

Unpublished Appendix: The Benchmark Portfolios

Table A1 presents the average returns of the portfolios over this period. In the Table there are five panels, one for each of the size quintiles. In each of the five panels, there are 25 average returns presented, one for each of the momentum/book-to-market portfolios within the size group. In addition, each table has a columns labeled H-L contain the differences between the high and low momentum portfolios for that row, and a T-statistic testing whether the difference in these return is equal to zero. The rows labeled H-L present the differences between the high and low book-to-market portfolios for that column.

Table A2 shows the minimum (left panel) and average (right panel) number of firms in each portfolio over this analysis period. This Table reveals that the 25 small size quintile portfolios contain many more firms that the other quintiles: this is a result of our having formed the size quintiles based on NYSE breakpoints.

Tables A3, A4 and A5 present, respectively, the average size, book-to-market, and momentum (that is, the average characteristics) for each of the 125 portfolios. The average characteristics are defined in the following way. First, for each of the 125 portfolios, at each yearly formation date, the average characteristic, CH_t , was calculated, using value weighting:

$$CH_t = \frac{\sum_{i=1}^N CH_{i,t} \cdot ME_{i,t}}{\sum_{i=1}^N ME_{i,t}}$$

where the summation is over the firms in the portfolio, where $ME_{i,t}$ denotes the market value of the firm's equity at the formation date, and where $CH_{i,t}$ is either the firm's market value of equity ($ME_{i,t}$), book-to-market ratio ($BM_{i,t}$), or momentum (past one-year return or $MM_{i,t}$), depending on the average characteristic being calculated. The simple average of each of the three resulting time series, \overline{CH} , is then calculated and is presented in each of Tables A3, A4, and A5.

Table A1: Average Returns for the Benchmark Portfolios

This table presents the 125 characteristic sorted benchmark portfolios over the period 72:07-95:06 as described in the Appendix.

<i>Size Decile 1</i>							
	<i>Low</i>		BM		<i>High</i>	<i>H - L</i>	T-stat
<i>Low</i>	-0.506	0.542	0.946	1.118	1.215	1.721	(4.898)
	0.259	0.882	1.297	1.409	1.385	1.127	(4.155)
M-m	0.482	1.258	1.432	1.503	1.576	1.094	(4.240)
	0.700	1.217	1.522	1.573	1.762	1.062	(4.487)
<i>High</i>	0.609	1.441	1.434	1.697	1.929	1.319	(5.869)
<i>H - L</i>	1.115	0.900	0.488	0.579	0.713		
T-stat	(3.541)	(3.415)	(1.789)	(1.968)	(2.080)		
<i>Size Decile 2</i>							
<i>Low</i>	0.370	0.657	0.917	1.213	1.419	1.049	(3.416)
	0.573	1.067	1.254	1.501	1.648	1.075	(3.931)
M-m	0.867	1.175	1.320	1.600	1.605	0.738	(2.826)
	0.858	1.217	1.457	1.447	1.542	0.684	(2.417)
<i>High</i>	0.973	1.323	1.702	1.602	1.777	0.805	(2.570)
<i>H - L</i>	0.603	0.666	0.784	0.388	0.358		
T-stat	(1.645)	(2.232)	(3.090)	(1.389)	(1.159)		
<i>Size Decile 3</i>							
<i>Low</i>	0.333	0.783	0.903	1.395	1.408	1.075	(3.856)
	0.664	1.207	1.368	1.564	1.722	1.058	(4.216)
M-m	0.711	1.085	1.270	1.292	1.479	0.768	(2.882)
	1.068	1.024	1.229	1.267	1.557	0.490	(1.843)
<i>High</i>	1.443	1.575	1.267	1.466	1.855	0.412	(1.234)
<i>H - L</i>	1.110	0.793	0.364	0.071	0.447		
T-stat	(2.904)	(2.725)	(1.166)	(0.258)	(1.628)		
<i>Size Decile 4</i>							
<i>Low</i>	0.648	0.897	0.965	1.227	1.774	1.126	(3.609)
	0.729	0.777	1.041	1.301	1.670	0.941	(3.610)
M-m	0.597	1.081	1.251	1.227	1.286	0.689	(2.811)
	0.976	1.061	1.222	1.340	1.573	0.597	(2.155)
<i>High</i>	1.189	1.149	1.173	1.375	1.472	0.283	(0.930)
<i>H - L</i>	0.541	0.253	0.208	0.147	-0.303		
T-stat	(1.587)	(0.831)	(0.722)	(0.498)	(-1.096)		
<i>Size Decile 5</i>							
<i>Low</i>	0.403	0.645	1.132	1.115	1.278	0.876	(2.840)
	0.566	0.840	1.269	1.292	1.437	0.871	(3.036)
M-m	0.566	0.840	0.985	1.103	1.203	0.637	(2.206)
	0.649	0.948	1.036	1.179	1.231	0.582	(2.164)
<i>High</i>	1.045	0.964	1.017	1.341	1.254	0.209	(0.822)
<i>H - L</i>	0.642	0.319	-0.116	0.226	-0.025		
T-stat	(2.049)	(1.028)	(-0.402)	(0.772)	(-0.072)		

Table A2: Minimum and Average Number of Firms in the Characteristic-Sorted Benchmark Portfolios

This table presents the minimum (left panel) and average (right panel) number of firms in each of the 125 characteristic sorted benchmark portfolios over this analysis period (72:07-95:06). The construction of these portfolios is described in the Appendix

Minimum Number of Firms						Average Number of Firms					
<i>Size Decile 1</i>						<i>Size Decile 1</i>					
	<i>Low</i>	BM		<i>High</i>			<i>Low</i>	BM		<i>High</i>	
<i>Low</i>	33	33	35	35	30	<i>Low</i>	84.7	89.2	89.8	90.0	86.7
	37	35	37	36	36		91.6	93.3	93.0	93.4	92.2
M-m	35	36	37	37	35	M-m	92.9	93.5	93.5	93.2	92.4
	36	36	35	36	36		92.2	92.9	93.2	93.1	92.9
<i>High</i>	36	38	37	37	38	<i>High</i>	93.4	93.3	92.9	93.2	92.1
<i>Size Decile 2</i>						<i>Size Decile 2</i>					
<i>Low</i>	11	11	9	10	12	<i>Low</i>	21.4	21.4	21.4	21.5	21.3
	11	12	12	12	11		22.1	22.1	22.2	22.0	22.2
M-m	12	12	11	11	12	M-m	21.6	21.8	22.1	22.0	22.1
	12	12	12	11	12		22.0	21.9	21.9	22.0	21.8
<i>High</i>	11	13	13	12	12	<i>High</i>	22.0	22.2	22.1	21.9	22.1
<i>Size Decile 3</i>						<i>Size Decile 3</i>					
<i>Low</i>	9	10	10	10	10	<i>Low</i>	14.9	14.9	15.0	14.9	15.0
	10	11	10	11	11		15.5	15.4	15.4	15.6	15.7
M-m	10	11	10	11	11	M-m	15.3	15.3	15.7	15.5	15.7
	10	10	11	11	11		15.5	15.6	15.5	15.5	15.7
<i>High</i>	10	11	11	11	10	<i>High</i>	15.8	15.8	16.0	15.7	15.8
<i>Size Decile 4</i>						<i>Size Decile 4</i>					
<i>Low</i>	9	9	9	9	9	<i>Low</i>	11.4	11.3	11.5	11.4	11.5
	9	10	10	10	9		12.1	12.1	12.2	12.1	12.2
M-m	10	9	10	9	10	M-m	12.0	12.2	12.0	12.2	12.3
	9	10	10	9	10		12.0	12.0	12.2	12.1	12.2
<i>High</i>	10	10	9	10	10	<i>High</i>	12.5	12.7	12.5	12.8	12.8
<i>Size Decile 5</i>						<i>Size Decile 5</i>					
<i>Low</i>	8	8	9	9	9	<i>Low</i>	9.9	9.9	10.0	10.0	10.1
	9	9	9	10	9		10.7	10.8	10.8	10.8	10.7
M-m	9	9	9	9	9	M-m	10.5	10.7	10.6	10.8	10.9
	8	9	10	8	9		10.7	10.7	10.8	10.7	10.7
<i>High</i>	10	9	10	10	10	<i>High</i>	11.1	11.2	11.3	11.3	11.4

Table A3: Average Size for the Characteristic-Sorted Benchmark Portfolios

This table presents, the average value of market equity (in \$ Thousands) for each of the 125 portfolios, calculated over the period 72:07-95:06, as described in the Appendix.

<i>Size Decile 1</i>					
	<i>Low</i>	BM		<i>High</i>	
<i>Low</i>	32058.4	38770.7	37941.9	35933.8	30286.1
	41033.6	45616.1	45345.0	40805.2	34748.2
M-m	45654.0	50236.7	47905.2	44300.8	37946.3
	48757.6	51075.9	49466.2	43807.1	37699.3
<i>High</i>	47940.4	49161.2	47053.7	43603.8	37734.5
<i>Size Decile 2</i>					
<i>Low</i>	151684.1	149640.0	150777.4	149785.5	147447.6
	152457.1	156408.7	151609.6	148049.0	146407.8
M-m	154348.9	156465.3	156708.5	152403.5	145802.9
	157520.3	152940.3	157063.9	151614.3	152109.9
<i>High</i>	150406.5	153970.7	149738.4	151815.1	145977.0
<i>Size Decile 3</i>					
<i>Low</i>	369640.9	361887.4	380078.1	379032.7	366325.2
	387800.3	389946.1	388133.9	379648.6	369763.9
M-m	371154.7	376972.4	389565.9	385272.2	374881.8
	374739.6	383752.6	393614.9	375730.3	376862.9
<i>High</i>	378880.1	369222.7	381400.2	369065.0	365518.5
<i>Size Decile 4</i>					
<i>Low</i>	912643.9	971144.3	958797.1	964903.0	912402.5
	959371.0	999218.2	1005551.1	981604.6	973055.8
M-m	963387.2	979201.7	1008805.9	1000223.4	953739.5
	951945.5	973295.1	1024357.9	1024130.4	981350.7
<i>High</i>	970506.9	980703.1	935371.4	976744.4	947014.0
<i>Size Decile 5</i>					
<i>Low</i>	6901100.7	11485934.5	10683183.1	7089490.0	8833664.3
	9160456.4	8128028.4	10125744.3	9782591.7	12786389.9
M-m	11625583.8	13367329.8	12885154.9	9752684.3	6739710.4
	10555602.7	10650199.5	13570485.4	9841204.7	9277780.5
<i>High</i>	8253409.6	11087226.2	7860070.4	8794171.3	6563464.8

Table A4: Average Book-to-Market for the Characteristic-Sorted Benchmark Portfolios

This table presents, the average book-to-market ratio for each of the 125 portfolios, calculated over the period 72:07-95:06, as described in the Appendix.

<i>Size Decile 1</i>					
	<i>Low</i>	BM		<i>High</i>	
<i>Low</i>	0.430	1.009	1.531	2.229	4.472
	0.466	1.015	1.543	2.230	3.985
M-m	0.475	1.020	1.535	2.230	4.089
	0.476	1.016	1.533	2.214	3.870
<i>High</i>	0.428	1.000	1.539	2.214	3.971
<i>Size Decile 2</i>					
<i>Low</i>	0.425	0.834	1.175	1.581	2.871
	0.444	0.842	1.179	1.567	2.707
M-m	0.438	0.836	1.179	1.571	2.596
	0.439	0.840	1.176	1.568	2.508
<i>High</i>	0.394	0.824	1.169	1.566	2.605
<i>Size Decile 3</i>					
<i>Low</i>	0.408	0.767	1.076	1.413	2.352
	0.432	0.774	1.080	1.403	2.287
M-m	0.422	0.786	1.076	1.401	2.182
	0.411	0.779	1.070	1.408	2.265
<i>High</i>	0.364	0.761	1.069	1.400	2.267
<i>Size Decile 4</i>					
<i>Low</i>	0.438	0.763	1.055	1.372	2.244
	0.442	0.778	1.058	1.362	2.120
M-m	0.426	0.783	1.055	1.354	2.066
	0.417	0.768	1.056	1.345	2.112
<i>High</i>	0.403	0.767	1.049	1.359	2.106
<i>Size Decile 5</i>					
<i>Low</i>	0.485	0.768	1.006	1.268	1.933
	0.480	0.763	1.013	1.266	1.758
M-m	0.467	0.765	1.018	1.261	1.779
	0.463	0.765	1.010	1.275	1.844
<i>High</i>	0.405	0.753	1.005	1.268	1.821

Table A5: Average Momentum for the Characteristic-Sorted Benchmark Portfolios

This table presents, the average momentum ratio for each of the 125 portfolios, calculated over the period 72:07-95:06, as described in the Appendix.

<i>Size Decile 1</i>					
	<i>Low</i>	BM		<i>High</i>	
<i>Low</i>	-0.480	-0.426	-0.405	-0.416	-0.468
	-0.201	-0.167	-0.165	-0.175	-0.233
M-m	0.053	0.037	0.025	-0.001	-0.058
	0.383	0.285	0.245	0.204	0.141
<i>High</i>	1.457	0.978	0.796	0.723	0.643
<i>Size Decile 2</i>					
<i>Low</i>	-0.245	-0.254	-0.228	-0.253	-0.296
	0.051	0.004	0.003	-0.034	-0.068
M-m	0.269	0.177	0.146	0.110	0.079
	0.568	0.378	0.310	0.272	0.249
<i>High</i>	1.539	0.983	0.749	0.698	0.694
<i>Size Decile 3</i>					
<i>Low</i>	-0.180	-0.199	-0.188	-0.194	-0.251
	0.083	0.019	0.020	0.000	-0.051
M-m	0.267	0.170	0.160	0.123	0.087
	0.503	0.340	0.306	0.251	0.233
<i>High</i>	1.194	0.824	0.708	0.601	0.576
<i>Size Decile 4</i>					
<i>Low</i>	-0.158	-0.161	-0.159	-0.157	-0.211
	0.057	0.027	0.020	0.012	-0.035
M-m	0.231	0.161	0.129	0.119	0.088
	0.436	0.310	0.257	0.239	0.225
<i>High</i>	1.031	0.715	0.578	0.483	0.532
<i>Size Decile 5</i>					
<i>Low</i>	-0.098	-0.122	-0.110	-0.094	-0.162
	0.088	0.034	0.039	0.045	0.012
M-m	0.209	0.148	0.140	0.145	0.117
	0.359	0.270	0.265	0.248	0.221
<i>High</i>	0.779	0.517	0.506	0.473	0.466