchers, companies that move from value to growth Russell indexes experience significant positive abnormal returns in May and June but not in July. However, companies switching from Russell growth indexes to Russell value indexes realize significant negative excess returns in May and June but not in July. The results are robust for the entire period from 1980 to 1997 as well as both sub-periods from 1980 to 1989 and 1990 to 1997.

To better understand the timing associated with the reconstitution effect, we examine daily returns around the index announcement date (May 31) and the index reconstitution date (June 30). Table 3 reports daily excess returns around index reconstitution. Newly-listed companies in the Russell style indexes have significant positive abnormal returns on the reconstitution date, but not on the announcement date. Compared to newly-listed stocks, delisted stocks appear to be dumped at least one day

before index reconstitution. This is consistent with the indexing hypothesis. Although money managers most likely know the index compositions on May 31st, they tend not to rebalance their portfolios until the time of index reconstitution in order to avoid tracking error.

It is interesting to note that firms switching from the Russell 2000 to the Russell 1000 experience significant positive returns around the announcement date. These firms perform well over the prior year and grow large enough to be included in the Russell 1000. From the perspective of money managers benchmarked against the Russell 1000, these companies have relatively small weights when they enter the Russell 1000 benchmark. As a result, money managers tied to Russell 1000 index tend to act earlier to capture these positive abnormal returns without inducing high tracking errors.

III. Changes in attributes due to index reconstitution

From an information perspective, index inclusion may be associated with changes in analyst coverage that affects the degree of information asymmetry and trading costs, thereby affecting returns. Pruitt and Wei (1989) study the portfolio rebalancing of institutional investors following index replacements and find a positive relation between the average change in a stock's portfolio weights and its announcement period abnormal return. We explicitly examine whether these abnormal returns are associated changes in attributes such as return volatility, fractional institutional ownership, size, book-to-market, momentum, and analyst coverage. Table 4 reports changes in these attributes associated with Russell index reconstitution. The de-listed stocks from Russell 2000 experience large increases in return volatility and book-to-market rank but large decreases in the institutional ownership and size rank. It is noticeable that there is an increase in rank score for these deletions. It may mainly reflect that these poor performing stocks have been over-dumped before the index reconstitution. On the other hand, new-listed firms to either Russell 1000 or Russell 2000 experience significant reduction in return volatility and attract large attention from institutional investors.

From a practitioner's point of view, it is even more important to know whether changes in these firm attributes can reliably predict the excess returns associated with index reconstitution. We address this issue in Table 5 mainly using Fama and MacBeth

(1973) cross-sectional analysis of June excess returns. We construct the changes in attribute for each index composition prior to April every year. We find that these firm attributes do have some predictive power. For example, de-listed stocks from Russell 2000 tend to have more negative June excess returns if institutional investors increase their holdings of the company prior to April, because institutional investors then have to dump them harder at the time of index reconstitution.

IV. Changes in liquidity due to index reconstitution

We retrieve intraday data to estimate various liquidity measures from the TAQ database from March 1 to October 31 every year starting in 1993. For each stock, we retrieve intraday data in 5-minute intervals for a total of 78 intervals everyday from 9:35am to 4:00pm. The most current trade price is obtained for each interval. The prevailing quote is the most current quote in effect at least 5 second prior to the trade but within the 5-minute interval. The trade size is the sum of all trades that occur with the same time stamp and with the same trade price. The quote depth is the sum of the size at the highest bid price and the size at the lowest ask price only, if multiple quotes occur at the same time. For the trade signal, we follow Lee and Ready's (1991) algorithm to classify trades into buys and sells.[6]

This study uses the following measures for the liquidity measure:

1. Quoted relative spread = (ask-bid) / the midpoint of bid-ask spread
2. Quoted depth = depth at ask price + depth at bid price
3. Relative effective spread = $\dfrac{2\sum_{t=1}^{t=78}\left|P_t - \frac{Ask_t + Bid_t}{2}\right| \times TradeSize_t}{\sum_{t=1}^{t=78} TradeSize_t}$
4. Signed order flow = trade size* trade signal
5. Block trading = trade size if trade size>5000 shares

[6] Trades at prices above the midpoint of the bid-ask interval are classified as buys, and trades below the midpoint are classified as sells. Trades that occur at the midpoint of the bid and ask are classified using the "tick test." The tick test classifies trades executed at a price higher than the previous trade as buys, and trades executed at a lower price as sells. If the trade occurs at the same price as the last trade, then its price is compared to next most recent trade. This is continued until the trade is classified.

6. Components of direct cost π_1 and information asymmetry cost $(1-\pi_1)$ in bid-ask spread

We estimate these two components based on the following regression proposed by George, Kaul, and Nimalendran (1991):[7]

$$2RD_t = \pi_0 + \pi_1 s_{q,t}(Q_t - Q_{t-1}) + \varepsilon_t$$

Where RD is the transaction return minus the midpoint return

$s_{q,t}$ is the quoted relative spread

Q_t is the trade signal

We pool intra-daily data across a period to run regression for each stock for two periods: pre-listing period from March 1 to April 30 and post-listing period from August1 to September 30. After getting π_1, we report the product of π_1 $(1-\pi_1)$ and the average quoted relative spread over either pre-listing period or post-listing period as the direct (information asymmetry) cost component of transaction cost.

Table 6 reports changes in liquidity around index reconstitution. Firms that stay in the Russell 1000 or the Russell 2000 Growth appear to enjoy lower effective spread. Newly-listed firms either in the Russell 1000 or the Russell 2000 enjoy a significant decrease in the direct cost and the effective spread. Only 30.8 percent of new-listed firms to Russell 1000 index experience an increase in the direct cost component from the pre-listing period to post-listing period. Given that Russell reconstitutes indexes every June, it is less likely expected that the asymmetric information cost component will be reduced significantly for the additions to Russell style indexes. This result is consistent with what Hegde and McDermott (2000) find. Based on a sample of 74 NYSE listed firms added to the S&P 500 index during Jan 1993 to Oct 1998, Hegde and McDermott (2000) document that the main improvement in liquidity for the additions to the S&P 500 is due to a decline in the direct cost, not the asymmetric information cost, of trading.

[7] Van Ness, Van Ness, and Warr (2000) document that the model of George et al. (1991) does a fair job in capturing information asymmetries.

Delisted firms from Russell 2000 suffer a significant and relative large increase in quote relative spread. There are 74.8 percent of these de-listed firms experiencing an increase in the quote relative spread from the pre-listing period to post-listing period. While firms that switch from the Russell 1000 to the Russell 2000 or from the Russell 2000 to the Russell 1000 enjoy lower effective spreads, only switching firms from Russell 2000 to Russell 1000 have significantly reduced direct costs. For the quoted depth, trade size, and the block trading size, we do not find significant changes due to Russell index reconstitution.

V. Conclusion

This paper investigates whether abnormal returns exist in Russell transparent index reconstitution. Newly-listed (delisted) companies in the Russell style indexes have significant positive (negative) abnormal returns in May and June but not in July. Newly-listed companies in the Russell style indexes have significant positive abnormal returns on the reconstitution date, not on the announcement date. Compared to newly-listed stocks, delisted stocks appear be sold at least one day earlier before index reconstitution. Although money managers most likely know the index compositions on May 31st, they tend not rebalance their portfolios until the time of index reconstitution in order to avoid tracking error.

This study also provides some evidence that firm attributes are changed associated with Russell index reconstitution. For example, the de-listed stocks from Russell 2000 experience large increases in return volatility but large decreases in the institutional ownership. On the other hand, new-listed firms to either Russell 1000 or Russell 2000 experience significant reduction in return volatility and attract large attention from institutional investors. In addition, changes in firm attributes predict the excess returns associated with index reconstitution.

Finally, some of the Russell index transitions appear to be associated with permanent changes in various dimensions of liquidity. Newly-listed firms either in the Russell 1000 or the Russell 2000 enjoy a significant decrease in the direct cost and the effective spread. Delisted firms from Russell 2000 suffer a significant and relative large increase in quote relative spread. Firms that stay in the Russell 1000 or the Russell 2000

Growth appear to enjoy lower effective spread. While firms that switch from the Russell 1000 to the Russell 2000 or from the Russell 2000 to the Russell 1000 enjoy lower effective spreads, only switching firms from Russell 2000 to Russell 1000 have significantly reduced direct costs.

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Table 1 Statistics of Composition Changes in Russell Style Indexes
(Excluding Partial Growth-Value Assignments)

Changes in numbers of index compositions across years are recorded over 1980 to 1997. In each year, a company in the universe (NYSE, Amex, and NASDAQ) is assigned a size and book-to-market score of 0 (the smallest) to 1 (the largest) according to its May market capitalization ($million) and book-to-market ratio, respectively. The value-weighted score is calculated for each index group. Panel A and B reports statistics for Russell style indexes in 1979 and 1997, respectively. The time-series average of numbers of companies in each index is reported with the minimum number reported in the bracket in Panel C. The time-series average of size and book-to-market score is reported in Panel D and Panel E, respectively.

Prior Year	Current Year					
	Russell 1000 Growth	Russell 1000 Value	Russell 2000 Growth	Russell 2000 Value	Delisted from Russell	ALL
Panel A. 1979 Statistics						
Numbers	469	531	451	541		
Average Market Cap.	889.22	808.32	47.38	43.75		
Size Score	0.96	0.96	0.65	0.63		
Book-to-Market Score	0.23	0.6	0.13	0.79		
Panel B. 1997 Statistics						
Numbers	283	405	765	709		
Average Market Cap.	8743.2	6480.43	466.34	447.32		
Size Score	0.98	0.97	0.77	0.77		
Book-to-Market Score	0.11	0.47	0.20	0.67		
Panel C. The average number of companies						
Russell 1000 G	327 [201]	49 [2]	10 [4]	4 [1]	6 [1]	
Russell 1000 V	39 [3]	412 [287]	1 [1]	21 [9]	6 [1]	
Russell 2000 G	27 [11]	2 [1]	266 [217]	10 [1]	69 [16]	
Russell 2000 V	2 [1]	15 [2]	7 [1]	345 [258]	66 [28]	
Not in Russell	21 [11]	12 [3]	161 [93]	46 [10]		239 [129]
ALL					145 [59]	
Panel D. The value-weighted size score						
Russell 1000 G	0.97	0.95	0.8	0.77	0.91	
Russell 1000 V	0.96	0.97	0.79	0.8	0.91	
Russell 2000 G	0.85	0.86	0.72	0.59	0.47	
Russell 2000 V	0.85	0.84	0.68	0.69	0.5	
Not in Russell	0.89	0.91	0.66	0.63		0.81
ALL					0.73	
Panel E. The value-weighted book-to-market score						
Russell 1000 G	0.23	0.51	0.19	0.82	0.36	
Russell 1000 V	0.37	0.62	0.27	0.79	0.57	
Russell 2000 G	0.13	0.44	0.16	0.7	0.35	
Russell 2000 V	0.44	0.63	0.25	0.79	0.77	
Not in Russell	0.26	0.57	0.13	0.73		0.3
ALL					0.49	

Table 2 Performance of Russell Indexes Around Index Reconstitution
(Excluding Partial Growth-Value Assignments)

The equally-weighted return is calculated for each Russell style index, new lists, and defunct lists in each May, June, and July. The excess return of each index relative to the associated Russell style index is recorded in a row of "Dif". For a company existing in Russell indexes across reconstitution date, its return benchmark in each of May, June, and July is its associated Russell index in that month. For a company new to Russell indexes, its return benchmark is its assigned Russell index over these three months. For a company de-listed from Russell indexes, its return benchmark is its prior assigned Russell index over these three months. The time-series average of these returns across years during a period is reported with the associated t-value in the parentheses. All monthly figures are in a percentage format. The statistics are done for three periods, Year 1980 to 1989, Year 1990 to1997, and Year 1980 to 1997.

Panel A: Year 1980 to 1989

A1. Existing Lists

Prior Year	Current Year											
	Russell 1000 Growth			Russell 1000 Value			Russell 2000 Growth			Russell 2000 Value		
	May	June	July	May	June	July	May	June	July	May	June	July
R1G	2.546	2.933	0.236	-0.382	-0.109	0.372	0.523	-1.223	-1.446	-5.663	0.390	-2.977
Dif	1.122	0.608	-0.517	-1.806	-1.735	-0.010	-0.901	-2.491	-0.858	-7.087	-1.224	-3.392
	(2.94)	(2.24)	(-1.35)	(-2.49)	(-2.65)	(-.01)	(-.50)	(-2.08)	(-.59)	(-2.50)	(-.26)	(-1.41)
R1V	3.369	4.994	0.438	1.855	1.666	0.153	-10.03	-17.11	-0.976	-1.143	-1.294	-0.513
Dif	1.557	2.669	-0.315	0.043	0.040	-0.229	-13.39	-14.78	-1.086	-2.955	-2.908	-0.928
	(2.89)	(5.65)	(-.62)	(.12)	(.15)	(-.86)	(-2.50)	(-2.99)	(-.75)	(-2.37)	(-1.85)	(-.68)
R2G	6.772	4.503	-0.224				2.993	2.491	-1.370	-4.420	-8.280	-4.677
Dif	4.717	2.178	-0.977				0.938	1.223	-0.782	-6.475	-9.894	-5.092
	(6.58)	(1.25)	(-.92)				(3.02)	(3.04)	(-2.50)	(-2.41)	(-4.30)	(-2.25)
R2V	5.835	6.103	-2.423	2.077	4.744	1.343	4.469	12.672	-4.753	1.345	1.127	0.725
Dif	4.776	4.021	-2.337	0.277	3.118	0.961	1.970	11.663	-4.778	-0.455	-0.487	0.310
	(2.37)	(2.47)	(-1.17)	(.14)	(3.32)	(1.32)	(.54)	(1.92)	(-1.44)	(-1.59)	(-2.26)	(1.43)

A2. New or Defunct Lists in Each Style Index

	Russell 1000 Growth			Russell 1000 Value			Russell 2000 Growth			Russell 2000 Value		
	May	June	July	May	June	July	May	June	July	May	June	July
New-Listed Compositions												
Ret	3.784	4.948	-1.420	2.146	2.795	0.679	5.517	2.996	-0.831	3.144	2.053	0.401
Dif	2.360	2.623	-2.173	0.334	1.169	0.297	3.462	1.728	-0.243	1.344	0.439	-0.014
	(2.89)	(1.78)	(-1.62)	(.40)	(2.08)	(.24)	(3.13)	(2.30)	(-.73)	(2.05)	(.45)	(-.01)
De-Listed Compositions												
Ret	0.974	0.029	1.635	1.672	1.059	1.518	-2.060	-5.656	-1.807	-0.464	-1.259	-0.681
Dif	-0.450	-2.296	0.882	-0.140	-0.567	1.136	-4.115	-6.924	-1.219	-2.264	-2.873	-1.096
	(-.34)	(-1.15)	(.60)	(-.08)	(-.40)	(.70)	(-2.56)	(-4.80)	(-.88)	(-2.36)	(-4.15)	(-1.53)

A3. Entire New or Defunct Lists

	All Style Indexes		
	May	June	July
New-Listed Compositions			
Return	4.747	2.813	-0.619
Difference	2.756	1.367	-0.367
	(2.94)	(2.50)	(-1.08)
De-Listed Compositions			
Return	-0.699	-3.033	-0.799
Difference	-2.612	-4.678	-0.496
	(-2.33)	(-5.89)	(-.51)

Table 2—*Continued*

Panel B: Year 1990 to 1997

B1. Existing Lists

Prior Year	Current Year											
	Russell 1000 Growth			Russell 1000 Value			Russell 2000 Growth			Russell 2000 Value		
	May	June	July	May	June	July	May	June	July	May	June	July
R1G	4.800	-0.737	1.976	3.144	-0.493	1.277	5.132	-1.359	-2.570	5.757	2.618	-2.682
Dif	0.450	-0.481	-0.236	-1.206	-0.298	-1.051	0.782	0.247	-3.352	1.407	2.915	-3.714
	(.87)	(-.90)	(-.65)	(-.89)	(-.23)	(-.91)	(.29)	(.17)	(-1.63)	(.28)	(1.16)	(-1.69)
R1V	5.572	0.884	1.238	3.413	-0.008	2.074	0.556	40.941	-0.087	-0.613	1.612	-1.054
Dif	2.229	1.140	-0.974	0.070	0.187	-0.255	-2.761	44.294	-0.097	-3.955	1.909	-2.085
	(1.66)	(.91)	(-1.03)	(.28)	(1.30)	(-.99)	(-.41)	(1.32)	(-.02)	(-3.36)	(2.93)	(-1.82)
R2G	10.224	-2.134	3.592	-5.159	-1.455	4.630	6.575	-1.562	0.579	1.819	-6.352	0.916
Dif	5.379	-1.878	1.379	-11.31	-1.805	2.048	1.730	0.044	-0.203	-3.026	-6.054	-0.115
	(5.37)	(-1.15)	(.88)	(-3.66)	(-.48)	(.69)	(2.97)	(.08)	(-.55)	(-2.44)	(-2.00)	(-.08)
R2V	18.413	-3.513	4.898	6.804	-1.603	4.872	10.599	-0.397	2.934	3.027	0.137	0.901
Dif	14.693	-2.669	2.963	3.282	-1.408	2.543	7.077	1.209	2.152	-0.496	0.435	-0.130
	(2.40)	(-.50)	(.91)	(2.46)	(-1.97)	(1.92)	(3.57)	(.97)	(.95)	(-1.18)	(1.14)	(-.32)

B2. New or Defunct Lists in Each Style Index

	Russell 1000 Growth			Russell 1000 Value			Russell 2000 Growth			Russell 2000 Value		
	May	June	July	May	June	July	May	June	July	May	June	July
New-Listed Compositions												
Ret	7.874	-0.507	1.803	5.139	-0.115	2.780	9.169	1.147	-0.419	4.294	2.416	-0.099
Dif	3.524	-0.251	-0.410	1.796	0.080	0.451	4.324	2.753	-1.202	0.772	2.714	-1.131
	(1.88)	(-.20)	(-.25)	(1.23)	(.07)	(.46)	(3.74)	(2.05)	(-1.28)	(1.23)	(2.72)	(-1.20)
De-Listed Compositions												
Ret	4.528	2.351	-10.63	-2.692	2.515	-6.476	0.427	-5.446	2.396	-0.549	-5.044	4.939
Dif	-0.437	2.047	-10.16	-6.348	2.635	-5.606	-4.418	-3.840	1.613	-4.071	-4.746	3.907
	(-.11)	(1.02)	(-5.60)	(-1.58)	(.87)	(-9.90)	(-3.59)	(-3.00)	(1.09)	(-3.47)	(-4.16)	(3.55)

B3. Entire New or Defunct Lists

	All Style Indexes		
	May	June	July
New-Listed Compositions			
Return	7.983	1.155	-0.127
Difference	3.520	2.343	-1.015
	(4.14)	(2.19)	(-1.09)
De-Listed Compositions			
Return	0.152	-5.580	3.459
Difference	-4.296	-4.731	2.437
	(-3.87)	(-6.37)	(3.57)

Table 2—*Continued*

Panel C: Year 1980 to 1997

C1. Existing Lists

Prior Year	Current Year											
	Russell 1000 Growth			Russell 1000 Value			Russell 2000 Growth			Russell 2000 Value		
	May	June	July	May	June	July	May	June	July	May	June	July
R1G	3.548	1.302	1.009	1.186	-0.280	0.774	2.572	-1.284	-1.945	-0.588	1.380	-2.846
Dif	0.824	0.124	-0.392	-1.539	-1.097	-0.473	-0.153	-1.274	-1.966	-3.312	0.616	-3.535
	(2.63)	(.41)	(-1.50)	(-2.19)	(-1.59)	(-.71)	(-.10)	(-1.34)	(-1.61)	(-1.18)	(.22)	(-2.20)
R1V	4.348	3.167	0.794	2.547	0.922	1.007	-3.680	17.722	-0.442	-0.907	-0.002	-0.754
Dif	1.855	1.989	-0.608	0.055	0.105	-0.241	-7.014	20.664	-0.492	-3.399	-0.767	-1.442
	(2.85)	(3.21)	(-1.23)	(.24)	(.69)	(-1.32)	(-1.46)	(.88)	(-.18)	(-3.99)	(-.72)	(-1.61)
R2G	8.306	1.553	1.472	-5.159	-1.455	4.630	4.585	0.689	-0.504	-1.647	-7.423	-2.191
Dif	5.011	0.375	0.070	-11.31	-1.805	2.048	1.290	0.699	-0.525	-4.942	-8.187	-2.880
	(8.58)	(.29)	(.08)	(-3.66)	(-.48)	(.69)	(4.09)	(2.03)	(-2.17)	(-3.08)	(-4.41)	(-1.90)
R2V	11.338	1.896	0.780	4.178	1.923	2.911	7.354	6.522	-1.135	2.092	0.687	0.803
Dif	9.115	1.095	-0.018	1.612	1.106	1.664	4.373	6.743	-1.517	-0.473	-0.077	0.114
	(2.98)	(.43)	(-.01)	(1.26)	(1.37)	(2.33)	(2.00)	(1.97)	(-.70)	(-1.99)	(-.34)	(.53)

C2. New or Defunct Lists in Each Style Index

	Russell 1000 Growth			Russell 1000 Value			Russell 2000 Growth			Russell 2000 Value		
	May	June	July	May	June	July	May	June	July	May	June	July
New-Listed Compositions												
Ret	5.602	2.523	0.013	3.476	1.502	1.612	7.140	2.174	-0.648	3.655	2.214	0.179
Dif	2.878	1.345	-1.389	0.984	0.685	0.365	3.845	2.184	-0.669	1.090	1.450	-0.510
	(3.10)	(1.32)	(-1.35)	(1.24)	(1.10)	(.46)	(4.90)	(3.06)	(-1.47)	(2.42)	(1.99)	(-.74)
De-Listed Compositions												
Ret	2.307	0.900	-1.195	-0.125	1.545	0.791	-0.955	-5.563	0.061	-0.502	-2.941	1.817
Dif	-0.445	-0.667	-1.666	-2.696	0.501	0.523	-4.250	-5.553	0.039	-3.067	-3.705	1.128
	(-.28)	(-.44)	(-.93)	(-1.35)	(.36)	(.33)	(-4.17)	(-5.42)	(.04)	(-4.06)	(-5.65)	(1.31)

C3. Entire New or Defunct Lists

	All Style Indexes		
	May	June	July
New-Listed Compositions			
Return	6.185	2.076	-0.400
Difference	3.096	1.801	-0.655
	(4.90)	(3.23)	(-1.47)
De-Listed Compositions			
Return	-0.321	-4.165	1.094
Difference	-3.361	-4.701	0.808
	(-4.21)	(-8.78)	(1.16)

Table 3 Daily Excess Returns Around Russell Index Reconstitution
(Excluding Partial Growth-Value Assignments)

The excess return of a stock is its return minus the return of Russell style index to which the stock belongs. The benchmark of stocks de-listed from Russell style indexes is its associated index before de-listed. The benchmark of stocks new-added to Russell style indexes is its new assigned index. The sample period is from 1979 to 1997. The daily returns of Russell 1000 and Russell 2000 style indexes are available since Jan 1991 and June 1993, respectively. During the sample period, daily returns of Russell style indexes are replaced by the returns of Russell 1000 and Russell 2000, respectively. The daily mean excess returns around Russell index announcement date (May 31st) and reconstitution date (June 30th) are calculated for eleven groups. Group 1 includes stocks re-appearing in Russell 1000 Growth Index. Group 2 includes stocks re-appearing in Russell 1000 Value Index. Group 3 includes stocks re-appearing in Russell 2000 Growth Index. Group 4 includes stocks re-appearing in Russell 2000 Value Index. Group 5 includes stocks newly listing in Russell 1000 index. Group 6 includes stocks newly listing in Russell 2000 index. Group 7 includes stocks de-listed from Russell 2000 index. Group 8 includes stocks that switch listing from Russell 1000 index to Russell 2000 index. Group 9 includes stocks that switch listing from Russell 2000 index to Russell 1000 index. Group 10 includes stocks that switch listing from Russell growth indexes to Russell value indexes. Group 11 includes stocks that switch listing from Russell value indexes to Russell growth indexes. The time-series average and its t-value in the parentheses are reported.

Event Day	Group 1 Re-appearing in Russell 1000 Growth		Group 2 Re-appearing in Russell 1000 Value		Group 3 Re-appearing in Russell 2000 Growth		Group 4 Re-appearing in Russell 2000 Value	
-3	0.176	(.60)	0.197	(.82)	0.402	(1.59)	0.230	(1.32)
-2	0.217	(.88)	0.124	(.52)	0.176	(.68)	0.064	(.33)
-1	0.124	(.75)	0.014	(.11)	-0.042	(-.29)	-0.082	(-.73)
Announcement	0.161	(.62)	0.051	(.21)	0.021	(.15)	-0.122	(-1.17)
+1	0.428	(1.91)	0.271	(1.33)	0.360	(1.72)	0.102	(.69)
+2	-0.216	(-.94)	-0.255	(-1.38)	-0.205	(-1.03)	-0.112	(-.73)
+3	0.154	(.81)	0.203	(1.08)	0.080	(.57)	0.015	(.12)
-5	0.026	(.07)	-0.028	(-.09)	0.038	(.15)	-0.072	(-.51)
-4	-0.011	(-.05)	-0.007	(-.03)	0.041	(.18)	0.099	(.63)
-3	0.064	(.29)	0.062	(.34)	0.142	(.77)	0.089	(.68)
-2	-0.080	(-.30)	-0.070	(-.28)	0.105	(.34)	-0.018	(-.10)
-1	0.040	(.17)	-0.014	(-.07)	0.057	(.24)	-0.073	(-.45)
Reconstitution	0.217	(.91)	0.106	(.53)	0.109	(.43)	0.073	(.42)
+1	-0.057	(-.25)	-0.089	(-.54)	0.009	(.04)	-0.025	(-.19)
+2	-0.040	(-.17)	0.073	(.40)	0.101	(.49)	0.124	(.96)
+3	-0.041	(-.12)	0.053	(.20)	-0.115	(-.37)	0.106	(.52)
+4	0.044	(.11)	0.049	(.15)	-0.002	(.00)	0.150	(.54)
+5	-0.207	(-.87)	-0.119	(-.60)	-0.070	(-.24)	0.018	(.08)

Table 3—*Continued*

Event Day	Group 5 New-listed in Russell 1000		Group 6 New-listed in Russell 2000		Group 7 De-listed from Russell 2000	
-3	0.146	(.50)	0.393	(1.61)	0.213	(1.02)
-2	0.245	(.85)	0.119	(.43)	0.045	(.19)
-1	0.280	(1.86)	0.098	(.66)	-0.167	(-1.08)
Announcement	0.267	(.99)	0.110	(.89)	-0.310	(-1.93)
+1	0.263	(1.40)	0.352	(1.89)	0.013	(.06)
+2	-0.141	(-.58)	-0.056	(-.33)	-0.140	(-.77)
+3	0.203	(.89)	0.172	(1.32)	-0.123	(-1.05)
-5	-0.062	(-.21)	-0.052	(-.25)	-0.431	(-1.20)
-4	0.185	(.64)	0.012	(.06)	-0.119	(-.49)
-3	-0.080	(-.41)	0.291	(1.56)	-0.143	(-.54)
-2	-0.054	(-.20)	0.066	(.20)	-0.236	(-1.08)
-1	0.212	(.61)	0.022	(.09)	-0.519	(-2.32)
Reconstitution	0.702	(2.56)	0.567	(1.78)	-0.757	(-2.22)
+1	-0.044	(-.15)	-0.134	(-.57)	0.651	(2.15)
+2	0.045	(.25)	-0.002	(-.01)	0.358	(1.63)
+3	-0.004	(-.01)	-0.067	(-.21)	0.281	(1.42)
+4	-0.014	(-.04)	0.016	(.04)	0.094	(.24)
+5	-0.161	(-.62)	-0.136	(-.42)	0.008	(.03)

Event Day	Group 8 Switching from Russell 1000 to Russell 2000		Group 9 Switching from Russell 2000 to Russell 1000		Group 10 Switching from Russell Growth to Russell Value		Group 11 Switching from Russell Value to Russell Growth	
-3	0.071	(.23)	0.341	(1.31)	0.089	(.28)	0.310	(1.28)
-2	-0.198	(-.62)	0.620	(2.09)	-0.029	(-.13)	0.267	(1.15)
-1	-0.069	(-.34)	0.138	(.67)	-0.196	(-1.46)	0.128	(.79)
Announcement	0.146	(.57)	0.019	(.10)	0.009	(.03)	0.189	(.78)
+1	0.357	(1.52)	0.472	(2.77)	0.246	(.99)	0.395	(1.59)
+2	-0.031	(-.16)	0.034	(.15)	-0.195	(-.75)	-0.044	(-.20)
+3	0.075	(.36)	0.258	(1.75)	0.053	(.33)	0.129	(.69)
-5	-0.143	(-.39)	0.168	(.72)	-0.052	(-.19)	0.062	(.22)
-4	-0.183	(-.79)	0.003	(.01)	-0.203	(-1.00)	0.140	(.55)
-3	-0.014	(-.06)	0.139	(.71)	-0.033	(-.16)	0.216	(1.23)
-2	-0.074	(-.35)	0.084	(.22)	-0.137	(-.47)	0.111	(.37)
-1	0.104	(.29)	0.203	(.88)	-0.297	(-1.26)	0.283	(1.37)
Reconstitution	0.897	(2.41)	-0.524	(-1.72)	0.321	(1.15)	-0.043	(-.18)
+1	-0.153	(-.60)	0.234	(.93)	0.009	(.03)	0.352	(1.36)
+2	0.004	(.03)	0.068	(.27)	-0.059	(-.27)	0.187	(.90)
+3	-0.201	(-.60)	0.158	(.44)	-0.073	(-.24)	0.054	(.18)
+4	-0.066	(-.16)	0.062	(.14)	0.143	(.40)	0.131	(.28)
+5	-0.099	(-.43)	-0.261	(-.87)	-0.023	(-.10)	-0.197	(-.78)

Table 4. Changes in Attributes
(Excluding Partial Growth-Value Assignments)

For each stock to be included to or excluded from Russell style indexes from 1980 to 1997, we record its daily return standard deviations (SD) over the prior quarter, the percentage of its institutional ownership (%IO), the number of analyst coverage (AC), and its rank score of market capitalization (SZ), book-to-market (BM), momentum (MM), and turnover ratio (TO), at the end of the first and the third calendar quarter. The institutional ownership is the ratio of total shares held by institutional investors over the number of outstanding shares. The rank score between 0 and 1 is assigned to a stock based on the stock's market capitalization, book-to-market, raw returns over the prior quarter, and average daily turnover rates over the prior quarter, relative to that of universe stocks. The turnover rate is the ratio of trading volume over the number of outstanding shares. We assign index compositions into eight groups. Group 1 includes stocks re-appearing in Russell 1000 Growth Index. Group 2 includes stocks re-appearing in Russell 1000 Value Index. Group 3 includes stocks re-appearing in Russell 2000 Growth Index. Group 4 includes stocks re-appearing in Russell 2000 Value Index. Group 5 includes stocks newly listing in Russell 1000 index. Group 6 includes stocks newly listing in Russell 2000 index. Group 7 includes stocks de-listed from Russell 2000 index. Group 8 includes stocks that switch listing from Russell 1000 index to Russell 2000 index. Group 9 includes stocks that switch listing from Russell 2000 index to Russell 1000 index. Group 10 includes stocks that switch listing from Russell growth indexes to Russell value indexes. Group 11 includes stocks that switch listing from Russell value indexes to Russell growth indexes. We calculate the cross-sectional average of the change in each measure and the ratio of each measure over two quarters, the third and the first calendar quarter. The time-series average and its t-value in the parentheses are reported.

Group	Difference (Q3-Q1)		Ratio (Q3/Q1)		Difference (Q3-Q1)		Ratio (Q3/Q1)	
	Average	t-value	Average	t-value	Average	t-value	Average	t-value
	SD				%IO			
1	-0.099	(-1.40)	0.963	(-.94)	0.000	(-.16)	1.000	(.77)
2	-0.087	(-1.35)	0.958	(-1.89)	0.004	(2.03)	1.009	(1.29)
3	-0.109	(-.90)	0.977	(-.94)	0.013	(4.69)	1.055	(3.36)
4	-0.115	(-1.43)	0.963	(-1.89)	0.004	(1.82)	1.020	(1.81)
5	-0.156	(-1.50)	0.950	(-1.41)	0.040	(5.81)	1.137	(2.84)
6	-0.256	(-1.84)	0.941	(-1.41)	0.027	(8.29)	1.154	(3.87)
7	0.355	(2.58)	1.084	(2.36)	-0.015	(-4.18)	0.914	(-2.84)
8	0.078	(.64)	1.039	(-.47)	-0.007	(-1.16)	0.986	(-.77)
9	-0.087	(-.95)	0.971	(-.47)	0.022	(4.08)	1.054	(2.32)
10	-0.076	(-.86)	0.980	(-.94)	-0.005	(-1.09)	0.987	(-1.29)
11	-0.195	(-2.02)	0.930	(-1.41)	0.008	(1.68)	1.018	(.77)
	Size Rank Score				Book-to-market Rank Score			
1	0.001	(1.97)	1.001	(.94)	0.016	(2.80)	1.075	(2.36)
2	0.000	(.32)	1.000	(.00)	0.007	(1.68)	1.011	(.47)
3	-0.002	(-.77)	0.997	(-.47)	0.028	(6.91)	1.193	(4.24)
4	-0.003	(-1.00)	0.995	(-1.41)	-0.004	(-1.71)	0.995	(-.47)
5	0.013	(3.16)	1.016	(2.83)	0.014	(1.06)	1.100	(.94)
6	0.014	(5.12)	1.027	(3.77)	0.037	(5.06)	1.171	(3.30)
7	-0.079	(-8.64)	0.804	(-4.24)	0.054	(7.81)	1.095	(4.24)
8	-0.020	(-4.73)	0.975	(-3.77)	0.035	(8.08)	1.058	(3.77)
9	0.013	(9.92)	1.016	(4.24)	0.002	(.27)	1.049	(.00)
10	-0.012	(-5.95)	0.986	(-3.77)	0.096	(12.45)	1.205	(4.24)
11	0.009	(4.19)	1.010	(3.30)	-0.082	(-6.39)	0.820	(-3.30)

Table 4—*Continued*

Group	Difference (Q3-Q1)		Ratio (Q3/Q1)		Difference (Q3-Q1)		Ratio (Q3/Q1)	
	Average	t-value	Average	t-value	Average	t-value	Average	t-value
	Momentum Rank Score				Turnover Rank Score			
1	0.032	(1.60)	1.086	(.94)	0.001	(.18)	1.003	(-.47)
2	0.049	(2.07)	1.115	(2.36)	0.003	(.49)	1.004	(.00)
3	-0.032	(-1.34)	0.957	(-.94)	-0.017	(-3.01)	0.975	(-1.89)
4	0.016	(.89)	1.044	(-.47)	-0.008	(-2.05)	0.982	(-.94)
5	-0.041	(-1.27)	0.946	(-.94)	-0.037	(-2.83)	0.949	(-2.36)
6	-0.110	(-4.16)	0.828	(-2.36)	-0.019	(-1.71)	0.974	(-1.89)
7	0.072	(3.52)	1.206	(2.36)	-0.046	(-3.74)	0.914	(-2.36)
8	0.137	(4.22)	1.483	(1.89)	0.000	(-.05)	1.002	(-.47)
9	-0.068	(-3.57)	0.896	(-2.36)	0.020	(2.04)	1.039	(1.41)
10	0.143	(5.79)	1.465	(3.30)	-0.013	(-2.02)	0.979	(-1.41)
11	-0.049	(-2.76)	0.923	(-1.41)	-0.011	(-1.29)	0.984	(-.47)
	Number of Analyst Coverage							
1	0.038	(.44)	1.006	(.47)				
2	0.034	(.47)	1.006	(.00)				
3	0.091	(.79)	1.013	(1.89)				
4	0.029	(.30)	1.004	(.94)				
5	-0.074	(-.52)	1.003	(-.47)				
6	0.139	(1.89)	1.019	(1.41)				
7	0.086	(.96)	1.014	(.94)				
8	0.066	(.30)	1.029	(-.47)				
9	-0.135	(-1.25)	0.990	(-.94)				
10	0.084	(.70)	1.012	(.47)				
11	-0.055	(-.31)	1.001	(-.94)				

Table 5. Fama-MacBeth Cross-Sectional Regression Analysis of June Excess Returns (Excluding Partial Growth-Value Assignments)

We assign index compositions into eight groups. Group 1 includes stocks re-appearing in Russell 1000 Growth Index. Group 2 includes stocks re-appearing in Russell 1000 Value Index. Group 3 includes stocks re-appearing in Russell 2000 Growth Index. Group 4 includes stocks re-appearing in Russell 2000 Value Index. Group 5 includes stocks newly listing in Russell 1000 index. Group 6 includes stocks newly listing in Russell 2000 index. Group 7 includes stocks de-listed from Russell 2000 index. Group 8 includes stocks that switch listing from Russell 1000 index to Russell 2000 index. Group 9 includes stocks that switch listing from Russell 2000 index to Russell 1000 index. Group 10 includes stocks that switch listing from Russell growth indexes to Russell value indexes. Group 11 includes stocks that switch listing from Russell value indexes to Russell growth indexes. The excess return of each stock relative to the associated Russell style index is calculated in June. Each year each group, we perform a cross-sectional regression of excess returns on explanatory variables: ratios of its daily return standard deviations (SD), the percentage of its institutional ownership (%IO), the number of analyst coverage (AC), and its rank score of market capitalization (SZ), book-to-market (BM), momentum (MM), and turnover ratio (TO) over two adjacent quarters prior to April. The reported statistics are the time-series average coefficients from the year-by-year regressions, and in the parentheses are the *t*-statistics.

	Constant	%IO	SZ	BM	MM	TO	AC	SD	Adj R^2
1	30.914	-0.647	-29.120	-1.843	-0.465	-0.275	1.975	-0.104	2.71
	(1.09)	(-0.35)	(-1.04)	(-2.16)	(-2.87)	(-0.44)	(1.30)	(-0.25)	(2.75)
2	7.120	-1.694	-7.347	1.104	0.015	-0.295	-0.035	1.460	2.58
	(0.23)	(-1.20)	(-0.25)	(0.35)	(0.12)	(-0.72)	(-0.04)	(2.33)	(5.53)
3	-14.141	-0.409	13.394	0.182	-0.329	1.031	1.753	-0.449	2.69
	(-1.48)	(-0.45)	(1.49)	(0.33)	(-2.49)	(1.38)	(1.74)	(-0.50)	(2.60)
4	12.050	-1.654	-10.018	-1.212	-0.192	-0.041	0.507	0.489	1.74
	(0.94)	(-1.17)	(-1.17)	(-0.27)	(-2.39)	(-0.23)	(0.54)	(0.90)	(3.63)
5	730.315	7.532	-630.193	-74.711	-3.913	-0.744	-5.507	-18.501	20.94
	(1.46)	(0.77)	(-1.47)	(-1.73)	(-0.80)	(-0.25)	(-0.70)	(-1.03)	(2.30)
6	7.698	0.660	-2.154	-2.306	-0.429	-0.019	-1.213	-0.374	4.95
	(1.00)	(0.37)	(-0.25)	(-1.74)	(-2.40)	(-0.02)	(-0.46)	(-0.19)	(2.54)
7	3.610	-3.433	-1.020	-4.754	-0.083	0.068	-1.377	1.983	11.33
	(0.26)	(-1.82)	(-0.11)	(-0.80)	(-1.13)	(0.04)	(-0.45)	(0.69)	(2.29)
8	100.097	-2.382	-98.334	-0.440	0.477	-4.072	-2.924	4.728	10.00
	(1.92)	(-0.40)	(-2.37)	(-0.07)	(0.88)	(-0.85)	(-0.57)	(0.69)	(1.66)
9	88.227	-0.759	-73.756	-4.212	0.888	-2.540	-4.561	-0.338	11.09
	(1.70)	(-0.19)	(-1.45)	(-1.19)	(0.53)	(-0.92)	(-2.05)	(-0.15)	(2.69)
10	-47.062	3.394	47.288	1.993	-0.039	-0.591	-11.975	4.464	13.74
	(-2.05)	(0.65)	(1.96)	(1.27)	(-0.14)	(-0.35)	(-2.76)	(3.10)	(3.77)
11	-3.916	-1.080	19.906	2.744	0.547	-4.881	-6.077	-4.295	9.68
	(-0.09)	(-0.35)	(0.52)	(0.65)	(0.76)	(-2.96)	(-0.86)	(-2.79)	(1.92)

Table 6. Long-Term Liquidity Change due to Index Reconstitution
(Excluding Partial Growth-Value Assignments)

We assign index compositions into eight groups. Group 1 includes stocks re-appearing in Russell 1000 Growth Index. Group 2 includes stocks re-appearing in Russell 1000 Value Index. Group 3 includes stocks re-appearing in Russell 2000 Growth Index. Group 4 includes stocks re-appearing in Russell 2000 Value Index. Group 5 includes stocks newly listing in Russell 1000 index. Group 6 includes stocks newly listing in Russell 2000 index. Group 7 includes stocks de-listed from Russell 2000 index. Group 8 includes stocks that switch listing from Russell 1000 index to Russell 2000 index. Group 9 includes stocks that switch listing from Russell 2000 index to Russell 1000 index. Group 10 includes stocks that switch listing from Russell growth indexes to Russell value indexes. Group 11 includes stocks that switch listing from Russell value indexes to Russell growth indexes. Liquidity is measured by the standard deviation of signed order flow (SOF), information asymmetry (IA) and direct cost (DC) component of transaction cost, quoted relative spread (QRS), effective spread (ES), quoted depth (QD), trade size (TS), size of block trading (BTS), proportion of block trading during a day (BTP). These measures are calculated for each stock from TAQ database over the pre-listing period from March 1st to April 30th and the post-listing period from August 1st to September 30th in each year from 1993 to 1997. The signed order flow is the trade size multiplied by a trade indicator (+1 for a buy and -1 for a sell) using Lee and Ready (1991) procedure for trade classification. The decomposition of transaction cost is computed using George, Kaul, and Nimalendran (1991) methodology. The quoted relative spread is defined as the spread of ask price minus bid price divided by the midpoint. The effective spread is twice the absolute value of the difference between the trade price and the midpoint of the prevailing quote, where the difference is weighted by trade size. The quoted depth is defined as the sum of the depth (the number of shares) at the bid and ask prices. The size of block trading is the trade size that is larger than 5,000 shares. The proportion of block trading is the number of block trading divided by the number of trades. For each trading activity measure, Russell 3000 stocks are assigned a score of 0(the lowest) to 1(the highest) in each period. For each stock, the trading activity ratios are ranked relative to the Russell 3000 universe. The sample mean of rank scores for each trading activity measures are reported. The proportion of stocks with an increasing rank score over two periods is reported in the "Inc_Proportion". The t-test is used to test the null hypothesis that the trading activity measure is unchanged at a significance level of 5% with an asterisk and at a significance level of 1% with double asterisks.

	SOF	AI	DC	QRS	ES	QD	BTP	TS	BTS
Group 1: Persistent in Russell 1000 Growth									
Pre-listing	0.638	0.382	0.427	0.214	0.467	0.583	0.598	0.553	0.760
Post-listing	0.625	0.386	0.416	0.224	0.401	0.593	0.596	0.555	0.757
Difference	-.013**	0.004	-0.010	0.010	-.066**	0.010	-0.002	0.003	-0.002
Inc_Proportion	0.477	0.520	0.451	0.530	0.293	0.496	0.475	0.487	0.475
Group 2: Persistent in Russell 1000 Value									
Pre-listing	0.637	0.429	0.360	0.205	0.364	0.658	0.531	0.488	0.734
Post-listing	0.629	0.441	0.334	0.216	0.327	0.659	0.522	0.490	0.722
Difference	-0.008	0.012	-0.027	0.011	-.037**	0.001	-0.010	0.002	-0.012
Inc_Proportion	0.485	0.522	0.440	0.555	0.375	0.475	0.466	0.496	0.455
Group 3: Persistent in Russell 2000 Growth									
Pre-listing	0.438	0.544	0.807	0.595	0.670	0.420	0.495	0.530	0.412
Post-listing	0.421	0.502	0.785	0.622	0.617	0.446	0.484	0.520	0.399
Difference	-0.017	-0.042	-0.022	0.027	-.053**	0.026	-0.011	-0.010	-0.013
Inc_Proportion	0.474	0.416	0.420	0.614	0.276	0.455	0.460	0.474	0.453

Table 6—*Continued*

	SOF	AI	DC	QRS	ES	QD	BTP	TS	BTS
Group 4: Persistent in Russell 2000 Value									
Pre-listing	0.409	0.834	0.675	0.601	0.492	0.460	0.405	0.400	0.349
Post-listing	0.378	0.834	0.644	0.630	0.494	0.449	0.385	0.384	0.327
Difference	-.032*	0.000	-0.032	0.030	0.002	-0.011	-.021*	-0.015	-.022**
Inc_Proportion	0.455	0.499	0.421	0.633	0.433	0.429	0.420	0.461	0.418
Group 5: New listed firms in Russell 1000									
Pre-listing	0.697	0.562	0.603	0.368	0.522	0.485	0.664	0.659	0.710
Post-listing	0.657	0.576	0.512	0.389	0.470	0.495	0.651	0.633	0.693
Difference	-0.040	0.014	-.091**	0.021	-.052*	0.010	-0.013	-0.026	-0.017
Inc_Proportion	0.492	0.570	0.308	0.596	0.349	0.491	0.442	0.480	0.446
Group 6: New listed firms in Russell 2000									
Pre-listing	0.460	0.566	0.835	0.645	0.684	0.378	0.518	0.555	0.409
Post-listing	0.418	0.561	0.782	0.675	0.658	0.400	0.501	0.532	0.393
Difference	-.042**	-0.005	-.053**	0.030	-.026*	0.022	-0.017	-.024*	-0.015
Inc_Proportion	0.449	0.481	0.356	0.606	0.371	0.499	0.458	0.452	0.457
Group 7: De-listed firms in Russell 2000									
Pre-listing	0.395	0.559	0.575	0.842	0.448	0.421	0.440	0.498	0.314
Post-listing	0.364	0.540	0.588	0.887	0.457	0.468	0.444	0.514	0.307
Difference	-0.030	-0.019	0.013	.046**	0.009	0.046	0.004	0.016	-0.007
Inc_Proportion	0.449	0.401	0.537	0.748	0.419	0.491	0.479	0.531	0.443
Group 8: Switching from Russell 1000 to Russell 2000									
Pre-listing	0.555	0.641	0.716	0.491	0.461	0.496	0.520	0.492	0.589
Post-listing	0.542	0.632	0.670	0.523	0.388	0.546	0.503	0.498	0.552
Difference	-0.013	-0.010	-0.046	0.032	-.073**	.050**	-0.017	0.006	-0.037
Inc_Proportion	0.431	0.558	0.479	0.706	0.308	0.592	0.455	0.497	0.344
Group 9: Switching from Russell 2000 to Russell 1000									
Pre-listing	0.517	0.394	0.681	0.318	0.638	0.486	0.526	0.526	0.621
Post-listing	0.537	0.435	0.596	0.337	0.576	0.471	0.551	0.557	0.611
Difference	0.020	0.041	-.085**	0.019	-.063**	-0.015	0.025	0.031	-0.009
Inc_Proportion	0.529	0.522	0.321	0.482	0.238	0.423	0.527	0.591	0.469
Group 10: Switching from Russell Growth to Russell Value									
Pre-listing	0.522	0.607	0.554	0.519	0.406	0.498	0.515	0.509	0.570
Post-listing	0.541	0.606	0.525	0.536	0.366	0.541	0.514	0.520	0.552
Difference	0.019	-0.002	-0.030	0.017	-.039*	.043*	-0.001	0.010	-0.018
Inc_Proportion	0.491	0.514	0.424	0.632	0.368	0.495	0.440	0.497	0.424
Group 11: Switching from Russell Value to Russell Growth									
Pre-listing	0.613	0.606	0.536	0.458	0.458	0.549	0.607	0.597	0.640
Post-listing	0.607	0.579	0.474	0.448	0.432	0.542	0.589	0.583	0.636
Difference	-0.006	-.027*	-0.061	-0.010	-0.025	-0.007	-0.017	-0.014	-0.005
Inc_Proportion	0.442	0.547	0.346	0.530	0.361	0.413	0.437	0.480	0.546