

# Robustness Results: Appendix to Heuristic Portfolio Trading Rules with Capital Gain Taxes

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## **Abstract**

This document contains robustness results for the manuscript “Heuristic Portfolio Trading Rules with Capital Gain Taxes” published in the *Journal of Financial Economics*. It documents the robustness of our results to various parameter choices and assumptions.

# List of Tables

<b>Tables for base-case parameter setting</b> . . . . .	1
1 Portfolio Performance under No Taxes, $\tau_t = 0\%$ . . . . .	2
2 Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0\%$ . . . . .	3
3 Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0\%$ . . . . .	3
4 Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 0\%$ . . . . .	4
5 Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 0\%$ . . . . .	5
6 Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0\%$ . . . . .	6
7 Portfolio Performance under No Taxes, $\tau_t = 0.5\%$ . . . . .	7
8 Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0.5\%$ . . . . .	8
9 Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0.5\%$ . . . . .	8
10 Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 0.5\%$ . . . . .	9
11 Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 0.5\%$ . . . . .	10
12 Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0.5\%$ . . . . .	11
13 Portfolio Performance under No Taxes, $\tau_t = 1\%$ . . . . .	12
14 Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 1\%$ . . . . .	13
15 Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 1\%$ . . . . .	13
16 Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 1\%$ . . . . .	14
17 Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 1\%$ . . . . .	15
18 Trading Volume under the Tax Heuristic Strategies, $\tau_t = 1\%$ . . . . .	16
<b>Tables for risk aversion <math>\gamma = 3</math></b> . . . . .	17
19 Portfolio Performance under No Taxes, $\tau_t = 0\%$ . . . . .	18
20 Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0\%$ . . . . .	19
21 Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0\%$ . . . . .	19
22 Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 0\%$ . . . . .	20
23 Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 0\%$ . . . . .	21
24 Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0\%$ . . . . .	22
25 Portfolio Performance under No Taxes, $\tau_t = 0.5\%$ . . . . .	23
26 Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0.5\%$ . . . . .	24
27 Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0.5\%$ . . . . .	24
28 Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 0.5\%$ . . . . .	25
29 Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 0.5\%$ . . . . .	26
30 Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0.5\%$ . . . . .	27
31 Portfolio Performance under No Taxes, $\tau_t = 1\%$ . . . . .	28
32 Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 1\%$ . . . . .	29
33 Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 1\%$ . . . . .	29
34 Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 1\%$ . . . . .	30
35 Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 1\%$ . . . . .	31
36 Trading Volume under the Tax Heuristic Strategies, $\tau_t = 1\%$ . . . . .	32
<b>Tables for risk aversion <math>\gamma = 10</math></b> . . . . .	33
37 Portfolio Performance under No Taxes, $\tau_t = 0\%$ . . . . .	34
38 Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0\%$ . . . . .	35
39 Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0\%$ . . . . .	35
40 Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 0\%$ . . . . .	36

41	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 0\%$ . . . . .	37
42	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0\%$ . . . . .	38
43	Portfolio Performance under No Taxes, $\tau_t = 0.5\%$ . . . . .	39
44	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0.5\%$ . . . . .	40
45	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0.5\%$ . . . . .	40
46	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 0.5\%$ . . . . .	41
47	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 0.5\%$ . . . . .	42
48	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0.5\%$ . . . . .	43
49	Portfolio Performance under No Taxes, $\tau_t = 1\%$ . . . . .	44
50	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 1\%$ . . . . .	45
51	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 1\%$ . . . . .	45
52	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 1\%$ . . . . .	46
53	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 1\%$ . . . . .	47
54	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 1\%$ . . . . .	48
	<b>Tables for length of investment horizon <math>T = 60</math></b> . . . . .	49
55	Portfolio Performance under No Taxes, $\tau_t = 0\%$ . . . . .	50
56	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0\%$ . . . . .	51
57	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0\%$ . . . . .	51
58	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 0\%$ . . . . .	52
59	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 0\%$ . . . . .	53
60	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0\%$ . . . . .	54
61	Portfolio Performance under No Taxes, $\tau_t = 0.5\%$ . . . . .	55
62	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0.5\%$ . . . . .	56
63	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0.5\%$ . . . . .	56
64	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 0.5\%$ . . . . .	57
65	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 0.5\%$ . . . . .	58
66	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0.5\%$ . . . . .	59
67	Portfolio Performance under No Taxes, $\tau_t = 1\%$ . . . . .	60
68	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 1\%$ . . . . .	61
69	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 1\%$ . . . . .	61
70	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 1\%$ . . . . .	62
71	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 1\%$ . . . . .	63
72	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 1\%$ . . . . .	64
	<b>Tables for capital gains rate <math>\tau_g = 15\%</math></b> . . . . .	65
73	Portfolio Performance under No Taxes, $\tau_t = 0\%$ . . . . .	66
74	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0\%$ . . . . .	67
75	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0\%$ . . . . .	67
76	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 0\%$ . . . . .	68
77	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 0\%$ . . . . .	69
78	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0\%$ . . . . .	70
79	Portfolio Performance under No Taxes, $\tau_t = 0.5\%$ . . . . .	71
80	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0.5\%$ . . . . .	72
81	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0.5\%$ . . . . .	72
82	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 0.5\%$ . . . . .	73

83	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 0.5\%$ . . . . .	74
84	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0.5\%$ . . . . .	75
85	Portfolio Performance under No Taxes, $\tau_t = 1\%$ . . . . .	76
86	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 1\%$ . . . . .	77
87	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 1\%$ . . . . .	77
88	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 1\%$ . . . . .	78
89	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 1\%$ . . . . .	79
90	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 1\%$ . . . . .	80
	<b>Tables for capital gains rate <math>\tau_g = 35\%</math> . . . . .</b>	<b>81</b>
91	Portfolio Performance under No Taxes, $\tau_t = 0\%$ . . . . .	82
92	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0\%$ . . . . .	83
93	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0\%$ . . . . .	83
94	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 0\%$ . . . . .	84
95	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 0\%$ . . . . .	85
96	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0\%$ . . . . .	86
97	Portfolio Performance under No Taxes, $\tau_t = 0.5\%$ . . . . .	87
98	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0.5\%$ . . . . .	88
99	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0.5\%$ . . . . .	88
100	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 0.5\%$ . . . . .	89
101	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 0.5\%$ . . . . .	90
102	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0.5\%$ . . . . .	91
103	Portfolio Performance under No Taxes, $\tau_t = 1\%$ . . . . .	92
104	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 1\%$ . . . . .	93
105	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 1\%$ . . . . .	93
106	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 1\%$ . . . . .	94
107	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 1\%$ . . . . .	95
108	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 1\%$ . . . . .	96
	<b>Tables losses realized when present and potential future tax savings exceed present transaction costs . . . . .</b>	<b>97</b>
109	Portfolio Performance under No Taxes, $\tau_t = 0\%$ . . . . .	98
110	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0\%$ . . . . .	99
111	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0\%$ . . . . .	99
112	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 0\%$ . . . . .	100
113	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 0\%$ . . . . .	101
114	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0\%$ . . . . .	102
115	Portfolio Performance under No Taxes, $\tau_t = 0.5\%$ . . . . .	103
116	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0.5\%$ . . . . .	104
117	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0.5\%$ . . . . .	104
118	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 0.5\%$ . . . . .	105
119	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 0.5\%$ . . . . .	106
120	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0.5\%$ . . . . .	107
121	Portfolio Performance under No Taxes, $\tau_t = 1\%$ . . . . .	108
122	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 1\%$ . . . . .	109
123	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 1\%$ . . . . .	109

124	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 1\%$ . . . . .	110
125	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 1\%$ . . . . .	111
126	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 1\%$ . . . . .	112
	<b>Tables when losses are first realized at end of investment horizon</b> . . . . .	113
127	Portfolio Performance under No Taxes, $\tau_t = 0\%$ . . . . .	114
128	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0\%$ . . . . .	115
129	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0\%$ . . . . .	115
130	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 0\%$ . . . . .	116
131	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 0\%$ . . . . .	117
132	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0\%$ . . . . .	118
133	Portfolio Performance under No Taxes, $\tau_t = 0.5\%$ . . . . .	119
134	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0.5\%$ . . . . .	120
135	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0.5\%$ . . . . .	120
136	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 0.5\%$ . . . . .	121
137	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 0.5\%$ . . . . .	122
138	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0.5\%$ . . . . .	123
139	Portfolio Performance under No Taxes, $\tau_t = 1\%$ . . . . .	124
140	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 1\%$ . . . . .	125
141	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 1\%$ . . . . .	125
142	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 1\%$ . . . . .	126
143	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 1\%$ . . . . .	127
144	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 1\%$ . . . . .	128
	<b>Tables for other heuristic strategies</b> . . . . .	129
145	Portfolio Performance under No Taxes, $\tau_t = 0\%$ . . . . .	130
146	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0\%$ . . . . .	131
147	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0\%$ . . . . .	131
148	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 0\%$ . . . . .	132
149	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 0\%$ . . . . .	133
150	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0\%$ . . . . .	134
151	Portfolio Performance under No Taxes, $\tau_t = 0.5\%$ . . . . .	135
152	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0.5\%$ . . . . .	136
153	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0.5\%$ . . . . .	136
154	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 0.5\%$ . . . . .	137
155	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 0.5\%$ . . . . .	138
156	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0.5\%$ . . . . .	139
157	Portfolio Performance under No Taxes, $\tau_t = 1\%$ . . . . .	140
158	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 1\%$ . . . . .	141
159	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 1\%$ . . . . .	141
160	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 1\%$ . . . . .	142
161	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 1\%$ . . . . .	143
162	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 1\%$ . . . . .	144
	<b>Tables for parametric portfolios with multi-period objective function</b> . . . . .	145
163	Portfolio Performance under No Taxes, $\tau_t = 0\%$ . . . . .	146
164	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0\%$ . . . . .	147

165	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0\%$ . . . . .	147
166	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, PPN, and PPNm, $\tau_t = 0\%$ . . . . .	148
167	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for PPN, and PPNm, $\tau_t = 0\%$ . . . . .	149
168	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0\%$ . . . . .	150
169	Portfolio Performance under No Taxes, $\tau_t = 0.5\%$ . . . . .	151
170	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0.5\%$ . . . . .	152
171	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0.5\%$ . . . . .	152
172	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, PPN, and PPNm, $\tau_t = 0.5\%$ . . . . .	153
173	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for PPN, and PPNm, $\tau_t = 0.5\%$ . . . . .	154
174	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0.5\%$ . . . . .	155
175	Portfolio Performance under No Taxes, $\tau_t = 1\%$ . . . . .	156
176	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 1\%$ . . . . .	157
177	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 1\%$ . . . . .	157
178	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, PPN, and PPNm, $\tau_t = 1\%$ . . . . .	158
179	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for PPN, and PPNm, $\tau_t = 1\%$ . . . . .	159
180	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 1\%$ . . . . .	160
	<b>Tables for parametric portfolios when <math>z = 0</math></b> . . . . .	161
181	Portfolio Performance under No Taxes, $\tau_t = 0\%$ . . . . .	162
182	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0\%$ . . . . .	163
183	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0\%$ . . . . .	163
184	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 0\%$ . . . . .	164
185	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 0\%$ . . . . .	165
186	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0\%$ . . . . .	166
187	Portfolio Performance under No Taxes, $\tau_t = 0.5\%$ . . . . .	167
188	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0.5\%$ . . . . .	168
189	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0.5\%$ . . . . .	168
190	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 0.5\%$ . . . . .	169
191	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 0.5\%$ . . . . .	170
192	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0.5\%$ . . . . .	171
193	Portfolio Performance under No Taxes, $\tau_t = 1\%$ . . . . .	172
194	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 1\%$ . . . . .	173
195	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 1\%$ . . . . .	173
196	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 1\%$ . . . . .	174
197	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 1\%$ . . . . .	175
198	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 1\%$ . . . . .	176
	<b>Tables for parametric portfolios when <math>z = 0.25</math></b> . . . . .	177
199	Portfolio Performance under No Taxes, $\tau_t = 0\%$ . . . . .	178
200	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0\%$ . . . . .	179
201	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0\%$ . . . . .	179
202	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 0\%$ . . . . .	180
203	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 0\%$ . . . . .	181
204	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0\%$ . . . . .	182
205	Portfolio Performance under No Taxes, $\tau_t = 0.5\%$ . . . . .	183
206	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0.5\%$ . . . . .	184

207	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0.5\%$	184
208	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 0.5\%$	185
209	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 0.5\%$	186
210	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0.5\%$	187
211	Portfolio Performance under No Taxes, $\tau_t = 1\%$	188
212	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 1\%$	189
213	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 1\%$	189
214	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 1\%$	190
215	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 1\%$	191
216	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 1\%$	192
	<b>Other benchmark portfolio strategies</b>	193
217	Portfolio Performance under No Taxes, $\tau_t = 0\%$	194
218	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0\%$	195
219	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0\%$	195
220	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, VW, and PPVW, $\tau_t = 0\%$	196
221	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for VW, and PPVW, $\tau_t = 0\%$	197
222	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0\%$	198
223	Portfolio Performance under No Taxes, $\tau_t = 0.5\%$	199
224	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0.5\%$	200
225	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0.5\%$	200
226	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, VW, and PPVW, $\tau_t = 0.5\%$	201
227	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for VW, and PPVW, $\tau_t = 0.5\%$	202
228	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0.5\%$	203
229	Portfolio Performance under No Taxes, $\tau_t = 1\%$	204
230	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 1\%$	205
231	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 1\%$	205
232	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, VW, and PPVW, $\tau_t = 1\%$	206
233	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for VW, and PPVW, $\tau_t = 1\%$	207
234	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 1\%$	208
	<b>20 randomly chosen assets</b>	209
235	Portfolio Performance under No Taxes, $\tau_t = 0\%$	210
236	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0\%$	211
237	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0\%$	211
238	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 0\%$	212
239	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 0\%$	213
240	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0\%$	214
241	Portfolio Performance under No Taxes, $\tau_t = 0.5\%$	215
242	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0.5\%$	216
243	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0.5\%$	216
244	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 0.5\%$	217
245	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 0.5\%$	218
246	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0.5\%$	219
247	Portfolio Performance under No Taxes, $\tau_t = 1\%$	220
248	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 1\%$	221

249	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 1\%$ . . . . .	221
250	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 1\%$ . . . . .	222
251	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 1\%$ . . . . .	223
252	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 1\%$ . . . . .	224
<b>30 randomly chosen assets</b> . . . . .		225
253	Portfolio Performance under No Taxes, $\tau_t = 0\%$ . . . . .	226
254	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0\%$ . . . . .	227
255	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0\%$ . . . . .	227
256	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 0\%$ . . . . .	228
257	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 0\%$ . . . . .	229
258	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0\%$ . . . . .	230
259	Portfolio Performance under No Taxes, $\tau_t = 0.5\%$ . . . . .	231
260	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0.5\%$ . . . . .	232
261	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0.5\%$ . . . . .	232
262	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 0.5\%$ . . . . .	233
263	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 0.5\%$ . . . . .	234
264	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0.5\%$ . . . . .	235
265	Portfolio Performance under No Taxes, $\tau_t = 1\%$ . . . . .	236
266	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 1\%$ . . . . .	237
267	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 1\%$ . . . . .	237
268	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 1\%$ . . . . .	238
269	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 1\%$ . . . . .	239
270	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 1\%$ . . . . .	240
<b>Tables no gains passed on by ETF</b> . . . . .		241
271	Portfolio Performance under No Taxes, $\tau_t = 0\%$ . . . . .	242
272	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0\%$ . . . . .	243
273	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0\%$ . . . . .	243
274	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 0\%$ . . . . .	244
275	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 0\%$ . . . . .	245
276	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0\%$ . . . . .	246
277	Portfolio Performance under No Taxes, $\tau_t = 0.5\%$ . . . . .	247
278	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 0.5\%$ . . . . .	248
279	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 0.5\%$ . . . . .	248
280	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 0.5\%$ . . . . .	249
281	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 0.5\%$ . . . . .	250
282	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 0.5\%$ . . . . .	251
283	Portfolio Performance under No Taxes, $\tau_t = 1\%$ . . . . .	252
284	Certainty Equivalent Wealth Loss under Taxation, $\tau_t = 1\%$ . . . . .	253
285	Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy, $\tau_t = 1\%$ . . . . .	253
286	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN, $\tau_t = 1\%$ . . . . .	254
287	Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN, $\tau_t = 1\%$ . . . . .	255
288	Trading Volume under the Tax Heuristic Strategies, $\tau_t = 1\%$ . . . . .	256



# 1 Base-case parameter setting

This section contains detailed tables for our base-case parameter setting.

Panel A: Gain Relative to 1/N				
Data	MV	BH	PPN	
FFMF	<b>-6.03</b> (0.85)	1.47 (0.26)	0.66 (0.36)	
INMF	<b>-18.95</b> (0.93)	<b>-1.65</b> (0.68)	1.10 (0.31)	
CRSP	<b>-0.60</b> (0.57)	<b>-11.12</b> (1.00)	3.23 (0.00)	

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.08	1.63	0.69	12.61
INMF	3.76	3.87	0.68	9.80
CRSP	5.13	5.59	0.47	17.40

Table 1: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. The values in parenthesis are p-values from 1000 bootstraps under the null hypothesis that the certainty equivalent gain is non-positive. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-11.09	-15.04	-10.86	-12.92	-11.76	-15.31	-11.70	-13.14
	INMF	-19.56	-19.17	-17.95	-22.05	-21.07	-20.05	-20.00	-22.71
	CRSP	-16.48	-16.08	-12.58	-19.64	-18.06	-17.86	-14.88	-20.31
Exact	FFMF	-10.72	-15.01	-10.86	-11.74	-11.52	-15.30	-11.70	-12.33
	INMF	-17.84	-18.48	-17.95	-19.02	-19.98	-19.61	-20.00	-20.59
	CRSP	-13.27	-13.67	-12.58	-15.58	-15.88	-16.30	-14.88	-17.38
Mtm	FFMF	-15.09	-16.80	-15.53	-15.69	-15.09	-16.80	-15.53	-15.69
	INMF	-25.34	-23.33	-26.07	-25.75	-25.36	-23.35	-26.10	-25.77
	CRSP	-21.92	-20.65	-20.92	-22.40	-21.95	-20.68	-20.94	-22.43

Table 2: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	<b>-10.20</b>	1.74	<b>-1.41</b>	<b>-9.81</b>	1.53	<b>-0.92</b>
		(0.85)	(0.15)	(0.92)	(0.84)	(0.19)	(0.81)
	INMF	<b>-18.55</b>	0.32	<b>-2.02</b>	<b>-17.91</b>	<b>-0.31</b>	<b>-1.00</b>
		(0.92)	(0.46)	(0.74)	(0.92)	(0.53)	(0.55)
	CRSP	<b>-0.13</b>	<b>-6.97</b>	<b>-0.68</b>	<b>-0.36</b>	<b>-7.67</b>	0.39
		(0.53)	(1.00)	(0.85)	(0.58)	(1.00)	(0.39)
Exact	FFMF	<b>-10.53</b>	1.32	<b>-0.49</b>	<b>-10.03</b>	1.27	<b>-0.26</b>
		(0.85)	(0.25)	(0.57)	(0.84)	(0.25)	(0.50)
	INMF	<b>-19.59</b>	<b>-1.78</b>	<b>-0.35</b>	<b>-18.57</b>	<b>-1.67</b>	0.34
		(0.92)	(0.66)	(0.46)	(0.92)	(0.67)	(0.38)
	CRSP	<b>-1.06</b>	<b>-10.41</b>	0.47	<b>-1.10</b>	<b>-10.06</b>	1.38
		(0.70)	(1.00)	(0.35)	(0.71)	(1.00)	(0.00)
Mtm	FFMF	<b>-7.92</b>	0.95	<b>-0.06</b>	<b>-7.92</b>	0.94	<b>-0.06</b>
		(0.83)	(0.27)	(0.47)	(0.83)	(0.27)	(0.47)
	INMF	<b>-16.77</b>	<b>-2.62</b>	0.55	<b>-16.76</b>	<b>-2.61</b>	0.55
		(0.91)	(0.73)	(0.36)	(0.91)	(0.73)	(0.36)
	CRSP	1.01	<b>-9.97</b>	2.59	1.01	<b>-9.96</b>	2.59
		(0.20)	(1.00)	(0.00)	(0.20)	(1.00)	(0.00)

Table 3: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . The values in parenthesis are p-values from 1000 bootstraps under the null hypothesis that the certainty equivalent gain is non-positive. Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.20 (0.16)	0.21 (0.16)	1.20 (0.16)	1.44 (0.22)	1.24 (0.26)	0.47 (0.26)	0.45 (0.27)	1.58 (0.21)	0.38 (0.18)	1.58 (0.21)	1.84 (0.22)	1.65 (0.21)	1.11 (0.20)	1.08 (0.18)
	INMF	1.31 (0.17)	0.30 (0.00)	1.31 (0.17)	1.04 (0.37)	2.48 (0.26)	1.09 (0.23)	1.07 (0.30)	2.74 (0.04)	0.82 (0.01)	2.74 (0.04)	2.90 (0.16)	4.62 (0.14)	3.29 (0.07)	3.25 (0.14)
	CRSP	-0.48 (0.99)	0.19 (0.07)	-0.48 (0.99)	0.29 (0.13)	-2.66 (0.98)	-2.09 (0.99)	-5.12 (0.99)	1.34 (0.99)	1.34 (0.01)	1.95 (0.01)	3.43 (0.01)	0.80 (0.08)	1.70 (0.00)	-1.74 (0.99)
MV	FFMF	0.00 (0.54)	0.03 (0.11)	0.03 (0.07)	0.03 (0.03)	0.03 (0.07)	0.10 (0.10)	0.09 (0.11)	0.03 (0.22)	0.05 (0.11)	0.06 (0.08)	0.06 (0.05)	0.07 (0.04)	0.13 (0.09)	0.13 (0.09)
	INMF	0.94 (0.11)	0.28 (0.05)	2.29 (0.07)	4.97 (0.10)	4.40 (0.08)	5.17 (0.12)	5.17 (0.36)	1.38 (0.06)	0.65 (0.05)	2.83 (0.06)	5.64 (0.06)	5.20 (0.14)	2.97 (0.13)	5.20 (0.13)
	CRSP	-0.50 (0.93)	1.05 (0.00)	-0.14 (0.72)	-0.07 (0.48)	-0.61 (0.99)	-2.52 (0.99)	-3.60 (0.78)	0.98 (0.03)	2.37 (0.00)	1.48 (0.00)	1.80 (0.23)	1.54 (0.80)	-2.38 (0.79)	-2.53 (0.64)
PPN	FFMF	0.09 (0.18)	0.18 (0.05)	0.36 (0.03)	1.48 (0.17)	2.44 (0.21)	0.14 (0.64)	-0.18 (0.65)	0.72 (0.06)	0.57 (0.10)	1.03 (0.11)	2.44 (0.15)	3.60 (0.17)	-1.40 (0.75)	-0.64 (0.69)
	INMF	1.26 (0.01)	0.43 (0.01)	1.53 (0.06)	1.69 (0.03)	0.80 (0.39)	1.11 (0.26)	1.66 (0.31)	2.26 (0.04)	1.40 (0.03)	2.72 (0.06)	3.85 (0.05)	4.14 (0.12)	2.48 (0.03)	2.10 (0.12)
	CRSP	2.26 (0.00)	2.19 (0.00)	2.66 (0.00)	1.15 (0.06)	1.27 (0.09)	1.66 (0.01)	-0.51 (0.70)	3.37 (0.00)	4.16 (0.00)	4.20 (0.00)	3.36 (0.01)	4.39 (0.01)	2.21 (0.06)	-1.16 (0.74)

Panel B: Taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.16 (0.17)	0.21 (0.18)	1.16 (0.17)	1.38 (0.23)	1.16 (0.27)	0.43 (0.26)	0.39 (0.29)	1.38 (0.19)	0.31 (0.18)	1.38 (0.19)	1.63 (0.23)	1.43 (0.18)	0.91 (0.18)	0.87 (0.16)
	INMF	1.46 (0.16)	0.34 (0.00)	1.46 (0.16)	1.03 (0.37)	2.07 (0.30)	0.86 (0.27)	0.73 (0.36)	1.80 (0.09)	0.63 (0.00)	1.80 (0.09)	1.71 (0.30)	3.09 (0.23)	2.04 (0.18)	1.93 (0.26)
	CRSP	0.11 (0.19)	0.33 (0.01)	0.11 (0.19)	0.66 (0.06)	-2.31 (0.97)	-2.46 (0.99)	-5.32 (0.99)	0.83 (0.02)	1.19 (0.01)	0.83 (0.02)	1.66 (0.03)	-0.71 (0.96)	-0.09 (0.48)	-3.01 (0.99)
MV	FFMF	0.00 (0.53)	0.03 (0.11)	0.03 (0.07)	0.04 (0.04)	0.04 (0.09)	0.11 (0.12)	0.10 (0.13)	0.02 (0.26)	0.05 (0.12)	0.05 (0.07)	0.06 (0.04)	0.06 (0.05)	0.13 (0.10)	0.12 (0.11)
	INMF	0.91 (0.09)	0.29 (0.04)	2.17 (0.08)	4.63 (0.09)	3.86 (0.08)	2.32 (0.16)	4.41 (0.13)	1.07 (0.06)	0.60 (0.04)	2.41 (0.07)	4.80 (0.08)	4.21 (0.06)	2.35 (0.16)	4.14 (0.18)
	CRSP	-0.35 (0.94)	1.12 (0.00)	0.00 (0.63)	0.02 (0.46)	-0.51 (0.46)	-2.87 (1.00)	-4.14 (1.00)	0.08 (0.45)	2.32 (0.00)	0.74 (0.00)	0.57 (0.31)	-0.05 (0.53)	-3.66 (0.83)	-4.11 (0.83)
PPN	FFMF	0.08 (0.23)	0.18 (0.05)	0.34 (0.03)	1.40 (0.17)	2.30 (0.23)	0.14 (0.65)	-0.22 (0.67)	0.58 (0.04)	0.56 (0.10)	0.89 (0.08)	2.14 (0.14)	3.12 (0.16)	-1.42 (0.75)	-0.77 (0.71)
	INMF	1.29 (0.01)	0.44 (0.00)	1.50 (0.04)	1.47 (0.05)	0.29 (0.51)	0.67 (0.37)	0.88 (0.41)	1.92 (0.06)	1.36 (0.03)	2.28 (0.09)	2.86 (0.10)	2.56 (0.24)	1.91 (0.06)	1.10 (0.29)
	CRSP	2.30 (0.00)	2.24 (0.00)	2.65 (0.00)	1.33 (0.04)	1.28 (0.07)	0.77 (0.03)	-1.62 (1.00)	2.97 (0.00)	4.12 (0.00)	3.82 (0.00)	2.68 (0.01)	3.25 (0.01)	1.22 (0.13)	-2.84 (1.00)

Table 4: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 0\%$ . The values in parenthesis are p-values from 1000 bootstraps for the null hypothesis that the certainty equivalent gain is non-positive. Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

		Exact basis rule													
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	Average basis rule						
									PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-11.59	-10.70	-11.57	-11.77	-11.60	-10.87	-10.85	-11.37	-10.49	-11.55	-11.77	-11.60	-11.07	-11.04
	(0.85)	(0.85)	(0.84)	(0.83)	(0.83)	(0.83)	(0.84)	(0.83)	(0.84)	(0.85)	(0.84)	(0.83)	(0.83)	(0.84)	(0.84)
	INMF	-19.87	-19.60	-18.80	-16.45	-18.08	-18.36	-16.33	-19.63	-18.69	-18.48	-16.39	-18.10	-18.80	-17.01
	(0.92)	(0.92)	(0.92)	(0.91)	(0.90)	(0.92)	(0.92)	(0.91)	(0.92)	(0.92)	(0.92)	(0.91)	(0.90)	(0.92)	(0.91)
	CRSP	-1.08	-0.22	-0.72	-1.42	1.01	-1.50	0.53	-1.09	0.88	-0.59	-1.71	0.61	-4.13	-0.93
	(0.79)	(0.56)	(0.70)	(0.83)	(0.44)	(0.82)	(0.42)	(0.53)	(0.78)	(0.54)	(0.66)	(0.84)	(0.52)	(0.97)	(0.81)
BH	FFMF	0.12	1.11	0.12	-0.11	0.08	0.84	0.87	0.15	1.36	0.15	-0.10	0.08	0.62	0.66
	(0.47)	(0.26)	(0.47)	(0.59)	(0.47)	(0.27)	(0.27)	(0.26)	(0.44)	(0.18)	(0.44)	(0.59)	(0.47)	(0.30)	(0.29)
	INMF	-3.05	-2.07	-3.05	-2.79	-4.16	-2.84	-2.83	-2.35	-0.49	-2.35	-2.50	-4.11	-2.87	-2.83
	(0.74)	(0.68)	(0.74)	(0.68)	(0.76)	(0.73)	(0.73)	(0.68)	(0.68)	(0.54)	(0.68)	(0.66)	(0.76)	(0.71)	(0.70)
	CRSP	-9.97	-10.58	-9.97	-10.67	-7.96	-8.50	-5.57	-8.75	-8.20	-8.75	-10.06	-7.71	-8.53	-5.32
	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(0.99)
PPN	FFMF	-1.58	-0.53	-1.32	-0.45	0.68	-1.10	-1.11	-2.25	-1.22	-1.95	-0.84	0.47	-3.86	-3.09
	(0.88)	(0.58)	(0.86)	(0.56)	(0.32)	(0.90)	(0.90)	(0.90)	(0.91)	(0.90)	(0.92)	(0.84)	(0.34)	(0.86)	(0.86)
	INMF	-0.40	-0.22	-0.14	0.29	-1.99	-0.33	0.23	-2.48	-1.46	-2.04	-1.12	-2.47	-2.79	-3.12
	(0.50)	(0.44)	(0.45)	(0.37)	(0.66)	(0.57)	(0.35)	(0.85)	(0.68)	(0.84)	(0.67)	(0.70)	(0.86)	(0.73)	(0.73)
	CRSP	3.25	2.48	3.65	1.33	4.53	4.32	5.36	0.70	2.09	1.51	-0.75	2.86	-0.18	-0.10
	(0.00)	(0.05)	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)	(0.29)	(0.05)	(0.00)	(0.78)	(0.03)	(0.64)	(0.61)

Panel B: Taxation at end

		Exact basis rule													
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	Average basis rule						
									PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-11.07	-10.19	-11.04	-11.22	-11.03	-10.32	-10.30	-11.02	-10.05	-10.99	-11.20	-11.03	-10.50	-10.48
	(0.84)	(0.84)	(0.83)	(0.83)	(0.83)	(0.83)	(0.83)	(0.83)	(0.84)	(0.84)	(0.83)	(0.82)	(0.83)	(0.83)	(0.83)
	INMF	-19.00	-18.60	-18.00	-15.67	-17.14	-17.39	-15.59	-18.50	-17.93	-17.42	-15.41	-17.02	-17.66	-16.13
	(0.92)	(0.92)	(0.92)	(0.90)	(0.90)	(0.91)	(0.92)	(0.91)	(0.92)	(0.91)	(0.90)	(0.90)	(0.90)	(0.91)	(0.91)
	CRSP	-1.56	-0.33	-1.21	-1.73	0.73	-1.52	0.13	-1.10	0.75	-0.45	-1.43	0.30	-3.92	-1.49
	(0.83)	(0.59)	(0.75)	(0.86)	(0.50)	(0.83)	(0.58)	(0.78)	(0.78)	(0.55)	(0.65)	(0.82)	(0.61)	(0.98)	(0.86)
BH	FFMF	0.10	1.06	0.10	-0.11	0.10	0.83	0.87	0.15	1.22	0.15	-0.09	0.10	0.62	0.66
	(0.49)	(0.26)	(0.49)	(0.59)	(0.46)	(0.27)	(0.26)	(0.44)	(0.44)	(0.21)	(0.44)	(0.59)	(0.46)	(0.30)	(0.29)
	INMF	-3.08	-2.00	-3.08	-2.68	-3.66	-2.51	-2.38	-2.08	-0.94	-2.08	-1.99	-3.31	-2.31	-2.21
	(0.79)	(0.71)	(0.79)	(0.69)	(0.75)	(0.74)	(0.72)	(0.69)	(0.69)	(0.59)	(0.69)	(0.64)	(0.73)	(0.70)	(0.67)
	CRSP	-10.15	-10.35	-10.15	-10.65	-7.93	-7.79	-5.00	-8.43	-8.76	-8.43	-9.18	-7.01	-7.59	-4.80
	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(0.99)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(0.97)
PPN	FFMF	-1.33	-0.29	-1.08	-0.24	0.86	-0.83	-0.88	-1.70	-0.68	-1.39	-0.41	0.73	-3.20	-2.52
	(0.83)	(0.50)	(0.79)	(0.48)	(0.30)	(0.83)	(0.83)	(0.82)	(0.88)	(0.67)	(0.87)	(0.54)	(0.30)	(0.83)	(0.82)
	INMF	0.17	0.44	0.38	0.76	-1.41	0.15	0.49	-0.89	-0.28	-0.53	0.12	-1.51	-1.12	-1.81
	(0.38)	(0.35)	(0.30)	(0.30)	(0.61)	(0.38)	(0.29)	(0.57)	(0.45)	(0.51)	(0.40)	(0.62)	(0.60)	(0.61)	(0.61)
	CRSP	3.60	3.31	3.95	2.05	5.12	4.73	5.35	2.52	3.29	3.37	1.40	4.40	1.71	0.57
	(0.00)	(0.03)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)	(0.04)	(0.00)	(0.01)	(0.02)	(0.02)	(0.44)

Table 5: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 0\%$ . The values in parenthesis are p-values from 1000 bootstraps under the null hypothesis that the certainty equivalent gain is non-positive. Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.57	1.06	2.10	1.06	0.78	0.58	1.08	0.87
	INMF	4.97	2.18	4.41	2.18	1.34	0.93	1.90	1.18
	CRSP	7.61	3.78	6.82	3.78	2.37	1.67	1.70	1.22
MV	FFMF	1.72	1.24	1.62	1.27	1.09	1.00	1.32	1.19
	INMF	5.22	3.54	4.77	3.06	2.16	1.26	2.90	1.88
	CRSP	7.46	4.74	7.04	4.52	2.98	1.91	2.39	1.47
PPN	FFMF	13.64	9.11	12.97	9.06	5.69	3.13	9.70	7.56
	INMF	11.51	7.29	10.81	7.05	4.22	2.19	7.72	5.42
	CRSP	20.89	15.00	20.12	15.52	10.89	6.87	9.42	4.97

Table 6: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0\%$ .

Panel A: Gain Relative to 1/N			
Data	MV	BH	PPN
FFMF	<b>-5.37</b> (0.83)	2.24 (0.21)	<b>-4.45</b> (0.94)
INMF	<b>-18.83</b> (0.92)	0.27 (0.53)	<b>-2.74</b> (0.79)
CRSP	<b>-0.96</b> (0.64)	<b>-8.73</b> (1.00)	<b>-3.79</b> (0.98)

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.08	1.62	0.68	12.60
INMF	3.75	3.87	0.68	9.79
CRSP	5.13	5.59	0.47	17.38

Table 7: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0.5\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. The values in parenthesis are p-values from 1000 bootstraps under the null hypothesis that the certainty equivalent gain is non-positive. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-11.20	-15.00	-10.82	-13.18	-11.85	-15.28	-11.67	-13.38
	INMF	-20.57	-19.53	-17.88	-22.82	-21.99	-20.39	-19.94	-23.41
	CRSP	-17.48	-16.77	-12.55	-20.64	-18.99	-18.42	-14.87	-21.27
Exact	FFMF	-10.77	-14.97	-10.82	-11.91	-11.58	-15.27	-11.67	-12.52
	INMF	-18.09	-18.63	-17.88	-19.34	-20.25	-19.79	-19.94	-20.88
	CRSP	-13.61	-14.01	-12.54	-16.21	-16.27	-16.71	-14.86	-18.04
Mtm	FFMF	-15.09	-16.78	-15.51	-15.79	-15.09	-16.78	-15.52	-15.80
	INMF	-25.28	-23.28	-26.03	-25.67	-25.31	-23.29	-26.05	-25.69
	CRSP	-21.90	-20.62	-20.90	-22.30	-21.93	-20.65	-20.92	-22.33

Table 8: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	<b>-9.42</b>	2.67	<b>-6.58</b>	<b>-9.06</b>	2.44	<b>-6.10</b>
		(0.85)	(0.13)	(0.93)	(0.84)	(0.15)	(0.94)
	INMF	<b>-17.76</b>	3.67	<b>-5.50</b>	<b>-17.16</b>	2.90	<b>-4.52</b>
		(0.92)	(0.19)	(0.89)	(0.92)	(0.25)	(0.85)
	CRSP	<b>-0.10</b>	<b>-3.27</b>	<b>-7.47</b>	<b>-0.26</b>	<b>-4.09</b>	<b>-6.50</b>
		(0.52)	(1.00)	(1.00)	(0.56)	(1.00)	(1.00)
Exact	FFMF	<b>-9.82</b>	2.18	<b>-5.67</b>	<b>-9.32</b>	2.13	<b>-5.47</b>
		(0.85)	(0.19)	(0.94)	(0.84)	(0.19)	(0.95)
	INMF	<b>-19.36</b>	0.53	<b>-4.23</b>	<b>-18.35</b>	0.66	<b>-3.51</b>
		(0.92)	(0.48)	(0.90)	(0.92)	(0.46)	(0.88)
	CRSP	<b>-1.41</b>	<b>-7.60</b>	<b>-6.68</b>	<b>-1.48</b>	<b>-7.19</b>	<b>-5.83</b>
		(0.75)	(1.00)	(0.99)	(0.76)	(1.00)	(1.00)
Mtm	FFMF	<b>-7.26</b>	1.72	<b>-5.25</b>	<b>-7.25</b>	1.72	<b>-5.25</b>
		(0.83)	(0.18)	(0.95)	(0.83)	(0.18)	(0.95)
	INMF	<b>-16.65</b>	<b>-0.74</b>	<b>-3.24</b>	<b>-16.63</b>	<b>-0.73</b>	<b>-3.24</b>
		(0.91)	(0.60)	(0.84)	(0.91)	(0.60)	(0.84)
	CRSP	0.67	<b>-7.56</b>	<b>-4.29</b>	0.67	<b>-7.54</b>	<b>-4.29</b>
		(0.29)	(1.00)	(0.99)	(0.29)	(1.00)	(0.99)

Table 9: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . The values in parenthesis are p-values from 1000 bootstraps under the null hypothesis that the certainty equivalent gain is non-positive. Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.



Panel A: No taxation at end

Model	Data	Exact basis rule													
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.90 (0.21)	0.56 (0.21)	1.90 (0.21)	2.24 (0.24)	2.10 (0.25)	1.12 (0.22)	1.16 (0.22)	2.33 (0.23)	0.74 (0.20)	2.33 (0.23)	2.71 (0.20)	2.59 (0.20)	1.92 (0.20)	1.95 (0.19)
	INMF	2.83 (0.06)	0.90 (0.01)	2.83 (0.06)	3.01 (0.21)	4.71 (0.18)	2.72 (0.09)	3.07 (0.15)	7.82 (0.08)	1.57 (0.01)	4.79 (0.03)	5.64 (0.08)	7.82 (0.09)	6.03 (0.04)	6.47 (0.07)
	CRSP	1.56 (0.01)	1.15 (0.00)	1.56 (0.01)	2.84 (0.27)	0.13 (0.02)	0.44 (0.07)	<b>-2.44</b> (0.99)	4.38 (0.12)	2.64 (0.01)	4.49 (0.01)	6.62 (0.02)	4.38 (0.02)	5.39 (0.01)	2.07 (0.00)
MV	FFMF	0.02 (0.13)	0.37 (0.07)	0.07 (0.06)	0.08 (0.05)	0.08 (0.04)	0.12 (0.09)	0.12 (0.09)	0.16 (0.08)	0.39 (0.06)	0.10 (0.07)	0.11 (0.05)	0.11 (0.04)	0.16 (0.09)	0.16 (0.08)
	INMF	1.89 (0.07)	1.29 (0.05)	3.58 (0.08)	6.64 (0.07)	6.42 (0.06)	3.68 (0.07)	6.64 (0.08)	7.28 (0.09)	4.21 (0.07)	4.21 (0.06)	7.45 (0.06)	7.50 (0.06)	6.03 (0.09)	7.28 (0.09)
	CRSP	1.05 (0.02)	2.93 (0.01)	1.96 (0.08)	2.46 (0.29)	2.19 (0.02)	<b>-0.27</b> (0.71)	<b>-0.97</b> (0.99)	4.67 (0.12)	4.58 (0.01)	3.78 (0.01)	4.61 (0.03)	4.67 (0.05)	0.31 (0.64)	0.65 (0.51)
PPN	FFMF	3.13 (0.11)	2.14 (0.12)	3.75 (0.10)	6.26 (0.13)	8.19 (0.14)	2.54 (0.08)	3.20 (0.09)	3.86 (0.05)	2.59 (0.14)	4.47 (0.15)	7.25 (0.15)	9.40 (0.15)	2.77 (0.04)	3.86 (0.05)
	INMF	4.26 (0.05)	2.15 (0.03)	4.94 (0.07)	6.53 (0.05)	6.62 (0.07)	3.65 (0.11)	5.49 (0.17)	7.24 (0.06)	3.39 (0.04)	6.35 (0.06)	9.02 (0.06)	10.48 (0.08)	6.40 (0.04)	7.24 (0.06)
	CRSP	6.26 (0.00)	6.30 (0.00)	7.42 (0.00)	8.05 (0.00)	9.88 (0.00)	7.98 (0.00)	7.60 (0.00)	8.61 (0.00)	8.82 (0.00)	9.21 (0.00)	10.53 (0.00)	13.59 (0.00)	10.05 (0.00)	8.61 (0.00)

Panel B: Taxation at end

Model	Data	Exact basis rule													
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.87 (0.21)	0.56 (0.22)	1.87 (0.21)	2.18 (0.24)	2.03 (0.25)	1.08 (0.21)	1.11 (0.21)	2.12 (0.23)	0.67 (0.18)	2.12 (0.23)	2.47 (0.19)	2.34 (0.18)	1.70 (0.16)	1.72 (0.14)
	INMF	2.98 (0.04)	0.94 (0.00)	2.98 (0.04)	3.04 (0.21)	4.31 (0.21)	2.52 (0.10)	2.75 (0.18)	5.02 (0.13)	1.39 (0.01)	3.80 (0.05)	4.35 (0.13)	6.14 (0.14)	4.69 (0.07)	5.02 (0.13)
	CRSP	2.20 (0.01)	1.31 (0.00)	2.20 (0.01)	3.25 (0.02)	0.52 (0.04)	0.12 (0.29)	<b>-2.58</b> (0.99)	2.72 (0.02)	2.49 (0.01)	3.33 (0.02)	4.75 (0.02)	2.72 (0.02)	3.44 (0.02)	0.65 (0.07)
MV	FFMF	0.03 (0.12)	0.38 (0.07)	0.08 (0.06)	0.09 (0.05)	0.09 (0.05)	0.13 (0.10)	0.13 (0.10)	0.16 (0.09)	0.40 (0.06)	0.10 (0.07)	0.11 (0.05)	0.11 (0.05)	0.16 (0.10)	0.16 (0.09)
	INMF	1.87 (0.06)	1.32 (0.05)	3.47 (0.07)	6.32 (0.08)	5.91 (0.06)	3.40 (0.07)	5.91 (0.11)	6.17 (0.06)	1.67 (0.06)	3.79 (0.06)	6.60 (0.07)	6.46 (0.06)	3.83 (0.07)	6.17 (0.11)
	CRSP	1.27 (0.03)	3.00 (0.01)	2.15 (0.01)	2.64 (0.08)	2.39 (0.26)	<b>-0.55</b> (0.71)	<b>-1.44</b> (0.74)	2.96 (0.12)	4.53 (0.00)	2.98 (0.01)	3.31 (0.04)	2.96 (0.12)	<b>-1.06</b> (0.78)	<b>-1.10</b> (0.77)
PPN	FFMF	3.13 (0.11)	2.14 (0.12)	3.74 (0.10)	6.19 (0.13)	8.06 (0.14)	2.53 (0.07)	3.15 (0.07)	3.64 (0.13)	2.58 (0.14)	4.32 (0.13)	6.93 (0.14)	8.88 (0.13)	2.74 (0.04)	3.72 (0.04)
	INMF	4.24 (0.03)	2.16 (0.02)	4.85 (0.05)	6.27 (0.04)	6.05 (0.06)	3.18 (0.12)	4.65 (0.20)	5.13 (0.05)	3.34 (0.04)	5.91 (0.06)	7.98 (0.07)	8.77 (0.09)	5.83 (0.04)	6.19 (0.07)
	CRSP	6.24 (0.00)	6.39 (0.00)	7.44 (0.00)	8.27 (0.00)	9.94 (0.00)	7.04 (0.00)	6.50 (0.00)	7.30 (0.00)	8.77 (0.00)	8.83 (0.00)	9.80 (0.00)	12.35 (0.00)	9.03 (0.00)	6.77 (0.00)

Table 10: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 0.5\%$ . The values in parenthesis are p-values from 1000 bootstraps for the null hypothesis that the certainty equivalent gain is non-positive. Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

		Exact basis rule													
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-11.48	-9.99	-11.44	-11.73	-11.61	-10.72	-10.75	-11.44	-9.73	-11.40	-11.71	-11.61	-10.99	-11.01
	INMF	(0.84)	(0.85)	(0.84)	(0.83)	(0.83)	(0.84)	(0.84)	(0.85)	(0.85)	(0.84)	(0.83)	(0.83)	(0.84)	(0.84)
	CRSP	-20.09	-19.05	-18.77	-16.52	-18.04	-18.61	-16.58	-19.64	-17.64	-18.21	-16.35	-18.01	-18.98	-17.14
BH	FFMF	-1.91	0.32	-1.02	-1.77	0.63	-2.10	0.08	-1.87	1.78	-0.78	-1.99	0.18	-4.92	-1.49
	INMF	(0.85)	(0.55)	(0.73)	(0.85)	(0.53)	(0.85)	(0.60)	(0.84)	(0.52)	(0.68)	(0.85)	(0.63)	(0.98)	(0.87)
	CRSP	-9.02	-8.65	-9.02	-10.15	-7.71	-8.00	-5.29	-7.42	-5.75	-7.42	-9.27	-7.32	-8.21	-5.23
PPN	FFMF	-4.54	-4.19	-3.96	-1.96	-0.05	-4.35	-3.77	-5.25	-4.86	-4.63	-2.44	-0.37	-5.80	-4.83
	INMF	(0.93)	(0.95)	(0.94)	(0.95)	(0.41)	(0.93)	(0.93)	(0.93)	(0.95)	(0.93)	(0.96)	(0.71)	(0.87)	(0.87)
	CRSP	-2.89	-3.04	-2.26	-0.95	-2.48	-3.36	-1.98	-4.89	-3.81	-4.10	-2.48	-3.17	-5.17	-4.82
		(0.88)	(0.86)	(0.87)	(0.70)	(0.69)	(0.95)	(0.96)	(0.91)	(0.87)	(0.92)	(0.84)	(0.74)	(0.94)	(0.81)
		-2.37	-1.93	-1.30	-1.96	2.41	0.33	2.91	-4.65	-1.90	-3.29	-4.08	0.70	-3.38	-1.54
		(0.95)	(0.85)	(0.87)	(0.89)	(0.02)	(0.51)	(0.01)	(0.98)	(0.88)	(0.97)	(0.96)	(0.29)	(0.92)	(0.80)

Panel B: Taxation at end

		Average basis rule													
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-10.96	-9.48	-10.91	-11.18	-11.04	-10.17	-10.19	-10.90	-9.30	-10.85	-11.15	-11.04	-10.43	-10.45
	INMF	(0.84)	(0.84)	(0.82)	(0.82)	(0.83)	(0.82)	(0.83)	(0.84)	(0.85)	(0.82)	(0.82)	(0.83)	(0.83)	(0.83)
	CRSP	-19.22	-18.05	-17.96	-15.75	-17.10	-17.65	-15.84	-18.53	-16.93	-17.16	-15.37	-16.92	-17.85	-16.25
BH	FFMF	0.25	1.56	0.25	-0.05	0.10	1.04	1.01	0.32	1.76	0.32	-0.03	0.10	0.73	0.71
	INMF	(0.38)	(0.20)	(0.38)	(0.57)	(0.46)	(0.20)	(0.20)	(0.30)	(0.16)	(0.30)	(0.56)	(0.46)	(0.28)	(0.28)
	CRSP	-2.25	-0.28	-2.25	-2.31	-3.50	-1.81	-2.03	-0.86	1.49	-0.86	-1.39	-3.05	-1.71	-2.02
		(0.71)	(0.54)	(0.71)	(0.67)	(0.74)	(0.69)	(0.71)	(0.58)	(0.38)	(0.58)	(0.59)	(0.71)	(0.65)	(0.66)
		-9.19	-8.39	-9.19	-10.11	-7.67	-7.30	-4.73	-7.18	-6.42	-7.18	-8.44	-6.63	-7.28	-4.71
		(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(0.99)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(0.97)
PPN	FFMF	-4.30	-3.98	-3.73	-1.76	0.13	-4.11	-3.55	-4.70	-4.32	-4.07	-2.01	-0.10	-5.14	-4.25
	INMF	(0.94)	(0.95)	(0.94)	(0.94)	(0.35)	(0.94)	(0.93)	(0.94)	(0.95)	(0.94)	(0.95)	(0.43)	(0.86)	(0.85)
	CRSP	-2.32	-2.35	-1.76	-0.49	-1.91	-2.89	-1.73	-3.29	-2.68	-2.57	-1.20	-2.16	-3.48	-3.46
		(0.83)	(0.82)	(0.81)	(0.53)	(0.64)	(0.94)	(0.93)	(0.84)	(0.79)	(0.82)	(0.68)	(0.67)	(0.86)	(0.73)
		-2.11	-1.11	-1.01	-1.25	3.00	0.68	2.94	-2.90	-0.78	-1.53	-1.99	2.26	-1.46	-0.82
		(0.94)	(0.78)	(0.84)	(0.85)	(0.02)	(0.06)	(0.01)	(0.96)	(0.75)	(0.91)	(0.89)	(0.04)	(0.81)	(0.73)

Table 11: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 0.5\%$ . The values in parenthesis are p-values from 1000 bootstraps under the null hypothesis that the certainty equivalent gain is non-positive. Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.18	0.84	1.70	0.84	0.67	0.56	1.01	0.87
	INMF	4.33	1.92	3.78	1.92	1.18	0.86	1.74	1.14
	CRSP	6.58	3.14	5.84	3.14	2.04	1.46	1.54	1.10
MV	FFMF	1.52	1.08	1.43	1.12	0.95	0.84	1.18	1.06
	INMF	4.39	2.80	3.96	2.39	1.60	0.97	2.40	1.70
	CRSP	6.53	3.96	6.08	3.79	2.48	1.60	2.11	1.35
PPN	FFMF	12.82	8.32	12.18	8.33	5.18	2.80	8.94	7.05
	INMF	10.51	6.50	9.84	6.28	3.79	1.98	7.12	5.09
	CRSP	19.07	13.47	18.36	13.94	9.58	5.94	8.68	4.63

Table 12: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0.5\%$ .

Panel A: Gain Relative to 1/N				
Data	MV	BH	PPN	
FFMF	-4.71 (0.82)	3.00 (0.20)	-9.31 (0.93)	
INMF	-18.70 (0.92)	2.22 (0.29)	-6.49 (0.89)	
CRSP	-1.31 (0.70)	-6.28 (1.00)	-10.51 (1.00)	

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.07	1.62	0.68	12.59
INMF	3.75	3.87	0.67	9.79
CRSP	5.13	5.58	0.47	17.37

Table 13: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 1\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. The values in parenthesis are p-values from 1000 bootstraps under the null hypothesis that the certainty equivalent gain is non-positive. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-11.22	-14.97	-10.79	-13.28	-11.86	-15.26	-11.64	-13.46
	INMF	-20.99	-19.64	-17.80	-22.98	-22.32	-20.48	-19.88	-23.49
	CRSP	-17.79	-17.03	-12.51	-20.69	-19.22	-18.58	-14.84	-21.27
Exact	FFMF	-10.79	-14.93	-10.79	-12.05	-11.60	-15.24	-11.64	-12.67
	INMF	-18.21	-18.69	-17.80	-19.45	-20.37	-19.86	-19.88	-20.99
	CRSP	-13.84	-14.23	-12.50	-16.34	-16.55	-16.94	-14.83	-18.22
Mtm	FFMF	-15.09	-16.76	-15.50	-15.91	-15.09	-16.76	-15.51	-15.91
	INMF	-25.23	-23.23	-25.99	-25.59	-25.26	-23.24	-26.01	-25.61
	CRSP	-21.88	-20.59	-20.88	-22.19	-21.91	-20.62	-20.90	-22.22

Table 14: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	<b>-8.74</b>	3.50	<b>-11.42</b>	<b>-8.38</b>	3.26	<b>-10.96</b>
		(0.84)	(0.14)	(0.93)	(0.84)	(0.13)	(0.94)
	INMF	<b>-17.31</b>	6.35	<b>-8.84</b>	<b>-16.77</b>	5.43	<b>-7.90</b>
		(0.92)	(0.10)	(0.91)	(0.92)	(0.12)	(0.90)
	CRSP	<b>-0.39</b>	<b>-0.25</b>	<b>-13.67</b>	<b>-0.53</b>	<b>-1.20</b>	<b>-12.79</b>
		(0.59)	(0.44)	(1.00)	(0.63)	(0.89)	(1.00)
Exact	FFMF	<b>-9.14</b>	3.01	<b>-10.59</b>	<b>-8.63</b>	2.95	<b>-10.41</b>
		(0.85)	(0.16)	(0.94)	(0.84)	(0.15)	(0.94)
	INMF	<b>-19.17</b>	2.74	<b>-7.90</b>	<b>-18.18</b>	2.85	<b>-7.22</b>
		(0.92)	(0.28)	(0.92)	(0.92)	(0.22)	(0.94)
	CRSP	<b>-1.75</b>	<b>-4.82</b>	<b>-13.10</b>	<b>-1.78</b>	<b>-4.35</b>	<b>-12.30</b>
		(0.80)	(1.00)	(1.00)	(0.81)	(1.00)	(1.00)
Mtm	FFMF	<b>-6.59</b>	2.50	<b>-10.19</b>	<b>-6.58</b>	2.50	<b>-10.19</b>
		(0.82)	(0.15)	(0.95)	(0.82)	(0.15)	(0.95)
	INMF	<b>-16.52</b>	1.18	<b>-6.94</b>	<b>-16.51</b>	1.18	<b>-6.93</b>
		(0.91)	(0.43)	(0.92)	(0.91)	(0.43)	(0.92)
	CRSP	0.32	<b>-5.08</b>	<b>-10.87</b>	0.32	<b>-5.07</b>	<b>-10.87</b>
		(0.41)	(1.00)	(1.00)	(0.41)	(1.00)	(1.00)

Table 15: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . The values in parenthesis are p-values from 1000 bootstraps under the null hypothesis that the certainty equivalent gain is non-positive. Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.60 (0.24)	0.92 (0.25)	2.60 (0.24)	3.02 (0.22)	2.93 (0.18)	1.75 (0.20)	1.84 (0.22)	3.03 (0.23)	1.09 (0.21)	3.03 (0.23)	3.49 (0.19)	3.42 (0.18)	2.66 (0.18)	2.73 (0.17)
	INMF	4.29 (0.04)	1.51 (0.01)	4.29 (0.04)	4.89 (0.11)	6.82 (0.15)	4.26 (0.05)	4.96 (0.10)	6.40 (0.03)	2.26 (0.01)	6.40 (0.03)	7.80 (0.06)	10.33 (0.07)	8.18 (0.03)	9.01 (0.06)
	CRSP	3.58 (0.01)	2.32 (0.01)	3.58 (0.01)	5.35 (0.02)	2.87 (0.01)	2.91 (0.01)	0.20 (0.26)	0.20 (0.14)	6.53 (0.01)	3.91 (0.01)	6.53 (0.01)	9.18 (0.02)	7.26 (0.02)	8.31 (0.01)
MV	FFMF	0.05 (0.10)	0.92 (0.08)	0.12 (0.07)	0.12 (0.05)	0.12 (0.04)	0.14 (0.09)	0.14 (0.09)	0.08 (0.12)	0.94 (0.08)	0.15 (0.08)	0.16 (0.06)	0.16 (0.05)	0.19 (0.08)	0.19 (0.07)
	INMF	2.88 (0.06)	2.49 (0.05)	4.07 (0.06)	8.30 (0.07)	8.41 (0.05)	4.76 (0.06)	8.06 (0.08)	3.38 (0.09)	2.93 (0.08)	5.52 (0.09)	9.09 (0.06)	9.55 (0.06)	5.80 (0.08)	8.83 (0.07)
	CRSP	2.61 (0.02)	5.01 (0.01)	4.08 (0.01)	4.99 (0.05)	4.99 (0.09)	2.00 (0.03)	1.59 (0.12)	4.19 (0.02)	6.78 (0.01)	5.93 (0.01)	7.17 (0.03)	7.53 (0.04)	2.73 (0.07)	3.42 (0.07)
PPN	FFMF	6.26 (0.11)	4.46 (0.11)	7.26 (0.09)	11.26 (0.11)	14.25 (0.11)	5.30 (0.07)	6.68 (0.08)	6.91 (0.13)	4.94 (0.12)	7.97 (0.12)	12.24 (0.13)	15.44 (0.13)	7.65 (0.05)	8.93 (0.07)
	INMF	7.32 (0.07)	4.15 (0.05)	8.40 (0.08)	11.48 (0.06)	12.56 (0.07)	6.21 (0.11)	9.35 (0.13)	8.58 (0.05)	5.61 (0.06)	9.84 (0.07)	14.02 (0.06)	16.53 (0.07)	10.73 (0.06)	12.39 (0.08)
	CRSP	10.74 (0.00)	11.40 (0.00)	12.44 (0.00)	15.42 (0.00)	18.83 (0.00)	14.77 (0.00)	16.10 (0.00)	11.99 (0.00)	14.19 (0.00)	14.21 (0.00)	17.91 (0.00)	22.84 (0.00)	18.08 (0.00)	18.01 (0.00)

Panel B: Taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.57 (0.23)	0.92 (0.22)	2.57 (0.23)	2.97 (0.22)	2.85 (0.18)	1.71 (0.19)	1.78 (0.21)	2.81 (0.19)	1.03 (0.18)	2.81 (0.19)	3.24 (0.16)	3.15 (0.14)	2.43 (0.12)	2.48 (0.12)
	INMF	4.44 (0.02)	1.55 (0.00)	4.44 (0.02)	4.91 (0.10)	6.41 (0.16)	4.04 (0.06)	4.61 (0.11)	5.37 (0.04)	2.08 (0.01)	5.37 (0.04)	6.41 (0.09)	8.51 (0.11)	6.75 (0.05)	7.41 (0.09)
	CRSP	4.27 (0.02)	2.50 (0.01)	4.27 (0.02)	5.81 (0.02)	3.32 (0.01)	2.64 (0.01)	0.33 (0.33)	5.37 (0.01)	3.78 (0.01)	5.37 (0.01)	7.25 (0.02)	5.49 (0.01)	6.22 (0.01)	3.58 (0.01)
MV	FFMF	0.05 (0.11)	0.93 (0.08)	0.13 (0.08)	0.14 (0.05)	0.14 (0.05)	0.16 (0.10)	0.16 (0.10)	0.07 (0.12)	0.95 (0.08)	0.15 (0.08)	0.16 (0.06)	0.16 (0.05)	0.19 (0.09)	0.19 (0.08)
	INMF	2.87 (0.05)	2.52 (0.05)	4.80 (0.05)	7.99 (0.08)	7.90 (0.05)	4.48 (0.06)	7.34 (0.09)	3.08 (0.07)	2.89 (0.07)	5.11 (0.05)	8.22 (0.06)	8.46 (0.05)	5.15 (0.06)	7.71 (0.07)
	CRSP	2.87 (0.03)	5.09 (0.01)	4.26 (0.01)	5.19 (0.05)	5.21 (0.08)	1.72 (0.05)	1.12 (0.21)	3.30 (0.02)	6.73 (0.01)	5.15 (0.01)	5.84 (0.03)	5.80 (0.06)	1.33 (0.14)	1.54 (0.17)
PPN	FFMF	6.26 (0.10)	4.47 (0.11)	7.25 (0.09)	11.19 (0.11)	14.13 (0.11)	5.29 (0.07)	6.63 (0.07)	6.76 (0.12)	4.92 (0.12)	7.82 (0.11)	11.90 (0.12)	14.89 (0.11)	7.63 (0.04)	8.79 (0.06)
	INMF	7.30 (0.05)	4.15 (0.03)	8.32 (0.07)	11.22 (0.05)	11.96 (0.06)	5.74 (0.09)	8.47 (0.13)	8.22 (0.06)	5.56 (0.06)	9.37 (0.07)	12.90 (0.07)	14.69 (0.07)	10.08 (0.05)	11.25 (0.07)
	CRSP	10.75 (0.00)	11.51 (0.00)	12.48 (0.00)	15.68 (0.00)	18.92 (0.00)	13.77 (0.00)	14.99 (0.00)	11.59 (0.00)	14.13 (0.00)	13.82 (0.00)	17.17 (0.00)	21.52 (0.00)	17.07 (0.00)	16.04 (0.00)

Table 16: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 1\%$ . The values in parenthesis are p-values from 1000 bootstraps for the null hypothesis that the certainty equivalent gain is non-positive. Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

		Exact basis rule											
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-11.40	-9.14	-11.33	-11.69	-11.62	-10.58	-10.65	-11.29	-11.68	-11.62	-10.94	-10.99
	INMF	-20.27	-18.40	-18.70	-16.55	-17.98	-18.79	-16.78	-17.99	-16.32	-17.90	-19.13	-17.45
	CRSP	-2.67	0.84	-1.28	-2.08	0.28	-2.61	-0.38	-0.96	-2.23	-0.14	-5.52	-2.03
BH	FFMF	0.40	2.07	0.40	-0.01	0.08	1.24	1.15	0.46	0.01	0.08	0.82	0.76
	INMF	-1.49	1.21	-1.49	-2.05	-3.83	-1.46	-2.12	-0.05	-3.99	-3.61	-1.69	-2.45
	CRSP	-8.10	-6.97	-8.10	-9.65	-7.47	-7.50	-5.01	-6.37	-8.64	-7.00	-7.90	-5.13
PPN	FFMF	-7.40	-7.45	-6.53	-3.44	-0.76	-7.47	-6.34	-8.08	-8.05	-7.18	-7.11	-6.07
	INMF	-5.23	-5.51	-4.27	-2.11	-2.95	-6.17	-4.04	-6.97	-5.86	-3.72	-6.69	-6.02
	CRSP	-7.09	-5.39	-5.66	-4.79	0.38	-3.09	0.69	-9.24	-5.13	-6.76	-1.13	-5.88
	CRSP	(0.99)	(0.96)	(0.99)	(0.97)	(0.52)	(0.96)	(0.31)	(0.99)	(1.00)	(0.98)	(0.95)	(0.87)

Panel B: Taxation at end

		Average basis rule											
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-10.87	-8.62	-10.80	-11.15	-11.05	-10.03	-10.09	-10.83	-10.75	-11.12	-11.04	-10.38
	INMF	-19.41	-17.40	-17.90	-15.78	-17.04	-17.83	-16.05	-18.58	-16.12	-16.98	-16.81	-18.02
	CRSP	-3.09	0.71	-1.78	-2.35	0.02	-2.66	-0.79	-2.47	2.30	-0.73	-1.84	-0.23
BH	FFMF	0.38	2.02	0.38	-0.01	0.10	1.23	1.15	0.43	0.01	0.10	0.80	0.76
	INMF	-1.52	1.28	-1.52	-1.96	-3.34	-1.14	-1.68	0.24	0.14	0.24	0.46	0.28
	CRSP	-8.27	-6.68	-8.27	-9.61	-7.43	-6.81	-4.46	0.05	3.28	0.05	-2.84	-1.84
PPN	FFMF	-7.19	-7.26	-6.32	-3.26	-0.59	-7.26	-6.15	-7.55	-7.53	-6.63	-6.45	-5.48
	INMF	-4.69	-4.84	-3.78	-1.64	-2.38	-5.71	-3.80	-5.42	-4.76	-4.41	-2.29	-4.61
	CRSP	-6.86	-4.60	-5.40	-4.12	0.94	-2.79	0.73	-7.64	-4.09	-5.79	-4.72	-3.88
	CRSP	(0.99)	(0.95)	(0.99)	(0.96)	(0.19)	(0.97)	(0.21)	(0.99)	(0.96)	(0.97)	(0.43)	(0.84)

Table 17: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 1\%$ . The values in parenthesis are p-values from 1000 bootstraps under the null hypothesis that the certainty equivalent gain is non-positive. Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.08	0.78	1.59	0.78	0.63	0.55	0.98	0.87
	INMF	4.07	1.76	3.53	1.76	1.09	0.81	1.65	1.11
	CRSP	5.99	2.74	5.29	2.74	1.79	1.28	1.40	1.01
MV	FFMF	1.48	1.04	1.39	1.09	0.93	0.82	1.15	1.03
	INMF	4.10	2.53	3.67	2.13	1.39	0.85	2.21	1.59
	CRSP	6.08	3.62	5.61	3.43	2.24	1.48	1.98	1.29
PPN	FFMF	12.66	8.17	12.04	8.17	5.03	2.65	8.75	6.89
	INMF	10.14	6.21	9.47	6.00	3.60	1.89	6.85	4.95
	CRSP	18.16	12.63	17.51	13.16	8.94	5.50	8.15	4.44

Table 18: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 1\%$ .



## 2 Degree of risk aversion $\gamma = 3$

This section contains detailed tables for the case where the investor is assumed to have a degree of risk aversion of  $\gamma = 3$ .

Panel A: Gain Relative to 1/N				
Data		MV	BH	PPN
FFMF		-11.08	1.05	1.47
INMF		-16.35	-1.29	1.54
CRSP		-0.60	-11.12	8.48

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.08	1.63	0.69	14.36
INMF	3.76	3.87	0.68	11.94
CRSP	5.13	5.59	0.47	19.54

Table 19: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-14.78	-17.59	-14.14	-17.74	-16.12	-18.23	-15.96	-18.09
	INMF	-20.11	-20.18	-18.32	-23.04	-22.03	-21.54	-21.12	-23.87
	CRSP	-17.62	-16.89	-12.63	-20.63	-18.50	-18.08	-14.91	-21.06
Exact	FFMF	-14.06	-17.43	-14.14	-15.65	-15.77	-18.16	-15.96	-16.79
	INMF	-18.18	-19.24	-18.32	-19.97	-20.96	-21.01	-21.12	-21.93
	CRSP	-14.44	-14.95	-12.62	-16.53	-16.90	-17.32	-14.90	-18.62
Mtm	FFMF	-20.10	-20.31	-20.52	-20.70	-20.12	-20.32	-20.54	-20.72
	INMF	-26.09	-24.77	-26.95	-26.90	-26.13	-24.79	-26.98	-26.94
	CRSP	-21.92	-20.65	-20.92	-23.16	-21.95	-20.68	-20.94	-23.20

Table 20: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	-14.02	1.80	-2.06	-13.32	1.24	-0.92
	INMF	-16.41	0.92	-2.18	-15.82	-0.14	-0.85
	CRSP	0.27	-5.74	4.50	-0.10	-7.20	5.07
Exact	FFMF	-14.57	0.95	-0.41	-13.60	0.82	0.23
	INMF	-17.44	-1.47	-0.68	-16.41	-1.49	0.29
	CRSP	-1.20	-9.23	5.83	-1.10	-8.98	6.24
Mtm	FFMF	-11.31	0.52	0.70	-11.30	0.52	0.71
	INMF	-14.85	-2.43	0.43	-14.84	-2.43	0.43
	CRSP	1.01	-9.97	6.75	1.01	-9.96	6.74

Table 21: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	0.94	0.19	0.94	1.22	1.01	0.44	0.38	1.69	0.52	1.69	2.04	1.85	1.47	1.44
	INMF	1.24	0.33	1.24	1.08	2.11	1.11	0.92	2.88	0.93	2.88	3.18	4.51	3.62	3.42
	CRSP	-1.40	0.32	-1.40	-0.47	-2.69	-1.34	-3.99	1.50	1.55	1.50	2.99	0.98	2.21	-0.54
MV	FFMF	0.05	0.14	0.15	0.16	0.11	0.28	0.26	0.19	0.25	0.30	0.33	0.29	0.43	0.43
	INMF	0.89	0.35	2.04	4.39	4.50	2.29	4.32	1.49	0.84	2.82	5.35	5.62	2.86	4.76
	CRSP	-0.82	1.76	0.06	-0.33	-0.97	-2.46	-3.03	0.58	2.77	1.45	1.50	1.12	-2.79	-2.56
PPN	FFMF	0.04	0.43	0.24	-0.24	-0.72	-0.75	-0.45	0.83	1.12	1.18	1.18	1.08	-1.01	-0.37
	INMF	1.47	0.93	1.16	-0.44	-0.50	0.66	1.79	2.44	1.95	2.34	1.60	2.41	1.44	2.23
	CRSP	1.19	3.38	2.86	1.82	-0.74	-0.51	-3.41	2.43	5.23	4.39	4.10	2.53	-2.79	-5.21

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	0.89	0.19	0.89	1.12	0.87	0.33	0.24	1.20	0.36	1.20	1.50	1.28	0.93	0.86
	INMF	1.38	0.36	1.38	1.03	1.72	0.79	0.52	1.70	0.69	1.70	1.65	2.70	2.00	1.75
	CRSP	-0.81	0.47	-0.81	-0.12	-2.37	-1.81	-4.34	0.80	1.46	0.80	1.72	-0.48	0.25	-2.58
MV	FFMF	0.04	0.15	0.16	0.16	0.11	0.28	0.24	0.11	0.25	0.25	0.26	0.20	0.37	0.34
	INMF	0.86	0.36	1.92	4.02	3.82	1.93	3.49	1.06	0.77	2.25	4.31	4.26	2.01	3.44
	CRSP	-0.66	1.81	0.20	-0.19	-0.83	-2.83	-3.73	0.00	2.73	0.97	0.70	0.07	-3.60	-3.89
PPN	FFMF	0.01	0.43	0.22	-0.31	-0.81	-0.76	-0.60	0.63	1.10	1.00	0.77	0.48	-1.09	-0.60
	INMF	1.38	0.93	1.02	-0.66	-1.09	0.19	0.92	1.98	1.89	1.81	0.61	0.82	0.77	1.06
	CRSP	1.20	3.41	2.81	1.91	-0.32	-1.44	-4.39	2.25	5.21	4.24	3.75	1.96	-3.00	-6.03

Table 22: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

		Exact basis rule													
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	Average basis rule						
									PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-15.32	-14.60	-15.23	-15.46	-15.33	-14.71	-14.67	-15.29	-14.25	-15.19	-15.46	-15.34	-14.90	-14.88
	INMF	-17.73	-17.42	-16.79	-14.73	-15.50	-16.47	-14.66	-17.54	-16.48	-16.46	-14.66	-15.53	-17.02	-15.33
	CRSP	-0.62	0.23	0.27	-1.05	0.54	-2.31	-0.22	-0.64	1.48	0.21	-1.18	0.41	-4.64	-1.76
BH	FFMF	0.02	0.77	0.02	-0.26	-0.06	0.51	0.57	0.11	1.27	0.11	-0.23	-0.05	0.33	0.36
	INMF	-2.68	-1.79	-2.68	-2.52	-3.51	-2.55	-2.36	-1.90	0.00	-1.90	-2.19	-3.43	-2.60	-2.42
	CRSP	-7.94	-9.52	-7.94	-8.80	-6.72	-8.00	-5.46	-7.13	-7.18	-7.13	-8.47	-6.65	-7.77	-5.22
PPN	FFMF	-1.29	-0.17	-1.10	-1.85	-2.12	-1.60	-1.24	-2.90	-1.48	-2.55	-2.88	-2.81	-4.45	-3.81
	INMF	-0.46	-0.09	-0.76	-2.18	-3.23	-1.12	0.17	-2.60	-1.19	-2.70	-3.68	-4.14	-4.24	-3.31
	CRSP	8.60	9.06	10.40	8.26	7.94	6.73	6.46	5.46	8.29	7.48	5.63	6.11	-0.61	-0.39

Panel B: Taxation at end

		Exact basis rule													
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	Average basis rule						
									PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-14.32	-13.63	-14.23	-14.42	-14.25	-13.65	-13.60	-14.26	-13.42	-14.13	-14.38	-14.25	-13.80	-13.77
	INMF	-16.84	-16.41	-15.97	-13.94	-14.69	-15.47	-13.94	-16.36	-15.75	-15.37	-13.62	-14.54	-15.81	-14.43
	CRSP	-0.95	0.21	-0.10	-1.17	0.46	-2.13	-0.47	-0.89	1.15	0.07	-1.10	0.45	-3.94	-1.45
BH	FFMF	-0.06	0.64	-0.06	-0.29	-0.04	0.49	0.58	0.04	0.88	0.04	-0.25	-0.04	0.31	0.37
	INMF	-2.84	-1.85	-2.84	-2.50	-3.16	-2.27	-2.01	-1.81	-0.82	-1.81	-1.76	-2.76	-2.10	-1.86
	CRSP	-8.24	-9.41	-8.24	-8.87	-6.77	-7.31	-4.86	-7.94	-8.54	-7.94	-8.77	-6.75	-7.44	-4.74
PPN	FFMF	-0.64	0.48	-0.43	-1.19	-1.44	-0.86	-0.62	-1.48	-0.19	-1.11	-1.63	-1.70	-2.91	-2.36
	INMF	0.28	0.85	-0.07	-1.39	-2.49	-0.31	0.68	-0.58	0.33	-0.75	-1.87	-2.66	-2.05	-1.53
	CRSP	8.39	9.34	10.11	8.39	8.47	6.64	6.17	6.58	8.95	8.65	7.17	7.64	1.65	1.34

Table 23: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.57	1.06	2.10	1.06	0.78	0.58	1.08	0.87
	INMF	4.97	2.18	4.41	2.18	1.34	0.93	1.90	1.18
	CRSP	5.12	1.92	4.38	1.92	1.21	0.88	1.15	0.88
MV	FFMF	1.72	1.24	1.62	1.27	1.09	1.00	1.32	1.19
	INMF	5.22	3.54	4.77	3.06	2.16	1.26	2.90	1.88
	CRSP	5.56	3.05	5.07	2.87	1.76	1.09	1.71	1.14
PPN	FFMF	15.49	10.95	14.84	11.12	7.44	4.60	11.94	9.80
	INMF	13.65	9.07	12.97	8.95	5.71	3.30	9.64	7.15
	CRSP	19.53	13.69	18.79	14.22	9.63	5.79	8.94	5.26

Table 24: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0\%$ .

Panel A: Gain Relative to 1/N				
Data		MV	BH	PPN
FFMF		-10.53	1.84	-4.91
INMF		-16.29	0.58	-3.45
CRSP		-3.00	-7.66	-0.07

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.08	1.62	0.68	14.35
INMF	3.75	3.87	0.68	11.93
CRSP	5.13	5.59	0.47	19.52

Table 25: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0.5\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-14.96	-17.58	-14.10	-18.10	-16.27	-18.22	-15.92	-18.42
	INMF	-21.11	-20.57	-18.25	-23.97	-22.93	-21.90	-21.06	-24.73
	CRSP	-18.80	-18.80	-12.78	-22.24	-20.50	-20.77	-17.13	-23.02
Exact	FFMF	-14.13	-17.41	-14.09	-15.89	-15.86	-18.16	-15.92	-17.07
	INMF	-18.47	-19.45	-18.25	-20.46	-21.29	-21.26	-21.06	-22.41
	CRSP	-15.14	-16.36	-12.75	-18.00	-19.11	-19.99	-17.12	-21.05
Mtm	FFMF	-20.09	-20.31	-20.50	-20.80	-20.11	-20.31	-20.51	-20.82
	INMF	-26.05	-24.73	-26.91	-26.84	-26.08	-24.75	-26.94	-26.88
	CRSP	-23.80	-23.33	-22.79	-25.00	-23.87	-23.40	-22.84	-25.08

Table 26: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	-13.28	2.88	-8.41	-12.61	2.27	-7.35
	INMF	-15.71	4.23	-6.95	-15.17	3.01	-5.71
	CRSP	-3.00	-0.81	-4.30	-3.32	-3.74	-3.24
Exact	FFMF	-13.95	1.89	-6.85	-12.98	1.76	-6.27
	INMF	-17.29	0.86	-5.80	-16.26	0.87	-4.83
	CRSP	-4.40	-5.06	-3.44	-4.06	-5.38	-2.46
Mtm	FFMF	-10.77	1.32	-5.75	-10.76	1.32	-5.75
	INMF	-14.80	-0.59	-4.50	-14.78	-0.59	-4.49
	CRSP	-2.40	-6.43	-1.64	-2.39	-6.41	-1.65

Table 27: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.



Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.69	0.54	1.69	2.08	1.94	1.13	1.14	2.57	0.92	2.57	3.04	2.93	2.42	2.47
	INMF	2.77	0.94	2.77	3.06	4.33	2.79	2.96	4.91	1.69	4.91	5.88	7.64	6.35	6.62
	CRSP	0.90	1.77	0.90	2.21	0.89	1.87	0.10	4.24	3.25	4.24	6.33	5.30	6.59	4.89
MV	FFMF	0.14	0.60	0.33	0.34	0.29	0.35	0.36	0.29	0.70	0.48	0.51	0.47	0.53	0.55
	INMF	1.88	1.41	3.42	6.15	6.61	3.43	5.89	2.57	1.95	4.30	7.27	7.98	4.43	6.87
	CRSP	1.08	3.92	2.30	1.86	1.19	-0.37	-1.07	2.93	5.31	4.04	4.22	3.95	0.37	0.59
PPN	FFMF	3.16	2.83	3.99	5.00	5.69	1.77	2.96	3.95	3.63	4.97	6.50	7.63	3.38	4.49
	INMF	4.83	3.14	4.99	4.93	6.08	3.40	5.96	6.08	4.56	6.42	7.34	9.62	6.00	7.99
	CRSP	6.02	9.32	8.85	10.17	10.04	6.79	7.48	7.31	11.53	10.38	12.49	13.42	7.56	7.22

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.65	0.54	1.65	1.99	1.80	1.03	1.00	2.04	0.75	2.04	2.45	2.30	1.84	1.84
	INMF	2.91	0.98	2.91	3.05	3.96	2.51	2.59	3.66	1.45	3.66	4.22	5.65	4.61	4.78
	CRSP	1.39	1.94	1.39	2.41	0.95	1.13	-0.65	2.86	3.07	2.86	4.08	2.68	3.39	1.49
MV	FFMF	0.14	0.62	0.34	0.35	0.30	0.36	0.35	0.21	0.71	0.43	0.44	0.38	0.48	0.46
	INMF	1.86	1.43	3.31	5.82	5.95	3.09	5.09	2.14	1.88	3.73	6.20	6.56	3.57	5.48
	CRSP	1.16	3.98	2.36	1.88	1.11	-1.05	-2.13	1.92	5.26	3.24	2.85	2.08	-1.25	-1.80
PPN	FFMF	3.14	2.85	3.99	4.95	5.62	1.76	2.80	3.74	3.61	4.78	6.07	6.99	3.29	4.26
	INMF	4.75	3.14	4.82	4.71	5.45	2.92	5.04	5.65	4.49	5.91	6.31	7.89	5.34	6.77
	CRSP	5.97	9.43	8.74	10.05	10.02	5.26	5.38	6.98	11.51	10.07	11.75	12.07	6.72	4.80

Table 28: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

		Exact basis rule													
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	Average basis rule						
									PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-15.26	-13.89	-15.10	-15.41	-15.34	-14.61	-14.62	-15.20	-13.46	-15.04	-15.40	-15.35	-14.87	-14.90
	INMF	-18.01	-16.91	-16.77	-14.81	-15.48	-16.77	-14.93	-17.59	-15.50	-16.21	-14.61	-15.45	-17.23	-15.52
	CRSP	-4.23	-2.38	-3.07	-4.73	-4.11	-6.50	-5.53	-4.22	-1.06	-3.19	-4.93	-4.25	-8.66	-6.98
BH	FFMF	0.20	1.34	0.20	-0.19	-0.05	0.75	0.74	0.31	1.95	0.31	-0.15	-0.05	0.46	0.40
	INMF	-1.86	-0.08	-1.86	-2.13	-3.32	-1.87	-2.04	-0.65	2.50	-0.65	-1.56	-3.16	-1.99	-2.24
	CRSP	-5.90	-6.71	-5.90	-7.11	-5.89	-6.80	-5.15	-4.85	-3.92	-4.85	-6.71	-5.80	-6.94	-5.43
PPN	FFMF	-5.50	-4.73	-4.75	-4.19	-3.43	-6.27	-5.18	-7.18	-5.95	-6.27	-5.33	-4.23	-7.55	-6.60
	INMF	-3.91	-3.75	-3.77	-4.08	-4.22	-5.24	-3.06	-5.91	-4.33	-5.61	-5.67	-5.24	-7.26	-5.75
	CRSP	1.47	3.72	4.18	4.08	5.32	1.23	3.68	-1.48	3.38	1.33	1.25	3.08	-3.43	-2.17

Panel B: Taxation at end

		Exact basis rule													
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	Average basis rule						
									PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-14.27	-12.91	-14.09	-14.37	-14.26	-13.55	-13.54	-14.18	-12.65	-13.99	-14.33	-14.25	-13.78	-13.80
	INMF	-17.11	-15.88	-15.94	-14.01	-14.66	-15.79	-14.22	-16.42	-14.82	-15.12	-13.56	-14.44	-16.02	-14.60
	CRSP	-4.28	-2.14	-3.14	-4.56	-3.90	-6.13	-5.50	-4.20	-1.27	-2.96	-4.47	-3.89	-7.66	-6.46
BH	FFMF	0.11	1.21	0.11	-0.22	-0.04	0.73	0.75	0.22	1.50	0.22	-0.18	-0.03	0.42	0.42
	INMF	-1.99	-0.11	-1.99	-2.12	-2.98	-1.60	-1.68	-0.63	1.54	-0.63	-1.15	-2.49	-1.53	-1.69
	CRSP	-6.68	-7.19	-6.68	-7.61	-6.27	-6.44	-4.77	-6.41	-6.60	-6.41	-7.51	-6.25	-6.89	-5.15
PPN	FFMF	-4.90	-4.12	-4.12	-3.55	-2.75	-5.60	-4.61	-5.81	-4.72	-4.86	-4.08	-3.10	-6.03	-5.15
	INMF	-3.13	-2.79	-3.06	-3.29	-3.47	-4.45	-2.56	-3.90	-2.89	-3.67	-3.81	-3.71	-5.06	-3.92
	CRSP	1.94	4.70	4.61	4.81	6.30	1.52	3.46	0.64	4.69	3.55	3.89	5.61	-0.12	-0.08

Table 29: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.18	0.84	1.70	0.84	0.67	0.56	1.01	0.87
	INMF	4.33	1.92	3.78	1.92	1.18	0.86	1.74	1.14
	CRSP	5.12	1.92	4.39	1.92	1.21	0.88	1.15	0.88
MV	FFMF	1.52	1.08	1.43	1.12	0.95	0.84	1.18	1.06
	INMF	4.39	2.80	3.96	2.39	1.60	0.97	2.40	1.70
	CRSP	5.55	3.06	5.08	2.88	1.76	1.09	1.71	1.14
PPN	FFMF	14.55	10.04	13.93	10.18	6.80	4.09	11.07	9.13
	INMF	12.68	8.26	12.03	8.13	5.25	3.03	9.04	6.76
	CRSP	19.51	13.70	18.82	14.24	9.66	5.80	8.89	5.24

Table 30: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0.5\%$ .

Panel A: Gain Relative to 1/N				
Data		MV	BH	PPN
FFMF		-9.98	2.64	-10.90
INMF		-16.23	2.49	-8.27
CRSP		-3.31	-5.12	-8.66

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.07	1.62	0.68	14.34
INMF	3.75	3.87	0.67	11.92
CRSP	5.13	5.58	0.47	19.51

Table 31: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 1\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-15.00	-17.55	-14.05	-18.21	-16.30	-18.21	-15.89	-18.51
	INMF	-21.50	-20.67	-18.17	-24.13	-23.21	-21.97	-21.01	-24.79
	CRSP	-18.83	-18.82	-12.74	-22.23	-20.55	-20.80	-17.12	-23.01
Exact	FFMF	-14.16	-17.39	-14.05	-16.07	-15.89	-18.14	-15.89	-17.28
	INMF	-18.61	-19.53	-18.17	-20.61	-21.42	-21.35	-21.01	-22.57
	CRSP	-15.17	-16.38	-12.71	-18.10	-19.20	-20.06	-17.11	-21.23
Mtm	FFMF	-20.08	-20.30	-20.48	-20.91	-20.10	-20.31	-20.49	-20.92
	INMF	-26.00	-24.68	-26.87	-26.78	-26.03	-24.71	-26.90	-26.82
	CRSP	-23.79	-23.31	-22.79	-24.83	-23.85	-23.37	-22.84	-24.91

Table 32: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	-12.68	3.79	-14.27	-12.04	3.14	-13.27
	INMF	-15.35	6.83	-11.35	-14.88	5.43	-10.16
	CRSP	-3.30	2.00	-12.49	-3.63	-1.03	-11.50
Exact	FFMF	-13.37	2.77	-12.89	-12.39	2.64	-12.37
	INMF	-17.18	3.04	-10.53	-16.16	3.02	-9.61
	CRSP	-4.69	-2.37	-11.82	-4.34	-2.67	-10.97
Mtm	FFMF	-10.23	2.13	-11.82	-10.22	2.13	-11.82
	INMF	-14.74	1.28	-9.25	-14.73	1.29	-9.24
	CRSP	-2.70	-3.88	-9.92	-2.70	-3.86	-9.93

Table 33: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.43	0.91	2.43	2.91	2.82	1.78	1.85	3.34	1.29	3.34	3.89	3.84	3.23	3.33
	INMF	4.22	1.54	4.22	4.91	6.39	4.34	4.84	6.48	2.39	6.48	7.96	10.05	8.45	9.09
	CRSP	2.92	2.99	2.92	4.66	3.53	4.28	2.66	6.32	4.52	6.32	8.87	8.05	9.34	7.75
MV	FFMF	0.24	1.27	0.50	0.52	0.47	0.43	0.46	0.40	1.38	0.65	0.69	0.65	0.64	0.68
	INMF	2.89	2.64	4.78	7.86	8.63	4.56	7.37	3.57	3.19	5.64	8.95	10.04	5.80	8.53
	CRSP	2.71	5.97	4.35	4.37	3.97	1.88	1.48	4.59	7.48	6.14	6.79	6.81	2.97	3.39
PPN	FFMF	6.40	5.75	7.87	10.51	12.54	4.41	6.54	7.17	6.62	8.84	11.99	14.46	8.56	10.15
	INMF	8.21	5.92	8.84	10.34	12.76	6.04	10.02	9.47	7.55	10.25	12.76	16.43	10.61	13.56
	CRSP	11.05	15.63	14.90	18.77	20.76	14.84	17.81	12.30	18.06	16.42	21.12	24.28	17.99	18.75

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.39	0.91	2.39	2.82	2.67	1.68	1.71	2.80	1.13	2.80	3.28	3.17	2.63	2.67
	INMF	4.37	1.58	4.37	4.90	6.01	4.04	4.45	5.18	2.14	5.18	6.18	7.88	6.60	7.07
	CRSP	3.45	3.19	3.45	4.90	3.62	3.58	1.94	4.89	4.35	4.89	6.55	5.35	6.05	4.24
MV	FFMF	0.24	1.30	0.53	0.54	0.48	0.44	0.45	0.32	1.39	0.61	0.63	0.57	0.58	0.58
	INMF	2.89	2.68	4.69	7.56	7.98	4.23	6.58	3.14	3.13	5.08	7.85	8.55	4.92	7.12
	CRSP	2.82	6.05	4.44	4.41	3.92	1.22	0.42	3.56	7.43	5.33	5.38	4.88	1.30	0.93
PPN	FFMF	6.38	5.79	7.88	10.47	12.50	4.39	6.38	6.97	6.60	8.65	11.55	13.79	8.50	9.92
	INMF	8.16	5.91	8.71	10.13	12.10	5.56	9.06	8.98	7.49	9.68	11.62	14.51	9.89	12.23
	CRSP	11.01	15.81	14.82	18.69	20.80	13.18	15.57	11.94	18.04	16.09	20.30	22.77	17.03	16.03

Table 34: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-15.22	-13.05	-15.00	-15.38	-15.35	-14.52	-14.55	-15.16	-12.60	-14.95	-15.37	-15.36	-14.87	-14.93
	INMF	-18.23	-16.28	-16.73	-14.84	-15.44	-17.00	-15.17	-17.66	-14.68	-16.01	-14.57	-15.35	-17.42	-15.78
	CRSP	-4.88	-1.93	-3.36	-4.96	-4.28	-6.88	-5.79	-4.87	-0.56	-3.47	-5.15	-4.42	-8.94	-7.21
BH	FFMF	0.33	1.85	0.33	-0.13	-0.04	0.97	0.91	0.44	2.47	0.44	-0.10	-0.04	0.55	0.44
	INMF	-1.14	1.47	-1.14	-1.79	-3.16	-1.24	-1.72	0.33	4.34	0.33	-1.04	-2.92	-1.49	-2.07
	CRSP	-5.14	-5.21	-5.14	-6.71	-5.70	-6.38	-4.90	-4.06	-2.41	-4.06	-6.31	-5.60	-6.72	-5.34
PPN	FFMF	-9.52	-8.71	-8.27	-6.46	-4.66	-10.65	-8.88	-11.09	-9.75	-9.70	-7.58	-5.49	-9.83	-8.61
	INMF	-7.10	-6.67	-6.56	-5.90	-5.18	-9.06	-6.11	-8.86	-6.88	-8.21	-7.41	-6.20	-9.58	-7.72
	CRSP	-4.85	-1.00	-1.55	0.07	2.86	-2.90	1.19	-7.57	-1.15	-4.17	-2.64	0.65	-5.57	-3.55

Panel B: Taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-14.23	-12.06	-13.99	-14.34	-14.26	-13.46	-13.47	-14.16	-11.82	-13.91	-14.30	-14.26	-13.79	-13.83
	INMF	-17.35	-15.26	-15.90	-14.04	-14.61	-16.01	-14.45	-16.53	-14.06	-14.97	-13.54	-14.35	-16.22	-14.84
	CRSP	-4.93	-1.69	-3.43	-4.78	-4.07	-6.52	-5.77	-4.85	-0.78	-3.23	-4.69	-4.06	-7.94	-6.69
BH	FFMF	0.24	1.71	0.24	-0.18	-0.03	0.95	0.92	0.33	1.98	0.33	-0.14	-0.03	0.50	0.45
	INMF	-1.29	1.42	-1.29	-1.79	-2.82	-0.98	-1.37	0.23	3.21	0.23	-0.71	-2.28	-1.10	-1.54
	CRSP	-5.92	-5.68	-5.92	-7.22	-6.08	-6.03	-4.53	-5.65	-5.15	-5.65	-7.12	-6.06	-6.68	-5.05
PPN	FFMF	-8.96	-8.14	-7.68	-5.86	-3.99	-10.04	-8.35	-9.75	-8.57	-8.33	-6.32	-4.33	-8.30	-7.14
	INMF	-6.33	-5.76	-5.85	-5.11	-4.42	-8.29	-5.62	-6.92	-5.46	-6.32	-5.56	-4.65	-7.39	-5.83
	CRSP	-4.46	-0.08	-1.18	0.74	3.79	-2.71	0.94	-5.56	0.11	-2.05	-0.08	3.13	-2.34	-1.49

Table 35: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.08	0.78	1.59	0.78	0.63	0.55	0.98	0.87
	INMF	4.07	1.76	3.53	1.76	1.09	0.81	1.65	1.11
	CRSP	5.12	1.93	4.39	1.93	1.22	0.89	1.15	0.88
MV	FFMF	1.48	1.04	1.39	1.09	0.93	0.82	1.15	1.03
	INMF	4.10	2.53	3.67	2.13	1.39	0.85	2.21	1.59
	CRSP	5.55	3.06	5.09	2.88	1.76	1.09	1.71	1.14
PPN	FFMF	14.40	9.91	13.80	10.06	6.68	3.92	10.89	8.96
	INMF	12.25	7.92	11.62	7.79	5.02	2.92	8.76	6.60
	CRSP	19.50	13.71	18.85	14.27	9.68	5.82	8.82	5.22

Table 36: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 1\%$ .



### **3 Degree of risk aversion $\gamma = 10$**

This section contains detailed tables for the case where the investor is assumed to have a degree of risk aversion of  $\gamma = 10$ .

Panel A: Gain Relative to 1/N				
Data		MV	BH	PPN
FFMF		1.26	1.86	-3.59
INMF		-20.10	-3.60	1.84
CRSP		-0.91	-12.51	-4.32

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.08	1.63	0.69	9.00
INMF	3.76	3.87	0.68	7.89
CRSP	5.13	5.59	0.47	13.90

Table 37: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-9.67	-13.33	-9.61	-10.13	-9.74	-13.37	-9.69	-10.16
	INMF	-19.65	-18.63	-17.65	-21.20	-20.13	-18.88	-18.21	-21.45
	CRSP	-17.28	-15.49	-12.07	-18.42	-17.48	-15.76	-12.68	-18.50
Exact	FFMF	-9.47	-13.32	-9.61	-9.68	-9.55	-13.37	-9.69	-9.73
	INMF	-18.20	-18.19	-17.65	-18.51	-18.89	-18.49	-18.21	-19.18
	CRSP	-14.10	-14.04	-12.07	-15.11	-15.04	-14.82	-12.68	-15.52
Mtm	FFMF	-12.75	-14.32	-13.24	-12.64	-12.75	-14.32	-13.24	-12.64
	INMF	-25.07	-22.32	-24.85	-25.17	-25.08	-22.32	-24.85	-25.18
	CRSP	-21.44	-18.41	-20.17	-20.83	-21.44	-18.41	-20.17	-20.83

Table 38: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	-2.84	1.93	-4.08	-2.81	1.92	-4.04
	INMF	-19.09	-1.20	-0.13	-18.84	-1.28	0.16
	CRSP	1.23	-7.00	-5.64	1.16	-7.43	-5.51
Exact	FFMF	-3.05	1.71	-3.82	-3.02	1.70	-3.79
	INMF	-20.09	-2.95	1.45	-19.71	-2.80	1.47
	CRSP	-0.84	-10.44	-5.45	-0.65	-10.08	-4.86
Mtm	FFMF	-0.56	1.29	-3.47	-0.56	1.29	-3.47
	INMF	-17.16	-3.30	1.71	-17.16	-3.30	1.71
	CRSP	2.92	-11.10	-3.57	2.92	-11.09	-3.57

Table 39: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.40	0.23	1.40	1.66	1.47	0.69	0.71	1.61	0.32	1.61	1.88	1.70	1.13	1.10
	INMF	1.59	0.26	1.59	1.12	3.67	0.80	1.01	2.72	0.66	2.72	2.66	5.51	2.69	2.88
	CRSP	-1.56	0.12	-1.56	-0.52	-2.89	-1.66	-4.97	1.46	1.39	1.46	3.01	0.78	1.80	-1.75
MV	FFMF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	INMF	1.16	0.26	2.74	5.83	3.06	2.92	5.85	1.43	0.49	3.04	6.19	3.57	3.13	5.46
	CRSP	-1.24	1.62	-0.05	0.27	0.55	-2.59	-3.19	-0.23	2.35	1.00	1.63	2.09	-2.58	-2.64
PPN	FFMF	0.84	0.14	1.01	3.14	6.43	2.82	3.08	1.16	0.33	1.34	3.58	6.93	2.27	2.83
	INMF	0.68	0.21	0.58	2.48	0.34	1.92	2.29	2.17	0.93	2.25	5.29	3.66	1.25	4.77
	CRSP	1.76	2.16	2.49	1.51	1.95	0.56	-1.22	3.26	3.70	4.06	4.08	5.21	0.88	0.03

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.39	0.23	1.39	1.65	1.46	0.69	0.70	1.59	0.31	1.59	1.86	1.68	1.11	1.09
	INMF	1.66	0.28	1.66	1.12	3.31	0.76	0.87	2.34	0.59	2.34	2.22	4.71	2.26	2.40
	CRSP	-1.13	0.21	-1.13	-0.19	-2.58	-1.89	-5.04	1.29	1.36	1.29	2.60	0.28	1.00	-2.58
MV	FFMF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	INMF	1.14	0.26	2.66	5.65	2.94	2.78	5.49	1.31	0.47	2.87	5.81	3.31	2.88	5.01
	CRSP	-1.08	1.62	0.07	0.41	0.70	-2.64	-3.33	-0.40	2.33	0.84	1.37	1.72	-2.80	-3.02
PPN	FFMF	0.84	0.14	1.01	3.12	6.38	2.81	3.06	1.14	0.32	1.32	3.54	6.86	2.26	2.80
	INMF	0.77	0.23	0.65	2.48	0.37	1.64	1.84	1.97	0.91	2.00	4.67	3.00	1.02	4.11
	CRSP	1.79	2.13	2.47	1.56	2.00	0.35	-1.36	3.22	3.69	4.01	3.99	5.06	0.85	-0.16

Table 40: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

		Exact basis rule													
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	Average basis rule						
									PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-4.39	-3.28	-4.39	-4.63	-4.46	-3.72	-3.74	-4.38	-3.15	-4.38	-4.63	-4.46	-3.92	-3.90
	INMF	-20.43	-20.09	-19.19	-16.36	-20.56	-18.41	-16.26	-20.11	-19.23	-18.84	-16.32	-20.58	-18.75	-17.07
	CRSP	-0.51	0.65	0.68	-0.06	2.68	-1.78	1.02	-0.45	2.19	0.77	-0.12	2.55	-3.13	0.31
BH	FFMF	0.31	1.47	0.31	0.05	0.23	1.01	0.99	0.31	1.61	0.31	0.05	0.23	0.80	0.82
	INMF	-4.47	-3.20	-4.47	-4.02	-6.39	-3.72	-3.92	-3.81	-1.85	-3.81	-3.76	-6.36	-3.79	-3.97
	CRSP	-9.02	-10.55	-9.02	-9.98	-7.78	-8.93	-5.76	-8.34	-8.28	-8.34	-9.72	-7.72	-8.65	-5.35
PPN	FFMF	-4.34	-3.91	-4.18	-2.41	0.89	-1.78	-1.56	-4.51	-4.07	-4.34	-2.48	0.86	-2.99	-2.44
	INMF	0.55	1.41	0.44	2.82	-1.81	2.58	2.74	-0.67	0.13	-0.59	2.42	-1.88	-1.53	1.70
	CRSP	-2.26	-3.52	-1.55	-3.52	-0.73	-3.32	-1.72	-3.97	-3.49	-3.23	-4.66	-1.50	-6.50	-3.94

Panel B: Taxation at end

		Exact basis rule													
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	Average basis rule						
									PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-4.35	-3.24	-4.34	-4.58	-4.41	-3.67	-3.69	-4.33	-3.11	-4.33	-4.58	-4.41	-3.87	-3.85
	INMF	-20.12	-19.73	-18.92	-16.12	-20.00	-18.10	-16.03	-19.66	-18.95	-18.43	-15.99	-19.93	-18.36	-16.78
	CRSP	-0.61	0.75	0.55	-0.05	2.69	-1.42	1.13	-0.53	2.13	0.72	-0.05	2.62	-2.65	0.70
BH	FFMF	0.31	1.46	0.31	0.05	0.24	1.01	0.99	0.32	1.60	0.32	0.06	0.24	0.80	0.82
	INMF	-4.39	-3.07	-4.39	-3.88	-5.91	-3.53	-3.64	-3.54	-1.86	-3.54	-3.42	-5.72	-3.47	-3.59
	CRSP	-9.06	-10.27	-9.06	-9.91	-7.71	-8.36	-5.31	-8.60	-8.67	-8.60	-9.77	-7.68	-8.35	-4.98
PPN	FFMF	-4.31	-3.88	-4.15	-2.39	0.88	-1.76	-1.54	-4.47	-4.03	-4.29	-2.46	0.85	-2.95	-2.41
	INMF	0.58	1.42	0.46	2.83	-1.42	2.35	2.45	-0.20	0.48	-0.17	2.57	-1.47	-1.06	1.84
	CRSP	-2.06	-3.04	-1.41	-3.20	-0.39	-2.70	-1.18	-3.71	-3.34	-2.97	-4.23	-1.00	-5.66	-3.17

Table 41: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.57	1.06	2.10	1.06	0.78	0.58	1.08	0.87
	INMF	4.97	2.18	4.41	2.18	1.34	0.93	1.90	1.18
	CRSP	5.12	1.92	4.38	1.92	1.21	0.88	1.15	0.88
MV	FFMF	1.72	1.24	1.62	1.27	1.09	1.00	1.32	1.19
	INMF	5.22	3.54	4.77	3.06	2.16	1.26	2.90	1.88
	CRSP	5.56	3.05	5.07	2.87	1.76	1.09	1.71	1.14
PPN	FFMF	10.24	6.39	9.54	6.21	3.79	1.88	7.27	5.49
	INMF	9.73	5.72	9.07	5.50	3.15	1.51	5.93	3.87
	CRSP	13.89	8.62	13.15	8.99	5.53	3.03	5.62	2.99

Table 42: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0\%$ .

Panel A: Gain Relative to 1/N				
Data	MV	BH	PPN	
FFMF	2.00	2.62	-5.14	
INMF	-19.88	-1.62	-0.57	
CRSP	-1.27	-10.16	-9.11	

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.08	1.62	0.68	9.00
INMF	3.75	3.87	0.68	7.89
CRSP	5.13	5.59	0.47	13.89

Table 43: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0.5\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-9.71	-13.27	-9.56	-10.24	-9.78	-13.31	-9.65	-10.28
	INMF	-20.59	-18.97	-17.57	-22.01	-21.04	-19.20	-18.14	-22.23
	CRSP	-17.28	-15.50	-12.03	-18.38	-17.47	-15.77	-12.64	-18.46
Exact	FFMF	-9.49	-13.27	-9.56	-9.81	-9.57	-13.31	-9.65	-9.86
	INMF	-18.40	-18.32	-17.57	-18.67	-19.08	-18.63	-18.14	-19.37
	CRSP	-14.09	-14.05	-12.02	-14.94	-15.04	-14.84	-12.64	-15.35
Mtm	FFMF	-12.73	-14.26	-13.21	-12.62	-12.73	-14.26	-13.21	-12.62
	INMF	-25.02	-22.24	-24.80	-25.09	-25.03	-22.24	-24.80	-25.10
	CRSP	-21.41	-18.37	-20.15	-20.70	-21.41	-18.38	-20.15	-20.71

Table 44: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	-2.03	2.78	-5.70	-2.00	2.76	-5.67
	INMF	-18.24	2.12	-2.35	-18.01	1.99	-2.07
	CRSP	0.85	-4.45	-10.33	0.78	-4.90	-10.20
Exact	FFMF	-2.26	2.54	-5.47	-2.22	2.53	-5.44
	INMF	-19.80	-0.62	-0.90	-19.43	-0.47	-0.92
	CRSP	-1.22	-8.00	-10.01	-1.03	-7.62	-9.45
Mtm	FFMF	0.21	2.06	-5.02	0.21	2.06	-5.02
	INMF	-16.90	-1.32	-0.65	-16.90	-1.32	-0.65
	CRSP	2.55	-8.72	-8.30	2.55	-8.71	-8.29

Table 45: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.



Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FPMF	2.08	0.58	2.08	2.43	2.31	1.32	1.41	2.30	0.65	2.30	2.67	2.55	1.87	1.89
	INMF	3.11	0.87	3.11	3.08	5.94	2.32	2.94	4.77	1.37	4.77	5.43	8.76	5.37	6.05
	CRSP	0.39	1.01	0.39	1.85	-0.38	0.57	-2.60	3.48	2.34	3.48	5.46	3.40	4.37	0.88
MV	FPMF	0.00	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.00	0.00	0.00	0.00	0.00
	INMF	2.09	1.24	3.96	7.42	5.04	3.88	7.25	2.37	1.53	4.30	7.90	5.82	4.50	7.66
	CRSP	0.31	3.32	2.00	2.73	3.27	-0.48	-0.82	1.36	4.12	3.05	4.12	4.85	-0.13	-0.04
PPN	FPMF	2.40	1.08	2.69	5.23	8.94	4.38	4.70	2.73	1.28	3.04	5.67	9.43	4.33	4.99
	INMF	3.31	1.42	3.40	6.40	4.84	3.98	5.46	4.92	2.36	5.24	9.68	8.97	4.67	9.58
	CRSP	5.52	4.93	6.61	7.18	8.75	5.37	4.62	7.13	6.84	8.33	10.05	12.39	7.64	7.33

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FPMF	2.08	0.58	2.08	2.42	2.30	1.32	1.40	2.28	0.65	2.28	2.65	2.53	1.85	1.87
	INMF	3.18	0.89	3.18	3.10	5.58	2.28	2.81	4.38	1.31	4.38	4.95	7.90	4.92	5.52
	CRSP	0.84	1.10	0.84	2.18	-0.05	0.33	-2.67	3.30	2.30	3.30	5.03	2.87	3.54	0.02
MV	FPMF	0.00	0.31	0.00	0.00	0.00	0.01	0.01	0.00	0.32	0.00	0.00	0.00	0.01	0.01
	INMF	2.07	1.25	3.89	7.25	4.93	3.76	6.90	2.26	1.51	4.14	7.53	5.53	4.25	7.18
	CRSP	0.48	3.32	2.11	2.88	3.43	-0.53	-0.97	1.18	4.09	2.89	3.85	4.47	-0.36	-0.42
PPN	FPMF	2.39	1.08	2.68	5.21	8.88	4.36	4.68	2.72	1.28	3.02	5.63	9.35	4.31	4.96
	INMF	3.39	1.45	3.46	6.41	4.89	3.68	4.99	4.73	2.34	5.00	9.05	8.26	4.41	8.86
	CRSP	5.54	4.90	6.57	7.23	8.80	5.12	4.47	7.08	6.82	8.28	9.96	12.23	7.60	7.12

Table 46: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

		Exact basis rule													
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	Average basis rule						
									PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-4.25	-2.52	-4.25	-4.58	-4.46	-3.53	-3.61	-4.23	-2.36	-4.23	-4.57	-4.46	-3.82	-3.84
	INMF	-20.60	-19.51	-19.14	-16.43	-20.48	-18.58	-16.45	-20.11	-18.12	-18.61	-16.33	-20.45	-18.92	-17.00
	CRSP	-1.30	1.04	0.36	-0.37	2.39	-2.25	0.58	-1.21	2.60	0.44	-0.43	2.27	-3.50	-0.07
BH	FFMF	0.45	1.95	0.45	0.10	0.23	1.20	1.12	0.47	2.12	0.47	0.11	0.23	0.89	0.88
	INMF	-3.62	-1.48	-3.62	-3.60	-6.20	-2.87	-3.47	-2.53	0.74	-2.53	-3.15	-6.11	-3.09	-3.71
	CRSP	-8.35	-8.92	-8.35	-9.67	-7.65	-8.51	-5.54	-7.67	-6.64	-7.67	-9.40	-7.60	-8.46	-5.29
PPN	FFMF	-5.18	-5.00	-4.91	-2.89	0.65	-2.62	-2.40	-5.31	-5.12	-5.03	-2.95	0.62	-3.43	-2.84
	INMF	-0.71	-0.37	-0.63	2.29	-1.93	0.71	1.52	-2.20	-1.39	-1.91	1.59	-2.16	-3.00	0.91
	CRSP	-5.41	-6.52	-4.43	-5.30	-1.77	-5.71	-3.34	-7.16	-6.38	-6.12	-6.42	-2.53	-7.52	-4.59

Panel B: Taxation at end

		Exact basis rule													
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	Average basis rule						
									PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-4.21	-2.48	-4.21	-4.53	-4.41	-3.49	-3.57	-4.18	-2.32	-4.18	-4.52	-4.41	-3.78	-3.79
	INMF	-20.30	-19.15	-18.88	-16.19	-19.93	-18.27	-16.22	-19.68	-17.85	-18.20	-16.00	-19.81	-18.53	-16.73
	CRSP	-1.39	1.13	0.21	-0.36	2.41	-1.89	0.69	-1.29	2.54	0.38	-0.36	2.34	-3.02	0.33
BH	FFMF	0.45	1.94	0.45	0.11	0.23	1.20	1.12	0.47	2.10	0.47	0.12	0.23	0.89	0.88
	INMF	-3.54	-1.36	-3.54	-3.47	-5.73	-2.70	-3.19	-2.28	0.67	-2.28	-2.82	-5.48	-2.79	-3.34
	CRSP	-8.39	-8.63	-8.39	-9.60	-7.58	-7.93	-5.09	-7.93	-7.04	-7.93	-9.46	-7.55	-8.15	-4.92
PPN	FFMF	-5.15	-4.97	-4.88	-2.88	0.64	-2.60	-2.38	-5.26	-5.08	-4.98	-2.92	0.62	-3.39	-2.81
	INMF	-0.73	-0.38	-0.66	2.26	-1.58	0.42	1.17	-1.74	-1.07	-1.48	1.75	-1.75	-2.54	1.03
	CRSP	-5.22	-6.04	-4.30	-4.98	-1.43	-5.12	-2.81	-6.91	-6.24	-5.86	-5.99	-2.03	-6.68	-3.83

Table 47: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.18	0.84	1.70	0.84	0.67	0.56	1.01	0.87
	INMF	4.33	1.92	3.78	1.92	1.18	0.86	1.74	1.14
	CRSP	5.12	1.92	4.39	1.92	1.21	0.88	1.15	0.88
MV	FFMF	1.52	1.08	1.43	1.12	0.95	0.84	1.18	1.06
	INMF	4.39	2.80	3.96	2.39	1.60	0.97	2.40	1.70
	CRSP	5.55	3.06	5.08	2.88	1.76	1.09	1.71	1.14
PPN	FFMF	9.24	5.58	8.58	5.41	3.29	1.65	6.41	4.90
	INMF	8.72	4.98	8.08	4.77	2.80	1.34	5.41	3.61
	CRSP	13.88	8.63	13.17	9.01	5.54	3.04	5.59	2.98

Table 48: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0.5\%$ .

Panel A: Gain Relative to 1/N				
Data	MV	BH	PPN	
FFMF	2.75	3.39	<b>-6.67</b>	
INMF	<b>-19.66</b>	0.41	<b>-2.93</b>	
CRSP	<b>-1.63</b>	<b>-7.74</b>	<b>-13.79</b>	

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.07	1.62	0.68	8.99
INMF	3.75	3.87	0.67	7.88
CRSP	5.13	5.58	0.47	13.89

Table 49: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 1\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-9.69	-13.22	-9.52	-10.25	-9.76	-13.26	-9.61	-10.28
	INMF	-21.04	-19.08	-17.50	-22.18	-21.45	-19.30	-18.07	-22.38
	CRSP	-17.28	-15.51	-11.98	-18.34	-17.47	-15.77	-12.60	-18.41
Exact	FFMF	-9.48	-13.22	-9.52	-9.83	-9.56	-13.26	-9.61	-9.89
	INMF	-18.53	-18.37	-17.50	-18.74	-19.19	-18.69	-18.07	-19.48
	CRSP	-14.08	-14.02	-11.98	-14.74	-15.05	-14.82	-12.60	-15.17
Mtm	FFMF	-12.72	-14.21	-13.18	-12.61	-12.72	-14.21	-13.18	-12.61
	INMF	-24.98	-22.17	-24.76	-25.01	-24.98	-22.17	-24.76	-25.01
	CRSP	-21.38	-18.34	-20.13	-20.57	-21.38	-18.34	-20.13	-20.58

Table 50: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	<b>-1.26</b>	3.59	<b>-7.24</b>	<b>-1.23</b>	3.57	<b>-7.20</b>
	INMF	<b>-17.66</b>	4.91	<b>-4.32</b>	<b>-17.46</b>	4.73	<b>-4.07</b>
	CRSP	0.47	<b>-1.83</b>	<b>-14.90</b>	0.40	<b>-2.30</b>	<b>-14.78</b>
Exact	FFMF	<b>-1.49</b>	3.35	<b>-7.03</b>	<b>-1.45</b>	3.34	<b>-7.00</b>
	INMF	<b>-19.51</b>	1.67	<b>-3.18</b>	<b>-19.15</b>	1.80	<b>-3.27</b>
	CRSP	<b>-1.56</b>	<b>-5.48</b>	<b>-14.46</b>	<b>-1.36</b>	<b>-5.08</b>	<b>-13.92</b>
Mtm	FFMF	1.00	2.84	<b>-6.55</b>	1.00	2.84	<b>-6.55</b>
	INMF	<b>-16.65</b>	0.70	<b>-2.97</b>	<b>-16.64</b>	0.70	<b>-2.97</b>
	CRSP	2.18	<b>-6.27</b>	<b>-12.91</b>	2.18	<b>-6.27</b>	<b>-12.91</b>

Table 51: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.76	0.94	2.76	3.20	3.11	1.95	2.09	2.97	1.00	2.97	3.43	3.35	2.59	2.64
	INMF	4.60	1.50	4.60	5.00	8.16	3.78	4.82	6.45	2.05	6.45	7.70	11.43	7.56	8.64
	CRSP	2.38	2.14	2.38	4.27	2.21	2.84	-0.17	5.54	3.52	5.54	7.97	6.09	7.00	3.58
MV	FFMF	0.00	0.81	0.00	0.00	0.00	0.00	0.00	0.00	0.81	0.00	0.00	0.00	0.01	0.01
	INMF	3.06	2.41	5.23	9.04	7.02	4.86	8.64	3.35	2.70	5.56	9.49	7.87	5.87	9.00
	CRSP	1.84	5.23	4.02	5.20	6.01	1.63	1.57	2.97	6.11	5.16	6.67	7.68	2.38	2.63
PPN	FFMF	3.96	2.17	4.37	7.34	11.43	5.92	6.34	4.31	2.37	4.74	7.78	11.92	6.39	7.15
	INMF	5.96	2.73	6.25	10.38	9.44	6.07	8.64	7.55	3.80	8.05	13.65	13.69	8.20	13.94
	CRSP	9.49	8.44	10.98	13.35	16.14	10.58	10.91	11.24	10.69	12.88	16.52	20.23	15.13	15.35

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.75	0.94	2.75	3.19	3.10	1.94	2.08	2.95	0.99	2.95	3.40	3.33	2.57	2.61
	INMF	4.67	1.51	4.67	5.02	7.79	3.75	4.67	6.06	1.99	6.06	7.19	10.52	7.08	8.06
	CRSP	2.85	2.23	2.85	4.62	2.55	2.60	-0.24	5.34	3.49	5.34	7.53	5.54	6.13	2.69
MV	FFMF	0.00	0.82	0.00	0.00	0.00	0.01	0.01	0.00	0.82	0.00	0.00	0.00	0.01	0.01
	INMF	3.04	2.42	5.17	8.88	6.90	4.74	8.29	3.24	2.69	5.40	9.11	7.56	5.62	8.53
	CRSP	2.02	5.22	4.14	5.35	6.18	1.58	1.40	2.79	6.09	4.99	6.39	7.28	2.15	2.23
PPN	FFMF	3.96	2.17	4.37	7.32	11.38	5.90	6.32	4.29	2.37	4.73	7.74	11.84	6.37	7.12
	INMF	6.04	2.77	6.33	10.42	9.53	5.75	8.15	7.37	3.81	7.83	13.01	12.93	7.92	13.17
	CRSP	9.52	8.41	10.93	13.39	16.20	10.30	10.76	11.19	10.66	12.82	16.42	20.05	15.07	15.11

Table 52: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

		Exact basis rule													
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	Average basis rule						
									PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-4.13	-1.61	-4.13	-4.54	-4.46	-3.36	-3.50	-4.11	-1.43	-4.11	-4.53	-4.46	-3.74	-3.79
	INMF	-20.69	-18.78	-19.02	-16.41	-20.36	-18.67	-16.57	-18.35	-17.13	-18.35	-16.29	-20.29	-18.95	-17.39
	CRSP	-2.08	1.43	0.02	-0.68	2.11	-2.71	0.16	-1.97	2.99	0.12	-0.74	1.98	-3.86	-0.45
BH	FFMF	0.57	2.39	0.57	0.14	0.23	1.37	1.23	0.60	2.57	0.60	0.15	0.23	0.97	0.93
	INMF	-2.80	0.17	-2.80	-3.17	-6.00	-2.03	-3.00	-1.44	2.81	-1.44	-2.59	-5.85	-2.46	-3.43
	CRSP	-7.68	-7.46	-7.68	-9.35	-7.52	-8.09	-5.31	-6.98	-5.17	-6.98	-9.08	-7.46	-8.25	-5.23
PPN	FFMF	-5.94	-5.89	-5.57	-3.30	0.47	-3.40	-3.16	-6.04	-5.98	-5.65	-3.34	0.45	-3.80	-3.16
	INMF	-1.93	-2.01	-1.65	1.78	-2.04	-1.05	0.35	-3.33	-2.68	-2.88	0.97	-2.39	-3.75	0.35
	CRSP	-8.52	-9.18	-7.28	-7.01	-2.79	-8.02	-4.96	-10.30	-9.01	-8.98	-8.16	-3.56	-8.43	-5.23

Panel B: Taxation at end

		Exact basis rule													
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	Average basis rule						
									PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-4.09	-1.57	-4.08	-4.49	-4.41	-3.32	-3.45	-4.06	-1.40	-4.06	-4.48	-4.41	-3.70	-3.74
	INMF	-20.41	-18.43	-18.76	-16.18	-19.81	-18.37	-16.35	-19.65	-16.90	-17.97	-15.98	-19.67	-18.59	-17.10
	CRSP	-2.16	1.51	-0.13	-0.68	2.13	-2.35	0.26	-2.04	2.92	0.06	-0.67	2.06	-3.38	-0.05
BH	FFMF	0.57	2.38	0.57	0.14	0.23	1.37	1.23	0.60	2.55	0.60	0.16	0.23	0.97	0.93
	INMF	-2.74	0.29	-2.74	-3.06	-5.55	-1.87	-2.74	-1.25	2.68	-1.25	-2.30	-5.24	-2.20	-3.08
	CRSP	-7.71	-7.16	-7.71	-9.28	-7.45	-7.49	-4.85	-7.25	-5.59	-7.25	-9.14	-7.42	-7.94	-4.85
PPN	FFMF	-5.91	-5.86	-5.54	-3.28	0.46	-3.39	-3.14	-5.99	-5.94	-5.60	-3.31	0.44	-3.76	-3.13
	INMF	-1.99	-2.07	-1.73	1.71	-1.71	-1.39	-0.05	-2.89	-2.37	-2.47	1.13	-1.98	-3.33	0.47
	CRSP	-8.34	-8.71	-7.15	-6.71	-2.46	-7.45	-4.42	-10.05	-8.87	-8.73	-7.73	-3.06	-7.60	-4.47

Table 53: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.08	0.78	1.59	0.78	0.63	0.55	0.98	0.87
	INMF	4.07	1.76	3.53	1.76	1.09	0.81	1.65	1.11
	CRSP	5.12	1.93	4.39	1.93	1.22	0.89	1.15	0.88
MV	FFMF	1.48	1.04	1.39	1.09	0.93	0.82	1.15	1.03
	INMF	4.10	2.53	3.67	2.13	1.39	0.85	2.21	1.59
	CRSP	5.55	3.06	5.09	2.88	1.76	1.09	1.71	1.14
PPN	FFMF	9.09	5.41	8.43	5.24	3.11	1.51	6.24	4.76
	INMF	8.29	4.68	7.66	4.47	2.59	1.25	5.17	3.50
	CRSP	13.87	8.64	13.19	9.02	5.56	3.05	5.56	2.97

Table 54: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 1\%$ .



## 4 Length of investment horizon $T = 60$ periods

This section contains detailed tables for the case where the length of the investment horizon is assumed to be  $T = 60$  periods.

Panel A: Gain Relative to 1/N

Data	MV	BH	PPN
FFMF	-2.18	0.41	0.26
INMF	-7.30	-1.88	-0.69
CRSP	1.34	-3.61	0.76

Panel B: Trading Volume

Data	1/N	MV	BH	PPN
FFMF	2.04	1.70	0.65	12.59
INMF	3.74	3.88	0.68	10.13
CRSP	5.08	5.55	0.44	17.63

Table 55: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-6.78	-8.56	-6.46	-8.25	-7.54	-9.06	-7.33	-8.56
	INMF	-10.26	-10.26	-9.81	-11.48	-11.47	-11.10	-11.12	-12.16
	CRSP	-7.59	-7.94	-5.96	-9.48	-9.19	-9.61	-8.02	-10.29
Exact	FFMF	-6.51	-8.50	-6.46	-7.20	-7.35	-9.04	-7.33	-7.81
	INMF	-9.82	-9.95	-9.81	-10.37	-11.14	-10.91	-11.12	-11.45
	CRSP	-6.46	-7.04	-5.96	-7.30	-8.26	-8.93	-8.01	-8.92
Mtm	FFMF	-10.61	-10.52	-10.74	-10.80	-10.63	-10.54	-10.76	-10.82
	INMF	-14.12	-13.27	-14.41	-14.36	-14.15	-13.30	-14.44	-14.39
	CRSP	-12.01	-11.55	-11.56	-12.06	-12.05	-11.61	-11.59	-12.10

Table 56: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	-4.04	0.77	-1.32	-3.79	0.63	-0.85
	INMF	-7.30	-1.38	-2.04	-6.92	-1.49	-1.47
	CRSP	0.95	-1.91	-1.30	0.88	-2.37	-0.46
Exact	FFMF	-4.26	0.48	-0.47	-3.97	0.43	-0.24
	INMF	-7.44	-1.87	-1.30	-7.07	-1.86	-1.04
	CRSP	0.71	-3.09	-0.14	0.60	-3.35	0.03
Mtm	FFMF	-2.08	0.26	0.04	-2.08	0.27	0.05
	INMF	-6.39	-2.21	-0.96	-6.38	-2.20	-0.96
	CRSP	1.87	-3.12	0.71	1.86	-3.11	0.71

Table 57: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	0.51	0.11	0.51	0.66	0.58	0.26	0.24	0.77	0.24	0.77	0.94	0.87	0.63	0.60
	INMF	0.41	0.12	0.41	0.02	0.09	-0.28	-0.31	0.79	0.26	0.79	0.47	0.58	-0.01	0.17
	CRSP	-0.25	0.17	-0.25	-0.09	-1.40	-0.47	-1.44	0.63	0.57	0.63	0.98	-0.23	0.51	-0.33
MV	FFMF	0.02	0.05	0.03	0.02	-0.02	0.09	0.09	0.06	0.08	0.08	0.07	0.03	0.13	0.15
	INMF	0.52	0.15	1.14	2.19	1.82	0.70	1.14	0.73	0.30	1.40	2.50	2.16	0.95	1.47
	CRSP	-0.27	0.54	-0.15	-0.31	-0.53	-0.90	-1.15	0.32	0.99	0.49	0.44	0.31	-0.63	-0.64
PPN	FFMF	0.18	0.18	0.35	0.84	1.24	-0.07	0.01	0.71	0.50	0.90	1.65	2.25	-0.13	0.47
	INMF	0.62	0.22	0.81	1.03	0.82	0.90	0.80	0.98	0.55	1.26	1.82	1.96	1.68	1.18
	CRSP	1.28	1.19	1.64	1.66	0.04	2.25	1.14	1.90	2.06	2.40	2.82	1.78	1.89	1.02

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	0.48	0.11	0.48	0.61	0.52	0.22	0.18	0.64	0.19	0.64	0.80	0.72	0.49	0.46
	INMF	0.44	0.14	0.44	-0.01	-0.02	-0.36	-0.44	0.49	0.19	0.49	0.13	0.23	-0.31	-0.16
	CRSP	-0.13	0.22	-0.13	-0.10	-1.47	-0.77	-1.81	0.14	0.48	0.14	0.32	-0.78	-0.13	-0.89
MV	FFMF	0.01	0.05	0.03	0.01	-0.03	0.08	0.08	0.03	0.08	0.05	0.03	-0.02	0.10	0.10
	INMF	0.50	0.16	1.09	2.03	1.59	0.58	0.93	0.56	0.28	1.18	2.11	1.74	0.68	1.11
	CRSP	-0.24	0.55	-0.12	-0.34	-0.64	-1.11	-1.53	-0.07	0.96	0.15	-0.10	-0.37	-1.21	-1.36
PPN	FFMF	0.16	0.18	0.32	0.76	1.12	-0.08	-0.05	0.60	0.50	0.79	1.41	1.86	-0.18	0.31
	INMF	0.63	0.23	0.79	0.94	0.67	0.77	0.59	0.78	0.52	1.01	1.35	1.32	1.36	0.75
	CRSP	1.19	1.20	1.52	1.46	-0.07	1.84	0.61	1.59	2.04	2.11	2.18	0.86	1.13	-0.14

Table 58: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule													
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-4.73	-4.32	-4.72	-4.87	-4.84	-4.43	-4.41	-4.72	-4.19	-4.70	-4.87	-4.84	-4.51	-4.47
	INMF	-7.34	-7.41	-6.77	-5.43	-5.84	-6.52	-6.09	-7.35	-7.26	-6.74	-5.43	-5.84	-6.42	-6.10
	CRSP	0.69	1.09	0.81	0.49	1.60	0.28	1.01	0.64	1.38	0.81	0.41	1.51	-0.19	0.64
BH	FFMF	-0.03	0.36	-0.03	-0.18	-0.11	0.21	0.23	-0.01	0.52	-0.01	-0.17	-0.11	0.13	0.16
	INMF	-2.27	-1.99	-2.27	-1.88	-1.96	-1.59	-1.57	-2.16	-1.64	-2.16	-1.84	-1.95	-1.38	-1.55
	CRSP	-2.85	-3.26	-2.85	-3.00	-1.72	-2.63	-1.68	-2.53	-2.47	-2.53	-2.87	-1.68	-2.41	-1.59
PPN	FFMF	-0.80	-0.41	-0.64	-0.30	0.18	-0.81	-0.71	-1.38	-1.06	-1.20	-0.62	0.02	-2.06	-1.45
	INMF	-1.10	-1.20	-0.91	-0.30	-0.58	-0.12	-0.20	-1.85	-1.76	-1.58	-0.72	-0.69	-0.38	-1.05
	CRSP	1.39	0.88	1.75	1.61	1.31	2.60	2.48	-0.06	0.16	0.43	0.49	0.69	0.05	0.04

Panel B: Taxation at end

Model	Data	Exact basis rule													
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-4.41	-4.02	-4.39	-4.54	-4.49	-4.10	-4.07	-4.38	-3.90	-4.35	-4.52	-4.49	-4.16	-4.13
	INMF	-7.02	-7.06	-6.47	-5.18	-5.57	-6.19	-5.79	-6.85	-6.84	-6.28	-5.07	-5.52	-5.99	-5.74
	CRSP	0.49	0.93	0.60	0.36	1.45	0.25	0.87	0.67	1.35	0.89	0.45	1.28	-0.22	0.40
BH	FFMF	-0.05	0.32	-0.05	-0.18	-0.09	0.21	0.24	-0.01	0.44	-0.01	-0.16	-0.09	0.14	0.17
	INMF	-2.30	-2.00	-2.30	-1.86	-1.85	-1.50	-1.43	-1.97	-1.68	-1.97	-1.62	-1.72	-1.19	-1.33
	CRSP	-3.22	-3.56	-3.22	-3.25	-1.91	-2.60	-1.58	-2.50	-2.83	-2.50	-2.68	-1.60	-2.24	-1.49
PPN	FFMF	-0.56	-0.17	-0.40	-0.09	0.36	-0.54	-0.47	-0.89	-0.56	-0.71	-0.25	0.27	-1.52	-1.00
	INMF	-0.86	-0.95	-0.70	-0.10	-0.36	0.08	-0.02	-1.19	-1.14	-0.96	-0.26	-0.40	0.18	-0.56
	CRSP	1.36	1.01	1.69	1.60	1.45	2.66	2.49	0.98	1.08	1.49	1.38	1.18	0.79	0.29

Table 59: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.83	1.14	2.35	1.14	0.79	0.54	1.06	0.79
	INMF	5.29	2.42	4.73	2.42	1.52	1.01	2.25	1.36
	CRSP	7.54	3.71	6.75	3.71	2.31	1.57	1.84	1.23
MV	FFMF	1.71	1.22	1.60	1.22	1.03	0.91	1.32	1.18
	INMF	5.53	3.70	5.09	3.30	2.32	1.38	3.16	2.16
	CRSP	7.40	4.66	6.97	4.49	3.00	1.92	2.76	1.75
PPN	FFMF	13.99	9.42	13.32	9.38	5.94	3.21	9.95	8.21
	INMF	11.99	7.61	11.28	7.41	4.57	2.35	8.15	6.24
	CRSP	20.80	14.92	20.02	15.31	10.54	6.44	9.82	6.17

Table 60: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0\%$ .

Panel A: Gain Relative to 1/N

Data	MV	BH	PPN
FFMF	-1.88	0.80	-2.35
INMF	-7.30	-0.95	-2.66
CRSP	1.21	-2.28	-3.24

Panel B: Trading Volume

Data	1/N	MV	BH	PPN
FFMF	2.04	1.70	0.65	12.59
INMF	3.74	3.88	0.68	10.13
CRSP	5.08	5.55	0.44	17.61

Table 61: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0.5\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-6.88	-8.55	-6.43	-8.44	-7.62	-9.06	-7.32	-8.74
	INMF	-10.66	-10.44	-9.77	-11.85	-11.83	-11.26	-11.09	-12.49
	CRSP	-8.10	-8.31	-5.95	-9.96	-9.64	-9.88	-8.02	-10.73
Exact	FFMF	-6.57	-8.49	-6.43	-7.33	-7.41	-9.04	-7.32	-7.96
	INMF	-9.99	-10.06	-9.77	-10.55	-11.30	-11.03	-11.09	-11.62
	CRSP	-6.69	-7.27	-5.95	-7.57	-8.50	-9.16	-8.01	-9.20
Mtm	FFMF	-10.61	-10.53	-10.74	-10.83	-10.62	-10.54	-10.75	-10.85
	INMF	-14.09	-13.24	-14.38	-14.32	-14.13	-13.26	-14.41	-14.35
	CRSP	-11.99	-11.54	-11.55	-11.96	-12.04	-11.59	-11.59	-12.00

Table 62: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	-3.64	1.28	-3.99	-3.40	1.13	-3.54
	INMF	-7.07	0.04	-3.95	-6.70	-0.12	-3.39
	CRSP	0.98	0.01	-5.21	0.95	-0.52	-4.41
Exact	FFMF	-3.90	0.95	-3.15	-3.61	0.90	-2.93
	INMF	-7.38	-0.71	-3.26	-7.01	-0.71	-3.00
	CRSP	0.58	-1.50	-4.15	0.48	-1.76	-3.99
Mtm	FFMF	-1.79	0.66	-2.60	-1.78	0.66	-2.60
	INMF	-6.38	-1.29	-2.91	-6.37	-1.28	-2.91
	CRSP	1.74	-1.79	-3.20	1.72	-1.78	-3.20

Table 63: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.



Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FEMF	0.89	0.29	0.89	1.09	1.05	0.62	0.64	1.19	0.43	1.19	1.42	1.39	1.08	1.09
	INMF	1.17	0.41	1.17	1.00	1.20	0.45	0.62	1.73	0.61	1.73	1.67	1.94	1.13	1.49
	CRSP	0.79	0.67	0.79	1.22	0.09	0.81	-0.03	1.87	1.20	1.87	2.57	1.56	2.26	1.52
MV	FEMF	0.05	0.42	0.10	0.09	0.05	0.12	0.14	0.10	0.45	0.15	0.14	0.11	0.19	0.21
	INMF	1.05	0.75	1.85	3.08	2.89	1.25	1.85	1.30	0.92	2.14	3.45	3.30	1.75	2.46
	CRSP	0.54	1.62	0.88	0.96	0.93	0.23	0.20	1.21	2.18	1.62	1.84	1.90	0.72	0.92
PPN	FEMF	1.68	1.15	2.02	3.21	4.12	1.32	1.65	2.24	1.51	2.60	4.09	5.22	1.89	2.74
	INMF	2.10	1.06	2.48	3.37	3.68	2.19	2.51	2.51	1.52	3.00	4.27	5.01	3.63	3.58
	CRSP	3.49	3.47	4.26	5.41	4.74	5.72	5.32	4.17	4.61	5.14	6.67	6.69	6.33	6.05

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FEMF	0.86	0.29	0.86	1.04	0.99	0.58	0.58	1.04	0.39	1.04	1.26	1.22	0.92	0.93
	INMF	1.20	0.43	1.20	0.98	1.08	0.37	0.49	1.40	0.54	1.40	1.29	1.54	0.79	1.11
	CRSP	0.90	0.73	0.90	1.22	0.02	0.52	-0.39	1.35	1.11	1.35	1.85	0.94	1.55	0.89
MV	FEMF	0.05	0.43	0.11	0.09	0.04	0.12	0.13	0.07	0.46	0.13	0.10	0.06	0.15	0.16
	INMF	1.04	0.76	1.80	2.93	2.66	1.14	1.64	1.13	0.90	1.91	3.05	2.85	1.47	2.07
	CRSP	0.58	1.62	0.91	0.94	0.81	0.01	-0.19	0.81	2.14	1.25	1.27	1.16	0.09	0.11
PPN	FEMF	1.67	1.15	1.99	3.14	4.00	1.30	1.59	2.13	1.50	2.48	3.83	4.81	1.83	2.57
	INMF	2.11	1.08	2.46	3.27	3.51	2.04	2.29	2.30	1.49	2.74	3.78	4.31	3.30	3.13
	CRSP	3.39	3.51	4.14	5.20	4.62	5.28	4.80	3.84	4.58	4.83	6.01	5.70	5.51	4.79

Table 64: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule													
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-4.69	-3.78	-4.65	-4.85	-4.85	-4.37	-4.38	-4.67	-3.62	-4.62	-4.85	-4.85	-4.49	-4.47
	INMF	-7.49	-7.06	-6.76	-5.47	-5.83	-6.63	-6.25	-7.47	-6.78	-6.69	-5.44	-5.82	-6.49	-6.18
	CRSP	0.34	1.52	0.68	0.32	1.42	0.00	0.81	0.33	1.97	0.74	0.27	1.32	-0.54	0.39
BH	FFMF	0.06	0.66	0.06	-0.14	-0.11	0.32	0.31	0.09	0.84	0.09	-0.13	-0.10	0.20	0.19
	INMF	-1.86	-1.12	-1.86	-1.70	-1.89	-1.15	-1.33	-1.67	-0.57	-1.67	-1.61	-1.86	-1.08	-1.44
	CRSP	-2.27	-2.16	-2.27	-2.69	-1.59	-2.29	-1.47	-1.83	-1.17	-1.83	-2.49	-1.53	-2.20	-1.49
PPN	FFMF	-2.39	-2.32	-2.07	-1.13	-0.22	-2.48	-2.18	-3.00	-2.97	-2.66	-1.46	-0.37	-3.22	-2.43
	INMF	-2.37	-2.63	-2.01	-0.99	-0.88	-1.58	-1.44	-3.21	-3.08	-2.76	-1.49	-1.05	-1.57	-1.98
	CRSP	-1.58	-1.49	-0.85	-0.18	0.29	0.52	0.98	-3.07	-2.01	-2.16	-1.41	-0.42	-1.43	-0.98

Panel B: Taxation at end

Model	Data	Exact basis rule													
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-4.38	-3.48	-4.33	-4.52	-4.51	-4.05	-4.05	-4.34	-3.34	-4.28	-4.50	-4.51	-4.14	-4.14
	INMF	-7.17	-6.71	-6.47	-5.21	-5.56	-6.31	-5.95	-6.95	-6.37	-6.23	-5.07	-5.49	-6.06	-5.81
	CRSP	0.15	1.37	0.48	0.21	1.27	-0.03	0.67	0.41	1.98	0.86	0.37	1.16	-0.50	0.17
BH	FFMF	0.04	0.61	0.04	-0.14	-0.09	0.32	0.32	0.09	0.74	0.09	-0.12	-0.09	0.21	0.20
	INMF	-1.90	-1.14	-1.90	-1.67	-1.77	-1.08	-1.20	-1.50	-0.66	-1.50	-1.39	-1.63	-0.90	-1.22
	CRSP	-2.64	-2.47	-2.64	-2.94	-1.78	-2.27	-1.38	-1.85	-1.61	-1.85	-2.33	-1.46	-2.04	-1.40
PPN	FFMF	-2.15	-2.10	-1.84	-0.92	-0.03	-2.23	-1.96	-2.51	-2.47	-2.17	-1.08	-0.12	-2.67	-1.97
	INMF	-2.14	-2.38	-1.80	-0.80	-0.67	-1.39	-1.27	-2.53	-2.47	-2.12	-1.01	-0.75	-0.98	-1.46
	CRSP	-1.62	-1.34	-0.91	-0.21	0.43	0.55	1.01	-2.05	-1.12	-1.12	-0.51	0.10	-0.68	-0.70

Table 65: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.23	0.88	1.76	0.88	0.67	0.53	0.95	0.79
	INMF	4.42	2.00	3.87	2.00	1.26	0.91	1.95	1.28
	CRSP	6.55	3.12	5.81	3.12	1.99	1.36	1.68	1.12
MV	FFMF	1.56	1.11	1.46	1.14	0.96	0.85	1.22	1.10
	INMF	4.49	2.82	4.07	2.49	1.66	1.04	2.57	1.91
	CRSP	6.48	3.91	6.02	3.75	2.48	1.58	2.41	1.58
PPN	FFMF	12.92	8.39	12.27	8.40	5.26	2.84	8.84	7.36
	INMF	10.88	6.80	10.22	6.62	4.05	2.13	7.43	5.77
	CRSP	19.30	13.64	18.57	14.07	9.49	5.72	9.08	5.77

Table 66: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0.5\%$ .

Panel A: Gain Relative to 1/N				
Data		MV	BH	PPN
FFMF		-1.58	1.19	-4.91
INMF		-7.29	-0.02	-4.61
CRSP		1.08	-0.92	-7.11

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.04	1.70	0.65	12.58
INMF	3.74	3.87	0.68	10.12
CRSP	5.08	5.55	0.44	17.60

Table 67: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 1\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-6.90	-8.54	-6.41	-8.50	-7.63	-9.05	-7.30	-8.80
	INMF	-10.84	-10.49	-9.73	-11.95	-11.95	-11.29	-11.05	-12.54
	CRSP	-8.31	-8.45	-5.93	-10.00	-9.77	-9.94	-8.01	-10.73
Exact	FFMF	-6.59	-8.48	-6.41	-7.41	-7.43	-9.04	-7.30	-8.04
	INMF	-10.06	-10.10	-9.73	-10.61	-11.37	-11.07	-11.05	-11.69
	CRSP	-6.81	-7.39	-5.93	-7.63	-8.62	-9.28	-8.00	-9.26
Mtm	FFMF	-10.61	-10.53	-10.73	-10.87	-10.62	-10.54	-10.75	-10.89
	INMF	-14.07	-13.21	-14.36	-14.28	-14.10	-13.24	-14.39	-14.31
	CRSP	-11.98	-11.52	-11.55	-11.86	-12.02	-11.58	-11.59	-11.90

Table 68: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	<b>-3.31</b>	1.72	<b>-6.55</b>	<b>-3.10</b>	1.55	<b>-6.11</b>
	INMF	<b>-6.93</b>	1.23	<b>-5.79</b>	<b>-6.59</b>	1.00	<b>-5.24</b>
	CRSP	0.92	1.64	<b>-8.83</b>	0.89	1.01	<b>-8.10</b>
Exact	FFMF	<b>-3.57</b>	1.39	<b>-5.74</b>	<b>-3.29</b>	1.34	<b>-5.53</b>
	INMF	<b>-7.34</b>	0.35	<b>-5.19</b>	<b>-6.98</b>	0.34	<b>-4.95</b>
	CRSP	0.45	0.01	<b>-7.93</b>	0.36	<b>-0.25</b>	<b>-7.76</b>
Mtm	FFMF	<b>-1.49</b>	1.05	<b>-5.19</b>	<b>-1.49</b>	1.05	<b>-5.19</b>
	INMF	<b>-6.37</b>	<b>-0.36</b>	<b>-4.85</b>	<b>-6.36</b>	<b>-0.36</b>	<b>-4.84</b>
	CRSP	1.60	<b>-0.44</b>	<b>-6.99</b>	1.59	<b>-0.44</b>	<b>-6.99</b>

Table 69: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.25	0.47	1.25	1.50	1.49	0.96	1.00	1.56	0.62	1.56	1.83	1.82	1.46	1.49
	INMF	1.89	0.71	1.89	1.92	2.21	1.11	1.46	2.52	0.93	2.52	2.68	3.07	2.06	2.59
	CRSP	1.78	1.38	1.78	2.48	1.51	1.99	1.29	2.92	1.96	2.92	3.89	3.08	3.71	3.08
MV	FFMF	0.09	0.99	0.18	0.16	0.13	0.16	0.19	0.14	1.03	0.23	0.22	0.18	0.24	0.27
	INMF	1.57	1.53	2.52	3.93	3.89	1.76	2.49	1.82	1.70	2.82	4.30	4.32	2.48	3.32
	CRSP	1.33	2.83	1.89	2.21	2.33	1.34	1.46	2.03	3.44	2.64	3.11	3.34	1.96	2.32
PPN	FFMF	3.21	2.37	3.72	5.61	7.03	2.73	3.33	3.77	2.76	4.29	6.50	8.16	4.04	5.07
	INMF	3.60	2.17	4.16	5.70	6.54	3.48	4.21	4.04	2.69	4.69	6.62	7.90	5.64	6.00
	CRSP	5.72	6.34	6.92	9.23	9.54	9.22	9.58	6.33	7.58	7.76	10.47	11.49	10.73	10.89

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.22	0.47	1.22	1.45	1.42	0.91	0.95	1.40	0.57	1.40	1.66	1.64	1.29	1.32
	INMF	1.92	0.73	1.92	1.89	2.09	1.03	1.32	2.16	0.87	2.16	2.24	2.60	1.68	2.14
	CRSP	1.91	1.44	1.91	2.48	1.43	1.72	0.94	2.36	1.87	2.36	3.11	2.36	2.90	2.34
MV	FFMF	0.09	1.01	0.19	0.17	0.12	0.16	0.18	0.11	1.04	0.21	0.19	0.14	0.21	0.22
	INMF	1.56	1.55	2.47	3.78	3.66	1.64	2.29	1.65	1.68	2.58	3.89	3.84	2.19	2.91
	CRSP	1.38	2.84	1.92	2.19	2.21	1.12	1.06	1.63	3.40	2.26	2.51	2.55	1.29	1.43
PPN	FFMF	3.20	2.39	3.69	5.55	6.93	2.70	3.26	3.66	2.76	4.18	6.24	7.74	3.98	4.89
	INMF	3.60	2.18	4.14	5.61	6.36	3.32	3.97	3.83	2.68	4.44	6.11	7.14	5.31	5.52
	CRSP	5.61	6.37	6.79	9.00	9.38	8.74	9.02	6.02	7.56	7.46	9.80	10.47	9.87	9.59

Table 70: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2		
MV	FFMF	-4.67	-3.07	-4.59	-4.84	-4.87	-4.33	-4.35		
	INMF	-7.63	-6.58	-6.76	-5.51	-5.82	-6.74	-6.40		
	CRSP	0.01	1.89	0.56	0.19	1.27	-0.20	0.62		
BH	FFMF	0.13	0.91	0.13	-0.12	-0.10	0.43	0.38		
	INMF	-1.51	-0.36	-1.51	-1.54	-1.82	-0.75	-1.09		
	CRSP	-1.74	-1.35	-1.74	-2.41	-1.47	-1.94	-1.26		
PPN	FFMF	-3.92	-3.96	-3.45	-1.93	-0.59	-4.09	-3.58		
	INMF	-3.61	-3.82	-3.08	-1.67	-1.18	-2.97	-2.63		
	CRSP	-4.37	-3.43	-3.28	-1.86	-0.65	-1.40	-0.40		
		Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2		
MV	FFMF	-4.66	-2.92	-4.58	-4.84	-4.87	-4.47	-4.48		
	INMF	-7.56	-6.22	-6.66	-5.46	-5.80	-6.55	-6.27		
	CRSP	0.04	2.38	0.65	0.16	1.18	-0.78	0.18		
BH	FFMF	0.16	1.09	0.16	-0.11	-0.10	0.26	0.22		
	INMF	-1.26	0.29	-1.26	-1.41	-1.78	-0.81	-1.33		
	CRSP	-1.24	-0.31	-1.24	-2.17	-1.39	-1.99	-1.39		
PPN	FFMF	-4.51	-4.56	-4.03	-2.26	-0.73	-4.17	-3.26		
	INMF	-4.39	-4.14	-3.80	-2.17	-1.37	-2.48	-2.66		
	CRSP	-5.80	-3.80	-4.54	-3.05	-1.39	-2.66	-1.91		

Panel B: Taxation at end

Model	Data	Exact basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2		
MV	FFMF	-4.36	-2.77	-4.27	-4.51	-4.53	-4.01	-4.02		
	INMF	-7.31	-6.23	-6.47	-5.25	-5.55	-6.42	-6.09		
	CRSP	-0.17	1.74	0.37	0.07	1.13	-0.24	0.48		
BH	FFMF	0.11	0.86	0.11	-0.12	-0.09	0.42	0.39		
	INMF	-1.56	-0.39	-1.56	-1.52	-1.72	-0.69	-0.97		
	CRSP	-2.12	-1.67	-2.12	-2.66	-1.66	-1.94	-1.18		
PPN	FFMF	-3.69	-3.73	-3.23	-1.72	-0.41	-3.86	-3.37		
	INMF	-3.38	-3.58	-2.88	-1.48	-0.97	-2.79	-2.46		
	CRSP	-4.41	-3.28	-3.34	-1.89	-0.53	-1.39	-0.38		
		Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2		
MV	FFMF	-4.33	-2.65	-4.24	-4.50	-4.53	-4.13	-4.15		
	INMF	-7.06	-5.84	-6.20	-5.08	-5.46	-6.12	-5.89		
	CRSP	0.16	2.40	0.79	0.30	1.08	-0.69	-0.01		
BH	FFMF	0.15	0.98	0.15	-0.10	-0.09	0.26	0.23		
	INMF	-1.13	0.13	-1.13	-1.21	-1.55	-0.67	-1.12		
	CRSP	-1.32	-0.85	-1.32	-2.04	-1.32	-1.84	-1.30		
PPN	FFMF	-4.02	-4.07	-3.54	-1.87	-0.48	-3.62	-2.80		
	INMF	-3.69	-3.54	-3.13	-1.65	-1.05	-1.86	-2.11		
	CRSP	-4.82	-2.97	-3.52	-2.13	-0.82	-1.87	-1.59		

Table 71: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.09	0.78	1.60	0.78	0.62	0.52	0.92	0.78
	INMF	4.08	1.78	3.54	1.78	1.13	0.83	1.80	1.23
	CRSP	5.98	2.72	5.28	2.72	1.74	1.19	1.54	1.03
MV	FFMF	1.55	1.10	1.46	1.13	0.96	0.85	1.21	1.09
	INMF	4.14	2.52	3.73	2.20	1.44	0.90	2.36	1.78
	CRSP	6.04	3.58	5.57	3.39	2.21	1.43	2.24	1.50
PPN	FFMF	12.70	8.20	12.07	8.22	5.08	2.68	8.60	7.17
	INMF	10.48	6.44	9.83	6.26	3.80	2.00	7.10	5.57
	CRSP	18.51	12.93	17.84	13.36	8.90	5.28	8.61	5.53

Table 72: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 1\%$ .



## 5 Capital gains rate $\tau_g = 15\%$

This section contains detailed tables for the case where the capital gains rate is assumed to be  $\tau_g = 15\%$ .

Panel A: Gain Relative to 1/N				
Data		MV	BH	PPN
FFMF		-6.03	1.47	0.83
INMF		-18.92	-1.65	1.47
CRSP		-0.60	-11.12	3.23

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.08	1.64	0.69	12.71
INMF	3.76	3.85	0.68	9.76
CRSP	5.13	5.59	0.47	17.40

Table 73: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-9.09	-13.93	-8.89	-10.58	-9.58	-14.13	-9.51	-10.74
	INMF	-16.57	-17.46	-15.35	-18.54	-17.74	-18.14	-16.92	-19.06
	CRSP	-15.62	-15.28	-12.55	-18.04	-16.78	-16.58	-14.22	-18.54
Exact	FFMF	-8.81	-13.91	-8.89	-9.65	-9.40	-14.12	-9.51	-10.10
	INMF	-15.22	-16.94	-15.35	-16.17	-16.89	-17.80	-16.92	-17.39
	CRSP	-13.15	-13.43	-12.55	-14.96	-15.06	-15.35	-14.22	-16.28
Mtm	FFMF	-12.10	-15.25	-12.42	-12.65	-12.11	-15.25	-12.42	-12.65
	INMF	-21.12	-20.67	-21.72	-21.48	-21.14	-20.68	-21.74	-21.50
	CRSP	-19.60	-18.63	-18.80	-20.02	-19.63	-18.65	-18.82	-20.05

Table 74: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	-11.03	1.70	-0.83	-10.76	1.55	-0.47
	INMF	-19.79	-0.21	-0.93	-19.31	-0.66	-0.16
	CRSP	-0.21	-7.89	0.26	-0.36	-8.38	1.04
Exact	FFMF	-11.28	1.39	-0.10	-10.92	1.36	0.05
	INMF	-20.56	-1.79	0.33	-19.82	-1.68	0.85
	CRSP	-0.92	-10.50	1.07	-0.95	-10.24	1.73
Mtm	FFMF	-9.39	1.11	0.20	-9.38	1.11	0.20
	INMF	-18.46	-2.40	1.01	-18.45	-2.40	1.01
	CRSP	0.60	-10.23	2.69	0.60	-10.22	2.69

Table 75: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.22	0.20	1.22	1.45	1.24	0.41	0.37	1.50	0.33	1.50	1.75	1.54	0.98	0.94
	INMF	1.21	0.29	1.21	0.84	2.26	0.98	1.00	2.30	0.68	2.30	2.25	3.87	2.60	2.64
	CRSP	-0.55	0.14	-0.55	0.22	-2.74	-2.19	-5.23	1.29	1.00	1.29	2.60	-0.11	0.71	-2.71
MV	FFMF	0.00	0.02	0.02	0.03	0.04	0.11	0.10	0.02	0.03	0.04	0.05	0.06	0.13	0.13
	INMF	0.99	0.25	2.37	4.88	4.26	2.71	5.02	1.31	0.53	2.78	5.37	4.85	2.91	5.05
	CRSP	-0.64	0.90	-0.28	-0.24	-0.82	-2.73	-3.84	0.48	1.87	0.95	1.17	0.81	-3.15	-3.40
PPN	FFMF	-0.04	0.16	-0.03	0.36	1.42	-0.61	-0.56	0.46	0.44	0.49	1.09	2.32	-1.98	-1.46
	INMF	1.00	0.26	1.13	1.26	0.37	0.75	1.21	1.75	0.90	2.06	2.87	2.85	1.58	1.07
	CRSP	2.12	1.84	2.41	0.78	0.76	1.14	-1.18	2.90	3.19	3.54	2.40	3.09	0.94	-2.93

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.19	0.20	1.19	1.41	1.19	0.38	0.34	1.35	0.28	1.35	1.59	1.38	0.84	0.79
	INMF	1.32	0.32	1.32	0.85	1.97	0.82	0.75	1.61	0.54	1.61	1.39	2.76	1.70	1.68
	CRSP	-0.12	0.24	-0.12	0.49	-2.48	-2.46	-5.38	0.48	0.89	0.48	1.32	-1.21	-0.60	-3.64
MV	FFMF	0.00	0.02	0.03	0.04	0.05	0.12	0.11	0.01	0.03	0.04	0.05	0.06	0.14	0.13
	INMF	0.97	0.26	2.28	4.63	3.88	2.48	4.47	1.08	0.49	2.46	4.76	4.13	2.43	4.26
	CRSP	-0.53	0.93	-0.19	-0.18	-0.75	-3.00	-4.25	-0.17	1.82	0.39	0.26	-0.36	-4.09	-4.56
PPN	FFMF	-0.04	0.16	-0.04	0.34	1.35	-0.60	-0.58	0.36	0.43	0.40	0.90	1.99	-1.99	-1.55
	INMF	1.02	0.27	1.12	1.10	0.00	0.42	0.62	1.49	0.88	1.74	2.15	1.70	1.18	0.34
	CRSP	2.16	1.86	2.40	0.91	0.78	0.49	-1.97	2.61	3.15	3.26	1.91	2.27	0.23	-4.11

Table 76: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

		Exact basis rule													
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	Average basis rule						
									PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-12.34	-11.44	-12.32	-12.52	-12.33	-11.55	-11.52	-12.33	-11.29	-12.31	-12.51	-12.33	-11.78	-11.75
	INMF	-20.73	-20.60	-19.65	-17.39	-19.01	-19.21	-17.40	-20.56	-19.91	-19.41	-17.34	-19.03	-19.55	-17.90
	CRSP	-1.00	-0.17	-0.65	-1.37	1.03	-1.47	0.53	-1.01	0.65	-0.55	-1.60	0.72	-4.03	-0.91
BH	FFMF	0.17	1.18	0.17	-0.06	0.15	0.97	1.02	0.20	1.37	0.20	-0.05	0.15	0.71	0.75
	INMF	-2.97	-2.08	-2.97	-2.61	-3.96	-2.75	-2.76	-2.45	-0.88	-2.45	-2.40	-3.92	-2.74	-2.77
	CRSP	-10.01	-10.63	-10.01	-10.70	-7.98	-8.50	-5.56	-9.06	-8.80	-9.06	-10.22	-7.78	-8.53	-5.32
PPN	FFMF	-1.35	-0.15	-1.34	-1.17	0.08	-1.12	-1.03	-1.85	-0.72	-1.82	-1.47	-0.07	-3.74	-3.19
	INMF	0.13	0.30	0.26	0.75	-1.52	0.11	0.54	-1.46	-0.71	-1.16	-0.32	-1.89	-1.91	-2.44
	CRSP	3.79	2.78	4.08	1.64	4.71	4.51	5.40	1.85	2.43	2.48	0.07	3.47	0.49	0.03

Panel B: Taxation at end

		Exact basis rule													
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	Average basis rule						
									PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-11.97	-11.08	-11.94	-12.12	-11.92	-11.16	-11.12	-11.94	-10.98	-11.91	-12.11	-11.92	-11.37	-11.34
	INMF	-20.09	-19.86	-19.06	-16.81	-18.31	-18.49	-16.85	-19.73	-19.36	-18.63	-16.63	-18.24	-18.73	-17.26
	CRSP	-1.36	-0.27	-1.02	-1.60	0.82	-1.49	0.24	-1.02	0.55	-0.46	-1.40	0.49	-3.87	-1.32
BH	FFMF	0.16	1.15	0.16	-0.05	0.17	0.97	1.02	0.20	1.27	0.20	-0.04	0.17	0.71	0.76
	INMF	-2.97	-2.00	-2.97	-2.51	-3.59	-2.48	-2.41	-2.24	-1.20	-2.24	-2.02	-3.34	-2.33	-2.30
	CRSP	-10.13	-10.45	-10.13	-10.67	-7.95	-7.97	-5.14	-8.82	-9.19	-8.82	-9.57	-7.26	-7.83	-4.92
PPN	FFMF	-1.17	0.01	-1.16	-1.00	0.21	-0.92	-0.86	-1.44	-0.33	-1.41	-1.14	0.13	-3.26	-2.78
	INMF	0.55	0.80	0.65	1.10	-1.10	0.46	0.73	-0.27	0.17	-0.03	0.59	-1.19	-0.67	-1.47
	CRSP	4.05	3.38	4.30	2.16	5.14	4.81	5.40	3.17	3.30	3.83	1.63	4.60	1.88	0.54

Table 77: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.57	1.07	2.10	1.07	0.79	0.60	1.11	0.91
	INMF	4.96	2.18	4.39	2.18	1.34	0.95	1.91	1.21
	CRSP	7.52	3.72	6.73	3.72	2.34	1.64	1.69	1.21
MV	FFMF	1.74	1.26	1.64	1.29	1.11	1.02	1.34	1.21
	INMF	5.18	3.51	4.75	3.02	2.16	1.25	2.88	1.87
	CRSP	7.27	4.59	6.87	4.39	2.90	1.85	2.33	1.44
PPN	FFMF	13.75	9.16	13.07	9.11	5.64	3.09	9.87	7.72
	INMF	11.49	7.28	10.79	7.03	4.22	2.21	7.73	5.46
	CRSP	20.66	14.78	19.88	15.30	10.76	6.76	9.34	4.95

Table 78: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0\%$ .

Panel A: Gain Relative to 1/N				
Data		MV	BH	PPN
FFMF		-5.37	2.24	-4.41
INMF		-18.78	0.27	-2.36
CRSP		-0.96	-8.73	-3.79

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.08	1.63	0.68	12.71
INMF	3.75	3.85	0.68	9.76
CRSP	5.13	5.59	0.47	17.38

Table 79: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0.5\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-9.17	-13.89	-8.86	-10.77	-9.65	-14.10	-9.48	-10.91
	INMF	-17.45	-17.77	-15.28	-19.20	-18.53	-18.42	-16.86	-19.67
	CRSP	-16.34	-15.80	-12.51	-18.58	-17.42	-16.96	-14.19	-19.02
Exact	FFMF	-8.86	-13.87	-8.86	-9.79	-9.45	-14.09	-9.48	-10.25
	INMF	-15.45	-17.07	-15.28	-16.44	-17.12	-17.95	-16.86	-17.65
	CRSP	-13.45	-13.71	-12.51	-15.37	-15.39	-15.68	-14.19	-16.71
Mtm	FFMF	-12.10	-15.22	-12.41	-12.74	-12.11	-15.22	-12.41	-12.74
	INMF	-21.06	-20.62	-21.68	-21.40	-21.09	-20.64	-21.70	-21.42
	CRSP	-19.58	-18.60	-18.77	-19.87	-19.61	-18.62	-18.79	-19.90

Table 80: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	-10.30	2.59	-6.09	-10.04	2.42	-5.74
	INMF	-19.10	2.91	-4.42	-18.67	2.32	-3.72
	CRSP	-0.31	-4.55	-6.37	-0.40	-5.16	-5.66
Exact	FFMF	-10.58	2.23	-5.39	-10.22	2.20	-5.25
	INMF	-20.34	0.46	-3.50	-19.59	0.58	-2.97
	CRSP	-1.26	-7.74	-5.93	-1.30	-7.43	-5.30
Mtm	FFMF	-8.73	1.89	-5.10	-8.73	1.89	-5.10
	INMF	-18.33	-0.52	-2.77	-18.32	-0.51	-2.77
	CRSP	0.25	-7.81	-4.14	0.25	-7.80	-4.15

Table 81: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.



Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.91	0.55	1.91	2.24	2.08	1.05	1.06	2.22	0.68	2.22	2.58	2.43	1.76	1.77
	INMF	2.70	0.89	2.70	2.77	4.43	2.57	2.95	4.21	1.40	4.21	4.81	6.84	5.14	5.63
	CRSP	1.47	1.08	1.47	2.73	0.00	0.29	-2.60	3.58	2.13	3.58	5.46	3.10	4.00	0.70
MV	FFMF	0.02	0.36	0.07	0.07	0.08	0.13	0.12	0.04	0.38	0.09	0.10	0.10	0.16	0.16
	INMF	1.94	1.23	3.65	6.51	6.23	3.77	6.47	2.31	1.56	4.13	7.13	7.05	4.35	7.04
	CRSP	0.90	2.75	1.80	2.25	1.94	-0.52	-1.27	2.05	3.92	3.13	3.82	3.76	-0.65	-0.45
PPN	FFMF	3.01	2.15	3.36	5.13	7.22	2.17	2.88	3.53	2.46	3.91	5.87	8.10	2.26	3.34
	INMF	3.93	1.89	4.47	5.98	6.05	3.21	4.90	4.89	2.76	5.61	7.86	8.92	5.37	5.98
	CRSP	6.15	5.77	7.06	7.52	9.12	7.27	6.60	6.91	7.44	8.16	9.20	11.69	8.14	5.99

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.89	0.55	1.89	2.20	2.03	1.02	1.02	2.07	0.63	2.07	2.40	2.25	1.60	1.60
	INMF	2.82	0.92	2.82	2.80	4.15	2.41	2.70	3.47	1.26	3.47	3.84	5.60	4.15	4.53
	CRSP	1.95	1.19	1.95	3.04	0.30	0.05	-2.70	2.77	2.03	2.77	4.11	1.89	2.57	-0.35
MV	FFMF	0.02	0.37	0.07	0.08	0.09	0.14	0.13	0.03	0.38	0.08	0.09	0.10	0.17	0.16
	INMF	1.93	1.25	3.57	6.28	5.86	3.56	5.93	2.08	1.52	3.81	6.50	6.28	3.86	6.21
	CRSP	1.07	2.79	1.93	2.37	2.08	-0.75	-1.63	1.37	3.87	2.55	2.86	2.51	-1.66	-1.77
PPN	FFMF	3.01	2.15	3.36	5.12	7.15	2.18	2.85	3.43	2.45	3.81	5.67	7.75	2.27	3.26
	INMF	3.93	1.90	4.43	5.81	5.63	2.87	4.27	4.67	2.73	5.30	7.11	7.68	4.98	5.22
	CRSP	6.16	5.81	7.07	7.67	9.18	6.59	5.81	6.62	7.40	7.89	8.67	10.81	7.45	4.71

Table 82: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

		Exact basis rule										Average basis rule									
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2						
MV	FFMF	-12.24	-10.75	-12.20	-12.48	-12.33	-11.40	-11.41	-12.21	-10.56	-12.17	-12.46	-12.33	-11.70	-11.72						
	INMF	-20.93	-20.07	-19.61	-17.45	-18.97	-19.40	-17.61	-20.57	-18.97	-19.16	-17.31	-18.94	-19.71	-18.02						
	CRSP	-1.81	0.37	-0.94	-1.72	0.65	-2.06	0.08	-1.79	1.43	-0.75	-1.87	0.33	-4.77	-1.46						
BH	FFMF	0.31	1.67	0.31	0.00	0.15	1.17	1.16	0.36	1.90	0.36	0.01	0.15	0.81	0.80						
	INMF	-2.18	-0.42	-2.18	-2.25	-3.80	-2.05	-2.41	-1.25	1.49	-1.25	-1.82	-3.68	-2.12	-2.58						
	CRSP	-9.08	-8.73	-9.08	-10.19	-7.74	-8.01	-5.28	-7.86	-6.55	-7.86	-9.50	-7.43	-8.23	-5.22						
PPN	FFMF	-4.37	-3.89	-4.05	-2.71	-0.62	-4.33	-3.68	-4.89	-4.43	-4.54	-3.07	-0.89	-5.62	-4.64						
	INMF	-2.35	-2.54	-1.84	-0.49	-2.01	-2.90	-1.67	-3.80	-3.14	-3.14	-1.64	-2.56	-4.21	-4.10						
	CRSP	-1.59	-1.57	-0.75	-1.55	2.65	0.61	2.94	-3.36	-1.51	-2.23	-3.05	1.43	-2.64	-1.45						

Panel B: Taxation at end

		Exact basis rule										Average basis rule									
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2						
MV	FFMF	-11.87	-10.38	-11.82	-12.08	-11.93	-11.01	-11.01	-11.83	-10.26	-11.78	-12.07	-11.93	-11.31	-11.31						
	INMF	-20.29	-19.33	-19.01	-16.87	-18.28	-18.70	-17.06	-19.77	-18.47	-18.41	-16.59	-18.14	-18.90	-17.37						
	CRSP	-2.15	0.26	-1.32	-1.94	0.45	-2.09	-0.22	-1.76	1.40	-0.62	-1.60	0.20	-4.51	-1.82						
BH	FFMF	0.30	1.64	0.30	0.00	0.16	1.17	1.16	0.35	1.78	0.35	0.02	0.17	0.81	0.81						
	INMF	-2.18	-0.34	-2.18	-2.16	-3.43	-1.79	-2.06	-1.12	1.04	-1.12	-1.46	-3.10	-1.75	-2.12						
	CRSP	-9.20	-8.52	-9.20	-10.16	-7.71	-7.48	-4.86	-7.71	-7.04	-7.71	-8.91	-6.92	-7.53	-4.83						
PPN	FFMF	-4.21	-3.74	-3.88	-2.54	-0.49	-4.16	-3.53	-4.49	-4.04	-4.14	-2.73	-0.67	-5.12	-4.21						
	INMF	-1.93	-2.03	-1.46	-0.14	-1.60	-2.54	-1.49	-2.61	-2.33	-2.02	-0.68	-1.82	-2.95	-3.08						
	CRSP	-1.39	-0.97	-0.54	-1.04	3.08	0.89	2.98	-2.12	-0.69	-0.96	-1.53	2.59	-1.17	-0.87						

Table 83: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.15	0.84	1.67	0.84	0.68	0.58	1.03	0.90
	INMF	4.21	1.87	3.67	1.87	1.15	0.86	1.72	1.16
	CRSP	6.18	2.87	5.46	2.87	1.86	1.32	1.42	1.03
MV	FFMF	1.54	1.09	1.44	1.13	0.96	0.85	1.20	1.07
	INMF	4.23	2.64	3.80	2.24	1.50	0.93	2.30	1.66
	CRSP	6.27	3.76	5.79	3.57	2.34	1.54	2.05	1.32
PPN	FFMF	12.83	8.30	12.18	8.33	5.04	2.70	9.04	7.15
	INMF	10.29	6.33	9.63	6.12	3.70	1.96	6.99	5.07
	CRSP	18.53	12.96	17.82	13.45	9.18	5.68	8.41	4.52

Table 84: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0.5\%$ .

Panel A: Gain Relative to 1/N				
Data		MV	BH	PPN
FFMF		-4.71	3.00	-9.39
INMF		-18.65	2.22	-6.08
CRSP		-1.31	-6.28	-10.51

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.07	1.63	0.68	12.70
INMF	3.75	3.84	0.67	9.75
CRSP	5.13	5.58	0.47	17.37

Table 85: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 1\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-9.18	-13.86	-8.83	-10.86	-9.65	-14.07	-9.46	-11.00
	INMF	-17.75	-17.83	-15.22	-19.20	-18.74	-18.45	-16.81	-19.59
	CRSP	-16.46	-15.90	-12.47	-18.49	-17.45	-16.97	-14.16	-18.92
Exact	FFMF	-8.87	-13.84	-8.83	-9.89	-9.46	-14.06	-9.46	-10.37
	INMF	-15.55	-17.09	-15.22	-16.51	-17.22	-17.97	-16.81	-17.69
	CRSP	-13.61	-13.87	-12.47	-15.42	-15.58	-15.83	-14.16	-16.83
Mtm	FFMF	-12.10	-15.20	-12.39	-12.84	-12.11	-15.20	-12.40	-12.84
	INMF	-21.01	-20.58	-21.64	-21.32	-21.04	-20.60	-21.66	-21.34
	CRSP	-19.56	-18.57	-18.74	-19.72	-19.58	-18.59	-18.76	-19.74

Table 86: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	-9.62	3.40	-11.07	-9.37	3.23	-10.74
	INMF	-18.73	5.37	-7.74	-18.36	4.65	-7.07
	CRSP	-0.64	-1.80	-12.69	-0.73	-2.54	-12.10
Exact	FFMF	-9.91	3.05	-10.41	-9.55	3.01	-10.29
	INMF	-20.13	2.63	-7.15	-19.38	2.74	-6.62
	CRSP	-1.60	-5.03	-12.38	-1.59	-4.69	-11.83
Mtm	FFMF	-8.07	2.67	-10.14	-8.06	2.67	-10.14
	INMF	-18.20	1.41	-6.45	-18.19	1.41	-6.44
	CRSP	-0.09	-5.33	-10.69	-0.09	-5.32	-10.69

Table 87: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.60	0.91	2.60	3.01	2.90	1.66	1.71	2.92	1.03	2.92	3.36	3.25	2.49	2.53
	INMF	4.16	1.49	4.16	4.63	6.52	4.06	4.79	5.73	2.06	5.73	6.80	9.15	7.12	7.95
	CRSP	3.44	2.21	3.44	5.17	2.68	2.66	-0.04	5.49	3.29	5.49	7.83	5.76	6.65	3.51
MV	FFMF	0.04	0.90	0.11	0.11	0.12	0.15	0.15	0.06	0.92	0.13	0.14	0.15	0.19	0.19
	INMF	2.90	2.40	4.93	8.11	8.14	4.85	7.91	3.28	2.72	5.40	8.71	9.00	5.65	8.61
	CRSP	2.43	4.77	3.87	4.72	4.68	1.68	1.22	3.52	5.96	5.15	6.25	6.47	1.67	2.17
PPN	FFMF	6.16	4.47	6.86	10.13	13.36	5.02	6.42	6.70	4.82	7.43	10.90	14.24	7.30	8.60
	INMF	6.93	3.84	7.88	10.82	11.88	5.69	8.61	7.81	4.79	8.92	12.59	14.68	9.77	10.95
	CRSP	10.55	10.72	12.10	14.82	18.04	13.99	14.98	11.29	12.52	13.13	16.35	20.70	15.52	15.11

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.58	0.91	2.58	2.98	2.84	1.63	1.68	2.76	0.99	2.76	3.18	3.06	2.32	2.35
	INMF	4.28	1.52	4.28	4.66	6.23	3.91	4.53	4.97	1.94	4.97	5.77	7.79	6.08	6.73
	CRSP	3.94	2.34	3.94	5.50	3.00	2.45	-0.12	4.65	3.17	4.65	6.43	4.45	5.08	2.31
MV	FFMF	0.04	0.91	0.12	0.13	0.13	0.16	0.16	0.06	0.92	0.13	0.14	0.15	0.19	0.19
	INMF	2.88	2.42	4.84	7.89	7.76	4.61	7.35	3.07	2.68	5.08	8.10	8.21	5.16	7.77
	CRSP	2.58	4.81	4.02	4.84	4.80	1.45	0.83	2.89	5.91	4.59	5.31	5.21	0.62	0.76
PPN	FFMF	6.17	4.48	6.87	10.13	13.30	5.02	6.39	6.59	4.81	7.33	10.69	13.89	7.30	8.52
	INMF	6.91	3.84	7.82	10.62	11.40	5.32	7.92	7.55	4.76	8.58	11.78	13.33	9.30	10.12
	CRSP	10.59	10.82	12.15	14.98	18.18	13.33	14.21	11.01	12.48	12.88	15.84	19.84	14.89	13.75

Table 88: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule													
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-12.16	-9.91	-12.10	-12.45	-12.34	-11.25	-11.30	-12.13	-9.72	-12.07	-12.44	-12.34	-11.65	-11.69
	INMF	-21.09	-19.41	-19.54	-17.47	-18.91	-19.53	-17.75	-20.60	-18.20	-18.98	-17.28	-18.84	-19.84	-18.23
	CRSP	-2.55	0.86	-1.19	-2.02	0.32	-2.54	-0.36	-2.50	1.93	-0.96	-2.10	0.03	-5.28	-1.93
BH	FFMF	0.43	2.12	0.43	0.03	0.15	1.36	1.31	0.47	2.35	0.47	0.05	0.15	0.89	0.85
	INMF	-1.47	1.12	-1.47	-1.91	-3.65	-1.38	-2.06	-0.34	3.24	-0.34	-1.34	-3.47	-1.64	-2.39
	CRSP	-8.19	-7.09	-8.19	-9.70	-7.51	-7.49	-4.99	-6.91	-4.93	-6.91	-8.93	-7.14	-7.93	-5.13
PPN	FFMF	-7.31	-7.25	-6.69	-4.22	-1.30	-7.45	-6.27	-7.80	-7.73	-7.17	-4.58	-1.60	-6.89	-5.80
	INMF	-4.68	-5.00	-3.83	-1.65	-2.48	-5.70	-3.76	-5.92	-5.26	-4.95	-2.74	-3.07	-5.46	-5.17
	CRSP	-6.36	-5.09	-5.05	-4.35	0.73	-2.71	0.78	-7.89	-4.89	-6.36	-5.79	-0.35	-5.43	-2.90

Panel B: Taxation at end

Model	Data	Exact basis rule													
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-11.78	-9.55	-11.72	-12.05	-11.93	-10.86	-10.90	-11.75	-9.43	-11.69	-12.04	-11.93	-11.26	-11.29
	INMF	-20.46	-18.66	-18.94	-16.89	-18.21	-18.83	-17.20	-19.84	-17.77	-18.28	-16.56	-18.05	-19.07	-17.57
	CRSP	-2.88	0.79	-1.51	-2.21	0.13	-2.56	-0.65	-2.40	1.92	-0.79	-1.77	-0.01	-4.95	-2.23
BH	FFMF	0.42	2.08	0.42	0.03	0.16	1.36	1.31	0.45	2.22	0.45	0.05	0.16	0.88	0.85
	INMF	-1.48	1.20	-1.48	-1.84	-3.29	-1.13	-1.72	-0.31	2.65	-0.31	-1.06	-2.91	-1.34	-1.95
	CRSP	-8.30	-6.87	-8.30	-9.66	-7.47	-6.97	-4.58	-6.87	-5.53	-6.87	-8.42	-6.69	-7.26	-4.74
PPN	FFMF	-7.15	-7.11	-6.54	-4.06	-1.17	-7.30	-6.13	-7.41	-7.36	-6.77	-4.24	-1.36	-6.40	-5.36
	INMF	-4.26	-4.48	-3.45	-1.30	-2.07	-5.35	-3.58	-4.79	-4.50	-3.88	-1.78	-2.29	-4.24	-4.12
	CRSP	-6.19	-4.52	-4.86	-3.91	1.16	-2.46	0.82	-6.76	-4.16	-5.19	-4.33	0.85	-3.90	-2.26

Table 89: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.05	0.76	1.56	0.76	0.64	0.57	1.00	0.90
	INMF	3.99	1.71	3.46	1.71	1.08	0.81	1.65	1.13
	CRSP	5.76	2.58	5.07	2.58	1.70	1.22	1.36	0.99
MV	FFMF	1.50	1.06	1.41	1.10	0.94	0.84	1.17	1.05
	INMF	3.94	2.39	3.52	2.02	1.33	0.83	2.14	1.55
	CRSP	5.94	3.49	5.45	3.28	2.14	1.41	1.94	1.26
PPN	FFMF	12.74	8.19	12.09	8.22	4.95	2.60	8.91	7.02
	INMF	9.97	6.08	9.32	5.89	3.53	1.86	6.79	4.96
	CRSP	17.91	12.36	17.25	12.87	8.70	5.31	7.99	4.37

Table 90: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 1\%$ .



## 6 Capital gains rate $\tau_g = 35\%$

This section contains detailed tables for the case where the capital gains rate is assumed to be  $\tau_g = 35\%$ .

Panel A: Gain Relative to 1/N				
Data		MV	BH	PPN
FFMF		-6.02	1.47	-0.21
INMF		-18.86	-1.65	0.20
CRSP		-0.60	-11.12	3.23

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.08	1.60	0.69	12.48
INMF	3.76	3.91	0.68	9.79
CRSP	5.13	5.59	0.47	17.40

Table 91: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-17.09	-18.40	-16.69	-19.86	-18.30	-18.93	-18.26	-20.23
	INMF	-28.12	-24.17	-25.38	-31.80	-30.48	-25.66	-28.75	-32.76
	CRSP	-19.24	-18.54	-12.69	-24.58	-22.20	-21.90	-17.20	-25.79
Exact	FFMF	-16.42	-18.34	-16.69	-17.92	-17.89	-18.89	-18.26	-18.94
	INMF	-25.37	-23.00	-25.38	-27.20	-28.78	-24.88	-28.75	-29.60
	CRSP	-13.67	-14.42	-12.68	-17.58	-18.64	-19.39	-17.18	-20.95
Mtm	FFMF	-23.89	-21.52	-24.64	-24.50	-23.90	-21.52	-24.65	-24.50
	INMF	-36.74	-30.92	-37.76	-37.15	-36.78	-30.94	-37.79	-37.18
	CRSP	-28.86	-26.73	-27.26	-29.54	-28.91	-26.79	-27.30	-29.61

Table 92: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	<b>-7.51</b>	1.96	<b>-3.54</b>	<b>-6.74</b>	1.52	<b>-2.57</b>
	INMF	<b>-14.40</b>	2.10	<b>-4.93</b>	<b>-13.23</b>	0.80	<b>-3.09</b>
	CRSP	0.26	<b>-3.91</b>	<b>-3.60</b>	<b>-0.21</b>	<b>-5.40</b>	<b>-1.53</b>
Exact	FFMF	<b>-8.17</b>	1.14	<b>-2.01</b>	<b>-7.17</b>	1.01	<b>-1.48</b>
	INMF	<b>-16.28</b>	<b>-1.66</b>	<b>-2.26</b>	<b>-14.43</b>	<b>-1.61</b>	<b>-0.96</b>
	CRSP	<b>-1.46</b>	<b>-10.09</b>	<b>-1.45</b>	<b>-1.52</b>	<b>-9.53</b>	0.29
Mtm	FFMF	<b>-3.10</b>	0.47	<b>-1.01</b>	<b>-3.09</b>	0.47	<b>-1.00</b>
	INMF	<b>-11.39</b>	<b>-3.23</b>	<b>-0.44</b>	<b>-11.37</b>	<b>-3.22</b>	<b>-0.44</b>
	CRSP	2.37	<b>-9.12</b>	2.23	2.37	<b>-9.10</b>	2.22

Table 93: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.16	0.23	1.16	1.41	1.27	0.63	0.62	1.90	0.57	1.90	2.20	2.09	1.55	1.56
	INMF	1.62	0.35	1.62	1.64	3.09	1.57	1.30	4.13	1.31	4.13	4.92	6.87	5.56	5.37
	CRSP	-0.27	0.40	-0.27	0.53	-2.40	-1.75	-4.77	4.18	2.71	4.18	6.23	3.83	5.02	1.52
MV	FFMF	0.01	0.05	0.05	0.04	0.01	0.06	0.06	0.08	0.10	0.11	0.11	0.09	0.12	0.13
	INMF	0.83	0.43	1.99	5.23	4.86	2.62	5.42	1.58	1.16	2.96	6.39	6.34	3.38	6.34
	CRSP	-0.10	1.56	0.28	0.46	0.01	-1.86	-2.86	2.60	4.24	3.17	3.81	3.88	0.10	0.25
PPN	FFMF	0.34	0.26	0.54	1.91	3.54	0.52	0.93	1.38	1.03	1.66	3.54	5.58	-0.60	0.36
	INMF	1.54	0.89	1.84	1.54	1.80	1.37	2.98	3.24	3.02	3.92	5.33	7.66	3.26	5.12
	CRSP	2.76	3.61	3.58	2.40	2.92	3.47	1.72	4.91	7.89	6.57	6.55	8.65	6.47	4.82

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.09	0.23	1.09	1.29	1.11	0.53	0.49	1.47	0.45	1.47	1.75	1.61	1.13	1.11
	INMF	1.95	0.44	1.95	1.60	2.29	1.16	0.63	2.38	0.99	2.38	2.64	3.93	3.12	2.82
	CRSP	0.83	0.74	0.83	1.21	-1.82	-2.41	-5.12	1.95	2.51	1.95	2.79	0.84	1.56	-0.98
MV	FFMF	0.01	0.07	0.06	0.05	0.02	0.08	0.07	0.05	0.12	0.11	0.10	0.07	0.11	0.11
	INMF	0.82	0.48	1.80	4.54	3.80	2.08	4.01	1.03	1.10	2.24	4.80	4.43	2.28	4.33
	CRSP	0.21	1.80	0.56	0.64	0.19	-2.47	-3.81	0.97	4.31	1.83	1.56	0.90	-2.29	-2.71
PPN	FFMF	0.31	0.29	0.50	1.73	3.21	0.45	0.75	1.14	1.02	1.43	2.99	4.63	-0.64	0.11
	INMF	1.57	0.94	1.72	1.25	0.82	0.62	1.50	2.60	2.96	3.13	3.66	4.70	2.35	3.26
	CRSP	2.70	3.83	3.60	2.71	2.87	1.70	-0.49	4.16	7.84	5.87	5.21	6.34	4.38	1.26

Table 94: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

		Exact basis rule													
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	Average basis rule						
MV	FFMF	-9.21	-8.34	-9.18	-9.42	-9.32	-8.69	-8.68	-9.16	-7.94	-9.13	-9.40	-9.32	-8.82	-8.81
	INMF	-16.94	-16.22	-15.98	-13.33	-14.84	-15.42	-12.88	-16.50	-14.53	-15.37	-13.21	-14.83	-16.17	-13.62
	CRSP	-1.30	-0.32	-0.92	-1.53	0.98	-1.56	0.52	-1.26	1.76	-0.71	-2.03	0.31	-4.44	-1.00
BH	FFMF	-0.01	0.91	-0.01	-0.27	-0.12	0.51	0.52	0.06	1.38	0.06	-0.24	-0.12	0.40	0.40
	INMF	-3.23	-2.01	-3.23	-3.25	-4.61	-3.18	-2.93	-1.95	0.78	-1.95	-2.69	-4.46	-3.28	-3.10
	CRSP	-9.85	-10.45	-9.85	-10.57	-7.88	-8.49	-5.59	-7.76	-6.45	-7.76	-9.55	-7.46	-8.51	-5.35
PPN	FFMF	-2.80	-1.97	-2.60	-1.53	0.19	-2.12	-1.71	-4.03	-3.10	-3.76	-2.28	-0.24	-5.59	-4.68
	INMF	-2.34	-1.74	-2.05	-2.35	-3.48	-2.46	-0.64	-5.74	-3.33	-5.12	-4.56	-4.23	-7.00	-5.16
	CRSP	1.55	1.70	2.36	0.39	3.93	3.79	5.27	-2.92	1.26	-1.39	-3.31	0.88	-2.27	-0.47

Panel B: Taxation at end

		Exact basis rule													
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	Average basis rule						
MV	FFMF	-8.15	-7.31	-8.11	-8.31	-8.16	-7.58	-7.55	-8.05	-7.05	-8.00	-8.26	-8.15	-7.68	-7.67
	INMF	-15.38	-14.40	-14.55	-11.95	-13.16	-13.65	-11.55	-14.37	-13.14	-13.35	-11.41	-12.82	-13.94	-11.96
	CRSP	-2.13	-0.48	-1.78	-2.07	0.49	-1.58	-0.15	-1.18	1.53	-0.33	-1.41	-0.15	-4.00	-1.96
BH	FFMF	-0.07	0.78	-0.07	-0.28	-0.09	0.48	0.52	0.05	1.07	0.05	-0.23	-0.09	0.38	0.40
	INMF	-3.50	-2.05	-3.50	-3.16	-3.81	-2.74	-2.22	-1.54	-0.18	-1.54	-1.79	-3.01	-2.24	-1.96
	CRSP	-10.27	-10.19	-10.27	-10.60	-7.85	-7.29	-4.64	-7.21	-7.72	-7.21	-7.97	-6.19	-6.86	-4.47
PPN	FFMF	-2.24	-1.42	-2.05	-1.06	0.57	-1.57	-1.23	-2.89	-2.02	-2.62	-1.38	0.33	-4.28	-3.53
	INMF	-1.34	-0.47	-1.19	-1.31	-2.38	-1.49	-0.10	-2.88	-1.19	-2.37	-2.13	-2.37	-3.81	-2.67
	CRSP	2.15	3.37	3.04	1.78	5.08	4.52	5.19	0.60	3.59	2.25	0.79	3.84	1.20	0.69

Table 95: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.58	1.01	2.11	1.01	0.72	0.50	0.99	0.76
	INMF	5.04	2.19	4.48	2.19	1.32	0.89	1.87	1.11
	CRSP	7.80	3.87	6.99	3.87	2.43	1.71	1.72	1.22
MV	FFMF	1.65	1.18	1.56	1.20	1.04	0.94	1.25	1.13
	INMF	5.31	3.64	4.83	3.11	2.14	1.24	2.93	1.83
	CRSP	7.71	4.93	7.30	4.70	3.07	1.99	2.46	1.50
PPN	FFMF	13.53	9.08	12.85	9.04	5.68	3.16	9.51	7.39
	INMF	11.56	7.26	10.86	7.02	4.21	2.17	7.66	5.29
	CRSP	21.26	15.38	20.50	15.87	11.18	7.09	9.52	4.98

Table 96: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0\%$ .

Panel A: Gain Relative to 1/N				
Data		MV	BH	PPN
FFMF		-5.36	2.24	-5.15
INMF		-18.75	0.27	-3.61
CRSP		-0.96	-8.73	-3.79

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.08	1.60	0.68	12.48
INMF	3.75	3.91	0.68	9.79
CRSP	5.13	5.59	0.47	17.38

Table 97: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0.5\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-17.26	-18.37	-16.64	-20.35	-18.46	-18.91	-18.22	-20.71
	INMF	-29.32	-24.62	-25.28	-32.80	-31.60	-26.10	-28.68	-33.71
	CRSP	-20.79	-19.62	-12.66	-26.53	-23.66	-22.84	-17.21	-27.67
Exact	FFMF	-16.49	-18.30	-16.64	-18.22	-17.98	-18.87	-18.22	-19.27
	INMF	-25.66	-23.20	-25.28	-27.59	-29.08	-25.13	-28.68	-30.01
	CRSP	-14.13	-14.91	-12.65	-18.73	-19.21	-20.03	-17.20	-22.19
Mtm	FFMF	-23.89	-21.51	-24.62	-24.66	-23.90	-21.52	-24.63	-24.67
	INMF	-36.68	-30.85	-37.72	-37.07	-36.72	-30.88	-37.75	-37.10
	CRSP	-28.84	-26.70	-27.28	-29.58	-28.90	-26.76	-27.31	-29.64

Table 98: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	<b>-6.63</b>	3.01	<b>-8.69</b>	<b>-5.88</b>	2.53	<b>-7.77</b>
	INMF	<b>-13.35</b>	5.99	<b>-8.36</b>	<b>-12.21</b>	4.55	<b>-6.58</b>
	CRSP	0.51	0.64	<b>-10.76</b>	0.10	<b>-1.03</b>	<b>-8.85</b>
Exact	FFMF	<b>-7.41</b>	2.06	<b>-7.11</b>	<b>-6.40</b>	1.93	<b>-6.64</b>
	INMF	<b>-16.06</b>	0.77	<b>-6.11</b>	<b>-14.21</b>	0.84	<b>-4.87</b>
	CRSP	<b>-1.86</b>	<b>-7.16</b>	<b>-8.95</b>	<b>-1.96</b>	<b>-6.45</b>	<b>-7.34</b>
Mtm	FFMF	<b>-2.41</b>	1.25	<b>-6.11</b>	<b>-2.40</b>	1.25	<b>-6.10</b>
	INMF	<b>-11.26</b>	<b>-1.37</b>	<b>-4.19</b>	<b>-11.24</b>	<b>-1.36</b>	<b>-4.19</b>
	CRSP	2.03	<b>-6.72</b>	<b>-4.78</b>	2.02	<b>-6.69</b>	<b>-4.79</b>

Table 99: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.



Panel A: No taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.88	0.60	1.88	2.25	2.19	1.32	1.38	2.71	0.98	2.71	3.15	3.13	2.46	2.54
	INMF	3.21	1.01	3.21	3.70	5.41	3.29	3.43	6.47	2.21	6.47	8.08	10.57	8.75	9.13
MV	CRSP	1.87	1.44	1.87	3.19	0.49	0.91	-1.95	7.24	4.31	7.24	10.16	8.24	9.62	6.23
	FFMF	0.04	0.41	0.10	0.09	0.06	0.09	0.09	0.11	0.46	0.17	0.17	0.15	0.15	0.17
PPN	INMF	1.78	1.50	3.30	6.96	7.01	3.72	7.02	2.61	2.32	4.41	8.34	8.86	4.94	8.43
	CRSP	1.54	3.59	2.49	3.14	2.99	0.55	-0.05	4.56	6.88	5.86	7.06	7.50	3.31	3.97
PPN	FFMF	3.28	2.30	3.85	6.71	9.35	3.17	4.30	4.40	3.24	5.11	8.50	11.60	3.71	4.94
	INMF	4.67	2.75	5.41	6.56	7.84	4.08	7.09	6.72	5.38	7.87	10.90	14.73	7.43	10.88
PPN	CRSP	7.08	8.29	8.68	9.86	12.27	10.51	10.73	9.56	13.80	12.39	14.82	19.52	16.32	16.64

Panel B: Taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.82	0.60	1.82	2.13	2.02	1.23	1.26	2.27	0.85	2.27	2.67	2.62	2.01	2.07
	INMF	3.46	1.10	3.46	3.68	4.62	2.90	2.77	4.66	1.90	4.66	5.68	7.45	6.19	6.41
MV	CRSP	3.08	1.85	3.08	3.97	1.20	0.39	-2.16	4.90	4.13	4.90	6.50	5.01	5.90	3.51
	FFMF	0.05	0.44	0.13	0.12	0.09	0.11	0.11	0.08	0.48	0.17	0.16	0.14	0.15	0.15
PPN	INMF	1.77	1.57	3.10	6.32	5.97	3.20	5.64	2.07	2.29	3.71	6.74	6.87	3.84	6.38
	CRSP	2.01	3.90	2.89	3.51	3.36	0.09	-0.83	2.87	6.98	4.40	4.68	4.35	0.73	0.77
PPN	FFMF	3.27	2.34	3.84	6.55	9.03	3.09	4.13	4.15	3.23	4.86	7.91	10.57	3.65	4.67
	INMF	4.71	2.81	5.29	6.25	6.83	3.34	5.56	6.06	5.33	7.07	9.16	11.54	6.48	8.90
PPN	CRSP	7.03	8.63	8.78	10.26	12.29	8.66	8.55	8.78	13.75	11.64	13.36	16.93	13.95	12.61

Table 100: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule													
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-9.09	-7.59	-9.03	-9.37	-9.33	-8.54	-8.59	-9.00	-7.11	-8.95	-9.33	-9.34	-8.73	-8.80
	INMF	-17.21	-15.65	-15.98	-13.41	-14.78	-15.71	-13.14	-16.49	-13.25	-15.03	-13.14	-14.69	-16.38	-13.91
	CRSP	-2.18	0.22	-1.26	-1.91	0.58	-2.21	0.04	-2.01	2.99	-0.78	-2.32	-0.17	-5.28	-1.62
BH	FFMF	0.17	1.45	0.17	-0.18	-0.12	0.72	0.67	0.28	2.01	0.28	-0.14	-0.12	0.54	0.45
	INMF	-2.36	-0.23	-2.36	-2.82	-4.40	-2.44	-2.57	-0.45	3.70	-0.45	-1.94	-4.15	-2.54	-2.88
	CRSP	-8.86	-8.47	-8.86	-10.03	-7.61	-8.00	-5.31	-6.15	-3.52	-6.15	-8.64	-7.02	-8.19	-5.26
PPN	FFMF	-5.83	-5.54	-5.31	-3.05	-0.60	-5.42	-4.44	-7.19	-6.65	-6.56	-3.95	-1.20	-7.57	-6.56
	INMF	-4.78	-4.50	-4.11	-3.52	-3.95	-5.39	-2.79	-8.14	-5.51	-7.16	-5.97	-4.91	-9.47	-6.89
	CRSP	-4.30	-2.80	-2.87	-3.07	1.72	-0.30	2.81	-8.83	-2.64	-6.48	-6.98	-1.46	-5.31	-2.02

Panel B: Taxation at end

Model	Data	Exact basis rule													
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-8.03	-6.55	-7.96	-8.25	-8.17	-7.43	-7.46	-7.90	-6.23	-7.82	-8.18	-8.16	-7.60	-7.65
	INMF	-15.61	-13.82	-14.51	-12.04	-13.11	-13.97	-11.82	-14.38	-11.88	-13.01	-11.34	-12.69	-14.16	-12.24
	CRSP	-2.98	0.01	-2.14	-2.39	0.13	-2.25	-0.63	-1.83	2.84	-0.37	-1.61	-0.53	-4.79	-2.55
BH	FFMF	0.11	1.32	0.11	-0.20	-0.09	0.69	0.66	0.25	1.67	0.25	-0.13	-0.09	0.51	0.46
	INMF	-2.53	-0.26	-2.53	-2.74	-3.62	-2.00	-1.87	-0.10	2.61	-0.10	-1.07	-2.70	-1.54	-1.74
	CRSP	-9.24	-8.15	-9.24	-10.02	-7.56	-6.81	-4.39	-5.65	-4.95	-5.65	-7.07	-5.75	-6.54	-4.38
PPN	FFMF	-5.31	-5.03	-4.79	-2.60	-0.23	-4.93	-4.00	-6.08	-5.59	-5.44	-3.06	-0.62	-6.28	-5.42
	INMF	-3.72	-3.26	-3.19	-2.52	-2.87	-4.47	-2.29	-5.33	-3.44	-4.43	-3.51	-3.02	-6.32	-4.40
	CRSP	-3.79	-1.18	-2.21	-1.73	2.81	0.29	2.80	-5.47	-0.43	-3.00	-2.99	1.50	-1.93	-0.84

Table 101: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.24	0.85	1.76	0.85	0.65	0.49	0.94	0.76
	INMF	4.57	2.06	4.02	2.06	1.25	0.87	1.77	1.09
	CRSP	7.07	3.41	6.30	3.41	2.20	1.58	1.61	1.15
MV	FFMF	1.47	1.04	1.39	1.07	0.91	0.80	1.13	1.04
	INMF	4.74	3.09	4.31	2.67	1.77	1.04	2.55	1.71
	CRSP	6.93	4.27	6.46	4.10	2.68	1.74	2.22	1.40
PPN	FFMF	12.87	8.53	12.23	8.49	5.29	2.93	8.92	6.96
	INMF	10.84	6.75	10.18	6.52	3.91	2.01	7.23	5.05
	CRSP	20.05	14.32	19.32	14.85	10.42	6.54	9.01	4.75

Table 102: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0.5\%$ .

Panel A: Gain Relative to 1/N				
Data		MV	BH	PPN
FFMF		-4.70	3.00	-9.86
INMF		-18.63	2.22	-7.32
CRSP		-1.31	-6.28	-10.51

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.07	1.60	0.68	12.47
INMF	3.75	3.91	0.67	9.78
CRSP	5.13	5.58	0.47	17.37

Table 103: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 1\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-17.32	-18.34	-16.58	-20.59	-18.50	-18.89	-18.18	-20.93
	INMF	-29.97	-24.82	-25.18	-33.16	-32.17	-26.28	-28.60	-34.00
	CRSP	-21.58	-20.22	-12.63	-27.34	-24.37	-23.31	-17.22	-28.42
Exact	FFMF	-16.52	-18.26	-16.58	-18.43	-18.02	-18.85	-18.18	-19.53
	INMF	-25.86	-23.30	-25.18	-27.83	-29.30	-25.26	-28.60	-30.19
	CRSP	-14.48	-15.23	-12.61	-19.59	-19.67	-20.40	-17.20	-23.26
Mtm	FFMF	-23.90	-21.51	-24.61	-24.83	-23.90	-21.51	-24.62	-24.84
	INMF	-36.62	-30.78	-37.68	-36.98	-36.66	-30.81	-37.71	-37.01
	CRSP	-28.83	-26.67	-27.29	-29.61	-28.89	-26.73	-27.33	-29.67

Table 104: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	-5.88	3.92	-13.43	-5.15	3.41	-12.54
	INMF	-12.64	9.21	-11.54	-11.56	7.60	-9.83
	CRSP	0.41	4.42	-17.08	0.08	2.58	-15.30
Exact	FFMF	-6.69	2.93	-11.92	-5.68	2.80	-11.52
	INMF	-15.82	3.15	-9.79	-13.97	3.24	-8.49
	CRSP	-2.18	-4.24	-15.86	-2.21	-3.40	-14.51
Mtm	FFMF	-1.71	2.04	-10.97	-1.71	2.04	-10.96
	INMF	-11.13	0.52	-7.84	-11.11	0.53	-7.83
	CRSP	1.69	-4.25	-11.49	1.68	-4.22	-11.50

Table 105: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule						Average basis rule							
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.60	0.97	2.60	3.05	3.05	1.98	2.10	3.45	1.36	3.45	4.00	4.04	3.25	3.39
	INMF	4.76	1.67	4.76	5.69	7.68	4.94	5.47	8.36	3.05	8.36	10.64	13.58	11.31	12.21
	CRSP	3.96	2.67	3.96	5.81	3.37	3.53	0.84	9.70	5.96	9.70	13.30	11.83	13.33	10.11
MV	FFMF	0.07	0.96	0.15	0.14	0.12	0.11	0.12	0.14	1.01	0.23	0.22	0.20	0.19	0.20
	INMF	2.75	2.74	4.61	8.66	9.10	4.85	8.56	3.61	3.58	5.74	10.10	11.10	6.37	10.36
	CRSP	3.12	5.79	4.69	5.76	5.89	2.89	2.67	6.20	9.49	8.22	9.94	10.74	6.09	7.28
PPN	FFMF	6.29	4.68	7.25	11.69	15.42	5.88	7.77	7.42	5.72	8.55	13.53	17.71	8.26	10.03
	INMF	7.90	4.91	9.09	11.73	14.10	6.89	11.20	10.03	7.93	11.65	16.17	21.34	12.05	16.33
	CRSP	11.70	14.28	14.38	17.83	22.40	18.03	20.53	14.36	20.34	18.19	22.96	30.14	25.71	28.07

Panel B: Taxation at end

Model	Data	Exact basis rule						Average basis rule							
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.54	0.98	2.54	2.95	2.89	1.89	1.98	3.00	1.24	3.00	3.49	3.50	2.79	2.89
	INMF	5.07	1.77	5.07	5.71	6.90	4.59	4.83	6.48	2.76	6.48	8.07	10.25	8.62	9.28
	CRSP	5.27	3.16	5.27	6.69	4.19	3.14	0.76	7.30	5.80	7.30	9.49	8.38	9.40	7.19
MV	FFMF	0.08	1.00	0.19	0.18	0.16	0.14	0.15	0.12	1.05	0.24	0.23	0.20	0.19	0.20
	INMF	2.76	2.83	4.42	8.04	8.07	4.35	7.18	3.08	3.55	5.06	8.46	9.03	5.25	8.25
	CRSP	3.61	6.13	5.10	6.16	6.32	2.47	1.92	4.45	9.60	6.72	7.43	7.43	3.39	3.84
PPN	FFMF	6.30	4.75	7.27	11.56	15.14	5.80	7.62	7.15	5.71	8.29	12.89	16.60	8.18	9.71
	INMF	7.86	4.98	8.88	11.33	12.92	6.08	9.51	9.40	7.88	10.84	14.34	17.94	11.02	14.22
	CRSP	11.85	14.93	14.76	18.35	22.75	16.28	18.53	13.62	20.29	17.42	21.39	27.27	23.16	23.63

Table 106: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule													
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-8.99	-6.70	-8.92	-9.33	-9.35	-8.40	-8.50	-8.89	-6.21	-8.81	-9.29	-9.35	-8.67	-8.78
	INMF	-17.43	-14.93	-15.94	-13.45	-14.70	-15.89	-13.36	-16.47	-12.19	-14.75	-13.06	-14.55	-16.52	-14.08
	CRSP	-2.98	0.80	-1.50	-2.23	0.21	-2.78	-0.41	-2.79	3.75	-0.94	-2.58	-0.57	-6.01	-2.17
BH	FFMF	0.32	1.94	0.32	-0.12	-0.12	0.93	0.81	0.45	2.52	0.45	-0.08	-0.12	0.64	0.51
	INMF	-1.53	1.45	-1.53	-2.40	-4.20	-1.70	-2.20	0.78	5.98	0.78	-1.29	-3.84	-1.88	-2.67
	CRSP	-7.89	-6.73	-7.89	-9.49	-7.36	-7.50	-5.04	-4.81	-1.45	-4.81	-7.84	-6.63	-7.86	-5.17
PPN	FFMF	-8.74	-8.68	-7.92	-4.54	-1.35	-8.55	-7.02	-10.11	-9.71	-9.16	-5.49	-2.06	-9.23	-7.87
	INMF	-7.08	-6.92	-6.06	-4.63	-4.41	-8.11	-4.89	-10.17	-7.34	-8.86	-7.11	-5.49	-10.95	-8.29
	CRSP	-9.60	-6.34	-7.43	-6.30	-0.37	-4.07	0.56	-13.55	-5.83	-10.66	-10.02	-3.50	-8.02	-3.55

Panel B: Taxation at end

Model	Data	Exact basis rule													
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-7.93	-5.65	-7.83	-8.21	-8.18	-7.29	-7.37	-7.80	-5.33	-7.70	-8.14	-8.17	-7.55	-7.63
	INMF	-15.86	-13.07	-14.50	-12.07	-13.03	-14.17	-12.04	-14.39	-10.88	-12.75	-11.24	-12.54	-14.31	-12.40
	CRSP	-3.75	0.61	-2.37	-2.69	-0.22	-2.84	-1.09	-2.57	3.67	-0.46	-1.80	-0.80	-5.42	-3.05
BH	FFMF	0.26	1.81	0.26	-0.14	-0.09	0.90	0.81	0.40	2.15	0.40	-0.08	-0.09	0.61	0.51
	INMF	-1.75	1.44	-1.75	-2.34	-3.43	-1.30	-1.52	1.05	4.70	1.05	-0.44	-2.41	-0.95	-1.54
	CRSP	-8.24	-6.36	-8.24	-9.45	-7.29	-6.34	-4.13	-4.39	-3.04	-4.39	-6.30	-5.35	-6.23	-4.30
PPN	FFMF	-8.28	-8.21	-7.44	-4.11	-0.99	-8.12	-6.63	-9.01	-8.08	-8.05	-4.60	-1.47	-7.95	-6.74
	INMF	-6.06	-5.60	-5.17	-3.62	-3.33	-7.19	-4.40	-7.36	-5.34	-6.13	-4.59	-3.54	-7.84	-5.75
	CRSP	-9.17	-4.75	-6.80	-5.16	0.71	-3.62	0.57	-10.31	-3.70	-7.31	-6.09	-0.54	-4.65	-2.31

Table 107: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.14	0.78	1.65	0.78	0.60	0.48	0.91	0.76
	INMF	4.32	1.90	3.76	1.90	1.15	0.82	1.67	1.06
	CRSP	6.61	3.17	5.87	3.17	2.06	1.46	1.52	1.09
MV	FFMF	1.45	1.01	1.36	1.05	0.88	0.78	1.10	0.98
	INMF	4.44	2.81	4.00	2.38	1.55	0.92	2.35	1.63
	CRSP	6.53	3.98	6.08	3.80	2.49	1.62	2.11	1.36
PPN	FFMF	12.68	8.34	12.07	8.33	5.15	2.82	8.71	6.78
	INMF	10.42	6.39	9.76	6.19	3.73	1.93	6.93	4.92
	CRSP	19.12	13.54	18.42	14.02	9.70	6.04	8.62	4.58

Table 108: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 1\%$ .



## **7 Losses realized when present and potential future tax savings exceed present transaction costs**

This section contains detailed tables for the case where losses are realized when present and potential future tax savings exceed the present transaction costs from realizing the loss.

Panel A: Gain Relative to 1/N				
Data		MV	BH	PPN
FFMF		-6.03	1.47	0.66
INMF		-18.95	-1.65	1.10
CRSP		-0.60	-11.12	3.23

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.08	1.63	0.69	12.61
INMF	3.76	3.87	0.68	9.80
CRSP	5.13	5.59	0.47	17.40

Table 109: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-11.12	-15.29	-11.14	-13.09	-11.90	-15.57	-11.97	-13.37
	INMF	-18.97	-19.12	-18.24	-22.31	-20.87	-20.17	-20.27	-23.06
	CRSP	-18.18	-17.96	-14.21	-22.03	-20.05	-20.06	-16.44	-22.83
Exact	FFMF	-10.94	-15.28	-11.14	-12.06	-11.77	-15.58	-11.98	-12.69
	INMF	-18.10	-18.77	-18.26	-19.47	-20.63	-20.08	-20.29	-21.27
	CRSP	-16.03	-16.35	-14.30	-18.73	-19.12	-19.62	-16.53	-20.80
Mtm	FFMF	-15.09	-16.80	-15.53	-15.69	-15.09	-16.80	-15.53	-15.69
	INMF	-25.34	-23.33	-26.07	-25.75	-25.36	-23.35	-26.10	-25.77
	CRSP	-21.92	-20.65	-20.92	-22.40	-21.95	-20.68	-20.94	-22.43

Table 110: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	-10.43	1.46	-1.57	-9.94	1.39	-1.02
	INMF	-19.10	-0.77	-3.07	-18.23	-0.90	-1.69
	CRSP	-0.34	-6.81	-1.64	-0.62	-7.11	-0.37
Exact	FFMF	-10.61	1.24	-0.61	-10.08	1.24	-0.39
	INMF	-19.62	-1.84	-0.58	-18.39	-1.23	0.30
	CRSP	-0.98	-9.28	-0.10	-1.22	-8.27	1.09
Mtm	FFMF	-7.92	0.95	-0.06	-7.92	0.94	-0.06
	INMF	-16.77	-2.62	0.55	-16.76	-2.61	0.55
	CRSP	1.01	-9.97	2.59	1.01	-9.96	2.59

Table 111: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	0.88	0.17	0.88	0.89	0.69	0.83	0.62	1.02	0.28	1.02	1.13	0.85	0.95	0.75
	INMF	1.58	0.27	1.58	2.56	2.88	1.73	2.54	2.48	0.72	2.48	3.24	4.15	2.77	3.84
	CRSP	0.48	0.63	0.48	1.61	-0.28	-1.01	-4.24	2.88	1.74	2.88	4.31	2.38	1.63	-1.75
MV	FFMF	0.00	0.01	-0.01	-0.04	-0.10	-0.02	-0.05	0.02	0.04	0.02	-0.02	-0.07	0.00	-0.02
	INMF	1.01	0.29	2.04	4.77	4.16	4.72	6.03	1.17	0.48	2.24	5.45	4.20	4.88	6.90
	CRSP	-0.12	1.54	0.31	-0.22	-1.48	-2.56	-4.55	1.48	2.62	1.65	1.33	0.44	-0.61	-2.49
PPN	FFMF	0.22	0.15	0.35	1.25	2.22	0.13	0.52	0.91	0.53	1.12	2.42	3.61	1.24	1.81
	INMF	1.88	0.49	2.01	3.33	4.14	2.86	4.81	2.80	1.50	3.26	5.31	6.28	4.76	7.24
	CRSP	2.15	2.32	2.60	3.83	3.15	3.64	-0.84	3.90	4.10	4.77	5.74	6.15	7.49	2.47

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	0.86	0.17	0.86	0.87	0.68	0.81	0.61	0.93	0.24	0.93	1.04	0.77	0.86	0.67
	INMF	1.40	0.26	1.40	2.20	2.50	1.53	2.28	1.66	0.55	1.66	2.20	2.99	1.82	2.78
	CRSP	0.40	0.68	0.40	1.26	-0.34	-0.88	-3.63	1.61	1.57	1.61	2.52	0.89	0.35	-2.51
MV	FFMF	0.00	0.02	-0.01	-0.04	-0.10	-0.02	-0.05	0.01	0.04	0.01	-0.03	-0.08	-0.01	-0.03
	INMF	0.89	0.28	1.85	4.25	3.66	4.16	5.27	0.87	0.44	1.84	4.63	3.45	4.08	5.76
	CRSP	-0.16	1.55	0.26	-0.37	-1.59	-2.52	-4.39	0.54	2.53	0.84	0.13	-0.94	-1.87	-3.67
PPN	FFMF	0.20	0.15	0.32	1.18	2.09	0.09	0.43	0.74	0.52	0.95	2.05	3.09	1.02	1.42
	INMF	1.62	0.47	1.65	2.65	3.30	2.25	3.80	2.38	1.45	2.74	4.06	4.34	3.86	5.32
	CRSP	1.97	2.35	2.37	3.32	2.51	2.51	-1.41	3.38	4.04	4.26	4.68	4.61	5.75	0.56

Table 112: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-11.38	-10.75	-11.39	-11.44	-11.31	-11.36	-11.20	-11.32	-10.65	-11.32	-11.45	-11.25	-11.27	-11.11
	INMF	-20.07	-19.60	-19.25	-17.89	-18.62	-17.26	-16.88	-19.29	-19.29	-17.38	-19.07	-19.07	-17.44	-16.72
	CRSP	-1.57	-0.08	-1.14	-2.76	-2.16	-2.53	-1.29	-1.69	0.52	-1.52	-3.18	-2.23	-2.54	-1.09
BH	FFMF	0.36	1.07	0.36	0.35	0.55	0.41	0.62	0.43	1.18	0.43	0.33	0.60	0.51	0.71
	INMF	-3.36	-2.11	-3.36	-4.29	-4.59	-3.51	-4.27	-3.17	-1.48	-3.17	-3.88	-4.72	-3.45	-4.44
	CRSP	-9.71	-9.85	-9.71	-10.72	-9.03	-8.35	-5.27	-9.42	-8.40	-9.42	-10.66	-8.97	-8.30	-5.15
PPN	FFMF	-1.26	-0.64	-1.13	-0.26	0.90	-1.30	-0.72	-1.68	-1.33	-1.47	-0.31	1.12	-1.29	-0.54
	INMF	-0.29	-0.37	-0.16	0.16	0.63	0.52	1.63	-2.77	-2.32	-2.33	-1.13	-1.09	-1.20	0.10
	CRSP	1.57	1.58	2.02	2.08	3.34	4.60	3.45	-0.66	0.64	0.17	-0.29	1.98	4.03	2.58

Panel B: Taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-10.84	-10.21	-10.85	-10.90	-10.78	-10.82	-10.66	-10.76	-10.13	-10.76	-10.89	-10.71	-10.72	-10.57
	INMF	-18.80	-18.37	-18.03	-16.76	-17.47	-16.27	-16.00	-18.86	-18.32	-18.09	-16.29	-17.86	-16.42	-15.86
	CRSP	-1.77	-0.37	-1.35	-2.81	-2.45	-2.85	-1.99	-1.67	0.32	-1.38	-2.93	-2.43	-2.81	-1.80
BH	FFMF	0.38	1.07	0.38	0.36	0.56	0.43	0.63	0.45	1.14	0.45	0.35	0.61	0.52	0.72
	INMF	-2.59	-1.48	-2.59	-3.36	-3.64	-2.71	-3.43	-2.53	-1.44	-2.53	-3.04	-3.78	-2.67	-3.59
	CRSP	-8.63	-8.89	-8.63	-9.41	-7.95	-7.45	-4.81	-8.58	-8.54	-8.58	-9.39	-7.93	-7.43	-4.71
PPN	FFMF	-1.03	-0.40	-0.91	-0.08	1.01	-1.09	-0.56	-1.21	-0.75	-1.00	-0.03	1.25	-0.87	-0.29
	INMF	0.51	0.51	0.54	0.74	1.07	1.01	1.79	-1.00	-0.80	-0.65	0.10	-0.40	0.29	0.74
	CRSP	2.67	2.76	3.08	3.14	3.98	4.55	3.42	1.37	2.06	2.23	1.74	3.31	5.00	2.78

Table 113: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	14.50	11.95	13.73	11.95	11.52	11.32	11.62	11.32
	INMF	18.64	13.89	17.68	13.89	12.15	11.21	12.22	11.02
	CRSP	17.18	11.53	16.11	11.53	9.45	8.40	8.11	7.63
MV	FFMF	13.95	13.11	13.82	13.20	12.73	12.49	13.24	12.88
	INMF	18.59	15.27	17.87	14.59	12.43	11.01	13.16	11.36
	CRSP	15.87	11.92	15.21	11.84	9.71	8.08	8.33	7.06
PPN	FFMF	31.29	25.41	30.44	25.15	20.28	16.10	25.53	21.10
	INMF	28.06	21.93	27.11	21.43	16.87	13.68	20.42	16.01
	CRSP	32.98	25.97	32.04	26.12	20.40	15.09	17.52	11.44

Table 114: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0\%$ .

Panel A: Gain Relative to 1/N				
Data		MV	BH	PPN
FFMF		-5.37	2.24	-4.45
INMF		-18.83	0.27	-2.74
CRSP		-0.96	-8.73	-3.79

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.08	1.62	0.68	12.60
INMF	3.75	3.87	0.68	9.79
CRSP	5.13	5.59	0.47	17.38

Table 115: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0.5\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-16.87	-18.77	-16.20	-20.08	-17.50	-19.01	-16.90	-20.27
	INMF	-23.76	-23.19	-21.06	-27.71	-25.42	-24.10	-22.94	-28.31
	CRSP	-22.26	-20.49	-16.49	-26.83	-23.96	-22.40	-18.60	-27.51
Exact	FFMF	-16.20	-18.99	-16.04	-17.74	-16.91	-19.24	-16.76	-18.29
	INMF	-22.60	-22.55	-21.26	-24.45	-24.87	-23.73	-23.14	-26.01
	CRSP	-19.72	-18.79	-16.53	-23.08	-22.65	-21.97	-18.65	-25.01
Mtm	FFMF	-15.09	-16.78	-15.51	-15.79	-15.09	-16.78	-15.52	-15.80
	INMF	-25.28	-23.28	-26.03	-25.67	-25.31	-23.29	-26.05	-25.69
	CRSP	-21.90	-20.62	-20.90	-22.30	-21.93	-20.65	-20.92	-22.33

Table 116: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	-7.54	3.06	-8.14	-7.11	2.97	-7.66
	INMF	-18.22	3.82	-7.77	-17.40	3.60	-6.51
	CRSP	1.29	-1.96	-9.45	1.08	-2.29	-8.28
Exact	FFMF	-8.51	2.43	-6.21	-8.03	2.43	-6.03
	INMF	-18.78	2.01	-5.07	-17.59	2.57	-4.23
	CRSP	0.20	-5.10	-7.81	-0.09	-4.02	-6.73
Mtm	FFMF	-7.26	1.72	-5.25	-7.25	1.72	-5.25
	INMF	-16.65	-0.74	-3.24	-16.63	-0.73	-3.24
	CRSP	0.67	-7.56	-4.29	0.67	-7.54	-4.29

Table 117: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.



Panel A: No taxation at end

Model	Data	Exact basis rule						Average basis rule							
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.08	0.91	2.08	2.27	2.12	1.98	1.95	2.60	1.44	2.60	2.91	2.73	2.45	2.47
	INMF	3.78	1.58	3.78	5.50	6.56	4.96	6.60	5.30	2.39	5.30	7.00	8.37	7.09	8.73
	CRSP	3.22	2.67	3.22	5.33	3.14	3.62	0.48	6.45	4.34	6.45	8.79	6.58	7.15	3.73
MV	FFMF	0.03	3.93	0.04	-0.01	-0.06	0.00	-0.01	0.05	4.13	0.05	0.01	-0.04	0.02	0.01
	INMF	2.50	2.79	3.95	7.46	7.51	7.06	9.10	3.21	3.48	4.62	8.40	8.61	7.91	10.59
	CRSP	1.84	4.78	2.79	2.73	1.68	0.86	-0.59	3.78	6.09	4.37	4.81	3.79	3.34	1.70
PPN	FFMF	3.55	2.32	4.01	6.56	9.12	2.44	4.15	4.76	3.29	5.14	8.76	11.91	5.10	7.83
	INMF	4.95	2.45	5.75	9.03	9.89	7.18	11.03	6.64	3.78	7.53	11.66	13.77	9.87	15.14
	CRSP	7.02	8.35	8.06	11.03	12.69	13.14	10.23	9.55	11.36	10.75	14.73	17.97	19.31	16.48

Panel B: Taxation at end

Model	Data	Exact basis rule						Average basis rule							
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.05	0.90	2.05	2.24	2.09	1.96	1.93	2.49	1.39	2.49	2.80	2.63	2.35	2.37
	INMF	3.61	1.56	3.61	5.15	6.14	4.76	6.31	4.48	2.21	4.48	5.90	7.13	6.07	7.58
	CRSP	3.18	2.74	3.18	4.99	3.23	3.79	1.14	5.16	4.14	5.16	6.92	5.13	5.76	2.91
MV	FFMF	0.03	3.90	0.04	0.00	-0.06	0.00	-0.01	0.04	4.09	0.05	0.01	-0.05	0.01	-0.01
	INMF	2.40	2.76	3.77	6.95	7.00	6.51	8.34	2.92	3.40	4.24	7.59	7.76	7.11	9.43
	CRSP	1.85	4.77	2.81	2.64	1.65	0.93	-0.42	2.67	5.96	3.45	3.42	2.29	1.90	0.32
PPN	FFMF	3.52	2.33	3.98	6.48	8.97	2.41	4.10	4.57	3.27	4.95	8.36	11.32	4.85	7.40
	INMF	4.75	2.45	5.43	8.38	9.13	6.55	9.96	6.25	3.73	7.04	10.44	11.84	9.04	13.20
	CRSP	6.79	8.38	7.81	10.63	12.14	11.89	9.67	9.00	11.29	10.20	13.60	16.25	17.35	14.20

Table 118: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule													
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-10.35	-5.78	-10.34	-10.55	-10.46	-10.29	-10.27	-9.84	-5.09	-9.83	-10.15	-10.03	-9.73	-9.76
	INMF	-19.78	-17.80	-18.65	-17.27	-18.05	-17.15	-16.87	-19.84	-17.34	-18.75	-17.15	-18.04	-17.59	-16.81
	CRSP	-1.13	2.25	-0.21	-2.27	-1.22	-2.46	-0.87	-1.24	3.00	-0.68	-2.41	-1.36	-2.30	-0.69
BH	FFMF	0.35	1.51	0.35	0.16	0.31	0.45	0.48	0.45	1.60	0.45	0.14	0.32	0.60	0.58
	INMF	-1.71	0.42	-1.71	-3.31	-4.27	-2.81	-4.31	-1.41	1.41	-1.41	-2.97	-4.20	-3.05	-4.51
	CRSP	-8.06	-7.57	-8.06	-9.90	-7.99	-8.41	-5.56	-7.90	-6.03	-7.90	-9.88	-8.01	-8.50	-5.49
PPN	FFMF	-4.85	-4.90	-4.43	-2.27	0.23	-5.78	-4.18	-6.21	-6.47	-5.87	-2.93	0.07	-5.77	-3.34
	INMF	-4.00	-4.25	-3.27	-1.89	-2.10	-3.06	-1.12	-6.61	-6.52	-5.82	-3.76	-3.19	-5.38	-2.34
	CRSP	-4.41	-2.72	-3.49	-2.82	0.72	0.66	1.13	-6.81	-3.35	-5.79	-4.51	0.23	0.83	1.67

Panel B: Taxation at end

Model	Data	Exact basis rule													
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-9.85	-5.30	-9.83	-10.04	-9.96	-9.79	-9.78	-9.33	-4.63	-9.32	-9.63	-9.53	-9.23	-9.26
	INMF	-18.56	-16.62	-17.46	-16.18	-16.93	-16.21	-16.02	-18.63	-16.43	-17.59	-16.08	-16.91	-16.59	-15.98
	CRSP	-1.38	1.89	-0.45	-2.33	-1.61	-2.84	-1.63	-1.31	2.85	-0.56	-2.22	-1.64	-2.61	-1.46
BH	FFMF	0.37	1.51	0.37	0.18	0.33	0.46	0.49	0.47	1.56	0.47	0.17	0.34	0.61	0.59
	INMF	-1.00	0.99	-1.00	-2.45	-3.36	-2.09	-3.52	-0.84	1.36	-0.84	-2.18	-3.29	-2.33	-3.70
	CRSP	-6.98	-6.57	-6.98	-8.58	-7.02	-7.52	-5.10	-7.08	-6.17	-7.08	-8.61	-7.05	-7.61	-5.05
PPN	FFMF	-4.68	-4.71	-4.26	-2.14	0.29	-5.62	-4.04	-5.79	-5.95	-5.45	-2.67	0.16	-5.41	-3.13
	INMF	-3.17	-3.39	-2.54	-1.28	-1.53	-2.59	-0.94	-4.93	-5.12	-4.22	-2.51	-2.40	-3.90	-1.63
	CRSP	-3.47	-1.61	-2.55	-1.72	1.33	0.54	1.13	-4.94	-1.98	-3.88	-2.55	1.42	1.77	1.79

Table 119: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	7.89	6.07	7.30	6.07	5.84	5.73	5.97	5.77
	INMF	11.28	7.85	10.57	7.85	6.66	6.04	6.72	5.93
	CRSP	12.19	7.71	11.33	7.71	6.16	5.37	5.20	4.84
MV	FFMF	6.03	5.45	5.95	5.53	5.25	5.09	5.55	5.33
	INMF	10.21	7.93	9.69	7.38	5.99	5.00	6.59	5.42
	CRSP	10.76	7.67	10.24	7.51	5.85	4.63	4.97	4.00
PPN	FFMF	20.64	15.74	19.96	15.68	12.05	8.88	16.45	13.27
	INMF	18.55	13.77	17.80	13.44	10.16	7.77	13.11	9.94
	CRSP	25.76	19.58	25.00	19.82	14.89	10.51	12.88	8.04

Table 120: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0.5\%$ .

Panel A: Gain Relative to 1/N				
Data		MV	BH	PPN
FFMF		-4.71	3.00	-9.31
INMF		-18.70	2.22	-6.49
CRSP		-1.31	-6.28	-10.51

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.07	1.62	0.68	12.59
INMF	3.75	3.87	0.67	9.79
CRSP	5.13	5.58	0.47	17.37

Table 121: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 1\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-17.76	-19.69	-17.01	-21.38	-18.35	-19.92	-17.69	-21.55
	INMF	-24.91	-23.58	-21.97	-29.45	-26.44	-24.45	-23.78	-29.95
	CRSP	-23.41	-21.13	-17.14	-28.10	-25.01	-22.95	-19.23	-28.72
Exact	FFMF	-17.16	-19.77	-16.97	-18.37	-17.84	-20.02	-17.66	-18.91
	INMF	-23.71	-23.14	-22.17	-25.40	-25.89	-24.27	-23.99	-26.85
	CRSP	-20.72	-19.23	-17.30	-23.78	-23.59	-22.41	-19.39	-25.67
Mtm	FFMF	-15.09	-16.76	-15.50	-15.91	-15.09	-16.76	-15.51	-15.91
	INMF	-25.23	-23.23	-25.99	-25.59	-25.26	-23.24	-26.01	-25.61
	CRSP	-21.88	-20.59	-20.88	-22.19	-21.91	-20.62	-20.90	-22.22

Table 122: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	<b>-6.95</b>	3.94	<b>-13.31</b>	<b>-6.54</b>	3.84	<b>-12.86</b>
	INMF	<b>-17.26</b>	6.22	<b>-12.15</b>	<b>-16.50</b>	5.92	<b>-10.96</b>
	CRSP	1.63	1.40	<b>-15.99</b>	1.42	0.96	<b>-14.93</b>
Exact	FFMF	<b>-7.72</b>	3.23	<b>-10.64</b>	<b>-7.25</b>	3.22	<b>-10.50</b>
	INMF	<b>-18.09</b>	4.28	<b>-8.57</b>	<b>-16.92</b>	4.84	<b>-7.70</b>
	CRSP	0.55	<b>-2.23</b>	<b>-13.97</b>	0.22	<b>-1.13</b>	<b>-12.95</b>
Mtm	FFMF	<b>-6.59</b>	2.50	<b>-10.19</b>	<b>-6.58</b>	2.50	<b>-10.19</b>
	INMF	<b>-16.52</b>	1.18	<b>-6.94</b>	<b>-16.51</b>	1.18	<b>-6.93</b>
	CRSP	0.32	<b>-5.08</b>	<b>-10.87</b>	0.32	<b>-5.07</b>	<b>-10.87</b>

Table 123: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.65	2.36	2.65	3.05	2.94	2.53	2.56	3.44	3.24	3.44	3.94	3.80	3.40	3.46
	INMF	5.73	2.81	5.73	7.52	9.27	7.20	9.49	7.54	4.10	7.54	9.19	10.96	9.49	11.54
	CRSP	5.27	4.53	5.27	7.95	5.97	6.68	3.46	8.85	6.66	8.85	11.76	9.73	10.70	7.26
MV	FFMF	0.05	5.82	0.07	0.02	-0.03	0.02	0.01	0.07	6.27	0.11	0.04	0.00	0.04	0.03
	INMF	3.55	4.40	5.47	9.46	9.84	8.68	11.00	4.03	5.08	6.47	10.09	10.77	8.70	12.21
	CRSP	3.22	7.42	4.74	4.82	4.32	2.92	1.78	5.18	8.94	6.25	7.21	6.74	5.89	4.57
PPN	FFMF	6.16	5.67	6.89	10.88	14.41	4.86	7.53	8.29	7.98	8.99	14.42	17.90	9.54	13.63
	INMF	7.71	5.34	8.91	13.10	14.42	10.35	15.93	10.80	8.36	12.14	18.27	21.45	14.31	22.15
	CRSP	11.77	14.80	13.46	18.76	22.81	19.92	19.17	14.59	18.80	16.15	23.23	28.78	28.73	27.10

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.62	2.33	2.62	3.02	2.91	2.51	2.54	3.32	3.15	3.32	3.81	3.67	3.29	3.34
	INMF	5.54	2.78	5.54	7.15	8.77	6.96	9.12	6.62	3.86	6.62	8.03	9.60	8.39	10.26
	CRSP	5.22	4.60	5.22	7.58	6.03	6.83	4.12	7.45	6.42	7.45	9.71	8.11	9.13	6.27
MV	FFMF	0.05	5.77	0.08	0.03	-0.02	0.02	0.01	0.06	6.22	0.11	0.04	-0.01	0.03	0.02
	INMF	3.45	4.36	5.29	8.92	9.27	8.10	10.18	3.74	4.98	6.04	9.25	9.83	7.94	11.00
	CRSP	3.27	7.44	4.78	4.74	4.27	3.01	2.00	4.00	8.82	5.23	5.66	5.07	4.33	3.07
PPN	FFMF	6.14	5.67	6.87	10.80	14.26	4.82	7.49	8.10	7.95	8.81	14.00	17.31	9.29	13.17
	INMF	7.55	5.31	8.62	12.51	13.75	9.68	14.76	10.41	8.26	11.63	16.99	19.36	13.54	20.15
	CRSP	11.49	14.88	13.18	18.25	22.11	18.56	18.58	14.02	18.72	15.59	22.00	26.87	26.55	24.63

Table 124: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-10.06	-4.61	-10.04	-10.43	-10.38	-9.98	-10.02	-9.99	-4.22	-9.95	-10.44	-10.36	-9.98	-10.04
	INMF	-19.78	-16.83	-18.29	-16.61	-17.66	-16.96	-16.96	-19.96	-16.48	-18.08	-16.57	-17.40	-17.85	-16.76
	CRSP	-1.42	3.32	0.03	-2.37	-1.02	-3.00	-1.08	-1.80	3.81	-0.80	-2.51	-1.14	-2.78	-0.91
BH	FFMF	0.57	0.85	0.57	0.18	0.28	0.69	0.66	0.49	0.69	0.49	0.00	0.14	0.52	0.47
	INMF	-1.37	1.42	-1.37	-3.02	-4.57	-2.73	-4.76	-1.22	2.04	-1.22	-2.71	-4.27	-2.98	-4.77
	CRSP	-7.13	-6.47	-7.13	-9.43	-7.74	-8.35	-5.50	-6.85	-4.93	-6.85	-9.27	-7.59	-8.40	-5.46
PPN	FFMF	-7.59	-7.76	-6.95	-3.86	-0.69	-8.61	-6.31	-9.24	-9.32	-8.65	-4.57	-1.53	-8.16	-4.78
	INMF	-6.85	-6.32	-5.82	-3.82	-4.26	-5.88	-3.19	-9.48	-8.55	-8.39	-4.84	-3.84	-8.28	-3.79
	CRSP	-8.66	-5.52	-7.27	-5.35	-0.30	-3.29	-0.90	-11.57	-6.43	-10.36	-7.37	-1.40	-2.31	-0.45

Panel B: Taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-9.57	-4.12	-9.54	-9.94	-9.89	-9.50	-9.54	-9.49	-3.76	-9.44	-9.93	-9.86	-9.49	-9.54
	INMF	-18.57	-15.65	-17.11	-15.55	-16.54	-16.03	-16.11	-18.76	-15.60	-16.95	-15.55	-16.32	-16.84	-15.93
	CRSP	-1.63	2.95	-0.20	-2.42	-1.45	-3.36	-1.82	-1.84	3.70	-0.68	-2.33	-1.44	-3.04	-1.65
BH	FFMF	0.59	0.88	0.59	0.20	0.30	0.69	0.66	0.51	0.67	0.51	0.03	0.16	0.53	0.48
	INMF	-0.66	2.00	-0.66	-2.16	-3.62	-1.98	-3.93	-0.66	1.98	-0.66	-1.96	-3.36	-2.29	-3.94
	CRSP	-6.03	-5.47	-6.03	-8.09	-6.75	-7.45	-5.04	-6.04	-5.14	-6.04	-7.98	-6.62	-7.49	-5.00
PPN	FFMF	-7.43	-7.57	-6.79	-3.74	-0.63	-8.48	-6.18	-8.83	-8.81	-8.23	-4.31	-1.40	-7.80	-4.57
	INMF	-5.94	-5.43	-5.01	-3.08	-3.48	-5.35	-2.93	-7.79	-7.19	-6.77	-3.58	-3.02	-6.73	-2.96
	CRSP	-7.76	-4.39	-6.36	-4.31	0.25	-3.39	-0.86	-9.73	-5.10	-8.48	-5.41	-0.17	-1.35	-0.24

Table 125: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	5.38	3.85	4.86	3.85	3.65	3.56	3.82	3.66
	INMF	8.24	5.39	7.63	5.39	4.49	4.00	4.58	3.93
	CRSP	9.65	5.78	8.89	5.78	4.52	3.89	3.77	3.47
MV	FFMF	4.01	3.50	3.94	3.58	3.34	3.23	3.60	3.42
	INMF	7.35	5.46	6.91	5.01	3.94	3.19	4.55	3.67
	CRSP	8.52	5.84	8.03	5.66	4.29	3.29	3.68	2.87
PPN	FFMF	16.82	12.27	16.21	12.31	9.00	6.31	13.25	10.57
	INMF	14.59	10.25	13.92	10.02	7.25	5.27	10.05	7.42
	CRSP	22.30	16.56	21.65	16.89	12.40	8.42	10.83	6.45

Table 126: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 1\%$ .



## **8 Realize losses at end of investment horizon**

This section contains detailed tables for the case where all losses are first realized at the end of the investment horizon or when required for portfolio rebalancing.

Panel A: Gain Relative to 1/N				
Data		MV	BH	PPN
FFMF		-6.03	1.47	0.66
INMF		-18.95	-1.65	1.10
CRSP		-0.60	-11.12	3.23

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.08	1.63	0.69	12.61
INMF	3.76	3.87	0.68	9.80
CRSP	5.13	5.59	0.47	17.40

Table 127: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-11.24	-15.04	-10.86	-13.02	-11.85	-15.31	-11.70	-13.22
	INMF	-21.26	-19.84	-17.95	-22.86	-22.20	-20.53	-20.00	-23.29
	CRSP	-17.62	-16.89	-12.63	-20.12	-18.50	-18.08	-14.91	-20.53
Exact	FFMF	-10.81	-15.01	-10.86	-11.84	-11.61	-15.30	-11.70	-12.42
	INMF	-18.79	-18.85	-17.95	-19.64	-20.78	-19.94	-20.00	-21.16
	CRSP	-14.44	-14.95	-12.62	-16.69	-16.90	-17.32	-14.90	-18.38
Mtm	FFMF	-15.09	-16.80	-15.53	-15.69	-15.09	-16.80	-15.53	-15.69
	INMF	-25.34	-23.33	-26.07	-25.75	-25.36	-23.35	-26.10	-25.77
	CRSP	-21.92	-20.65	-20.92	-22.40	-21.95	-20.68	-20.94	-22.43

Table 128: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	-10.05	1.91	-1.37	-9.72	1.65	-0.90
	INMF	-17.49	2.49	-0.95	-17.21	1.14	-0.31
	CRSP	0.27	-5.74	0.09	-0.10	-7.20	0.66
Exact	FFMF	-10.45	1.42	-0.50	-9.95	1.37	-0.27
	INMF	-19.01	-0.63	0.04	-18.09	-0.68	0.62
	CRSP	-1.20	-9.23	0.51	-1.10	-8.98	1.39
Mtm	FFMF	-7.92	0.95	-0.06	-7.92	0.94	-0.06
	INMF	-16.77	-2.62	0.55	-16.76	-2.61	0.55
	CRSP	1.01	-9.97	2.59	1.01	-9.96	2.59

Table 129: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FPMF	1.13	0.20	1.13	1.42	1.34	0.52	0.54	1.57	0.36	1.57	1.88	1.82	1.16	1.21
	INMF	0.49	0.35	0.49	0.49	2.58	1.29	1.73	2.74	0.98	2.74	3.35	5.70	4.25	4.89
	CRSP	-1.40	0.32	-1.40	-0.47	-2.69	-1.34	-3.99	1.50	1.55	1.50	2.99	0.98	2.21	-0.54
MV	FPMF	0.00	0.03	0.03	0.04	0.04	0.10	0.09	0.03	0.05	0.06	0.07	0.07	0.13	0.13
	INMF	0.63	0.31	1.95	4.45	4.34	2.49	5.23	1.25	0.69	2.59	5.32	5.55	2.87	5.35
	CRSP	-0.82	1.76	0.06	-0.33	-0.97	-2.46	-3.03	0.58	2.77	1.45	1.50	1.12	-2.79	-2.56
PPN	FPMF	0.08	0.20	0.37	1.50	2.23	-0.15	-0.17	0.69	0.58	1.02	2.36	3.29	-2.26	-1.56
	INMF	0.91	0.53	1.09	1.37	0.89	1.31	2.16	2.18	1.55	2.50	3.56	3.97	1.72	1.82
	CRSP	1.71	2.80	2.60	0.63	0.45	1.91	0.00	2.92	4.41	3.94	2.65	3.38	-1.69	-2.92

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FPMF	1.10	0.20	1.10	1.37	1.26	0.47	0.48	1.35	0.30	1.35	1.64	1.54	0.94	0.95
	INMF	0.68	0.39	0.68	0.51	2.17	1.05	1.29	2.02	0.86	2.02	2.18	3.99	2.99	3.19
	CRSP	-0.81	0.47	-0.81	-0.12	-2.37	-1.81	-4.34	0.80	1.46	0.80	1.72	-0.48	0.25	-2.58
MV	FPMF	0.00	0.03	0.04	0.04	0.04	0.11	0.10	0.02	0.05	0.05	0.06	0.06	0.14	0.12
	INMF	0.66	0.34	1.88	4.18	3.85	2.21	4.48	1.05	0.66	2.30	4.73	4.58	2.43	4.39
	CRSP	-0.66	1.81	0.20	-0.19	-0.83	-2.83	-3.73	0.00	2.73	0.97	0.70	0.07	-3.60	-3.89
PPN	FPMF	0.08	0.21	0.36	1.43	2.12	-0.15	-0.21	0.56	0.57	0.89	2.09	2.88	-2.21	-1.61
	INMF	0.98	0.55	1.11	1.22	0.40	0.86	1.35	1.91	1.52	2.18	2.74	2.51	1.34	0.97
	CRSP	1.82	2.85	2.62	0.88	0.75	1.06	-1.11	2.76	4.40	3.79	2.36	2.78	-2.00	-3.98

Table 130: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

		Exact basis rule													
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	Average basis rule						
									PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-11.45	-10.60	-11.42	-11.67	-11.60	-10.82	-10.84	-11.41	-10.33	-11.38	-11.66	-11.60	-10.97	-11.01
	INMF	-18.91	-19.05	-17.84	-15.82	-17.63	-18.06	-16.23	-18.68	-17.72	-17.60	-15.92	-17.61	-18.58	-17.13
	CRSP	-0.62	0.23	0.27	-1.05	0.54	-2.31	-0.22	-0.64	1.48	0.21	-1.18	0.41	-4.64	-1.76
BH	FFMF	0.29	1.22	0.29	0.00	0.09	0.90	0.88	0.34	1.54	0.34	0.02	0.09	0.73	0.69
	INMF	-1.12	-0.98	-1.12	-1.12	-3.14	-1.90	-2.33	-0.24	1.50	-0.24	-0.84	-3.04	-1.69	-2.29
	CRSP	-7.94	-9.52	-7.94	-8.80	-6.72	-8.00	-5.46	-7.13	-7.18	-7.13	-8.47	-6.65	-7.77	-5.22
PPN	FFMF	-1.53	-0.50	-1.25	-0.42	0.38	-1.16	-1.19	-2.22	-1.15	-1.90	-0.91	0.06	-4.71	-4.07
	INMF	0.46	0.22	0.64	0.92	-1.61	0.06	0.47	-1.48	-0.38	-1.18	-0.75	-2.57	-3.35	-3.85
	CRSP	3.68	3.00	4.59	1.62	3.75	3.82	4.68	1.49	2.90	2.50	-0.24	2.47	-3.73	-2.30

Panel B: Taxation at end

		Exact basis rule													
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	Average basis rule						
									PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-10.93	-10.10	-10.90	-11.13	-11.03	-10.27	-10.29	-10.91	-9.94	-10.87	-11.12	-11.03	-10.44	-10.45
	INMF	-18.11	-18.14	-17.12	-15.09	-16.74	-17.16	-15.51	-17.99	-17.37	-16.98	-15.14	-16.73	-17.66	-16.24
	CRSP	-0.95	0.21	-0.10	-1.17	0.46	-2.13	-0.47	-0.89	1.15	0.07	-1.10	0.45	-3.94	-1.45
BH	FFMF	0.26	1.16	0.26	0.00	0.10	0.89	0.88	0.29	1.34	0.29	0.01	0.10	0.70	0.69
	INMF	-1.35	-1.07	-1.35	-1.18	-2.79	-1.71	-1.95	-0.86	0.28	-0.86	-1.02	-2.74	-1.80	-1.99
	CRSP	-8.24	-9.41	-8.24	-8.87	-6.77	-7.31	-4.86	-7.94	-8.54	-7.94	-8.77	-6.75	-7.44	-4.74
PPN	FFMF	-1.27	-0.27	-1.00	-0.21	0.58	-0.88	-0.95	-1.67	-0.63	-1.35	-0.46	0.40	-3.99	-3.41
	INMF	0.91	0.78	1.04	1.33	-1.13	0.42	0.67	-0.41	0.35	-0.15	0.24	-1.73	-1.91	-2.45
	CRSP	4.08	3.78	4.89	2.41	4.63	4.35	4.81	2.61	3.57	3.64	1.29	3.96	-1.61	-0.79

Table 131: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.00	0.69	1.49	0.69	0.58	0.54	0.95	0.87
	INMF	3.71	1.41	3.14	1.41	0.87	0.68	1.51	1.03
	CRSP	5.12	1.92	4.38	1.92	1.21	0.88	1.15	0.88
MV	FFMF	1.48	1.04	1.38	1.08	0.92	0.82	1.15	1.03
	INMF	3.79	2.20	3.34	1.83	1.16	0.71	2.01	1.47
	CRSP	5.56	3.05	5.07	2.87	1.76	1.09	1.71	1.14
PPN	FFMF	12.56	7.99	11.89	8.01	4.86	2.50	8.67	6.86
	INMF	9.76	5.75	9.07	5.55	3.26	1.69	6.62	4.86
	CRSP	17.38	11.63	16.64	12.15	7.93	4.52	7.52	4.15

Table 132: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0\%$ .

Panel A: Gain Relative to 1/N				
Data		MV	BH	PPN
FFMF		-5.37	2.24	-4.45
INMF		-18.83	0.27	-2.74
CRSP		-0.96	-8.73	-3.79

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.08	1.62	0.68	12.60
INMF	3.75	3.87	0.68	9.79
CRSP	5.13	5.59	0.47	17.38

Table 133: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0.5\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-11.23	-15.00	-10.82	-13.14	-11.85	-15.28	-11.67	-13.33
	INMF	-21.25	-19.82	-17.88	-22.87	-22.19	-20.51	-19.94	-23.28
	CRSP	-17.63	-16.90	-12.58	-20.10	-18.52	-18.10	-14.88	-20.51
Exact	FFMF	-10.81	-14.97	-10.82	-11.94	-11.61	-15.27	-11.67	-12.55
	INMF	-18.77	-18.83	-17.88	-19.65	-20.78	-19.93	-19.94	-21.15
	CRSP	-14.45	-14.95	-12.58	-16.67	-16.95	-17.35	-14.87	-18.42
Mtm	FFMF	-15.09	-16.78	-15.51	-15.79	-15.09	-16.78	-15.52	-15.80
	INMF	-25.28	-23.28	-26.03	-25.67	-25.31	-23.29	-26.05	-25.69
	CRSP	-21.90	-20.62	-20.90	-22.30	-21.93	-20.65	-20.92	-22.33

Table 134: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	<b>-9.39</b>	2.71	<b>-6.50</b>	<b>-9.05</b>	2.45	<b>-6.05</b>
	INMF	<b>-17.36</b>	4.56	<b>-4.74</b>	<b>-17.08</b>	3.16	<b>-4.11</b>
	CRSP	<b>-0.08</b>	<b>-3.14</b>	<b>-6.68</b>	<b>-0.45</b>	<b>-4.65</b>	<b>-6.15</b>
Exact	FFMF	<b>-9.79</b>	2.22	<b>-5.67</b>	<b>-9.29</b>	2.16	<b>-5.46</b>
	INMF	<b>-18.88</b>	1.37	<b>-3.79</b>	<b>-17.96</b>	1.33	<b>-3.21</b>
	CRSP	<b>-1.54</b>	<b>-6.73</b>	<b>-6.29</b>	<b>-1.44</b>	<b>-6.45</b>	<b>-5.49</b>
Mtm	FFMF	<b>-7.26</b>	1.72	<b>-5.25</b>	<b>-7.25</b>	1.72	<b>-5.25</b>
	INMF	<b>-16.65</b>	<b>-0.74</b>	<b>-3.24</b>	<b>-16.63</b>	<b>-0.73</b>	<b>-3.24</b>
	CRSP	0.67	<b>-7.56</b>	<b>-4.29</b>	0.67	<b>-7.54</b>	<b>-4.29</b>

Table 135: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.



Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FPMF	1.83	0.56	1.83	2.19	2.14	1.12	1.18	2.27	0.71	2.27	2.66	2.63	1.89	1.96
	INMF	1.96	0.96	1.96	2.28	4.55	2.72	3.45	4.23	1.60	4.23	5.19	7.72	6.01	6.87
	CRSP	0.56	1.22	0.56	1.90	-0.16	0.88	-1.63	3.51	2.50	3.51	5.43	3.61	4.79	2.10
MV	FPMF	0.02	0.37	0.07	0.08	0.08	0.12	0.12	0.05	0.39	0.10	0.11	0.11	0.16	0.16
	INMF	1.63	1.27	3.25	6.07	6.24	3.54	6.63	2.26	1.66	3.90	6.95	7.47	4.22	6.95
	CRSP	0.75	3.49	2.06	2.10	1.70	-0.34	-0.65	2.18	4.59	3.47	3.97	3.86	-0.33	0.08
PPN	FPMF	3.12	2.15	3.75	6.26	7.97	2.53	3.19	3.74	2.57	4.43	7.17	9.10	2.50	3.48
	INMF	3.90	2.19	4.47	6.04	6.43	3.70	5.74	5.20	3.31	5.92	8.32	9.67	6.00	6.78
	CRSP	5.89	6.62	7.24	7.35	8.70	8.06	7.59	7.10	8.48	8.66	9.48	11.85	6.46	5.89

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FPMF	1.80	0.56	1.80	2.14	2.06	1.08	1.13	2.05	0.65	2.05	2.41	2.34	1.67	1.70
	INMF	2.16	1.01	2.16	2.30	4.13	2.48	3.01	3.50	1.48	3.50	3.99	5.97	4.73	5.12
	CRSP	1.18	1.39	1.18	2.27	0.19	0.44	-1.96	2.79	2.42	2.79	4.12	2.09	2.78	0.00
MV	FPMF	0.03	0.38	0.08	0.09	0.09	0.13	0.13	0.04	0.40	0.10	0.11	0.11	0.16	0.16
	INMF	1.66	1.31	3.19	5.81	5.74	3.26	5.87	2.06	1.63	3.60	6.36	6.48	3.78	5.99
	CRSP	0.93	3.54	2.21	2.25	1.87	-0.71	-1.33	1.59	4.56	2.99	3.15	2.77	-1.16	-1.29
PPN	FPMF	3.12	2.15	3.75	6.19	7.87	2.53	3.15	3.61	2.56	4.29	6.88	8.65	2.54	3.42
	INMF	3.95	2.20	4.47	5.86	5.88	3.23	4.87	4.91	3.28	5.58	7.45	8.11	5.56	5.85
	CRSP	6.01	6.69	7.28	7.65	9.07	7.16	6.47	6.93	8.47	8.50	9.16	11.19	6.09	4.71

Table 136: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule													
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-11.39	-9.95	-11.34	-11.65	-11.61	-10.68	-10.74	-11.35	-9.67	-11.31	-11.64	-11.61	-10.93	-10.99
	INMF	-19.14	-18.63	-17.86	-15.87	-17.57	-18.23	-16.39	-18.92	-17.30	-17.61	-15.97	-17.55	-18.75	-17.29
	CRSP	-1.35	0.67	-0.06	-1.34	0.30	-2.73	-0.56	-1.37	1.96	-0.12	-1.47	0.16	-4.96	-2.06
BH	FFMF	0.38	1.65	0.38	0.03	0.08	1.08	1.02	0.43	1.99	0.43	0.05	0.08	0.80	0.74
	INMF	-0.58	0.41	-0.58	-0.89	-3.03	-1.31	-2.01	0.31	2.91	0.31	-0.60	-2.93	-1.37	-2.16
	CRSP	-7.25	-7.85	-7.25	-8.46	-6.58	-7.54	-5.18	-6.43	-5.50	-6.43	-8.13	-6.51	-7.56	-5.13
PPN	FFMF	-4.47	-4.17	-3.88	-1.91	-0.28	-4.35	-3.79	-5.15	-4.78	-4.53	-2.40	-0.60	-5.94	-5.11
	INMF	-1.96	-2.62	-1.42	-0.25	-2.06	-2.87	-1.66	-3.85	-3.14	-3.20	-1.91	-3.02	-4.76	-4.82
	CRSP	-1.33	-1.29	-0.07	-1.27	2.02	0.38	2.49	-3.45	-1.25	-2.04	-3.10	0.74	-5.20	-3.22

Panel B: Taxation at end

Model	Data	Exact basis rule													
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-10.87	-9.44	-10.82	-11.11	-11.04	-10.14	-10.18	-10.84	-9.28	-10.79	-11.10	-11.04	-10.40	-10.43
	INMF	-18.36	-17.71	-17.13	-15.15	-16.69	-17.33	-15.67	-18.23	-16.96	-16.99	-15.19	-16.68	-17.84	-16.40
	CRSP	-1.68	0.65	-0.43	-1.46	0.22	-2.56	-0.81	-1.62	1.63	-0.26	-1.38	0.21	-4.27	-1.74
BH	FFMF	0.36	1.60	0.36	0.02	0.10	1.07	1.02	0.38	1.78	0.38	0.03	0.10	0.77	0.74
	INMF	-0.81	0.32	-0.81	-0.95	-2.69	-1.12	-1.63	-0.32	1.66	-0.32	-0.80	-2.65	-1.50	-1.87
	CRSP	-7.54	-7.73	-7.54	-8.53	-6.62	-6.86	-4.58	-7.24	-6.90	-7.24	-8.42	-6.61	-7.23	-4.65
PPN	FFMF	-4.23	-3.96	-3.65	-1.71	-0.08	-4.11	-3.57	-4.62	-4.28	-3.99	-1.96	-0.26	-5.24	-4.46
	INMF	-1.50	-2.06	-1.01	0.16	-1.57	-2.50	-1.46	-2.80	-2.42	-2.18	-0.93	-2.18	-3.35	-3.45
	CRSP	-0.98	-0.56	0.21	-0.52	2.88	0.83	2.62	-2.38	-0.61	-0.94	-1.61	2.22	-3.12	-1.73

Table 137: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.00	0.69	1.49	0.69	0.58	0.54	0.95	0.87
	INMF	3.71	1.41	3.14	1.41	0.87	0.68	1.50	1.03
	CRSP	5.12	1.92	4.39	1.92	1.21	0.88	1.15	0.88
MV	FFMF	1.47	1.04	1.38	1.08	0.92	0.82	1.15	1.02
	INMF	3.79	2.20	3.35	1.83	1.16	0.71	2.01	1.47
	CRSP	5.55	3.06	5.08	2.88	1.76	1.09	1.71	1.14
PPN	FFMF	12.56	8.00	11.91	8.02	4.87	2.50	8.65	6.82
	INMF	9.76	5.76	9.08	5.56	3.27	1.69	6.60	4.84
	CRSP	17.37	11.65	16.66	12.17	7.95	4.53	7.48	4.13

Table 138: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0.5\%$ .

Panel A: Gain Relative to 1/N				
Data		MV	BH	PPN
FFMF		-4.71	3.00	-9.31
INMF		-18.70	2.22	-6.49
CRSP		-1.31	-6.28	-10.51

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.07	1.62	0.68	12.59
INMF	3.75	3.87	0.67	9.79
CRSP	5.13	5.58	0.47	17.37

Table 139: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 1\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-11.23	-14.97	-10.79	-13.27	-11.86	-15.26	-11.64	-13.46
	INMF	-21.23	-19.80	-17.80	-22.87	-22.17	-20.50	-19.88	-23.28
	CRSP	-17.65	-16.91	-12.54	-20.09	-18.54	-18.12	-14.85	-20.50
Exact	FFMF	-10.80	-14.94	-10.79	-12.06	-11.61	-15.24	-11.64	-12.68
	INMF	-18.76	-18.81	-17.80	-19.65	-20.77	-19.92	-19.88	-21.14
	CRSP	-14.47	-14.95	-12.53	-16.67	-17.00	-17.38	-14.85	-18.47
Mtm	FFMF	-15.09	-16.76	-15.50	-15.91	-15.09	-16.76	-15.51	-15.91
	INMF	-25.23	-23.23	-25.99	-25.59	-25.26	-23.24	-26.01	-25.61
	CRSP	-21.88	-20.59	-20.88	-22.19	-21.91	-20.62	-20.90	-22.22

Table 140: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	-8.72	3.52	-11.40	-8.39	3.25	-10.96
	INMF	-17.22	6.67	-8.44	-16.95	5.23	-7.82
	CRSP	-0.43	-0.46	-13.16	-0.80	-2.03	-12.66
Exact	FFMF	-9.12	3.02	-10.59	-8.62	2.97	-10.41
	INMF	-18.75	3.43	-7.52	-17.83	3.37	-6.93
	CRSP	-1.86	-4.15	-12.81	-1.76	-3.84	-12.09
Mtm	FFMF	-6.59	2.50	-10.19	-6.58	2.50	-10.19
	INMF	-16.52	1.18	-6.94	-16.51	1.18	-6.93
	CRSP	0.32	-5.08	-10.87	0.32	-5.07	-10.87

Table 141: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule						Average basis rule							
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.53	0.92	2.53	2.97	2.94	1.74	1.84	2.97	1.07	2.97	3.45	3.44	2.63	2.72
	INMF	3.45	1.60	3.45	4.11	6.55	4.16	5.20	5.74	2.25	5.74	7.06	9.77	7.81	8.88
	CRSP	2.56	2.36	2.56	4.32	2.44	3.15	0.78	5.56	3.70	5.56	7.93	6.30	7.42	4.82
MV	FFMF	0.05	0.92	0.12	0.12	0.12	0.14	0.14	0.08	0.94	0.15	0.16	0.16	0.19	0.19
	INMF	2.65	2.46	4.57	7.73	8.17	4.62	8.02	3.27	2.87	5.22	8.61	9.42	5.59	8.57
	CRSP	2.32	5.45	4.10	4.57	4.44	1.81	1.79	3.79	6.65	5.56	6.50	6.67	2.19	2.77
PPN	FFMF	6.26	4.46	7.26	11.26	14.05	5.30	6.67	6.90	4.93	7.96	12.22	15.26	7.52	8.80
	INMF	7.01	4.17	8.00	10.97	12.33	6.24	9.52	8.35	5.44	9.49	13.34	15.73	10.53	12.06
	CRSP	10.32	11.63	12.28	14.72	17.85	14.78	16.05	11.54	13.72	13.77	16.94	21.22	15.47	15.70

Panel B: Taxation at end

Model	Data	Exact basis rule						Average basis rule							
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.50	0.92	2.50	2.92	2.86	1.69	1.79	2.76	1.02	2.76	3.19	3.15	2.40	2.45
	INMF	3.65	1.65	3.65	4.13	6.12	3.92	4.75	5.00	2.13	5.00	5.84	7.98	6.51	7.10
	CRSP	3.21	2.56	3.21	4.73	2.82	2.74	0.49	4.82	3.62	4.82	6.58	4.73	5.35	2.66
MV	FFMF	0.05	0.93	0.13	0.14	0.14	0.16	0.16	0.07	0.95	0.15	0.16	0.16	0.19	0.19
	INMF	2.68	2.50	4.51	7.47	7.67	4.34	7.26	3.07	2.84	4.93	8.02	8.41	5.14	7.59
	CRSP	2.53	5.52	4.25	4.74	4.63	1.46	1.10	3.20	6.62	5.06	5.65	5.54	1.33	1.37
PPN	FFMF	6.27	4.48	7.26	11.20	13.96	5.29	6.63	6.76	4.92	7.81	11.91	14.77	7.55	8.72
	INMF	7.06	4.18	7.98	10.76	11.72	5.74	8.59	8.05	5.40	9.12	12.42	14.07	10.04	11.05
	CRSP	10.46	11.74	12.35	15.07	18.30	13.84	14.92	11.35	13.72	13.60	16.60	20.50	15.05	14.39

Table 142: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule													
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-11.33	-9.12	-11.26	-11.64	-11.61	-10.55	-10.64	-11.29	-8.84	-11.22	-11.62	-11.62	-10.89	-10.97
	INMF	-19.38	-18.06	-17.87	-15.92	-17.51	-18.39	-16.58	-19.15	-16.72	-17.63	-16.02	-17.49	-18.92	-17.46
	CRSP	-2.09	1.09	-0.39	-1.63	0.05	-3.14	-0.89	-2.10	2.40	-0.43	-1.75	-0.08	-5.27	-2.37
BH	FFMF	0.48	2.09	0.48	0.06	0.08	1.27	1.16	0.53	2.42	0.53	0.07	0.08	0.87	0.78
	INMF	-0.02	1.80	-0.02	-0.66	-2.93	-0.70	-1.69	0.88	4.32	0.88	-0.36	-2.83	-1.06	-2.04
	CRSP	-6.55	-6.37	-6.55	-8.12	-6.44	-7.08	-4.90	-5.71	-4.02	-5.71	-7.78	-6.36	-7.34	-5.04
PPN	FFMF	-7.34	-7.45	-6.47	-3.39	-0.94	-7.46	-6.35	-8.01	-8.01	-7.11	-3.88	-1.26	-7.17	-6.14
	INMF	-4.33	-5.18	-3.45	-1.42	-2.50	-5.67	-3.72	-6.18	-5.59	-5.20	-3.06	-3.47	-6.13	-5.76
	CRSP	-6.21	-4.92	-4.55	-4.11	0.30	-2.98	0.39	-8.25	-4.77	-6.41	-5.92	-0.98	-6.65	-4.15

Panel B: Taxation at end

Model	Data	Exact basis rule													
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-10.80	-8.61	-10.73	-11.09	-11.04	-10.00	-10.08	-10.78	-8.45	-10.71	-11.08	-11.04	-10.35	-10.41
	INMF	-18.60	-17.14	-17.15	-15.20	-16.63	-17.50	-15.86	-18.48	-16.38	-17.01	-15.24	-16.62	-18.01	-16.57
	CRSP	-2.41	1.08	-0.77	-1.74	-0.03	-2.98	-1.16	-2.33	2.08	-0.58	-1.67	-0.04	-4.58	-2.05
BH	FFMF	0.45	2.03	0.45	0.05	0.10	1.25	1.16	0.48	2.21	0.48	0.06	0.10	0.84	0.78
	INMF	-0.27	1.70	-0.27	-0.73	-2.59	-0.53	-1.31	0.23	3.03	0.23	-0.57	-2.54	-1.20	-1.75
	CRSP	-6.83	-6.24	-6.83	-8.18	-6.48	-6.40	-4.31	-6.53	-5.45	-6.53	-8.08	-6.46	-7.00	-4.56
PPN	FFMF	-7.12	-7.25	-6.25	-3.20	-0.75	-7.25	-6.15	-7.49	-7.52	-6.58	-3.44	-0.93	-6.48	-5.51
	INMF	-3.88	-4.61	-3.05	-1.01	-2.02	-5.30	-3.52	-5.14	-4.87	-4.20	-2.09	-2.62	-4.76	-4.42
	CRSP	-5.92	-4.22	-4.30	-3.41	1.14	-2.59	0.53	-7.22	-4.15	-5.35	-4.46	0.49	-4.62	-2.68

Table 143: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.99	0.69	1.49	0.69	0.58	0.54	0.95	0.87
	INMF	3.70	1.41	3.15	1.41	0.87	0.68	1.50	1.03
	CRSP	5.12	1.93	4.39	1.93	1.22	0.89	1.15	0.88
MV	FFMF	1.47	1.03	1.38	1.08	0.92	0.82	1.14	1.02
	INMF	3.78	2.20	3.35	1.83	1.16	0.71	2.01	1.47
	CRSP	5.55	3.06	5.09	2.88	1.76	1.09	1.71	1.14
PPN	FFMF	12.55	8.00	11.92	8.03	4.88	2.51	8.62	6.79
	INMF	9.76	5.76	9.09	5.56	3.27	1.70	6.59	4.82
	CRSP	17.36	11.66	16.69	12.19	7.96	4.54	7.44	4.12

Table 144: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 1\%$ .



## 9 Other heuristic strategies

This section contains detailed tables for the NRL and the ORL trading strategy as well as results under the PX strategy for other choices of  $X$ . The trading strategy denoted ORL realizes gains on those positions with the highest deviation from the benchmark portfolio weight first. Under the trading strategy denoted ORLVAR gains are first realized in portfolio positions where the level of unrealized gains per unit of equity is smallest.

Panel A: Gain Relative to 1/N				
Data		MV	BH	PPN
FFMF		-6.03	1.47	0.66
INMF		-18.95	-1.65	1.10
CRSP		-0.60	-11.12	3.23

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.08	1.63	0.69	12.61
INMF	3.76	3.87	0.68	9.80
CRSP	5.13	5.59	0.47	17.40

Table 145: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-11.09	-15.04	-10.86	-12.92	-11.76	-15.31	-11.70	-13.14
	INMF	-19.56	-19.17	-17.95	-22.05	-21.07	-20.05	-20.00	-22.71
	CRSP	-16.48	-16.08	-12.58	-19.64	-18.06	-17.86	-14.88	-20.31
Exact	FFMF	-10.72	-15.01	-10.86	-11.74	-11.52	-15.30	-11.70	-12.33
	INMF	-17.84	-18.48	-17.95	-19.02	-19.98	-19.61	-20.00	-20.59
	CRSP	-13.27	-13.67	-12.58	-15.58	-15.88	-16.30	-14.88	-17.38
Mtm	FFMF	-15.09	-16.80	-15.53	-15.69	-15.09	-16.80	-15.53	-15.69
	INMF	-25.34	-23.33	-26.07	-25.75	-25.36	-23.35	-26.10	-25.77
	CRSP	-21.92	-20.65	-20.92	-22.40	-21.95	-20.68	-20.94	-22.43

Table 146: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	-10.20	1.74	-1.41	-9.81	1.53	-0.92
	INMF	-18.55	0.32	-2.02	-17.91	-0.31	-1.00
	CRSP	-0.13	-6.97	-0.68	-0.36	-7.67	0.39
Exact	FFMF	-10.53	1.32	-0.49	-10.03	1.27	-0.26
	INMF	-19.59	-1.78	-0.35	-18.57	-1.67	0.34
	CRSP	-1.06	-10.41	0.47	-1.10	-10.06	1.38
Mtm	FFMF	-7.92	0.95	-0.06	-7.92	0.94	-0.06
	INMF	-16.77	-2.62	0.55	-16.76	-2.61	0.55
	CRSP	1.01	-9.97	2.59	1.01	-9.96	2.59

Table 147: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	NRG	Exact basis rule					Average basis rule							
			ORLVAR	ORL	PD5	PD10	PD20	PD50	ORLVAR	ORL	PD5	PD10	PD20	PD50	
1/N	FFMF	1.23	-0.01	0.06	0.65	1.20	1.36	1.24	0.50	0.90	0.98	1.58	1.76	1.65	
	INMF	3.21	-0.06	-0.03	0.87	1.31	1.33	2.48	1.58	1.25	1.94	2.74	3.08	4.62	
	CRSP	-7.41	-4.04	-5.34	-0.63	-0.48	0.49	-2.66	-3.86	-0.70	-1.99	1.25	1.95	3.45	0.80
MV	FFMF	-0.07	-0.13	-0.13	0.01	0.00	-0.03	-0.08	-0.03	-0.10	0.03	0.03	0.00	-0.05	
	INMF	4.31	2.01	2.39	0.32	0.94	2.34	3.05	2.99	3.33	0.65	1.38	2.90	3.65	
	CRSP	-7.30	-5.65	-5.95	-0.06	-0.50	0.59	1.50	-4.64	-2.72	-3.23	1.18	0.98	2.28	3.65
PPN	FFMF	2.29	2.09	2.40	0.04	0.09	0.63	2.19	3.67	3.90	4.14	0.50	0.72	1.42	3.25
	INMF	-0.28	-0.07	0.01	0.93	1.26	1.31	-2.33	3.60	1.69	2.46	1.71	2.26	2.83	0.68
	CRSP	-9.15	-3.80	-4.22	1.96	2.26	2.16	1.04	-4.57	-0.05	-0.32	3.02	3.37	3.78	4.01

Panel B: Taxation at end

Model	Data	NRG	Exact basis rule					Average basis rule							
			ORLVAR	ORL	PD5	PD10	PD20	PD50	ORLVAR	ORL	PD5	PD10	PD20	PD50	
1/N	FFMF	1.16	0.12	0.18	0.64	1.16	1.31	1.16	0.33	0.71	0.82	1.38	1.55	1.43	
	INMF	2.42	-0.22	-0.17	1.03	1.46	1.38	2.07	0.46	0.18	1.33	1.80	1.95	3.09	
	CRSP	-7.29	-4.04	-5.21	-0.19	0.11	0.93	-2.31	-4.82	-2.22	-3.30	0.52	0.83	1.78	-0.71
MV	FFMF	-0.07	-0.13	-0.13	0.01	0.00	-0.03	-0.09	-0.11	-0.11	0.02	0.02	-0.01	-0.07	
	INMF	3.48	1.68	2.01	0.33	0.91	2.20	2.88	2.17	2.48	0.47	1.07	2.37	3.01	
	CRSP	-7.77	-6.34	-6.49	0.08	-0.35	0.65	0.99	-6.02	-4.40	-4.83	0.58	0.08	0.93	1.67
PPN	FFMF	2.03	2.21	2.49	0.04	0.08	0.58	2.06	3.28	3.51	0.43	0.58	1.19	2.80	
	INMF	-1.37	-0.85	-0.82	0.94	1.29	1.29	-2.38	1.33	-0.23	0.44	1.51	1.92	2.22	-0.26
	CRSP	-9.63	-4.72	-5.17	2.00	2.30	2.20	1.08	-6.31	-2.49	-2.76	2.81	2.97	3.10	2.88

Table 148: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule										Average basis rule									
		NRG	ORLVAR	ORL	PD5	PD10	PD20	PD50	NRG	ORLVAR	ORL	PD5	PD10	PD20	PD50						
MV	FFMF	-11.69	-10.64	-10.70	-11.11	-11.59	-11.76	-11.70	-11.69	-10.73	-11.08	-11.04	-11.57	-11.75	-11.70						
	INMF	-18.73	-17.92	-17.64	-20.02	-19.87	-18.78	-19.14	-18.73	-17.42	-16.88	-19.59	-19.63	-18.70	-19.30						
	CRSP	-0.95	-2.72	-1.70	-0.50	-1.08	-0.96	3.16	-0.95	-2.16	-1.39	-0.19	-1.09	-1.26	2.70						
BH	FFMF	0.09	1.33	1.26	0.67	0.12	-0.04	0.08	0.09	1.23	0.84	0.75	0.15	-0.02	0.08						
	INMF	-4.84	-1.73	-1.76	-2.63	-3.05	-3.08	-4.16	-4.84	-1.23	-0.91	-1.59	-2.35	-2.67	-4.11						
	CRSP	-3.23	-6.63	-5.35	-9.84	-9.97	-10.84	-7.96	-3.24	-6.31	-5.08	-8.12	-8.75	-10.08	-7.71						
PPN	FFMF	0.55	1.59	1.84	-1.10	-1.58	-1.21	0.44	0.55	1.93	1.76	-1.88	-2.25	-1.74	0.14						
	INMF	-3.72	-0.37	-0.32	-0.30	-0.40	-0.37	-5.03	-3.72	-1.91	-0.85	-2.25	-2.48	-2.26	-5.71						
	CRSP	-1.41	0.73	1.66	3.09	3.25	2.15	4.29	-1.41	-0.02	1.02	1.06	0.70	-0.37	2.48						

Panel B: Taxation at end

Model	Data	Exact basis rule										Average basis rule									
		NRG	ORLVAR	ORL	PD5	PD10	PD20	PD50	NRG	ORLVAR	ORL	PD5	PD10	PD20	PD50						
MV	FFMF	-11.12	-10.25	-10.31	-10.60	-11.07	-11.22	-11.15	-11.12	-10.21	-10.55	-10.53	-11.02	-11.20	-11.15						
	INMF	-17.72	-17.02	-16.79	-19.13	-19.00	-17.92	-17.92	-17.72	-16.51	-16.02	-18.60	-18.50	-17.57	-17.97						
	CRSP	-1.61	-3.47	-2.44	-0.83	-1.56	-1.38	2.24	-1.61	-2.58	-1.93	-0.30	-1.10	-1.19	2.04						
BH	FFMF	0.11	1.15	1.09	0.63	0.10	-0.04	0.10	0.11	1.20	0.82	0.71	0.15	-0.01	0.10						
	INMF	-3.99	-1.45	-1.50	-2.67	-3.08	-3.01	-3.66	-3.99	-0.77	-0.49	-1.63	-2.08	-2.22	-3.31						
	CRSP	-2.99	-6.26	-5.11	-9.88	-10.15	-10.88	-7.93	-2.99	-5.57	-4.52	-8.15	-8.43	-9.28	-7.01						
PPN	FFMF	0.59	1.82	2.04	-0.86	-1.33	-0.98	0.62	0.59	2.00	1.84	-1.30	-1.70	-1.27	0.42						
	INMF	-3.38	-0.30	-0.32	0.24	0.17	0.24	-4.04	-3.38	-1.67	-0.74	-0.82	-0.89	-0.73	-4.22						
	CRSP	-1.18	0.67	1.43	3.61	3.60	2.66	4.90	-1.18	0.12	0.94	2.67	2.52	1.69	4.03						

Table 149: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	NRG	ORLVAR	ORL	PD5	PD10	PD20	PD50
1/N	FFMF	2.57	0.53	1.33	1.31	1.35	1.06	0.84	0.58
	INMF	4.97	0.51	1.37	1.36	3.09	2.18	1.53	0.93
	CRSP	7.61	0.84	1.49	1.33	4.88	3.78	2.64	1.67
MV	FFMF	1.72	0.52	0.82	0.85	1.35	1.24	1.14	1.01
	INMF	5.22	0.45	1.74	1.69	4.10	3.54	2.86	2.00
	CRSP	7.46	0.31	1.23	1.14	5.57	4.74	3.84	2.53
PPN	FFMF	13.64	0.52	6.72	6.40	10.88	9.11	6.76	3.46
	INMF	11.51	0.51	4.51	4.48	8.85	7.29	5.34	2.83
	CRSP	20.89	0.72	4.30	4.10	17.45	15.00	11.58	6.61

Table 150: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0\%$ .

Panel A: Gain Relative to 1/N				
Data		MV	BH	PPN
FFMF		-5.37	2.24	-4.45
INMF		-18.83	0.27	-2.74
CRSP		-0.96	-8.73	-3.79

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.08	1.62	0.68	12.60
INMF	3.75	3.87	0.68	9.79
CRSP	5.13	5.59	0.47	17.38

Table 151: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0.5\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-11.20	-15.00	-10.82	-13.18	-11.85	-15.28	-11.67	-13.38
	INMF	-20.57	-19.53	-17.88	-22.82	-21.99	-20.39	-19.94	-23.41
	CRSP	-17.48	-16.77	-12.55	-20.64	-18.99	-18.42	-14.87	-21.27
Exact	FFMF	-10.77	-14.97	-10.82	-11.91	-11.58	-15.27	-11.67	-12.52
	INMF	-18.09	-18.63	-17.88	-19.34	-20.25	-19.79	-19.94	-20.88
	CRSP	-13.61	-14.01	-12.54	-16.21	-16.27	-16.71	-14.86	-18.04
Mtm	FFMF	-15.09	-16.78	-15.51	-15.79	-15.09	-16.78	-15.52	-15.80
	INMF	-25.28	-23.28	-26.03	-25.67	-25.31	-23.29	-26.05	-25.69
	CRSP	-21.90	-20.62	-20.90	-22.30	-21.93	-20.65	-20.92	-22.33

Table 152: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	<b>-9.42</b>	2.67	<b>-6.58</b>	<b>-9.06</b>	2.44	<b>-6.10</b>
	INMF	<b>-17.76</b>	3.67	<b>-5.50</b>	<b>-17.16</b>	2.90	<b>-4.52</b>
	CRSP	<b>-0.10</b>	<b>-3.27</b>	<b>-7.47</b>	<b>-0.26</b>	<b>-4.09</b>	<b>-6.50</b>
Exact	FFMF	<b>-9.82</b>	2.18	<b>-5.67</b>	<b>-9.32</b>	2.13	<b>-5.47</b>
	INMF	<b>-19.36</b>	0.53	<b>-4.23</b>	<b>-18.35</b>	0.66	<b>-3.51</b>
	CRSP	<b>-1.41</b>	<b>-7.60</b>	<b>-6.68</b>	<b>-1.48</b>	<b>-7.19</b>	<b>-5.83</b>
Mtm	FFMF	<b>-7.26</b>	1.72	<b>-5.25</b>	<b>-7.25</b>	1.72	<b>-5.25</b>
	INMF	<b>-16.65</b>	<b>-0.74</b>	<b>-3.24</b>	<b>-16.63</b>	<b>-0.73</b>	<b>-3.24</b>
	CRSP	0.67	<b>-7.56</b>	<b>-4.29</b>	0.67	<b>-7.54</b>	<b>-4.29</b>

Table 153: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.



Panel A: No taxation at end

Model	Data	Exact basis rule							Average basis rule						
		NRG	ORLVAR	ORL	PD5	PD10	PD20	PD50	NRG	ORLVAR	ORL	PD5	PD10	PD20	PD50
1/N	FFMF	2.10	0.31	0.42	1.25	1.90	2.14	2.10	2.59	0.97	1.42	1.60	2.33	2.60	2.59
	INMF	5.65	1.84	1.63	2.02	2.83	3.20	4.71	8.95	4.56	4.38	3.42	4.79	5.66	7.82
	CRSP	-4.51	-1.76	-2.93	0.98	1.56	2.93	0.13	-0.03	2.75	1.50	3.23	4.49	6.51	4.38
MV	FFMF	-0.02	-0.10	-0.11	0.02	0.02	0.00	-0.06	0.01	-0.07	-0.07	0.05	0.05	0.03	-0.02
	INMF	6.53	3.16	3.70	1.07	1.89	3.53	4.60	7.72	4.91	5.22	1.43	2.39	4.20	5.38
	CRSP	-4.06	-3.11	-3.46	1.19	1.05	2.48	3.90	-0.87	0.32	-0.08	2.53	2.63	4.31	6.33
PPN	FFMF	8.82	3.15	3.69	2.29	3.13	4.62	7.60	10.40	6.33	6.81	2.79	3.78	5.45	8.65
	INMF	6.20	2.35	2.70	3.27	4.26	5.26	2.87	11.00	7.33	7.99	4.27	5.47	7.06	6.36
	CRSP	0.88	2.50	2.80	5.14	6.26	7.81	9.23	6.52	8.93	9.26	6.51	7.68	9.61	12.71

Panel B: Taxation at end

Model	Data	Exact basis rule							Average basis rule						
		NRG	ORLVAR	ORL	PD5	PD10	PD20	PD50	NRG	ORLVAR	ORL	PD5	PD10	PD20	PD50
1/N	FFMF	2.02	0.43	0.54	1.24	1.87	2.09	2.03	2.33	0.78	1.21	1.43	2.12	2.37	2.34
	INMF	4.85	1.67	1.52	2.17	2.98	3.28	4.31	7.18	3.32	3.18	2.82	3.80	4.44	6.14
	CRSP	-4.33	-1.69	-2.73	1.44	2.20	3.42	0.52	-1.13	1.10	0.07	2.49	3.33	4.76	2.72
MV	FFMF	-0.01	-0.10	-0.10	0.03	0.03	0.00	-0.06	0.00	-0.08	-0.08	0.04	0.04	0.01	-0.05
	INMF	5.72	2.87	3.33	1.08	1.87	3.39	4.46	6.52	4.06	4.33	1.26	2.08	3.67	4.72
	CRSP	-4.47	-3.71	-3.89	1.38	1.27	2.64	3.47	-2.47	-1.53	-1.86	1.89	1.71	2.92	4.26
PPN	FFMF	8.56	3.32	3.83	2.30	3.13	4.58	7.48	9.62	5.73	6.19	2.71	3.64	5.20	8.16
	INMF	5.00	1.67	1.95	3.25	4.24	5.17	2.78	8.47	5.28	5.86	4.06	5.13	6.43	5.33
	CRSP	0.39	1.67	1.87	5.13	6.24	7.86	9.29	4.50	6.26	6.54	6.30	7.30	8.93	11.51

Table 154: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

		Exact basis rule										Average basis rule									
Model	Data	NRG	ORLVAR	ORL	PD5	PD10	PD20	PD50	NRG	ORLVAR	ORL	PD5	PD10	PD20	PD50						
MV	FFMF	-11.69	-10.19	-10.29	-10.91	-11.48	-11.71	-11.72	-11.69	-10.36	-10.76	-10.80	-11.44	-11.69	-11.73						
	INMF	-18.69	-18.32	-17.72	-20.12	-20.09	-19.10	-19.44	-18.69	-17.48	-17.10	-19.34	-19.64	-18.89	-19.62						
	CRSP	-0.95	-2.77	-1.94	-1.21	-1.91	-1.84	2.30	-0.95	-2.47	-1.66	-0.78	-1.87	-2.16	1.77						
BH	FFMF	0.08	1.87	1.76	0.92	0.27	0.04	0.08	0.08	1.68	1.23	1.06	0.33	0.07	0.08						
	INMF	-4.85	-1.29	-1.09	-1.46	-2.24	-2.59	-3.99	-4.85	-0.85	-0.69	0.24	-1.07	-1.88	-3.85						
	CRSP	-3.24	-5.94	-4.80	-8.49	-9.02	-10.23	-7.71	-3.24	-5.86	-4.70	-6.29	-7.42	-9.18	-7.32						
PPN	FFMF	0.54	-3.00	-2.60	-4.70	-4.54	-3.38	-0.59	0.54	-1.62	-1.61	-5.48	-5.25	-3.98	-1.05						
	INMF	-3.73	-3.75	-3.22	-3.05	-2.89	-2.32	-5.90	-3.72	-2.99	-2.24	-4.73	-4.89	-4.25	-6.78						
	CRSP	-1.41	-2.64	-1.17	-2.83	-2.37	-2.26	1.81	-1.42	-1.91	-0.40	-4.53	-4.65	-4.78	-0.09						

Panel B: Taxation at end

		Exact basis rule										Average basis rule									
Model	Data	NRG	ORLVAR	ORL	PD5	PD10	PD20	PD50	NRG	ORLVAR	ORL	PD5	PD10	PD20	PD50						
MV	FFMF	-11.13	-9.80	-9.90	-10.40	-10.96	-11.18	-11.18	-11.13	-9.84	-10.22	-10.30	-10.90	-11.15	-11.17						
	INMF	-17.67	-17.39	-16.89	-19.22	-19.22	-18.26	-18.23	-17.67	-16.57	-16.23	-18.41	-18.53	-17.77	-18.27						
	CRSP	-1.62	-3.50	-2.66	-1.53	-2.37	-2.22	1.41	-1.62	-2.85	-2.19	-0.85	-1.83	-2.02	1.22						
BH	FFMF	0.10	1.69	1.58	0.88	0.25	0.03	0.10	0.11	1.64	1.21	0.99	0.32	0.07	0.10						
	INMF	-4.00	-0.99	-0.84	-1.48	-2.25	-2.53	-3.50	-3.99	-0.41	-0.27	0.08	-0.86	-1.47	-3.05						
	CRSP	-2.99	-5.59	-4.59	-8.51	-9.19	-10.26	-7.67	-2.99	-5.13	-4.16	-6.42	-7.18	-8.44	-6.63						
PPN	FFMF	0.59	-2.76	-2.38	-4.48	-4.30	-3.16	-0.42	0.59	-1.50	-1.49	-4.92	-4.70	-3.51	-0.76						
	INMF	-3.38	-3.51	-3.10	-2.49	-2.32	-1.74	-4.92	-3.37	-2.71	-2.04	-3.37	-3.29	-2.69	-5.25						
	CRSP	-1.18	-2.61	-1.38	-2.40	-2.11	-1.78	2.39	-1.18	-1.72	-0.45	-3.03	-2.90	-2.78	1.49						

Table 155: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	NRG	ORLVAR	ORL	PD5	PD10	PD20	PD50
1/N	FFMF	2.18	0.53	1.31	1.29	1.07	0.84	0.71	0.56
	INMF	4.33	0.51	1.36	1.36	2.61	1.92	1.34	0.86
	CRSP	6.58	0.75	1.40	1.24	4.08	3.14	2.27	1.46
MV	FFMF	1.52	0.52	0.81	0.84	1.17	1.08	0.97	0.88
	INMF	4.39	0.45	1.72	1.65	3.30	2.80	2.23	1.61
	CRSP	6.53	0.31	1.22	1.13	4.80	3.96	3.16	2.11
PPN	FFMF	12.82	0.53	6.66	6.29	10.05	8.32	6.18	3.15
	INMF	10.51	0.51	4.49	4.43	7.95	6.50	4.76	2.56
	CRSP	19.07	0.62	4.22	4.07	15.82	13.47	10.24	5.69

Table 156: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0.5\%$ .

Panel A: Gain Relative to 1/N				
Data		MV	BH	PPN
FFMF		-4.71	3.00	-9.31
INMF		-18.70	2.22	-6.49
CRSP		-1.31	-6.28	-10.51

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.07	1.62	0.68	12.59
INMF	3.75	3.87	0.67	9.79
CRSP	5.13	5.58	0.47	17.37

Table 157: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 1\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-11.22	-14.97	-10.79	-13.28	-11.86	-15.26	-11.64	-13.46
	INMF	-20.99	-19.64	-17.80	-22.98	-22.32	-20.48	-19.88	-23.49
	CRSP	-17.79	-17.03	-12.51	-20.69	-19.22	-18.58	-14.84	-21.27
Exact	FFMF	-10.79	-14.93	-10.79	-12.05	-11.60	-15.24	-11.64	-12.67
	INMF	-18.21	-18.69	-17.80	-19.45	-20.37	-19.86	-19.88	-20.99
	CRSP	-13.84	-14.23	-12.50	-16.34	-16.55	-16.94	-14.83	-18.22
Mtm	FFMF	-15.09	-16.76	-15.50	-15.91	-15.09	-16.76	-15.51	-15.91
	INMF	-25.23	-23.23	-25.99	-25.59	-25.26	-23.24	-26.01	-25.61
	CRSP	-21.88	-20.59	-20.88	-22.19	-21.91	-20.62	-20.90	-22.22

Table 158: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	-8.74	3.50	-11.42	-8.38	3.26	-10.96
	INMF	-17.31	6.35	-8.84	-16.77	5.43	-7.90
	CRSP	-0.39	-0.25	-13.67	-0.53	-1.20	-12.79
Exact	FFMF	-9.14	3.01	-10.59	-8.63	2.95	-10.41
	INMF	-19.17	2.74	-7.90	-18.18	2.85	-7.22
	CRSP	-1.75	-4.82	-13.10	-1.78	-4.35	-12.30
Mtm	FFMF	-6.59	2.50	-10.19	-6.58	2.50	-10.19
	INMF	-16.52	1.18	-6.94	-16.51	1.18	-6.93
	CRSP	0.32	-5.08	-10.87	0.32	-5.07	-10.87

Table 159: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		NRG	ORLVAR	ORL	PD5	PD10	PD20	PD50	NRG	ORLVAR	ORL	PD5	PD10	PD20	PD50
1/N	FFMF	2.93	0.48	0.63	1.85	2.60	2.90	2.93	3.42	1.31	1.85	2.20	3.03	3.37	3.42
	INMF	7.98	3.04	3.04	3.14	4.29	4.99	6.82	11.77	7.04	6.79	4.61	6.40	7.68	10.33
	CRSP	-1.63	0.37	-0.60	2.56	3.58	5.34	2.87	3.09	5.46	4.29	4.82	6.53	8.95	7.26
MV	FFMF	0.02	-0.08	-0.08	0.04	0.05	0.02	-0.03	0.06	-0.04	-0.04	0.07	0.08	0.06	0.01
	INMF	8.69	4.35	4.86	1.83	2.88	4.76	6.17	9.97	6.65	6.97	2.22	3.38	5.42	6.98
	CRSP	-0.84	-0.90	-1.13	2.42	2.61	4.37	6.31	2.51	3.00	2.61	3.83	4.19	6.15	8.74
PPN	FFMF	15.74	3.94	4.79	4.60	6.26	8.78	13.29	17.38	8.32	9.05	5.10	6.91	9.59	14.26
	INMF	12.87	4.75	4.88	5.68	7.32	9.31	8.22	18.04	12.36	13.11	6.73	8.58	11.13	11.77
	CRSP	11.59	8.85	9.44	8.63	10.74	13.84	17.84	17.71	17.25	18.08	9.96	11.99	15.51	21.48

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		NRG	ORLVAR	ORL	PD5	PD10	PD20	PD50	NRG	ORLVAR	ORL	PD5	PD10	PD20	PD50
1/N	FFMF	2.85	0.61	0.76	1.84	2.57	2.86	2.85	3.15	1.11	1.63	2.04	2.81	3.13	3.15
	INMF	7.13	2.89	2.91	3.28	4.44	5.06	6.41	9.81	5.63	5.42	3.98	5.37	6.37	8.51
	CRSP	-1.41	0.51	-0.32	3.08	4.27	5.87	3.32	1.84	3.65	2.72	4.10	5.37	7.16	5.49
MV	FFMF	0.04	-0.07	-0.07	0.05	0.05	0.02	-0.03	0.06	-0.05	-0.05	0.07	0.07	0.04	-0.02
	INMF	7.86	4.05	4.52	1.86	2.87	4.64	6.04	8.69	5.73	6.02	2.06	3.08	4.89	6.31
	CRSP	-1.25	-1.50	-1.54	2.64	2.87	4.55	5.92	0.72	1.00	0.68	3.24	3.30	4.81	6.62
PPN	FFMF	15.47	4.17	4.99	4.61	6.26	8.75	13.18	16.53	7.76	8.46	5.02	6.76	9.32	13.75
	INMF	11.57	4.19	4.27	5.68	7.30	9.23	8.11	15.21	10.18	10.84	6.51	8.22	10.45	10.61
	CRSP	11.09	8.05	8.54	8.63	10.75	13.95	17.92	15.39	14.40	15.12	9.73	11.59	14.80	20.23

Table 160: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		NRG	ORLVAR	ORL	PD5	PD10	PD20	PD50	NRG	ORLVAR	ORL	PD5	PD10	PD20	PD50
MV	FFMF	-11.70	-9.65	-9.78	-10.75	-11.40	-11.68	-11.75	-11.70	-9.96	-10.43	-10.64	-11.35	-11.66	-11.75
	INMF	-18.64	-18.15	-17.75	-20.20	-20.27	-19.35	-19.67	-18.64	-17.61	-17.17	-19.20	-19.65	-19.04	-19.82
	CRSP	-0.95	-3.00	-2.28	-1.89	-2.67	-2.65	1.54	-0.95	-2.72	-2.00	-1.34	-2.59	-2.95	0.98
BH	FFMF	0.08	2.51	2.36	1.14	0.40	0.10	0.08	0.08	2.17	1.62	1.27	0.46	0.13	0.08
	INMF	-4.85	-0.30	-0.30	-0.39	-1.49	-2.15	-3.83	-4.85	-0.65	-0.41	1.66	-0.05	-1.24	-3.61
	CRSP	-3.23	-5.17	-4.24	-7.19	-8.10	-9.64	-7.47	-3.24	-5.42	-4.35	-4.84	-6.37	-8.44	-7.00
PPN	FFMF	0.54	-7.52	-6.89	-8.17	-7.40	-5.48	-1.59	0.54	-5.28	-5.16	-8.91	-8.08	-6.08	-2.13
	INMF	-3.73	-6.38	-6.26	-5.63	-5.23	-4.11	-6.70	-3.73	-4.31	-3.44	-7.00	-6.97	-5.91	-7.66
	CRSP	-1.42	-5.76	-4.33	-7.96	-7.09	-6.08	-0.45	-1.42	-4.02	-2.24	-9.44	-9.24	-8.47	-2.22

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		NRG	ORLVAR	ORL	PD5	PD10	PD20	PD50	NRG	ORLVAR	ORL	PD5	PD10	PD20	PD50
MV	FFMF	-11.13	-9.25	-9.39	-10.24	-10.87	-11.15	-11.20	-11.13	-9.44	-9.90	-10.15	-10.83	-11.12	-11.20
	INMF	-17.62	-17.26	-16.91	-19.31	-19.41	-18.51	-18.46	-17.62	-16.69	-16.30	-18.31	-18.58	-17.93	-18.46
	CRSP	-1.62	-3.74	-2.98	-2.19	-3.09	-3.00	0.70	-1.62	-3.08	-2.50	-1.34	-2.47	-2.70	0.55
BH	FFMF	0.10	2.33	2.18	1.09	0.38	0.09	0.10	0.10	2.12	1.60	1.19	0.43	0.12	0.10
	INMF	-4.00	-0.04	-0.06	-0.42	-1.52	-2.10	-3.34	-3.99	-0.19	0.01	1.39	0.05	-0.89	-2.84
	CRSP	-2.99	-4.84	-4.05	-7.21	-8.27	-9.66	-7.43	-2.99	-4.68	-3.81	-5.09	-6.23	-7.80	-6.34
PPN	FFMF	0.58	-7.25	-6.65	-7.98	-7.19	-5.28	-1.42	0.58	-5.12	-4.99	-8.36	-7.55	-5.62	-1.81
	INMF	-3.38	-6.05	-6.00	-5.07	-4.69	-3.54	-5.73	-3.37	-3.94	-3.16	-5.67	-5.42	-4.37	-6.11
	CRSP	-1.19	-5.73	-4.51	-7.58	-6.86	-5.62	0.09	-1.19	-3.75	-2.26	-8.07	-7.64	-6.56	-0.60

Table 161: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	NRG	ORLVAR	ORL	PD5	PD10	PD20	PD50
1/N	FFMF	2.08	0.53	1.31	1.28	0.98	0.78	0.66	0.55
	INMF	4.07	0.51	1.37	1.36	2.39	1.76	1.24	0.81
	CRSP	5.99	0.67	1.32	1.16	3.61	2.74	1.99	1.28
MV	FFMF	1.48	0.52	0.81	0.84	1.14	1.04	0.95	0.85
	INMF	4.10	0.45	1.71	1.66	2.99	2.53	2.01	1.40
	CRSP	6.08	0.30	1.21	1.13	4.42	3.62	2.89	1.90
PPN	FFMF	12.66	0.53	6.64	6.32	9.88	8.17	6.00	2.97
	INMF	10.14	0.51	4.49	4.42	7.60	6.21	4.50	2.40
	CRSP	18.16	0.59	4.19	4.04	14.93	12.63	9.53	5.28

Table 162: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 1\%$ .



## 10 Parametric portfolios with multi-period objective function

Throughout our manuscript, we follow Brandt, Santa-Clara, and Valkanov (2009) and compute portfolio weights under the parametric portfolio strategy using a myopic objective function where utility is defined over a one-period return. An investor maximizing utility from terminal wealth over a multi-period investment horizon, might, however, want to consider a multi-period objective function. In this section, we therefore extend the approach of Brandt, Santa-Clara, and Valkanov (2009) to a multi-period investment horizon to investigate whether calibrating the parametric portfolio strategy to optimize utility over a multi-period horizon could help improve its performance. Using the same notation as in our manuscript, an investor maximizing utility from the gross portfolio return over our  $T$  period investment horizon then solves the optimization problem

$$\max_{\theta} \frac{1}{1-\gamma} \mathbb{E} \left[ \prod_{t=1}^T \left( \sum_{i=1}^N w_{i,t}^+ R_{i,t} \right)^{1-\gamma} \right] \quad (1)$$

$$= \max_{\theta} \frac{1}{1-\gamma} \sum_{t=1}^T \left[ \mathbb{E} \left[ \left( \sum_{i=1}^N w_{i,t}^+ R_{i,t} \right)^{1-\gamma} \right] + \text{Cov} \left( \left( \sum_{i=1}^N w_{i,t}^+ R_{i,t} \right)^{1-\gamma}, \prod_{k=t+1}^T \left( \sum_{i=1}^N w_{i,k}^+ R_{j,k} \right)^{1-\gamma} \right) \right]. \quad (2)$$

That is, the multi-period optimization problem differs from its single-period counterpart by accounting for intertemporal correlations between portfolio returns. Such correlations can, e.g., be due to momentum in stock returns. The vector  $\theta$ , based on past  $T$  months of data is then chosen to maximize the investor's utility over a multi-period investment horizon:

$$\max_{\theta} \prod_{t=1}^T \left( \sum_{i=1}^N \frac{\max [\bar{w}_{i,t} + \frac{1}{N} \theta^\top \hat{x}_{i,t}, 0]}{\sum_{j=1}^N \max [\bar{w}_{j,t} + \frac{1}{N} \theta^\top \hat{x}_{j,t}, 0]} R_{i,t} \right)^{1-\gamma}. \quad (3)$$

Overall, our results reported in this section show that allowing for the parametric portfolio policies to be calibrated over a multi-period objective function does not systematically improve out-of-sample performance. This finding should be driven through three channels. First, autocorrelation in monthly returns tends to be weak. Second, private investors – which our work focuses on – cannot exploit momentum by leveraging up. Third, when optimizing portfolio weights using a multi-period objective function, covariances between assets' returns have to be (implicitly) taken into account, which introduces a new source of estimation risk. One of the major advantages of the single-period optimization problem suggested by Brandt, Santa-Clara, and Valkanov (2009) is that it is very little affected by estimation risk.

Panel A: Gain Relative to 1/N		
Data	PPN	PPNm
FFMF	0.66	4.88
INMF	1.10	-4.67
CRSP	3.23	3.78

Panel B: Trading Volume			
Data	1/N	PPN	PPNm
FFMF	2.08	12.61	15.33
INMF	3.76	9.80	15.07
CRSP	5.13	17.40	18.46

Table 163: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		1/N	PPN	PPNm	1/N	PPN	PPNm
Average	FFMF	-11.09	-12.92	-13.42	-11.76	-13.14	-13.63
	INMF	-19.56	-22.05	-23.05	-21.07	-22.71	-23.47
	CRSP	-16.48	-19.64	-19.75	-18.06	-20.31	-20.42
Exact	FFMF	-10.72	-11.74	-11.82	-11.52	-12.33	-12.51
	INMF	-17.84	-19.02	-20.08	-19.98	-20.59	-21.18
	CRSP	-13.27	-15.58	-15.65	-15.88	-17.38	-17.57
Mtm	FFMF	-15.09	-15.69	-16.09	-15.09	-15.69	-16.09
	INMF	-25.34	-25.75	-26.27	-25.36	-25.77	-26.29
	CRSP	-21.92	-22.40	-22.68	-21.95	-22.43	-22.71

Table 164: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end		Panel B: Taxation at end	
		PPN	PPNm	PPN	PPNm
Average	FFMF	-1.41	2.12	-0.92	2.65
	INMF	-2.02	-8.80	-1.00	-7.56
	CRSP	-0.68	-0.29	0.39	0.80
Exact	FFMF	-0.49	3.59	-0.26	3.71
	INMF	-0.35	-7.26	0.34	-6.09
	CRSP	0.47	0.94	1.38	1.69
Mtm	FFMF	-0.06	3.64	-0.06	3.63
	INMF	0.55	-5.86	0.55	-5.85
	CRSP	2.59	2.77	2.59	2.77

Table 165: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.20	0.21	1.20	1.44	1.24	0.47	0.45	1.58	0.38	1.58	1.84	1.65	1.11	1.08
	INMF	1.31	0.30	1.31	1.04	2.48	1.09	1.07	2.74	0.82	2.74	2.90	4.62	3.29	3.25
	CRSP	-0.48	0.19	-0.48	0.29	-2.66	-2.09	-5.12	1.95	1.34	1.95	3.43	0.80	1.70	-1.74
PPN	FFMF	0.09	0.18	0.36	1.48	2.44	-0.14	-0.18	0.72	0.57	1.03	2.44	3.60	-1.40	-0.64
	INMF	1.26	0.43	1.53	1.69	0.80	1.11	1.66	2.26	1.40	2.72	3.85	4.14	2.48	2.10
	CRSP	2.26	2.19	2.66	1.15	1.27	1.66	-0.51	3.37	4.16	4.20	3.36	4.39	2.21	-1.16
PPNm	FFMF	-0.53	0.18	-0.31	-1.43	-3.20	-2.13	-2.48	0.12	0.69	0.39	-0.32	-1.78	-2.05	-1.86
	INMF	1.71	0.94	1.87	1.67	2.28	-3.88	-2.09	2.29	2.15	2.85	3.19	4.80	3.12	5.59
	CRSP	1.43	2.64	2.24	3.37	3.95	1.79	-1.14	2.76	4.58	3.85	5.52	6.85	3.73	1.98

Panel B: Taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.16	0.21	1.16	1.38	1.16	0.43	0.39	1.38	0.31	1.38	1.63	1.43	0.91	0.87
	INMF	1.46	0.34	1.46	1.03	2.07	0.86	0.73	1.80	0.63	1.80	1.71	3.09	2.04	1.93
	CRSP	0.11	0.33	0.11	0.66	-2.31	-2.46	-5.32	0.83	1.19	0.83	1.66	-0.71	-0.09	-3.01
PPN	FFMF	0.08	0.18	0.34	1.40	2.30	-0.14	-0.22	0.58	0.56	0.89	2.14	3.12	-1.42	-0.77
	INMF	1.29	0.44	1.50	1.47	0.29	0.67	0.88	1.92	1.36	2.28	2.86	2.56	1.91	1.10
	CRSP	2.30	2.24	2.65	1.33	1.28	0.77	-1.62	2.97	4.12	3.82	2.68	3.25	1.22	-2.84
PPNm	FFMF	-0.53	0.19	-0.30	-1.41	-3.14	-2.06	-2.45	0.02	0.68	0.30	-0.52	-2.07	-2.05	-1.92
	INMF	1.62	0.93	1.73	1.36	1.65	-3.91	-2.35	2.06	2.11	2.58	2.60	3.70	2.64	4.71
	CRSP	1.44	2.65	2.18	3.23	3.70	0.75	-2.41	2.44	4.53	3.56	4.87	5.65	2.80	-0.10

Table 166: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, PPN, and PPNm.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, PPN, and PPNm strategies when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

		Exact basis rule										Average basis rule									
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2						
PPN	FFMF	-1.58	-0.53	-1.32	-0.45	0.68	-1.10	-1.11	-2.25	-1.22	-1.95	-0.84	0.47	-3.86	-3.09						
	INMF	-0.40	-0.22	-0.14	0.29	-1.99	-0.33	0.23	-2.48	-1.46	-2.04	-1.12	-2.47	-2.79	-3.12						
	CRSP	3.25	2.48	3.65	1.33	4.53	4.32	5.36	0.70	2.09	1.51	-0.75	2.86	-0.18	-0.10						
PPNm	FFMF	1.82	3.56	2.05	0.66	-0.94	0.91	0.57	0.66	2.44	0.92	-0.04	-1.32	-1.06	-0.84						
	INMF	-6.90	-6.67	-6.75	-6.69	-7.45	-11.83	-10.17	-9.21	-7.60	-8.71	-8.54	-8.65	-8.95	-6.74						
	CRSP	2.87	3.40	3.70	4.03	7.79	4.93	5.18	0.50	2.89	1.56	1.72	5.70	1.70	3.48						

Panel B: Taxation at end

		Exact basis rule										Average basis rule									
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2						
PPN	FFMF	-1.33	-0.29	-1.08	-0.24	0.86	-0.83	-0.88	-1.70	-0.68	-1.39	-0.41	0.73	-3.20	-2.52						
	INMF	0.17	0.44	0.38	0.76	-1.41	0.15	0.49	-0.89	-0.28	-0.53	0.12	-1.51	-1.12	-1.81						
	CRSP	3.60	3.31	3.95	2.05	5.12	4.73	5.35	2.52	3.29	3.37	1.40	4.40	1.71	0.57						
PPNm	FFMF	1.97	3.68	2.20	0.85	-0.71	1.13	0.77	1.28	3.03	1.56	0.49	-0.90	-0.35	-0.19						
	INMF	-5.94	-5.53	-5.84	-5.79	-6.48	-10.54	-8.96	-7.33	-6.20	-6.86	-6.75	-7.01	-7.02	-5.05						
	CRSP	3.04	4.04	3.80	4.29	7.95	5.03	4.81	2.40	4.12	3.52	3.98	7.25	3.71	3.82						

Table 167: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for PPN, and PPNm.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the PPN, and PPNm strategies when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.57	1.06	2.10	1.06	0.78	0.58	1.08	0.87
	INMF	4.97	2.18	4.41	2.18	1.34	0.93	1.90	1.18
	CRSP	7.61	3.78	6.82	3.78	2.37	1.67	1.70	1.22
PPN	FFMF	13.64	9.11	12.97	9.06	5.69	3.13	9.70	7.56
	INMF	11.51	7.29	10.81	7.05	4.22	2.19	7.72	5.42
	CRSP	20.89	15.00	20.12	15.52	10.89	6.87	9.42	4.97
PPNm	FFMF	16.52	11.59	15.85	11.68	7.76	4.44	12.23	10.06
	INMF	16.56	11.60	15.91	11.77	7.98	4.78	11.94	9.46
	CRSP	21.66	15.82	20.88	16.34	11.80	8.06	10.07	6.28

Table 168: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0\%$ .

Panel A: Gain Relative to 1/N		
Data	PPN	PPNm
FFMF	-4.45	-2.58
INMF	-2.74	-11.79
CRSP	-3.79	-4.32

Panel B: Trading Volume			
Data	1/N	PPN	PPNm
FFMF	2.08	12.60	15.32
INMF	3.75	9.79	15.06
CRSP	5.13	17.38	18.45

Table 169: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0.5\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		1/N	PPN	PPNm	1/N	PPN	PPNm
Average	FFMF	-11.20	-13.18	-13.61	-11.85	-13.38	-13.80
	INMF	-20.57	-22.82	-23.79	-21.99	-23.41	-24.14
	CRSP	-17.48	-20.64	-20.61	-18.99	-21.27	-21.22
Exact	FFMF	-10.77	-11.91	-12.01	-11.58	-12.52	-12.72
	INMF	-18.09	-19.34	-20.43	-20.25	-20.88	-21.46
	CRSP	-13.61	-16.21	-16.32	-16.27	-18.04	-18.27
Mtm	FFMF	-15.09	-15.79	-16.13	-15.09	-15.80	-16.13
	INMF	-25.28	-25.67	-26.15	-25.31	-25.69	-26.17
	CRSP	-21.90	-22.30	-22.54	-21.93	-22.33	-22.58

Table 170: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end		Panel B: Taxation at end	
		PPN	PPNm	PPN	PPNm
Average	FFMF	-6.58	-5.22	-6.10	-4.74
	INMF	-5.50	-15.36	-4.52	-14.22
	CRSP	-7.47	-7.94	-6.50	-6.95
Exact	FFMF	-5.67	-3.94	-5.47	-3.84
	INMF	-4.23	-14.31	-3.51	-13.12
	CRSP	-6.68	-7.32	-5.83	-6.60
Mtm	FFMF	-5.25	-3.78	-5.25	-3.78
	INMF	-3.24	-12.82	-3.24	-12.81
	CRSP	-4.29	-5.11	-4.29	-5.11

Table 171: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.



Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.90	0.56	1.90	2.24	2.10	1.12	1.16	2.33	0.74	2.33	2.71	2.59	1.92	1.95
	INMF	2.83	0.90	2.83	3.01	4.71	2.72	3.07	4.79	1.57	4.79	5.64	7.82	6.03	6.47
	CRSP	1.56	1.15	1.56	2.84	0.13	0.44	-2.44	4.49	2.64	4.49	6.62	4.38	5.39	2.07
PPN	FFMF	3.13	2.14	3.75	6.26	8.19	2.54	3.20	3.78	2.59	4.47	7.25	9.40	2.77	3.86
	INMF	4.26	2.15	4.94	6.53	6.62	3.65	5.49	5.47	3.39	6.35	9.02	10.48	6.40	7.24
	CRSP	6.26	6.30	7.42	8.05	9.88	7.98	7.60	7.68	8.82	9.21	10.53	13.59	10.05	8.61
PPNm	FFMF	2.73	2.62	3.54	4.11	3.56	1.84	2.11	3.28	3.13	4.14	5.10	4.95	3.17	3.89
	INMF	5.52	4.16	6.45	8.40	10.77	-0.67	2.70	6.27	5.77	7.71	10.25	13.77	10.28	13.72
	CRSP	6.17	7.30	7.68	11.00	13.39	9.63	8.05	7.51	9.57	9.35	13.23	16.58	13.04	12.26

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.87	0.56	1.87	2.18	2.03	1.08	1.11	2.12	0.67	2.12	2.47	2.34	1.70	1.72
	INMF	2.98	0.94	2.98	3.04	4.31	2.52	2.75	3.80	1.39	3.80	4.35	6.14	4.69	5.02
	CRSP	2.20	1.31	2.20	3.25	0.52	0.12	-2.58	3.33	2.49	3.33	4.75	2.72	3.44	0.65
PPN	FFMF	3.13	2.14	3.74	6.19	8.06	2.53	3.15	3.64	2.58	4.32	6.93	8.88	2.74	3.72
	INMF	4.24	2.16	4.85	6.27	6.05	3.18	4.65	5.13	3.34	5.91	7.98	8.77	5.83	6.19
	CRSP	6.24	6.39	7.44	8.27	9.94	7.04	6.50	7.30	8.77	8.83	9.80	12.35	9.03	6.77
PPNm	FFMF	2.74	2.63	3.55	4.14	3.63	1.88	2.11	3.17	3.12	4.04	4.89	4.64	3.16	3.82
	INMF	5.43	4.11	6.30	8.06	10.06	-0.72	2.41	6.04	5.71	7.44	9.64	12.61	9.74	12.77
	CRSP	6.18	7.32	7.61	10.86	13.11	8.43	6.63	7.18	9.52	9.04	12.52	15.26	11.95	9.99

Table 172: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, PPN, and PPNm.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, PPN, and PPNm strategies when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
PPN	FFMF	-4.54	-4.19	-3.96	-1.96	-0.05	-4.35	-3.77	-5.25	-4.86	-4.63	-2.44	-0.37	-5.80	-4.83
	INMF	-2.89	-3.04	-2.26	-0.95	-2.48	-3.36	-1.98	-4.89	-3.81	-4.10	-2.48	-3.17	-5.17	-4.82
	CRSP	-2.37	-1.93	-1.30	-1.96	2.41	0.33	2.91	-4.65	-1.90	-3.29	-4.08	0.70	-3.38	-1.54
PPNm	FFMF	-3.15	-1.97	-2.40	-2.17	-2.56	-3.25	-3.03	-4.35	-2.97	-3.55	-3.01	-3.04	-4.06	-3.42
	INMF	-12.07	-11.55	-11.29	-9.83	-9.35	-17.14	-14.62	-14.16	-11.87	-13.01	-11.68	-10.69	-11.98	-9.60
	CRSP	-3.12	-1.69	-1.74	0.03	4.96	1.16	2.64	-5.27	-1.72	-3.66	-2.23	2.82	-1.26	1.25

Panel B: Taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
PPN	FFMF	-4.30	-3.98	-3.73	-1.76	0.13	-4.11	-3.55	-4.70	-4.32	-4.07	-2.01	-0.10	-5.14	-4.25
	INMF	-2.32	-2.35	-1.76	-0.49	-1.91	-2.89	-1.73	-3.29	-2.68	-2.57	-1.20	-2.16	-3.48	-3.46
	CRSP	-2.11	-1.11	-1.01	-1.25	3.00	0.68	2.94	-2.90	-0.78	-1.53	-1.99	2.26	-1.46	-0.82
PPNm	FFMF	-3.02	-1.86	-2.25	-2.00	-2.33	-3.08	-2.88	-3.75	-2.42	-2.94	-2.48	-2.59	-3.37	-2.77
	INMF	-11.06	-10.40	-10.32	-8.89	-8.33	-15.87	-13.42	-12.37	-10.57	-11.21	-9.87	-8.99	-10.08	-7.89
	CRSP	-2.96	-1.06	-1.65	0.29	5.11	1.15	2.23	-3.48	-0.57	-1.82	-0.05	4.40	0.70	1.67

Table 173: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for PPN, and PPNm.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the PPN, and PPNm strategies when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.18	0.84	1.70	0.84	0.67	0.56	1.01	0.87
	INMF	4.33	1.92	3.78	1.92	1.18	0.86	1.74	1.14
	CRSP	6.58	3.14	5.84	3.14	2.04	1.46	1.54	1.10
PPN	FFMF	12.82	8.32	12.18	8.33	5.18	2.80	8.94	7.05
	INMF	10.51	6.50	9.84	6.28	3.79	1.98	7.12	5.09
	CRSP	19.07	13.47	18.36	13.94	9.58	5.94	8.68	4.63
PPNm	FFMF	15.60	10.83	14.95	10.89	7.21	4.09	11.33	9.40
	INMF	15.71	10.88	15.07	10.93	7.46	4.45	11.38	9.08
	CRSP	20.10	14.48	19.41	15.03	10.75	7.12	9.28	5.84

Table 174: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0.5\%$ .

Panel A: Gain Relative to 1/N		
Data	PPN	PPNm
FFMF	-9.31	-9.52
INMF	-6.49	-18.53
CRSP	-10.51	-11.95

Panel B: Trading Volume			
Data	1/N	PPN	PPNm
FFMF	2.07	12.59	15.31
INMF	3.75	9.79	15.05
CRSP	5.13	17.37	18.44

Table 175: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 1\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		1/N	PPN	PPNm	1/N	PPN	PPNm
Average	FFMF	-11.22	-13.28	-13.65	-11.86	-13.46	-13.83
	INMF	-20.99	-22.98	-23.97	-22.32	-23.49	-24.26
	CRSP	-17.79	-20.69	-20.86	-19.22	-21.27	-21.44
Exact	FFMF	-10.79	-12.05	-12.15	-11.60	-12.67	-12.87
	INMF	-18.21	-19.45	-20.62	-20.37	-20.99	-21.59
	CRSP	-13.84	-16.34	-16.48	-16.55	-18.22	-18.46
Mtm	FFMF	-15.09	-15.91	-16.17	-15.09	-15.91	-16.18
	INMF	-25.23	-25.59	-26.02	-25.26	-25.61	-26.04
	CRSP	-21.88	-22.19	-22.41	-21.91	-22.22	-22.44

Table 176: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end		Panel B: Taxation at end	
		PPN	PPNm	PPN	PPNm
Average	FFMF	-11.42	-12.00	-10.96	-11.55
	INMF	-8.84	-21.60	-7.90	-20.57
	CRSP	-13.67	-15.24	-12.79	-14.37
Exact	FFMF	-10.59	-10.90	-10.41	-10.82
	INMF	-7.90	-20.92	-7.22	-19.78
	CRSP	-13.10	-14.64	-12.30	-13.97
Mtm	FFMF	-10.19	-10.68	-10.19	-10.68
	INMF	-6.94	-19.40	-6.93	-19.38
	CRSP	-10.87	-12.55	-10.87	-12.55

Table 177: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.60	0.92	2.60	3.02	2.93	1.75	1.84	3.03	1.09	3.03	3.49	3.42	2.66	2.73
	INMF	4.29	1.51	4.29	4.89	6.82	4.26	4.96	6.40	2.26	6.40	7.80	10.33	8.18	9.01
	CRSP	3.58	2.32	3.58	5.35	2.87	2.91	0.20	6.53	3.91	6.53	9.18	7.26	8.31	5.15
PPN	FFMF	6.26	4.46	7.26	11.26	14.25	5.30	6.68	6.91	4.94	7.97	12.24	15.44	7.65	8.93
	INMF	7.32	4.15	8.40	11.48	12.56	6.21	9.35	8.58	5.61	9.84	14.02	16.53	10.73	12.39
	CRSP	10.74	11.40	12.44	15.42	18.83	14.77	16.10	11.99	14.19	14.21	17.91	22.84	18.08	18.01
PPNm	FFMF	6.07	5.68	7.58	9.94	10.75	5.96	6.89	6.58	6.20	8.12	10.88	12.08	9.30	10.35
	INMF	9.50	8.48	11.40	15.58	19.91	2.67	7.74	10.30	10.36	12.65	17.40	22.99	17.66	22.22
	CRSP	11.09	12.95	13.38	18.98	23.44	17.48	17.56	12.51	15.48	15.16	21.43	26.93	22.50	23.15

Panel B: Taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.57	0.92	2.57	2.97	2.85	1.71	1.78	2.81	1.03	2.81	3.24	3.15	2.43	2.48
	INMF	4.44	1.55	4.44	4.91	6.41	4.04	4.61	5.37	2.08	5.37	6.41	8.51	6.75	7.41
	CRSP	4.27	2.50	4.27	5.81	3.32	2.64	0.11	5.37	3.78	5.37	7.25	5.49	6.22	3.58
PPN	FFMF	6.26	4.47	7.25	11.19	14.13	5.29	6.63	6.76	4.92	7.82	11.90	14.89	7.63	8.79
	INMF	7.30	4.15	8.32	11.22	11.96	5.74	8.47	8.22	5.56	9.37	12.90	14.69	10.08	11.25
	CRSP	10.75	11.51	12.48	15.68	18.92	13.77	14.99	11.59	14.13	13.82	17.17	21.52	17.07	16.04
PPNm	FFMF	6.08	5.70	7.60	9.96	10.82	5.95	6.85	6.48	6.18	8.03	10.68	11.74	9.28	10.27
	INMF	9.42	8.38	11.24	15.20	19.13	2.61	7.42	10.10	10.31	12.39	16.78	21.75	17.11	21.20
	CRSP	11.10	12.97	13.32	18.84	23.19	16.23	16.06	12.15	15.42	14.83	20.68	25.48	21.37	20.75

Table 178: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, PPN, and PPNm.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, PPN, and PPNm strategies when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
PPN	FFMF	-7.40	-7.45	-6.53	-3.44	-0.76	-7.47	-6.34	-8.08	-8.05	-7.18	-3.93	-1.12	-7.11	-6.07
	INMF	-5.23	-5.51	-4.27	-2.11	-2.95	-6.17	-4.04	-6.97	-5.86	-5.89	-3.58	-3.72	-6.69	-6.02
	CRSP	-7.09	-5.39	-5.66	-4.79	0.38	-3.09	0.69	-9.24	-5.13	-7.45	-6.76	-1.13	-5.88	-3.10
PPNm	FFMF	-7.89	-6.70	-6.58	-4.92	-4.13	-7.22	-6.49	-8.98	-7.56	-7.66	-5.72	-4.64	-6.31	-5.47
	INMF	-16.97	-15.50	-15.53	-12.86	-11.23	-22.13	-18.83	-18.72	-15.39	-17.00	-14.61	-12.61	-14.73	-12.10
	CRSP	-8.46	-5.77	-6.57	-3.60	2.42	-2.56	0.15	-10.49	-5.80	-8.37	-5.73	0.30	-4.13	-0.72

Panel B: Taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
PPN	FFMF	-7.19	-7.26	-6.32	-3.26	-0.59	-7.26	-6.15	-7.55	-7.53	-6.63	-3.50	-0.83	-6.45	-5.48
	INMF	-4.69	-4.84	-3.78	-1.64	-2.38	-5.71	-3.80	-5.42	-4.76	-4.41	-2.29	-2.66	-5.03	-4.61
	CRSP	-6.86	-4.60	-5.40	-4.12	0.94	-2.79	0.73	-7.64	-4.09	-5.79	-4.72	0.47	-3.88	-2.30
PPNm	FFMF	-7.76	-6.59	-6.44	-4.76	-3.91	-7.09	-6.38	-8.39	-7.03	-7.06	-5.18	-4.18	-5.63	-4.82
	INMF	-15.95	-14.38	-14.55	-11.91	-10.18	-20.88	-17.62	-17.01	-14.17	-15.28	-12.83	-10.87	-12.86	-10.37
	CRSP	-8.34	-5.18	-6.50	-3.38	2.58	-2.58	-0.27	-8.86	-4.77	-6.68	-3.66	1.86	-2.16	-0.18

Table 179: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for PPN, and PPNm.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the PPN, and PPNm strategies when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.08	0.78	1.59	0.78	0.63	0.55	0.98	0.87
	INMF	4.07	1.76	3.53	1.76	1.09	0.81	1.65	1.11
	CRSP	5.99	2.74	5.29	2.74	1.79	1.28	1.40	1.01
PPN	FFMF	12.66	8.17	12.04	8.17	5.03	2.65	8.75	6.89
	INMF	10.14	6.21	9.47	6.00	3.60	1.89	6.85	4.95
	CRSP	18.16	12.63	17.51	13.16	8.94	5.50	8.15	4.44
PPNm	FFMF	15.43	10.69	14.80	10.75	7.04	3.99	11.15	9.25
	INMF	15.38	10.64	14.77	10.70	7.29	4.36	11.15	8.90
	CRSP	19.26	13.68	18.62	14.28	10.14	6.68	8.83	5.55

Table 180: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 1\%$ .



## 11 Parametric portfolios when $z = 0$

This section contains detailed tables for parametric portfolios when  $z = 0$

Panel A: Gain Relative to 1/N				
Data		MV	BH	PPN
FFMF		-6.03	1.47	0.70
INMF		-18.95	-1.65	-0.83
CRSP		-0.60	-11.12	1.50

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.08	1.63	0.69	24.62
INMF	3.76	3.87	0.68	18.36
CRSP	5.13	5.59	0.47	32.16

Table 181: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-11.09	-15.04	-10.86	-14.22	-11.76	-15.31	-11.70	-14.32
	INMF	-19.56	-19.17	-17.95	-23.19	-21.07	-20.05	-20.00	-23.49
	CRSP	-16.48	-16.08	-12.58	-20.84	-18.06	-17.86	-14.88	-21.20
Exact	FFMF	-10.72	-15.01	-10.86	-13.40	-11.52	-15.30	-11.70	-13.64
	INMF	-17.84	-18.48	-17.95	-21.74	-19.98	-19.61	-20.00	-22.33
	CRSP	-13.27	-13.67	-12.58	-18.98	-15.88	-16.30	-14.88	-19.70
Mtm	FFMF	-15.09	-16.80	-15.53	-16.33	-15.09	-16.80	-15.53	-16.33
	INMF	-25.34	-23.33	-26.07	-25.84	-25.36	-23.35	-26.10	-25.87
	CRSP	-21.92	-20.65	-20.92	-22.79	-21.95	-20.68	-20.94	-22.82

Table 182: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	-10.20	1.74	-2.84	-9.81	1.53	-2.22
	INMF	-18.55	0.32	-5.31	-17.91	-0.31	-3.87
	CRSP	-0.13	-6.97	-3.80	-0.36	-7.67	-2.39
Exact	FFMF	-10.53	1.32	-2.32	-10.03	1.27	-1.70
	INMF	-19.59	-1.78	-5.54	-18.57	-1.67	-3.74
	CRSP	-1.06	-10.41	-5.18	-1.10	-10.06	-3.11
Mtm	FFMF	-7.92	0.95	-0.77	-7.92	0.94	-0.77
	INMF	-16.77	-2.62	-1.50	-16.76	-2.61	-1.50
	CRSP	1.01	-9.97	0.36	1.01	-9.96	0.37

Table 183: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.20	0.21	1.20	1.44	1.24	0.47	0.45	1.58	0.38	1.58	1.84	1.65	1.11	1.08
	INMF	1.31	0.30	1.31	1.04	2.48	1.09	1.07	2.74	0.82	2.74	2.90	4.62	3.29	3.25
	CRSP	-0.48	0.19	-0.48	0.29	-2.66	-2.09	-5.12	1.95	1.34	1.95	3.43	0.80	1.70	-1.74
MV	FFMF	0.00	0.03	0.03	0.03	0.03	0.10	0.09	0.03	0.05	0.06	0.06	0.07	0.13	0.13
	INMF	0.94	0.28	2.29	4.97	4.40	2.63	5.17	1.38	0.65	2.83	5.64	5.20	2.97	5.20
	CRSP	-0.50	1.05	-0.14	-0.07	-0.61	-0.51	-0.24	0.98	2.37	1.48	1.80	1.54	-2.38	-2.53
PPN	FFMF	0.13	0.87	0.83	1.60	3.31	-0.51	-0.24	0.60	1.05	1.14	2.06	3.84	-5.49	-4.71
	INMF	2.20	2.36	2.72	3.99	4.37	-2.24	-0.76	2.36	2.80	2.63	3.60	4.65	-3.46	-2.96
	CRSP	3.27	7.69	7.03	6.69	4.86	-2.78	-2.58	3.69	8.75	7.26	6.60	4.99	1.15	1.38

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.16	0.21	1.16	1.38	1.16	0.43	0.39	1.38	0.31	1.38	1.63	1.43	0.91	0.87
	INMF	1.46	0.34	1.46	1.03	2.07	0.86	0.73	1.80	0.63	1.80	1.71	3.09	2.04	1.93
	CRSP	0.11	0.33	0.11	0.66	-2.31	-2.46	-5.32	0.83	1.19	0.83	1.66	-0.71	-0.09	-3.01
MV	FFMF	0.00	0.03	0.03	0.04	0.04	0.11	0.10	0.02	0.05	0.05	0.06	0.06	0.13	0.12
	INMF	0.91	0.29	2.17	4.63	3.86	2.32	4.41	1.07	0.60	2.41	4.80	4.21	2.35	4.14
	CRSP	-0.35	1.12	0.00	0.02	-0.51	-2.87	-4.14	0.08	2.32	0.74	0.57	-0.05	-3.66	-4.11
PPN	FFMF	0.11	0.87	0.79	1.47	3.08	-0.53	-0.33	0.56	1.05	1.09	1.94	3.61	-5.44	-4.68
	INMF	2.17	2.38	2.59	3.55	3.46	-2.42	-1.30	2.26	2.79	2.50	3.24	3.74	-3.51	-3.12
	CRSP	3.25	7.75	7.00	6.59	4.81	-2.66	-2.83	3.58	8.75	7.18	6.41	4.64	1.04	1.09

Table 184: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule													
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-11.59	-10.70	-11.57	-11.77	-11.60	-10.87	-10.85	-11.02	-10.05	-11.55	-11.77	-11.60	-11.07	-11.04
	INMF	-19.87	-19.60	-18.80	-16.45	-18.08	-18.36	-16.33	-18.50	-18.69	-18.48	-16.39	-18.10	-18.80	-17.01
	CRSP	-1.08	-0.22	-0.72	-1.42	1.01	-1.50	0.53	-1.10	0.88	-0.59	-1.71	0.61	-4.13	-0.93
BH	FFMF	0.12	1.11	0.12	-0.11	0.08	0.84	0.87	0.15	1.36	0.15	-0.10	0.08	0.62	0.66
	INMF	-3.05	-2.07	-3.05	-2.79	-4.16	-2.84	-2.83	-2.35	-0.49	-2.35	-2.50	-4.11	-2.87	-2.83
	CRSP	-9.97	-10.58	-9.97	-10.67	-7.96	-8.50	-5.57	-8.75	-8.20	-8.75	-10.06	-7.71	-8.53	-5.32
PPN	FFMF	-3.35	-1.67	-2.68	-2.17	-0.32	-3.27	-2.99	-3.78	-2.19	-3.27	-2.64	-0.75	-9.19	-8.41
	INMF	-4.71	-3.60	-4.22	-2.78	-3.80	-8.65	-7.25	-5.66	-3.45	-5.41	-4.66	-5.28	-11.49	-11.00
	CRSP	-1.60	1.91	1.98	0.87	2.14	-5.86	-2.63	-2.17	3.23	1.21	-0.86	0.20	-4.33	-0.75

Panel B: Taxation at end

Model	Data	Exact basis rule													
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-11.07	-10.19	-11.04	-11.22	-11.03	-10.32	-10.30	-11.02	-10.05	-10.99	-11.20	-11.03	-10.50	-10.48
	INMF	-19.00	-18.60	-18.00	-15.67	-17.14	-17.39	-15.59	-18.50	-17.93	-17.42	-15.41	-17.02	-17.66	-16.13
	CRSP	-1.56	-0.33	-1.21	-1.73	0.73	-1.52	0.13	-1.10	0.75	-0.45	-1.43	0.30	-3.92	-1.49
BH	FFMF	0.10	1.06	0.10	-0.11	0.10	0.83	0.87	0.15	1.22	0.15	-0.09	0.10	0.62	0.66
	INMF	-3.08	-2.00	-3.08	-2.68	-3.66	-2.51	-2.38	-2.08	-0.94	-2.08	-1.99	-3.31	-2.31	-2.21
	CRSP	-10.15	-10.35	-10.15	-10.65	-7.93	-7.79	-5.00	-8.43	-8.76	-8.43	-9.18	-7.01	-7.59	-4.80
PPN	FFMF	-2.72	-1.05	-2.07	-1.61	0.15	-2.65	-2.41	-3.01	-1.50	-2.50	-1.92	-0.12	-8.37	-7.60
	INMF	-3.06	-1.78	-2.66	-1.34	-2.42	-6.87	-5.68	-3.44	-1.81	-3.21	-2.43	-3.27	-9.10	-8.64
	CRSP	-0.07	4.06	3.56	2.60	3.95	-3.32	-0.56	0.27	4.90	3.76	2.17	2.87	-1.28	1.73

Table 185: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.57	1.06	2.10	1.06	0.78	0.58	1.08	0.87
	INMF	4.97	2.18	4.41	2.18	1.34	0.93	1.90	1.18
	CRSP	7.61	3.78	6.82	3.78	2.37	1.67	1.70	1.22
MV	FFMF	1.72	1.24	1.62	1.27	1.09	1.00	1.32	1.19
	INMF	5.22	3.54	4.77	3.06	2.16	1.26	2.90	1.88
	CRSP	7.46	4.74	7.04	4.52	2.98	1.91	2.39	1.47
PPN	FFMF	26.66	21.93	25.87	21.27	16.14	10.84	19.48	16.78
	INMF	21.53	16.98	20.74	15.79	11.37	7.14	15.85	13.12
	CRSP	36.26	31.00	35.85	31.58	25.87	19.20	21.42	14.61

Table 186: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0\%$ .

Panel A: Gain Relative to 1/N				
Data		MV	BH	PPN
FFMF		-5.37	2.24	-10.20
INMF		-18.83	0.27	-10.09
CRSP		-0.96	-8.73	-13.36

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.08	1.62	0.68	24.59
INMF	3.75	3.87	0.68	18.35
CRSP	5.13	5.59	0.47	32.12

Table 187: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0.5\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-11.20	-15.00	-10.82	-14.61	-11.85	-15.28	-11.67	-14.70
	INMF	-20.57	-19.53	-17.88	-23.66	-21.99	-20.39	-19.94	-23.91
	CRSP	-17.48	-16.77	-12.55	-21.58	-18.99	-18.42	-14.87	-21.90
Exact	FFMF	-10.77	-14.97	-10.82	-13.84	-11.58	-15.27	-11.67	-14.06
	INMF	-18.09	-18.63	-17.88	-22.37	-20.25	-19.79	-19.94	-22.89
	CRSP	-13.61	-14.01	-12.54	-19.93	-16.27	-16.71	-14.86	-20.59
Mtm	FFMF	-15.09	-16.78	-15.51	-16.54	-15.09	-16.78	-15.52	-16.54
	INMF	-25.28	-23.28	-26.03	-25.63	-25.31	-23.29	-26.05	-25.65
	CRSP	-21.90	-20.62	-20.90	-22.61	-21.93	-20.65	-20.92	-22.64

Table 188: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	-9.42	2.67	-13.65	-9.06	2.44	-13.10
	INMF	-17.76	3.67	-13.58	-17.16	2.90	-12.30
	CRSP	-0.10	-3.27	-17.65	-0.26	-4.09	-16.47
Exact	FFMF	-9.82	2.18	-13.28	-9.32	2.13	-12.72
	INMF	-19.36	0.53	-14.79	-18.35	0.66	-13.06
	CRSP	-1.41	-7.60	-19.69	-1.48	-7.19	-17.83
Mtm	FFMF	-7.26	1.72	-11.73	-7.25	1.72	-11.73
	INMF	-16.65	-0.74	-10.50	-16.63	-0.73	-10.50
	CRSP	0.67	-7.56	-14.15	0.67	-7.54	-14.14

Table 189: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.



Panel A: No taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.90	0.56	1.90	2.24	2.10	1.12	1.16	2.33	0.74	2.33	2.71	2.59	1.92	1.95
	INMF	2.83	0.90	2.83	3.01	4.71	2.72	3.07	4.79	1.57	4.79	5.64	7.82	6.03	6.47
	CRSP	1.56	1.15	1.56	2.84	0.13	0.44	-2.44	4.49	2.64	4.49	6.62	4.38	5.39	2.07
MV	FFMF	0.02	0.37	0.07	0.08	0.08	0.12	0.12	0.05	0.39	0.10	0.11	0.11	0.16	0.16
	INMF	1.89	1.29	3.58	6.64	6.42	3.68	6.64	2.39	1.72	4.21	7.45	7.50	4.46	7.28
	CRSP	1.05	2.93	1.96	2.46	2.19	-0.27	-0.97	2.63	4.58	3.78	4.61	4.67	0.31	0.65
PPN	FFMF	3.92	6.79	7.33	9.83	13.71	6.19	7.20	4.37	6.95	7.60	10.22	14.25	3.42	4.57
	INMF	6.26	7.12	8.58	12.14	15.07	2.23	5.31	6.58	7.63	8.33	11.67	15.00	4.01	4.87
	CRSP	8.41	21.27	18.12	19.37	19.75	7.80	10.87	8.87	22.43	18.30	19.22	19.58	12.93	15.87

Panel B: Taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.87	0.56	1.87	2.18	2.03	1.08	1.11	2.12	0.67	2.12	2.47	2.34	1.70	1.72
	INMF	2.98	0.94	2.98	3.04	4.31	2.52	2.75	3.80	1.39	3.80	4.35	6.14	4.69	5.02
	CRSP	2.20	1.31	2.20	3.25	0.52	0.12	-2.58	3.33	2.49	3.33	4.75	2.72	3.44	0.65
MV	FFMF	0.03	0.38	0.08	0.09	0.09	0.13	0.13	0.04	0.40	0.10	0.11	0.11	0.16	0.16
	INMF	1.87	1.32	3.47	6.32	5.91	3.40	5.91	2.08	1.67	3.79	6.60	6.46	3.83	6.17
	CRSP	1.27	3.00	2.15	2.64	2.39	-0.55	-1.44	1.71	4.53	2.98	3.31	2.96	-1.06	-1.10
PPN	FFMF	3.90	6.77	7.28	9.68	13.44	6.12	7.07	4.33	6.94	7.55	10.08	13.99	3.46	4.60
	INMF	6.21	7.11	8.41	11.64	14.01	1.99	4.67	6.47	7.61	8.19	11.32	14.03	3.92	4.68
	CRSP	8.39	21.29	18.04	19.21	19.61	7.83	10.48	8.79	22.42	18.21	19.02	19.22	12.85	15.52

Table 190: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-11.48	-9.99	-11.44	-11.73	-11.61	-10.72	-10.75	-11.44	-9.73	-11.40	-11.71	-11.61	-10.99	-11.01
	INMF	-20.09	-19.05	-18.77	-16.52	-18.04	-18.61	-16.58	-19.64	-17.64	-18.21	-16.35	-18.01	-18.98	-17.14
	CRSP	-1.91	0.32	-1.02	-1.77	0.63	-2.10	0.08	-1.87	1.78	-0.78	-1.99	0.18	-4.92	-1.49
BH	FFMF	0.27	1.61	0.27	-0.05	0.08	1.05	1.01	0.33	1.92	0.33	-0.03	0.08	0.74	0.71
	INMF	-2.24	-0.37	-2.24	-2.41	-3.99	-2.13	-2.47	-1.07	2.06	-1.07	-1.87	-3.85	-2.23	-2.64
	CRSP	-9.02	-8.65	-9.02	-10.15	-7.71	-8.00	-5.29	-7.42	-5.75	-7.42	-9.27	-7.32	-8.21	-5.23
PPN	FFMF	-11.57	-7.91	-8.66	-6.85	-3.42	-8.93	-8.10	-11.93	-8.32	-9.20	-7.33	-3.83	-12.38	-11.43
	INMF	-11.94	-9.53	-10.02	-7.23	-6.35	-15.19	-12.94	-12.11	-8.43	-10.66	-8.65	-7.83	-15.23	-14.89
	CRSP	-14.27	-3.71	-6.60	-6.79	-3.95	-13.81	-8.73	-14.20	-1.77	-6.76	-7.92	-5.66	-11.76	-6.52

Panel B: Taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-10.96	-9.48	-10.91	-11.18	-11.04	-10.17	-10.19	-10.90	-9.30	-10.85	-11.15	-11.04	-10.43	-10.45
	INMF	-19.22	-18.05	-17.96	-15.75	-17.10	-17.65	-15.84	-18.53	-16.93	-17.16	-15.37	-16.92	-17.85	-16.25
	CRSP	-2.37	0.17	-1.53	-2.06	0.36	-2.14	-0.32	-1.83	1.72	-0.60	-1.63	-0.03	-4.61	-2.00
BH	FFMF	0.25	1.56	0.25	-0.05	0.10	1.04	1.01	0.32	1.76	0.32	-0.03	0.10	0.73	0.71
	INMF	-2.25	-0.28	-2.25	-2.31	-3.50	-1.81	-2.03	-0.86	1.49	-0.86	-1.39	-3.05	-1.71	-2.02
	CRSP	-9.19	-8.39	-9.19	-10.11	-7.67	-7.30	-4.73	-7.18	-6.42	-7.18	-8.44	-6.63	-7.28	-4.71
PPN	FFMF	-10.97	-7.32	-8.08	-6.31	-2.95	-8.36	-7.57	-11.21	-7.68	-8.47	-6.64	-3.20	-11.59	-10.63
	INMF	-10.33	-7.74	-8.47	-5.80	-4.98	-13.51	-11.43	-10.04	-6.92	-8.59	-6.44	-5.78	-12.94	-12.58
	CRSP	-12.86	-1.62	-5.10	-5.13	-2.23	-11.51	-6.81	-12.05	-0.23	-4.44	-5.09	-3.06	-8.88	-4.13

Table 191: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.18	0.84	1.70	0.84	0.67	0.56	1.01	0.87
	INMF	4.33	1.92	3.78	1.92	1.18	0.86	1.74	1.14
	CRSP	6.58	3.14	5.84	3.14	2.04	1.46	1.54	1.10
MV	FFMF	1.52	1.08	1.43	1.12	0.95	0.84	1.18	1.06
	INMF	4.39	2.80	3.96	2.39	1.60	0.97	2.40	1.70
	CRSP	6.53	3.96	6.08	3.79	2.48	1.60	2.11	1.35
PPN	FFMF	24.89	20.17	24.39	19.72	14.84	9.90	17.71	15.37
	INMF	19.51	15.24	18.83	14.21	10.12	6.44	14.51	12.05
	CRSP	33.91	28.72	33.56	29.23	23.65	17.28	19.48	13.41

Table 192: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0.5\%$ .

Panel A: Gain Relative to 1/N				
Data		MV	BH	PPN
FFMF		-4.71	3.00	-19.97
INMF		-18.70	2.22	-18.67
CRSP		-1.31	-6.28	-26.66

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.07	1.62	0.68	24.57
INMF	3.75	3.87	0.67	18.33
CRSP	5.13	5.58	0.47	32.08

Table 193: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 1\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-11.22	-14.97	-10.79	-14.84	-11.86	-15.26	-11.64	-14.91
	INMF	-20.99	-19.64	-17.80	-23.65	-22.32	-20.48	-19.88	-23.87
	CRSP	-17.79	-17.03	-12.51	-21.36	-19.22	-18.58	-14.84	-21.65
Exact	FFMF	-10.79	-14.93	-10.79	-14.18	-11.60	-15.24	-11.64	-14.39
	INMF	-18.21	-18.69	-17.80	-22.53	-20.37	-19.86	-19.88	-23.01
	CRSP	-13.84	-14.23	-12.50	-20.04	-16.55	-16.94	-14.83	-20.68
Mtm	FFMF	-15.09	-16.76	-15.50	-16.76	-15.09	-16.76	-15.51	-16.77
	INMF	-25.23	-23.23	-25.99	-25.41	-25.26	-23.24	-26.01	-25.43
	CRSP	-21.88	-20.59	-20.88	-22.41	-21.91	-20.62	-20.90	-22.44

Table 194: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	-8.74	3.50	-23.24	-8.38	3.26	-22.74
	INMF	-17.31	6.35	-21.41	-16.77	5.43	-20.30
	CRSP	-0.39	-0.25	-29.84	-0.53	-1.20	-28.87
Exact	FFMF	-9.14	3.01	-23.01	-8.63	2.95	-22.50
	INMF	-19.17	2.74	-22.97	-18.18	2.85	-21.37
	CRSP	-1.75	-4.82	-31.93	-1.78	-4.35	-30.28
Mtm	FFMF	-6.59	2.50	-21.56	-6.58	2.50	-21.55
	INMF	-16.52	1.18	-18.87	-16.51	1.18	-18.86
	CRSP	0.32	-5.08	-27.16	0.32	-5.07	-27.16

Table 195: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.60	0.92	2.60	3.02	2.93	1.75	1.84	3.03	1.09	3.03	3.49	3.42	2.66	2.73
	INMF	4.29	1.51	4.29	4.89	6.82	4.26	4.96	6.40	2.26	6.40	7.80	10.33	8.18	9.01
	CRSP	3.58	2.32	3.58	5.35	2.87	2.91	0.20	6.53	3.91	6.53	9.18	7.26	8.31	5.15
MV	FFMF	0.05	0.92	0.12	0.12	0.12	0.14	0.14	0.08	0.94	0.15	0.16	0.16	0.19	0.19
	INMF	2.88	2.49	4.90	8.30	8.41	4.76	8.06	3.38	2.93	5.52	9.09	9.55	5.80	8.83
	CRSP	2.61	5.01	4.08	4.99	4.99	2.00	1.59	4.19	6.78	5.93	7.17	7.53	2.73	3.42
PPN	FFMF	7.85	13.94	14.51	18.70	25.16	13.22	15.13	8.35	14.04	14.77	19.07	25.62	13.83	15.12
	INMF	10.77	13.48	14.68	21.34	26.70	6.97	11.71	11.00	14.07	14.36	20.31	26.28	12.17	14.53
	CRSP	14.27	38.88	31.40	34.26	37.32	20.37	26.43	14.30	39.89	31.18	33.52	36.64	26.22	33.46

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.57	0.92	2.57	2.97	2.85	1.71	1.78	2.81	1.03	2.81	3.24	3.15	2.43	2.48
	INMF	4.44	1.55	4.44	4.91	6.41	4.04	4.61	5.37	2.08	5.37	6.41	8.51	6.75	7.41
	CRSP	4.27	2.50	4.27	5.81	3.32	2.64	0.11	5.37	3.78	5.37	7.25	5.49	6.22	3.58
MV	FFMF	0.05	0.93	0.13	0.14	0.14	0.16	0.16	0.07	0.95	0.15	0.16	0.16	0.19	0.19
	INMF	2.87	2.52	4.80	7.99	7.90	4.48	7.34	3.08	2.89	5.11	8.22	8.46	5.15	7.71
	CRSP	2.87	5.09	4.26	5.19	5.21	1.72	1.12	3.30	6.73	5.15	5.84	5.80	1.33	1.54
PPN	FFMF	7.83	13.92	14.45	18.53	24.85	13.11	14.94	8.31	14.03	14.72	18.94	25.33	13.87	15.15
	INMF	10.71	13.43	14.50	20.79	25.53	6.69	11.01	10.91	14.03	14.24	19.96	25.27	12.13	14.36
	CRSP	14.23	38.86	31.28	34.05	37.09	20.35	25.90	14.21	39.85	31.07	33.28	36.26	26.21	33.04

Table 196: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-11.40	-9.14	-11.33	-11.69	-11.62	-10.58	-10.65	-11.35	-8.87	-11.29	-11.68	-11.62	-10.94	-10.99
	INMF	-20.27	-18.40	-18.70	-16.55	-17.98	-18.79	-16.78	-19.65	-16.77	-17.99	-16.32	-17.90	-19.13	-17.45
	CRSP	-2.67	0.84	-1.28	-2.08	0.28	-2.61	-0.38	-2.59	2.35	-0.96	-2.23	-0.14	-5.52	-2.03
BH	FFMF	0.40	2.07	0.40	-0.01	0.08	1.24	1.15	0.46	2.39	0.46	0.01	0.08	0.82	0.76
	INMF	-1.49	1.21	-1.49	-2.05	-3.83	-1.46	-2.12	-0.05	3.99	-0.05	-1.34	-3.61	-1.69	-2.45
	CRSP	-8.10	-6.97	-8.10	-9.65	-7.47	-7.50	-5.01	-6.37	-4.00	-6.37	-8.64	-7.00	-7.90	-5.13
PPN	FFMF	-19.07	-13.08	-14.07	-11.29	-6.38	-14.33	-12.96	-19.28	-13.40	-14.50	-11.68	-6.76	-14.88	-13.98
	INMF	-18.18	-13.88	-15.29	-10.88	-8.63	-20.96	-18.02	-18.01	-12.34	-15.53	-12.28	-10.05	-18.50	-17.43
	CRSP	-24.91	-7.61	-13.65	-13.25	-9.14	-20.38	-14.12	-24.72	-5.54	-13.60	-14.19	-10.62	-18.23	-10.94

Panel B: Taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-10.87	-8.62	-10.80	-11.15	-11.05	-10.03	-10.09	-10.83	-8.46	-10.75	-11.12	-11.04	-10.38	-10.43
	INMF	-19.41	-17.40	-17.90	-15.78	-17.04	-17.83	-16.05	-18.58	-16.12	-16.98	-15.36	-16.81	-18.02	-16.54
	CRSP	-3.09	0.71	-1.78	-2.35	0.02	-2.66	-0.79	-2.47	2.30	-0.73	-1.84	-0.23	-5.11	-2.48
BH	FFMF	0.38	2.02	0.38	-0.01	0.10	1.23	1.15	0.43	2.20	0.43	0.01	0.10	0.80	0.76
	INMF	-1.52	1.28	-1.52	-1.96	-3.34	-1.14	-1.68	0.05	3.28	0.05	-0.92	-2.84	-1.24	-1.84
	CRSP	-8.27	-6.68	-8.27	-9.61	-7.43	-6.81	-4.46	-6.23	-4.80	-6.23	-7.88	-6.34	-6.99	-4.61
PPN	FFMF	-18.52	-12.52	-13.52	-10.78	-5.93	-13.81	-12.48	-18.61	-12.80	-13.80	-11.00	-6.14	-14.11	-13.19
	INMF	-16.65	-12.17	-13.80	-9.47	-7.24	-19.37	-16.56	-16.11	-10.97	-13.59	-10.15	-7.99	-16.28	-15.13
	CRSP	-23.62	-5.55	-12.23	-11.68	-7.50	-18.25	-12.33	-22.90	-4.15	-11.52	-11.61	-8.11	-15.48	-8.63

Table 197: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.08	0.78	1.59	0.78	0.63	0.55	0.98	0.87
	INMF	4.07	1.76	3.53	1.76	1.09	0.81	1.65	1.11
	CRSP	5.99	2.74	5.29	2.74	1.79	1.28	1.40	1.01
MV	FFMF	1.48	1.04	1.39	1.09	0.93	0.82	1.15	1.03
	INMF	4.10	2.53	3.67	2.13	1.39	0.85	2.21	1.59
	CRSP	6.08	3.62	5.61	3.43	2.24	1.48	1.98	1.29
PPN	FFMF	24.67	19.92	24.14	19.44	14.58	9.69	17.29	15.01
	INMF	18.76	14.43	18.16	13.56	9.63	6.13	13.95	11.59
	CRSP	32.81	27.60	32.44	28.09	22.59	16.32	18.23	12.60

Table 198: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 1\%$ .



## 12 Parametric portfolios when $z = 0.25$

This section contains detailed tables for parametric portfolios when  $z = 0.25$

Panel A: Gain Relative to 1/N				
Data		MV	BH	PPN
FFMF		-6.03	1.47	0.76
INMF		-18.95	-1.65	0.51
CRSP		-0.60	-11.12	2.87

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.08	1.63	0.69	18.59
INMF	3.76	3.87	0.68	14.00
CRSP	5.13	5.59	0.47	24.77

Table 199: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-11.09	-15.04	-10.86	-13.63	-11.76	-15.31	-11.70	-13.77
	INMF	-19.56	-19.17	-17.95	-22.75	-21.07	-20.05	-20.00	-23.17
	CRSP	-16.48	-16.08	-12.58	-20.37	-18.06	-17.86	-14.88	-20.85
Exact	FFMF	-10.72	-15.01	-10.86	-12.46	-11.52	-15.30	-11.70	-12.88
	INMF	-17.84	-18.48	-17.95	-20.17	-19.98	-19.61	-20.00	-21.21
	CRSP	-13.27	-13.67	-12.58	-17.19	-15.88	-16.30	-14.88	-18.39
Mtm	FFMF	-15.09	-16.80	-15.53	-16.01	-15.09	-16.80	-15.53	-16.01
	INMF	-25.34	-23.33	-26.07	-25.82	-25.36	-23.35	-26.10	-25.85
	CRSP	-21.92	-20.65	-20.92	-22.51	-21.95	-20.68	-20.94	-22.54

Table 200: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	-10.20	1.74	-2.12	-9.81	1.53	-1.54
	INMF	-18.55	0.32	-3.47	-17.91	-0.31	-2.17
	CRSP	-0.13	-6.97	-1.93	-0.36	-7.67	-0.64
Exact	FFMF	-10.53	1.32	-1.20	-10.03	1.27	-0.79
	INMF	-19.59	-1.78	-2.35	-18.57	-1.67	-1.03
	CRSP	-1.06	-10.41	-1.78	-1.10	-10.06	-0.20
Mtm	FFMF	-7.92	0.95	-0.34	-7.92	0.94	-0.34
	INMF	-16.77	-2.62	-0.15	-16.76	-2.61	-0.14
	CRSP	1.01	-9.97	2.09	1.01	-9.96	2.09

Table 201: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.20	0.21	1.20	1.44	1.24	0.47	0.45	1.58	0.38	1.58	1.84	1.65	1.11	1.08
	INMF	1.31	0.30	1.31	1.04	2.48	1.09	1.07	2.74	0.82	2.74	2.90	4.62	3.29	3.25
	CRSP	-0.48	0.19	-0.48	0.29	-2.66	-2.09	-5.12	1.95	1.34	1.95	3.43	0.80	1.70	-1.74
MV	FFMF	0.00	0.03	0.03	0.03	0.03	0.10	0.09	0.03	0.05	0.06	0.06	0.07	0.13	0.13
	INMF	0.94	0.28	2.29	4.97	4.40	2.63	5.17	1.38	0.65	2.83	5.64	5.20	2.97	5.20
	CRSP	-0.50	1.05	-0.14	-0.07	-0.61	-2.52	-3.60	0.98	2.37	1.48	1.80	1.54	-2.38	-2.53
PPN	FFMF	0.21	0.38	0.47	1.34	3.10	-0.27	-0.09	0.76	0.78	1.06	2.17	4.07	-3.12	-2.55
	INMF	1.89	1.12	2.28	1.81	1.34	0.23	1.92	2.32	2.10	2.75	2.82	3.39	-0.03	0.80
	CRSP	2.79	3.90	4.26	2.92	2.41	2.50	2.08	3.50	5.62	5.39	4.12	3.99	1.70	1.72

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.16	0.21	1.16	1.38	1.16	0.43	0.39	1.38	0.31	1.38	1.63	1.43	0.91	0.87
	INMF	1.46	0.34	1.46	1.03	2.07	0.86	0.73	1.80	0.63	1.80	1.71	3.09	2.04	1.93
	CRSP	0.11	0.33	0.11	0.66	-2.31	-2.46	-5.32	0.83	1.19	0.83	1.66	-0.71	-0.09	-3.01
MV	FFMF	0.00	0.03	0.03	0.04	0.04	0.11	0.10	0.02	0.05	0.05	0.06	0.06	0.13	0.12
	INMF	0.91	0.29	2.17	4.63	3.86	2.32	4.41	1.07	0.60	2.41	4.80	4.21	2.35	4.14
	CRSP	-0.35	1.12	0.00	0.02	-0.51	-2.87	-4.14	0.08	2.32	0.74	0.57	-0.05	-3.66	-4.11
PPN	FFMF	0.19	0.38	0.44	1.24	2.90	-0.27	-0.14	0.68	0.77	0.98	1.98	3.72	-3.08	-2.56
	INMF	1.79	1.11	2.06	1.42	0.62	-0.12	1.14	2.13	2.08	2.50	2.25	2.20	-0.25	0.25
	CRSP	2.71	3.92	4.21	2.94	2.40	1.85	0.83	3.33	5.60	5.23	3.76	3.35	1.39	0.72

Table 202: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

		Exact basis rule																
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	Average basis rule									
									PD10	AD1	AD10	AD25	AD50	G0.1	G0.2			
MV	FFMF	-11.59	-10.70	-11.57	-11.77	-11.60	-10.87	-10.85	-11.57	-10.49	-11.55	-11.77	-11.60	-11.07	-11.04			
	INMF	-19.87	-19.60	-18.80	-16.45	-18.08	-18.36	-16.33	-19.63	-18.69	-18.48	-16.39	-18.10	-18.80	-17.01			
	CRSP	-1.08	-0.22	-0.72	-1.42	1.01	-1.50	0.53	-1.09	0.88	-0.59	-1.71	0.61	-4.13	-0.93			
BH	FFMF	0.12	1.11	0.12	-0.11	0.08	0.84	0.87	0.15	1.36	0.15	-0.10	0.08	0.62	0.66			
	INMF	-3.05	-2.07	-3.05	-2.79	-4.16	-2.84	-2.83	-2.35	-0.49	-2.35	-2.50	-4.11	-2.87	-2.83			
	CRSP	-9.97	-10.58	-9.97	-10.67	-7.96	-8.50	-5.57	-8.75	-8.20	-8.75	-10.06	-7.71	-8.53	-5.32			
PPN	FFMF	-2.17	-1.04	-1.92	-1.30	0.62	-1.93	-1.73	-2.92	-1.73	-2.63	-1.81	0.20	-6.21	-5.64			
	INMF	-1.79	-1.55	-1.41	-1.60	-3.43	-3.17	-1.52	-3.86	-2.24	-3.46	-3.54	-4.60	-6.57	-5.76			
	CRSP	1.45	1.85	2.91	0.79	3.34	2.82	5.68	-0.44	2.22	1.38	-1.28	1.18	-1.92	1.53			

Panel B: Taxation at end

		Exact basis rule																
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	Average basis rule									
									PD10	AD1	AD10	AD25	AD50	G0.1	G0.2			
MV	FFMF	-11.07	-10.19	-11.04	-11.22	-11.03	-10.32	-10.30	-11.02	-10.05	-10.99	-11.20	-11.03	-10.50	-10.48			
	INMF	-19.00	-18.60	-18.00	-15.67	-17.14	-17.39	-15.59	-18.50	-17.93	-17.42	-15.41	-17.02	-17.66	-16.13			
	CRSP	-1.56	-0.33	-1.21	-1.73	0.73	-1.52	0.13	-1.10	0.75	-0.45	-1.43	0.30	-3.92	-1.49			
BH	FFMF	0.10	1.06	0.10	-0.11	0.10	0.83	0.87	0.15	1.22	0.15	-0.09	0.10	0.62	0.66			
	INMF	-3.08	-2.00	-3.08	-2.68	-3.66	-2.51	-2.38	-2.08	-0.94	-2.08	-1.99	-3.31	-2.31	-2.21			
	CRSP	-10.15	-10.35	-10.15	-10.65	-7.93	-7.79	-5.00	-8.43	-8.76	-8.43	-9.18	-7.01	-7.59	-4.80			
PPN	FFMF	-1.74	-0.62	-1.50	-0.92	0.91	-1.48	-1.32	-2.22	-1.09	-1.93	-1.20	0.68	-5.43	-4.89			
	INMF	-0.70	-0.27	-0.44	-0.65	-2.44	-1.99	-0.63	-1.85	-0.76	-1.50	-1.65	-3.01	-4.37	-3.78			
	CRSP	2.40	3.37	3.90	2.06	4.62	4.21	6.28	1.82	3.70	3.70	1.41	3.43	0.83	3.19			

Table 203: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.57	1.06	2.10	1.06	0.78	0.58	1.08	0.87
	INMF	4.97	2.18	4.41	2.18	1.34	0.93	1.90	1.18
	CRSP	7.61	3.78	6.82	3.78	2.37	1.67	1.70	1.22
MV	FFMF	1.72	1.24	1.62	1.27	1.09	1.00	1.32	1.19
	INMF	5.22	3.54	4.77	3.06	2.16	1.26	2.90	1.88
	CRSP	7.46	4.74	7.04	4.52	2.98	1.91	2.39	1.47
PPN	FFMF	20.02	15.30	19.37	15.00	10.68	6.62	14.93	12.36
	INMF	16.27	11.76	15.60	11.20	7.43	4.32	11.98	9.14
	CRSP	28.75	23.04	28.04	23.57	18.18	12.62	16.64	10.14

Table 204: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0\%$ .

Panel A: Gain Relative to 1/N				
Data		MV	BH	PPN
FFMF		-5.37	2.24	-7.27
INMF		-18.83	0.27	-6.03
CRSP		-0.96	-8.73	-8.21

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.08	1.62	0.68	18.58
INMF	3.75	3.87	0.68	13.99
CRSP	5.13	5.59	0.47	24.74

Table 205: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0.5\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-11.20	-15.00	-10.82	-13.95	-11.85	-15.28	-11.67	-14.08
	INMF	-20.57	-19.53	-17.88	-23.39	-21.99	-20.39	-19.94	-23.76
	CRSP	-17.48	-16.77	-12.55	-21.24	-18.99	-18.42	-14.87	-21.67
Exact	FFMF	-10.77	-14.97	-10.82	-12.73	-11.58	-15.27	-11.67	-13.16
	INMF	-18.09	-18.63	-17.88	-20.64	-20.25	-19.79	-19.94	-21.64
	CRSP	-13.61	-14.01	-12.54	-17.94	-16.27	-16.71	-14.86	-19.13
Mtm	FFMF	-15.09	-16.78	-15.51	-16.17	-15.09	-16.78	-15.52	-16.17
	INMF	-25.28	-23.28	-26.03	-25.69	-25.31	-23.29	-26.05	-25.71
	CRSP	-21.90	-20.62	-20.90	-22.36	-21.93	-20.65	-20.92	-22.40

Table 206: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	<b>-9.42</b>	2.67	<b>-10.15</b>	<b>-9.06</b>	2.44	<b>-9.61</b>
	INMF	<b>-17.76</b>	3.67	<b>-9.37</b>	<b>-17.16</b>	2.90	<b>-8.16</b>
	CRSP	<b>-0.10</b>	<b>-3.27</b>	<b>-12.39</b>	<b>-0.26</b>	<b>-4.09</b>	<b>-11.25</b>
Exact	FFMF	<b>-9.82</b>	2.18	<b>-9.30</b>	<b>-9.32</b>	2.13	<b>-8.93</b>
	INMF	<b>-19.36</b>	0.53	<b>-8.96</b>	<b>-18.35</b>	0.66	<b>-7.66</b>
	CRSP	<b>-1.41</b>	<b>-7.60</b>	<b>-12.81</b>	<b>-1.48</b>	<b>-7.19</b>	<b>-11.35</b>
Mtm	FFMF	<b>-7.26</b>	1.72	<b>-8.45</b>	<b>-7.25</b>	1.72	<b>-8.45</b>
	INMF	<b>-16.65</b>	<b>-0.74</b>	<b>-6.54</b>	<b>-16.63</b>	<b>-0.73</b>	<b>-6.54</b>
	CRSP	0.67	<b>-7.56</b>	<b>-8.76</b>	0.67	<b>-7.54</b>	<b>-8.76</b>

Table 207: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.



Panel A: No taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.90	0.56	1.90	2.24	2.10	1.12	1.16	2.33	0.74	2.33	2.71	2.59	1.92	1.95
	INMF	2.83	0.90	2.83	3.01	4.71	2.72	3.07	4.79	1.57	4.79	5.64	7.82	6.03	6.47
	CRSP	1.56	1.15	1.56	2.84	0.13	0.44	-2.44	4.49	2.64	4.49	6.62	4.38	5.39	2.07
MV	FFMF	0.02	0.37	0.07	0.08	0.08	0.12	0.12	0.05	0.39	0.10	0.11	0.11	0.16	0.16
	INMF	1.89	1.29	3.58	6.64	6.42	3.68	6.64	2.39	1.72	4.21	7.45	7.50	4.46	7.28
	CRSP	1.05	2.93	1.96	2.46	2.19	-0.27	-0.97	2.63	4.58	3.78	4.61	4.67	0.31	0.65
PPN	FFMF	3.72	3.70	5.14	7.80	11.34	3.90	4.96	4.28	4.16	5.78	8.70	12.35	3.69	4.25
	INMF	5.54	4.03	6.89	8.25	9.50	3.50	6.96	6.14	5.23	7.37	9.37	11.64	4.94	6.72
	CRSP	7.43	11.12	11.43	12.21	13.98	10.18	12.84	8.37	13.25	12.95	13.60	15.59	10.60	13.50

Panel B: Taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.87	0.56	1.87	2.18	2.03	1.08	1.11	2.12	0.67	2.12	2.47	2.34	1.70	1.72
	INMF	2.98	0.94	2.98	3.04	4.31	2.52	2.75	3.80	1.39	3.80	4.35	6.14	4.69	5.02
	CRSP	2.20	1.31	2.20	3.25	0.52	0.12	-2.58	3.33	2.49	3.33	4.75	2.72	3.44	0.65
MV	FFMF	0.03	0.38	0.08	0.09	0.09	0.13	0.13	0.04	0.40	0.10	0.11	0.11	0.16	0.16
	INMF	1.87	1.32	3.47	6.32	5.91	3.40	5.91	2.08	1.67	3.79	6.60	6.46	3.83	6.17
	CRSP	1.27	3.00	2.15	2.64	2.39	-0.55	-1.44	1.71	4.53	2.98	3.31	2.96	-1.06	-1.10
PPN	FFMF	3.70	3.71	5.12	7.71	11.13	3.88	4.89	4.20	4.15	5.69	8.50	11.96	3.73	4.23
	INMF	5.45	4.01	6.67	7.81	8.68	3.13	6.10	5.94	5.20	7.11	8.77	10.35	4.69	6.15
	CRSP	7.35	11.15	11.36	12.23	13.94	9.44	11.45	8.20	13.21	12.77	13.21	14.91	10.30	12.45

Table 208: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-11.48	-9.99	-11.44	-11.73	-11.61	-10.72	-10.75	-11.44	-9.73	-11.40	-11.71	-11.61	-10.99	-11.01
	INMF	-20.09	-19.05	-18.77	-16.52	-18.04	-18.61	-16.58	-19.64	-17.64	-18.21	-16.35	-18.01	-18.98	-17.14
	CRSP	-1.91	0.32	-1.02	-1.77	0.63	-2.10	0.08	-1.87	1.78	-0.78	-1.99	0.18	-4.92	-1.49
BH	FFMF	0.27	1.61	0.27	-0.05	0.08	1.05	1.01	0.33	1.92	0.33	-0.03	0.08	0.74	0.71
	INMF	-2.24	-0.37	-2.24	-2.41	-3.99	-2.13	-2.47	-1.07	2.06	-1.07	-1.87	-3.85	-2.23	-2.64
	CRSP	-9.02	-8.65	-9.02	-10.15	-7.71	-8.00	-5.29	-7.42	-5.75	-7.42	-9.27	-7.32	-8.21	-5.23
PPN	FFMF	-7.69	-6.47	-6.42	-4.37	-1.10	-6.81	-5.89	-8.44	-7.09	-7.12	-4.91	-1.60	-8.58	-8.12
	INMF	-6.56	-6.14	-5.36	-4.32	-4.79	-8.26	-5.53	-8.21	-6.11	-7.14	-6.18	-6.16	-10.31	-9.16
	CRSP	-7.77	-4.21	-4.34	-4.87	-0.75	-4.35	0.84	-9.13	-3.33	-5.29	-6.65	-2.98	-8.06	-2.57

Panel B: Taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-10.96	-9.48	-10.91	-11.18	-11.04	-10.17	-10.19	-10.90	-9.30	-10.85	-11.15	-11.04	-10.43	-10.45
	INMF	-19.22	-18.05	-17.96	-15.75	-17.10	-17.65	-15.84	-18.53	-16.93	-17.16	-15.37	-16.92	-17.85	-16.25
	CRSP	-2.37	0.17	-1.53	-2.06	0.36	-2.14	-0.32	-1.83	1.72	-0.60	-1.63	-0.03	-4.61	-2.00
BH	FFMF	0.25	1.56	0.25	-0.05	0.10	1.04	1.01	0.32	1.76	0.32	-0.03	0.10	0.73	0.71
	INMF	-2.25	-0.28	-2.25	-2.31	-3.50	-1.81	-2.03	-0.86	1.49	-0.86	-1.39	-3.05	-1.71	-2.02
	CRSP	-9.19	-8.39	-9.19	-10.11	-7.67	-7.30	-4.73	-7.18	-6.42	-7.18	-8.44	-6.63	-7.28	-4.71
PPN	FFMF	-7.29	-6.07	-6.03	-4.01	-0.81	-6.41	-5.52	-7.77	-6.49	-6.45	-4.30	-1.12	-7.81	-7.38
	INMF	-5.44	-4.85	-4.35	-3.38	-3.79	-7.11	-4.65	-6.27	-4.71	-5.24	-4.27	-4.53	-8.17	-7.18
	CRSP	-6.88	-2.74	-3.40	-3.64	0.49	-3.10	1.42	-7.06	-1.97	-3.14	-4.08	-0.73	-5.36	-0.85

Table 209: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.18	0.84	1.70	0.84	0.67	0.56	1.01	0.87
	INMF	4.33	1.92	3.78	1.92	1.18	0.86	1.74	1.14
	CRSP	6.58	3.14	5.84	3.14	2.04	1.46	1.54	1.10
MV	FFMF	1.52	1.08	1.43	1.12	0.95	0.84	1.18	1.06
	INMF	4.39	2.80	3.96	2.39	1.60	0.97	2.40	1.70
	CRSP	6.53	3.96	6.08	3.79	2.48	1.60	2.11	1.35
PPN	FFMF	18.87	14.12	18.26	13.88	9.75	5.86	13.72	11.47
	INMF	14.93	10.60	14.25	10.08	6.66	3.87	11.02	8.52
	CRSP	26.49	21.03	25.89	21.51	16.43	11.17	15.24	9.35

Table 210: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0.5\%$ .

Panel A: Gain Relative to 1/N				
Data		MV	BH	PPN
FFMF		-4.71	3.00	-14.69
INMF		-18.70	2.22	-12.25
CRSP		-1.31	-6.28	-18.47

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	2.07	1.62	0.68	18.56
INMF	3.75	3.87	0.67	13.98
CRSP	5.13	5.58	0.47	24.72

Table 211: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 1\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-11.22	-14.97	-10.79	-14.11	-11.86	-15.26	-11.64	-14.22
	INMF	-20.99	-19.64	-17.80	-23.44	-22.32	-20.48	-19.88	-23.75
	CRSP	-17.79	-17.03	-12.51	-21.16	-19.22	-18.58	-14.84	-21.57
Exact	FFMF	-10.79	-14.93	-10.79	-12.96	-11.60	-15.24	-11.64	-13.40
	INMF	-18.21	-18.69	-17.80	-20.86	-20.37	-19.86	-19.88	-21.81
	CRSP	-13.84	-14.23	-12.50	-18.00	-16.55	-16.94	-14.83	-19.18
Mtm	FFMF	-15.09	-16.76	-15.50	-16.34	-15.09	-16.76	-15.51	-16.34
	INMF	-25.23	-23.23	-25.99	-25.56	-25.26	-23.24	-26.01	-25.58
	CRSP	-21.88	-20.59	-20.88	-22.22	-21.91	-20.62	-20.90	-22.25

Table 212: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	-8.74	3.50	-17.47	-8.38	3.26	-16.97
	INMF	-17.31	6.35	-14.97	-16.77	5.43	-13.88
	CRSP	-0.39	-0.25	-21.81	-0.53	-1.20	-20.85
Exact	FFMF	-9.14	3.01	-16.76	-8.63	2.95	-16.42
	INMF	-19.17	2.74	-15.09	-18.18	2.85	-13.85
	CRSP	-1.75	-4.82	-22.40	-1.78	-4.35	-21.04
Mtm	FFMF	-6.59	2.50	-15.95	-6.58	2.50	-15.95
	INMF	-16.52	1.18	-12.64	-16.51	1.18	-12.64
	CRSP	0.32	-5.08	-18.83	0.32	-5.07	-18.83

Table 213: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule						Average basis rule							
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.60	0.92	2.60	3.02	2.93	1.75	1.84	3.03	1.09	3.03	3.49	3.42	2.66	2.73
	INMF	4.29	1.51	4.29	4.89	6.82	4.26	4.96	6.40	2.26	6.40	7.80	10.33	8.18	9.01
	CRSP	3.58	2.32	3.58	5.35	2.87	2.91	0.20	6.53	3.91	6.53	9.18	7.26	8.31	5.15
MV	FFMF	0.05	0.92	0.12	0.12	0.12	0.14	0.14	0.08	0.94	0.15	0.16	0.16	0.19	0.19
	INMF	2.88	2.49	4.90	8.30	8.41	4.76	8.06	3.38	2.93	5.52	9.09	9.55	5.80	8.83
	CRSP	2.61	5.01	4.08	4.99	4.99	2.00	1.59	4.19	6.78	5.93	7.17	7.53	2.73	3.42
PPN	FFMF	7.37	7.80	10.13	14.69	20.24	8.39	10.27	7.94	8.30	10.78	15.57	21.21	11.16	12.28
	INMF	9.45	7.74	11.71	15.16	18.15	7.01	12.19	9.92	9.12	11.98	16.03	20.06	11.19	13.49
	CRSP	12.52	20.32	19.41	22.63	26.79	18.63	24.56	13.39	22.70	20.92	23.97	28.51	21.68	26.21

Panel B: Taxation at end

Model	Data	Exact basis rule						Average basis rule							
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.57	0.92	2.57	2.97	2.85	1.71	1.78	2.81	1.03	2.81	3.24	3.15	2.43	2.48
	INMF	4.44	1.55	4.44	4.91	6.41	4.04	4.61	5.37	2.08	5.37	6.41	8.51	6.75	7.41
	CRSP	4.27	2.50	4.27	5.81	3.32	2.64	0.11	5.37	3.78	5.37	7.25	5.49	6.22	3.58
MV	FFMF	0.05	0.93	0.13	0.14	0.14	0.16	0.16	0.07	0.95	0.15	0.16	0.16	0.19	0.19
	INMF	2.87	2.52	4.80	7.99	7.90	4.48	7.34	3.08	2.89	5.11	8.22	8.46	5.15	7.71
	CRSP	2.87	5.09	4.26	5.19	5.21	1.72	1.12	3.30	6.73	5.15	5.84	5.80	1.33	1.54
PPN	FFMF	7.36	7.81	10.10	14.58	20.01	8.34	10.17	7.86	8.29	10.68	15.35	20.78	11.19	12.25
	INMF	9.34	7.70	11.47	14.66	17.22	6.62	11.25	9.75	9.08	11.75	15.42	18.66	10.95	12.88
	CRSP	12.42	20.33	19.30	22.62	26.71	17.75	23.00	13.24	22.64	20.71	23.54	27.82	21.39	25.14

Table 214: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-11.40	-9.14	-11.33	-11.69	-11.62	-10.58	-10.65	-11.35	-8.87	-11.29	-11.68	-11.62	-10.94	-10.99
	INMF	-20.27	-18.40	-18.70	-16.55	-17.98	-18.79	-16.78	-19.65	-16.77	-17.99	-16.32	-17.90	-19.13	-17.45
	CRSP	-2.67	0.84	-1.28	-2.08	0.28	-2.61	-0.38	-2.59	2.35	-0.96	-2.23	-0.14	-5.52	-2.03
BH	FFMF	0.40	2.07	0.40	-0.01	0.08	1.24	1.15	0.46	2.39	0.46	0.01	0.08	0.82	0.76
	INMF	-1.49	1.21	-1.49	-2.05	-3.83	-1.46	-2.12	-0.05	3.99	-0.05	-1.34	-3.61	-1.69	-2.45
	CRSP	-8.10	-6.97	-8.10	-9.65	-7.47	-7.50	-5.01	-6.37	-4.00	-6.37	-8.64	-7.00	-7.90	-5.13
PPN	FFMF	-12.89	-11.08	-10.65	-7.33	-2.77	-11.33	-9.87	-13.54	-11.58	-11.27	-7.84	-3.27	-10.63	-9.79
	INMF	-10.89	-9.87	-9.05	-6.78	-6.09	-12.85	-9.24	-12.15	-9.27	-10.51	-8.47	-7.47	-12.60	-11.48
	CRSP	-15.70	-8.74	-10.54	-9.67	-4.35	-10.54	-3.54	-16.78	-7.67	-11.26	-11.22	-6.32	-12.16	-6.15

Panel B: Taxation at end

Model	Data	Exact basis rule							Average basis rule						
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-10.87	-8.62	-10.80	-11.15	-11.05	-10.03	-10.09	-10.83	-8.46	-10.75	-11.12	-11.04	-10.38	-10.43
	INMF	-19.41	-17.40	-17.90	-15.78	-17.04	-17.83	-16.05	-18.58	-16.12	-16.98	-15.36	-16.81	-18.02	-16.54
	CRSP	-3.09	0.71	-1.78	-2.35	0.02	-2.66	-0.79	-2.47	2.30	-0.73	-1.84	-0.23	-5.11	-2.48
BH	FFMF	0.38	2.02	0.38	-0.01	0.10	1.23	1.15	0.43	2.20	0.43	0.01	0.10	0.80	0.76
	INMF	-1.52	1.28	-1.52	-1.96	-3.34	-1.14	-1.68	0.05	3.28	0.05	-0.92	-2.84	-1.24	-1.84
	CRSP	-8.27	-6.68	-8.27	-9.61	-7.43	-6.81	-4.46	-6.23	-4.80	-6.23	-7.88	-6.34	-6.99	-4.61
PPN	FFMF	-12.52	-10.71	-10.28	-6.99	-2.48	-10.97	-9.53	-12.90	-11.01	-10.61	-7.24	-2.78	-9.88	-9.05
	INMF	-9.81	-8.63	-8.05	-5.84	-5.09	-11.71	-8.38	-10.30	-7.97	-8.67	-6.59	-5.82	-10.49	-9.49
	CRSP	-14.87	-7.31	-9.66	-8.50	-3.17	-9.42	-2.99	-14.93	-6.46	-9.32	-8.82	-4.08	-9.54	-4.36

Table 215: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.08	0.78	1.59	0.78	0.63	0.55	0.98	0.87
	INMF	4.07	1.76	3.53	1.76	1.09	0.81	1.65	1.11
	CRSP	5.99	2.74	5.29	2.74	1.79	1.28	1.40	1.01
MV	FFMF	1.48	1.04	1.39	1.09	0.93	0.82	1.15	1.03
	INMF	4.10	2.53	3.67	2.13	1.39	0.85	2.21	1.59
	CRSP	6.08	3.62	5.61	3.43	2.24	1.48	1.98	1.29
PPN	FFMF	18.64	13.86	18.06	13.67	9.56	5.68	13.43	11.22
	INMF	14.36	10.11	13.73	9.61	6.35	3.71	10.57	8.23
	CRSP	25.42	19.95	24.88	20.47	15.44	10.47	14.47	8.92

Table 216: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 1\%$ .



## 13 Other benchmark portfolio strategies

This section contains detailed tables for the VW and the PPVW benchmark portfolio strategies and the CRSP dataset. Our results show that the 1/N strategy dominates the value weighted (VW) strategy. The results in Plyakha, Uppal, and Vilkov (2012) suggest that 1/N's outperformance over VW reflects 1/N's higher exposure to market, size, and value factors.

Panel A: Gain Relative to 1/N		
Data	VW	PPVW
CRSP	-13.46	-7.74

Panel B: Trading Volume			
Data	1/N	VW	PPVW
CRSP	5.13	2.13	18.63

Table 217: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		1/N	VW	PPVW	1/N	VW	PPVW
Average	CRSP	-16.48	-14.22	-17.82	-18.06	-16.15	-18.45
Exact	CRSP	-13.27	-13.64	-14.72	-15.88	-15.95	-16.34
Mtm	CRSP	-21.92	-19.40	-20.82	-21.95	-19.42	-20.85

Table 218: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end		Panel B: Taxation at end	
		VW	PPVW	VW	PPVW
Average	CRSP	-11.11	-9.22	-11.44	-8.17
Exact	CRSP	-13.82	-9.28	-13.53	-8.24
Mtm	CRSP	-10.67	-6.44	-10.65	-6.44

Table 219: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	CRSP	-0.48	0.19	-0.48	0.29	-2.66	-2.09	-5.12	1.95	1.34	1.95	3.43	0.80	1.70	-1.74
VW	CRSP	0.65	0.26	0.49	0.60	0.02	0.14	-0.03	0.96	0.59	0.75	1.00	0.55	-1.68	-1.55
PPVW	CRSP	0.80	3.09	2.70	2.13	3.90	1.14	-0.71	1.88	4.50	3.95	3.87	6.23	3.59	1.63

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	CRSP	0.11	0.33	0.11	0.66	-2.31	-2.46	-5.32	0.83	1.19	0.83	1.66	-0.71	-0.09	-3.01
VW	CRSP	0.60	0.29	0.49	0.59	0.04	-0.03	-0.32	0.78	0.62	0.64	0.76	0.25	-1.98	-2.06
PPVW	CRSP	0.88	3.14	2.64	2.06	3.48	0.36	-1.64	1.63	4.49	3.77	3.40	5.19	2.91	-0.02

Table 220: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, VW, and PPVW.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, VW, and PPVW strategies when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
VW	CRSP	-12.84	-13.77	-12.98	-13.56	-11.45	-11.87	-9.20	-11.98	-11.77	-12.17	-13.21	-11.34	-14.07	-10.95
PPVW	CRSP	-8.11	-6.66	-6.38	-7.62	-3.17	-6.30	-5.06	-9.28	-6.40	-7.44	-8.84	-4.33	-7.54	-6.11

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
VW	CRSP	-13.11	-13.57	-13.20	-13.59	-11.45	-11.38	-8.97	-11.49	-11.94	-11.61	-12.22	-10.58	-13.12	-10.57
PPVW	CRSP	-7.53	-5.67	-5.92	-6.96	-2.79	-5.59	-4.67	-7.44	-5.18	-5.50	-6.60	-2.71	-5.41	-5.34

**Table 221: Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for VW, and PPVW.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the VW, and PPVW strategies when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	CRSP	7.61	3.78	6.82	3.78	2.37	1.67	1.70	1.22
VW	CRSP	2.28	1.77	2.22	1.91	1.58	1.15	1.48	1.22
PPVW	CRSP	20.20	15.74	19.65	15.65	11.54	7.63	10.40	5.72

Table 222: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0\%$ .

Panel A: Gain Relative to 1/N			
Data		VW	PPVW
CRSP		-11.91	-15.24

  

Panel B: Trading Volume			
Data	1/N	VW	PPVW
CRSP	5.13	2.13	18.61

Table 223: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0.5\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		1/N	VW	PPVW	1/N	VW	PPVW
Average	CRSP	-17.48	-14.26	-18.44	-18.99	-16.20	-19.04
Exact	CRSP	-13.61	-13.60	-14.93	-16.27	-15.96	-16.61
Mtm	CRSP	-21.90	-19.37	-20.59	-21.93	-19.39	-20.62

Table 224: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end		Panel B: Taxation at end	
		VW	PPVW	VW	PPVW
Average	CRSP	-8.47	-16.22	-8.89	-15.30
Exact	CRSP	-11.90	-16.54	-11.59	-15.58
Mtm	CRSP	-9.06	-13.83	-9.05	-13.82

Table 225: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.



Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	CRSP	1.56	1.15	1.56	2.84	0.13	0.44	-2.44	4.49	2.64	4.49	6.62	4.38	5.39	2.07
VW	CRSP	0.97	0.88	0.83	1.08	0.66	0.56	0.42	1.32	1.32	1.12	1.53	1.25	-0.96	-0.75
PPVW	CRSP	4.69	8.45	8.42	9.64	13.43	8.27	8.11	6.10	10.38	9.94	11.82	16.39	12.61	12.72

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	CRSP	2.20	1.31	2.20	3.25	0.52	0.12	-2.58	3.33	2.49	3.33	4.75	2.72	3.44	0.65
VW	CRSP	0.94	0.93	0.85	1.09	0.70	0.40	0.15	1.14	1.37	1.01	1.28	0.95	-1.27	-1.27
PPVW	CRSP	4.81	8.56	8.45	9.60	12.99	7.41	7.19	5.85	10.39	9.75	11.31	15.25	11.89	10.85

Table 226: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, VW, and PPVW.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, VW, and PPVW strategies when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

		Exact basis rule					Average basis rule								
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
VW	CRSP	-12.41	-12.13	-12.53	-13.41	-11.43	-11.79	-9.32	-11.24	-9.64	-11.42	-12.84	-11.21	-13.98	-10.99
PPVW	CRSP	-13.96	-10.52	-10.90	-11.02	-5.45	-10.03	-7.51	-14.93	-9.91	-11.85	-12.14	-6.59	-10.49	-7.48

Panel B: Taxation at end

		Exact basis rule					Average basis rule								
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
VW	CRSP	-12.68	-11.92	-12.76	-13.43	-11.43	-11.34	-9.11	-10.82	-9.89	-10.93	-11.90	-10.47	-13.04	-10.62
PPVW	CRSP	-13.43	-9.54	-10.42	-10.40	-5.11	-9.44	-7.12	-13.23	-8.77	-10.03	-9.99	-4.97	-8.38	-6.71

**Table 227: Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for VW, and PPVW.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the VW, and PPVW strategies when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	CRSP	6.58	3.14	5.84	3.14	2.04	1.46	1.54	1.10
VW	CRSP	2.14	1.67	2.09	1.80	1.48	1.08	1.39	1.14
PPVW	CRSP	19.38	14.90	18.86	14.90	10.84	6.90	9.79	5.37

Table 228: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0.5\%$ .

Panel A: Gain Relative to 1/N			
Data		VW	PPVW
CRSP		-10.34	-22.51

  

Panel B: Trading Volume			
Data	1/N	VW	PPVW
CRSP	5.13	2.12	18.60

Table 229: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 1\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		1/N	VW	PPVW	1/N	VW	PPVW
Average	CRSP	-17.79	-14.26	-18.23	-19.22	-16.23	-18.80
Exact	CRSP	-13.84	-13.55	-14.93	-16.55	-15.96	-16.69
Mtm	CRSP	-21.88	-19.35	-20.35	-21.91	-19.37	-20.37

Table 230: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end		Panel B: Taxation at end	
		VW	PPVW	VW	PPVW
Average	CRSP	-6.49	-22.91	-7.02	-22.11
Exact	CRSP	-10.04	-23.48	-9.71	-22.64
Mtm	CRSP	-7.44	-20.99	-7.43	-20.98

Table 231: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	CRSP	3.58	2.32	3.58	5.35	2.87	2.91	0.20	6.53	3.91	6.53	9.18	7.26	8.31	5.15
VW	CRSP	1.30	1.73	1.19	1.56	1.28	0.97	0.90	1.68	2.26	1.50	2.04	1.94	-0.26	0.06
PPVW	CRSP	8.97	15.73	14.81	18.02	24.19	16.32	18.21	10.24	17.79	16.13	20.01	27.05	23.22	24.93

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	CRSP	4.27	2.50	4.27	5.81	3.32	2.64	0.11	5.37	3.78	5.37	7.25	5.49	6.22	3.58
VW	CRSP	1.28	1.80	1.23	1.59	1.35	0.82	0.65	1.50	2.32	1.39	1.80	1.63	-0.58	-0.47
PPVW	CRSP	9.14	15.94	14.91	18.03	23.77	15.40	17.30	9.99	17.81	15.94	19.49	25.83	22.47	22.83

Table 232: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, VW, and PPVW.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, VW, and PPVW strategies when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
VW	CRSP	-12.02	-10.55	-12.11	-13.27	-11.43	-11.73	-9.41	-10.75	-7.98	-10.92	-12.61	-11.14	-13.89	-11.02
PPVW	CRSP	-19.49	-13.45	-15.18	-14.27	-7.62	-13.51	-9.73	-20.23	-12.61	-15.97	-15.27	-8.69	-12.30	-8.41

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
VW	CRSP	-12.30	-10.32	-12.35	-13.31	-11.43	-11.31	-9.23	-10.44	-8.34	-10.53	-11.76	-10.43	-12.98	-10.65
PPVW	CRSP	-19.03	-12.50	-14.74	-13.71	-7.32	-13.03	-9.36	-18.69	-11.58	-14.29	-13.22	-7.08	-10.19	-7.63

**Table 233: Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for VW, and PPVW.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the VW, and PPVW strategies when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	CRSP	5.99	2.74	5.29	2.74	1.79	1.28	1.40	1.01
VW	CRSP	2.09	1.62	2.05	1.76	1.44	1.04	1.34	1.11
PPVW	CRSP	18.99	14.52	18.52	14.53	10.44	6.52	9.45	5.22

Table 234: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 1\%$ .



## 14 20 randomly chosen assets

This section contains detailed tables for the case of 20 randomly chosen assets from the CRSP dataset.

Panel A: Gain Relative to 1/N				
Data	MV	BH	PPN	
CRSP	-30.37	-13.07	1.32	

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
CRSP	5.53	8.14	0.43	22.07

Table 235: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	CRSP	-16.20	-14.80	-11.27	-18.75	-18.32	-15.45	-15.03	-19.52
Exact	CRSP	-12.03	-12.62	-11.25	-13.82	-16.01	-13.60	-14.90	-16.51
Mtm	CRSP	-22.13	-18.94	-20.12	-21.77	-22.18	-18.96	-20.15	-21.82

Table 236: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	CRSP	-29.21	-7.96	-1.76	-27.93	-9.56	-0.15
Exact	CRSP	-30.84	-12.30	-0.73	-28.37	-11.92	0.72
Mtm	CRSP	-27.52	-10.83	1.80	-27.50	-10.81	1.79

Table 237: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	CRSP	-1.08	0.17	-1.08	-1.27	-3.84	-5.96	-7.88	1.53	1.41	1.53	2.35	0.29	-2.10	-3.81
MV	CRSP	-0.65	0.97	-0.17	-1.06	-0.22	1.12	-1.16	0.67	2.16	1.00	0.50	1.63	3.29	0.81
PPN	CRSP	1.19	3.00	1.46	1.11	-0.93	1.42	-3.38	2.22	5.21	3.09	3.04	1.79	5.09	1.70

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	CRSP	-0.42	0.25	-0.42	-0.71	-3.49	-6.58	-8.36	-0.20	1.15	-0.20	-0.25	-2.35	-4.64	-6.17
MV	CRSP	-0.53	0.98	-0.09	-0.94	-0.20	0.77	-1.60	0.43	2.15	0.85	0.21	1.06	2.33	-0.18
PPN	CRSP	1.00	3.03	1.32	0.72	-1.52	-1.40	-5.92	1.85	5.18	2.77	2.29	0.30	1.06	-2.86

Table 238: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

		Exact basis rule							Average basis rule						
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	CRSP	-30.54	-30.28	-30.20	-30.69	-28.23	-25.64	-25.79	-29.81	-28.69	-29.58	-30.49	-28.26	-25.32	-25.81
BH	CRSP	-11.34	-12.44	-11.34	-11.17	-8.79	-6.74	-4.79	-9.34	-9.24	-9.34	-10.07	-8.22	-5.99	-4.31
PPN	CRSP	1.55	2.08	1.83	1.66	2.28	7.05	4.12	-1.09	1.91	-0.25	-1.10	-0.29	5.45	3.86

Panel B: Taxation at end

		Exact basis rule							Average basis rule						
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	CRSP	-28.45	-27.85	-28.13	-28.54	-25.93	-22.74	-23.08	-27.47	-27.21	-27.17	-27.60	-25.41	-22.66	-23.33
BH	CRSP	-11.55	-12.15	-11.55	-11.29	-8.73	-5.72	-3.88	-9.39	-10.60	-9.39	-9.34	-7.39	-5.16	-3.62
PPN	CRSP	2.15	3.51	2.48	2.18	2.78	6.30	3.41	1.90	3.82	2.81	2.39	2.55	5.82	3.37

Table 239: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	CRSP	8.37	3.81	7.46	3.81	2.34	1.57	1.01	0.88
MV	CRSP	10.45	6.79	10.09	7.87	5.86	4.23	3.10	2.08
PPN	CRSP	26.61	20.09	25.75	20.68	15.79	11.07	6.85	3.99

Table 240: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0\%$ .

Panel A: Gain Relative to 1/N				
Data	MV	BH	PPN	
CRSP	-31.60	-10.27	-8.80	

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
CRSP	5.52	8.13	0.43	22.06

Table 241: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0.5\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	CRSP	-17.82	-15.60	-11.25	-20.23	-19.85	-16.21	-15.04	-20.94
Exact	CRSP	-12.66	-12.89	-11.23	-14.92	-16.68	-13.88	-14.91	-17.63
Mtm	CRSP	-22.09	-18.84	-20.11	-21.57	-22.13	-18.86	-20.13	-21.62

Table 242: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	CRSP	-29.75	-3.10	-11.47	-28.50	-4.89	-10.04
Exact	CRSP	-31.78	-8.80	-11.16	-29.30	-8.37	-9.85
Mtm	CRSP	-28.75	-7.99	-8.19	-28.72	-7.97	-8.20

Table 243: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.



Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	CRSP	1.37	1.27	1.37	1.79	-0.51	-2.50	-4.38	4.48	2.92	4.48	6.15	4.71	2.84	1.14
MV	CRSP	1.84	3.72	2.51	2.30	3.72	5.20	3.30	3.48	5.39	3.97	4.20	6.01	8.26	6.26
PPN	CRSP	6.69	9.22	8.05	9.86	9.82	13.56	9.52	7.83	12.14	9.93	12.25	12.85	18.74	17.23

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	CRSP	2.06	1.37	2.06	2.39	-0.10	-3.10	-4.83	2.69	2.65	2.69	3.43	1.88	0.07	-1.43
MV	CRSP	1.98	3.74	2.59	2.42	3.76	4.83	2.86	3.22	5.38	3.80	3.87	5.40	7.24	5.17
PPN	CRSP	6.50	9.28	7.91	9.48	9.18	10.44	6.71	7.45	12.12	9.59	11.42	11.19	14.26	11.89

Table 244: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

		Exact basis rule							Average basis rule						
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	CRSP	-31.46	-30.12	-31.01	-31.44	-28.88	-26.39	-26.29	-30.42	-28.06	-30.09	-31.04	-28.87	-26.05	-26.20
BH	CRSP	-10.03	-9.94	-10.03	-10.41	-8.34	-6.46	-4.62	-7.25	-5.85	-7.25	-8.72	-7.46	-5.78	-4.20
PPN	CRSP	-6.49	-4.18	-5.31	-4.12	-1.94	3.47	1.76	-8.62	-3.53	-6.84	-6.38	-4.58	2.22	2.61

Panel B: Taxation at end

		Exact basis rule							Average basis rule						
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	CRSP	-29.36	-27.65	-28.94	-29.29	-26.57	-23.52	-23.59	-28.12	-26.60	-27.73	-28.19	-26.03	-23.37	-23.71
BH	CRSP	-10.22	-9.60	-10.22	-10.51	-8.27	-5.44	-3.72	-7.38	-7.35	-7.38	-8.04	-6.65	-4.96	-3.51
PPN	CRSP	-5.93	-2.80	-4.68	-3.61	-1.46	2.75	1.09	-5.87	-1.75	-4.00	-3.09	-1.83	2.71	2.11

Table 245: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	CRSP	7.25	3.30	6.44	3.30	2.07	1.40	0.91	0.79
MV	CRSP	9.39	5.94	9.05	6.92	5.14	3.73	2.80	1.93
PPN	CRSP	24.23	18.01	23.47	18.66	14.08	9.71	6.46	3.82

Table 246: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0.5\%$ .

Panel A: Gain Relative to 1/N				
Data		MV	BH	PPN
CRSP		-32.82	-7.38	-17.93

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
CRSP	5.52	8.13	0.44	22.04

Table 247: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 1\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	CRSP	-18.55	-15.88	-11.24	-20.53	-20.46	-16.45	-15.05	-21.18
Exact	CRSP	-12.95	-12.98	-11.20	-15.22	-16.98	-13.96	-14.91	-17.99
Mtm	CRSP	-22.04	-18.74	-20.09	-21.37	-22.09	-18.76	-20.12	-21.42

Table 248: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	CRSP	-30.62	0.93	-19.92	-29.43	-1.08	-18.68
Exact	CRSP	-32.84	-5.52	-20.07	-30.37	-5.07	-18.93
Mtm	CRSP	-29.97	-5.07	-17.22	-29.95	-5.04	-17.23

Table 249: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	CRSP	3.58	2.47	3.58	4.59	2.56	0.70	-1.13	6.97	4.47	6.97	9.30	8.30	6.89	5.24
MV	CRSP	4.37	6.88	5.22	5.67	7.67	9.35	7.70	6.15	8.86	6.82	7.68	10.14	12.84	11.23
PPN	CRSP	12.22	16.72	14.85	19.08	21.19	26.17	23.08	13.36	20.20	16.70	21.39	24.20	32.15	32.80

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	CRSP	4.32	2.57	4.32	5.21	2.98	0.07	-1.58	5.13	4.23	5.13	6.46	5.30	3.88	2.43
MV	CRSP	4.50	6.89	5.27	5.76	7.68	8.93	7.22	5.89	8.84	6.64	7.31	9.48	11.75	10.05
PPN	CRSP	12.05	16.84	14.76	18.72	20.58	22.75	20.04	12.97	20.15	16.31	20.50	22.42	27.37	26.77

Table 250: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

		Exact basis rule							Average basis rule						
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	CRSP	-32.33	-29.95	-31.78	-32.15	-29.50	-27.07	-26.84	-31.15	-27.71	-30.72	-31.65	-29.44	-26.76	-26.67
BH	CRSP	-8.79	-7.80	-8.79	-9.67	-7.89	-6.18	-4.45	-5.65	-3.39	-5.65	-7.66	-6.80	-5.57	-4.09
PPN	CRSP	-13.40	-8.96	-11.37	-8.99	-5.55	0.15	-0.51	-15.15	-7.87	-12.65	-11.07	-8.17	-1.00	1.05

Panel B: Taxation at end

		Exact basis rule							Average basis rule						
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	CRSP	-30.26	-27.44	-29.74	-30.01	-27.20	-24.22	-24.15	-28.92	-26.31	-28.42	-28.87	-26.63	-24.09	-24.18
BH	CRSP	-9.00	-7.45	-9.00	-9.77	-7.82	-5.14	-3.55	-5.91	-5.09	-5.91	-7.08	-6.06	-4.77	-3.43
PPN	CRSP	-12.92	-7.65	-10.81	-8.52	-5.08	-0.56	-1.12	-12.61	-6.25	-10.02	-7.95	-5.45	-0.28	0.65

Table 251: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	CRSP	6.63	3.00	5.86	3.00	1.91	1.31	0.88	0.76
MV	CRSP	8.84	5.53	8.51	6.42	4.74	3.44	2.64	1.86
PPN	CRSP	23.13	17.02	22.45	17.68	13.18	9.04	6.26	3.74

Table 252: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 1\%$ .



## **15 30 randomly chosen assets**

This section contains detailed tables for the case of 30 randomly chosen assets from the CRSP dataset.

Panel A: Gain Relative to 1/N				
Data	MV	BH	PPN	
CRSP	-0.69	-13.80	14.39	

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
CRSP	5.78	8.73	0.52	19.31

Table 253: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	CRSP	-17.82	-20.11	-12.54	-22.17	-20.06	-21.88	-16.15	-23.21
Exact	CRSP	-13.74	-16.58	-12.48	-17.10	-17.74	-19.22	-16.03	-20.21
Mtm	CRSP	-23.43	-24.13	-21.02	-25.34	-23.49	-24.19	-21.05	-25.41

Table 254: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	CRSP	-3.45	-8.26	8.34	-2.96	-9.59	9.89
Exact	CRSP	-3.95	-12.53	9.94	-2.48	-12.01	10.95
Mtm	CRSP	-1.60	-11.08	11.55	-1.60	-11.05	11.52

Table 255: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	CRSP	-1.12	0.14	-1.12	-0.87	-2.60	-4.99	-6.73	1.54	1.38	1.54	2.59	1.43	-0.85	-3.04
MV	CRSP	0.94	2.76	2.14	2.72	3.42	7.04	9.15	2.35	5.38	3.95	4.61	5.49	11.39	14.63
PPN	CRSP	0.61	3.83	1.15	-1.07	-3.62	-4.38	-9.12	2.13	6.30	2.91	1.32	-0.68	3.33	-6.85

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	CRSP	-0.40	0.26	-0.40	-0.25	-2.20	-5.66	-7.34	-0.14	1.12	-0.14	0.12	-1.23	-3.52	-5.42
MV	CRSP	0.93	2.75	2.07	2.42	2.99	5.22	6.45	1.59	5.36	3.60	3.79	4.09	8.11	10.20
PPN	CRSP	0.38	3.83	0.87	-1.51	-4.30	-7.20	-11.68	1.63	6.24	2.43	0.29	-2.40	-1.25	-10.79

**Table 256: Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

		Exact basis rule							Average basis rule						
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	CRSP	-1.95	-1.44	-0.78	-0.48	1.98	8.22	12.40	-2.69	0.35	-1.17	-1.56	0.41	8.47	14.13
BH	CRSP	-11.54	-12.66	-11.54	-11.77	-10.20	-7.94	-6.23	-9.65	-9.51	-9.65	-10.58	-9.55	-7.47	-5.39
PPN	CRSP	11.87	13.99	12.47	9.71	8.78	10.66	7.12	8.97	13.59	9.80	7.00	6.09	12.91	4.08

Panel B: Taxation at end

		Exact basis rule							Average basis rule						
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	CRSP	-1.19	-0.06	-0.06	0.13	2.69	8.76	12.04	-1.29	1.10	0.67	0.59	2.27	8.74	13.07
BH	CRSP	-11.66	-12.24	-11.66	-11.79	-10.03	-6.74	-5.04	-9.46	-10.59	-9.46	-9.69	-8.46	-6.29	-4.40
PPN	CRSP	11.82	14.91	12.36	9.55	8.57	9.14	5.76	11.82	15.44	12.71	10.07	8.59	12.47	3.65

**Table 257: Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	CRSP	9.71	4.67	8.71	4.67	3.12	2.21	1.36	1.24
MV	CRSP	12.23	8.57	11.96	9.94	7.95	6.07	3.76	2.50
PPN	CRSP	24.68	17.94	23.79	18.40	13.05	8.48	4.88	3.21

Table 258: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0\%$ .

Panel A: Gain Relative to 1/N				
Data	MV	BH	PPN	
CRSP	-2.50	-11.04	4.24	

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
CRSP	5.78	8.72	0.52	19.29

Table 259: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0.5\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	CRSP	-19.41	-21.47	-12.55	-23.75	-21.54	-23.12	-16.20	-24.73
Exact	CRSP	-14.43	-17.59	-12.48	-18.33	-18.44	-20.22	-16.07	-21.47
Mtm	CRSP	-23.41	-24.07	-21.00	-25.16	-23.46	-24.13	-21.03	-25.24

Table 260: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	CRSP	-4.99	-3.47	-1.37	-4.47	-4.98	0.01
Exact	CRSP	-6.10	-9.02	-0.52	-4.63	-8.46	0.37
Mtm	CRSP	-3.35	-8.25	1.85	-3.35	-8.22	1.83

Table 261: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.



Panel A: No taxation at end

Model	Exact basis rule						Average basis rule								
	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	CRSP	1.34	1.23	1.34	2.16	0.72	-1.43	-3.14	4.45	2.85	4.45	6.32	5.73	4.11	1.93
MV	CRSP	3.50	6.84	5.37	6.45	7.69	12.04	15.04	7.56	10.11	7.56	8.70	10.15	17.16	21.32
PPN	CRSP	6.00	9.68	7.22	7.39	6.58	6.82	2.69	9.11	12.78	9.11	10.09	10.02	16.55	6.59

Panel B: Taxation at end

Model	Exact basis rule						Average basis rule								
	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	CRSP	2.09	1.37	2.09	2.80	1.15	-2.09	-3.75	2.71	2.61	2.71	3.72	2.88	1.20	-0.69
MV	CRSP	3.50	6.85	5.30	6.23	7.30	10.16	12.21	7.19	10.11	7.19	7.86	8.69	13.68	16.58
PPN	CRSP	5.82	9.73	6.95	6.95	5.90	3.77	-0.13	8.61	12.72	8.61	8.95	8.10	11.44	2.01

Table 262: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

		Exact basis rule							Average basis rule						
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	CRSP	-4.10	-0.89	-2.36	-2.16	0.39	6.73	11.51	-4.32	1.71	-2.17	-2.87	-1.02	6.92	13.08
BH	CRSP	-10.22	-10.12	-10.22	-10.95	-9.67	-7.70	-6.07	-7.59	-6.15	-7.59	-9.22	-8.71	-7.28	-5.30
PPN	CRSP	4.06	7.79	5.26	4.57	5.27	7.81	5.47	1.72	8.16	3.03	2.12	2.63	10.42	3.14

Panel B: Taxation at end

		Exact basis rule							Average basis rule						
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	CRSP	-3.32	0.52	-1.64	-1.45	1.16	7.30	11.18	-2.92	2.52	-0.30	-0.65	0.93	7.31	12.15
BH	CRSP	-10.34	-9.69	-10.34	-10.96	-9.50	-6.50	-4.89	-7.49	-7.40	-7.49	-8.39	-7.64	-6.11	-4.32
PPN	CRSP	4.03	8.64	5.14	4.42	5.07	6.38	4.15	4.38	9.86	5.75	5.05	5.09	10.13	2.73

**Table 263: Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	CRSP	8.09	3.89	7.23	3.89	2.65	1.94	1.24	1.13
MV	CRSP	10.69	7.31	10.40	8.43	6.66	5.08	3.29	2.23
PPN	CRSP	22.04	15.66	21.23	16.18	11.26	7.32	4.62	3.08

Table 264: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0.5\%$ .

Panel A: Gain Relative to 1/N			
Data	MV	BH	PPN
CRSP	-4.29	-8.19	-5.11

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
CRSP	5.78	8.72	0.52	19.28

Table 265: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 1\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	CRSP	-20.14	-21.88	-12.56	-24.07	-22.13	-23.38	-16.23	-24.99
Exact	CRSP	-14.81	-18.08	-12.48	-18.69	-18.83	-20.69	-16.10	-21.85
Mtm	CRSP	-23.39	-24.02	-20.98	-24.99	-23.44	-24.07	-21.02	-25.06

Table 266: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	CRSP	-6.36	0.53	-9.77	-5.82	-1.23	-8.59
Exact	CRSP	-7.96	-5.68	-9.43	-6.49	-5.11	-8.64
Mtm	CRSP	-5.08	-5.32	-7.09	-5.08	-5.29	-7.11

Table 267: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	CRSP	3.63	2.48	3.63	5.00	3.85	1.93	0.26	6.86	4.39	6.86	9.41	9.23	8.21	6.05
MV	CRSP	5.91	11.20	8.57	10.04	11.74	16.74	20.58	7.49	14.77	10.84	12.22	14.13	22.13	27.03
PPN	CRSP	11.44	16.72	13.25	15.98	17.07	18.13	14.83	13.11	20.18	14.97	18.59	20.56	30.25	20.02

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	CRSP	4.40	2.61	4.40	5.66	4.31	1.26	-0.37	5.04	4.14	5.04	6.64	6.17	5.01	3.14
MV	CRSP	5.92	11.20	8.52	9.83	11.34	14.79	17.61	6.64	14.78	10.50	11.29	12.57	18.51	22.00
PPN	CRSP	11.29	16.81	13.00	15.55	16.37	14.86	11.77	12.56	20.11	14.43	17.35	18.48	24.57	14.82

Table 268: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

		Exact basis rule							Average basis rule						
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	CRSP	-5.94	-0.13	-3.57	-3.55	-0.97	5.41	10.70	-5.81	2.95	-2.88	-3.96	-2.17	5.68	12.16
BH	CRSP	-8.98	-7.96	-8.98	-10.18	-9.18	-7.47	-5.93	-5.93	-3.70	-5.93	-8.12	-7.97	-7.11	-5.21
PPN	CRSP	-2.60	3.16	-1.01	0.04	2.11	4.97	3.74	-4.49	3.88	-2.92	-2.20	-0.41	8.60	2.12

Panel B: Taxation at end

		Exact basis rule							Average basis rule						
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	CRSP	-5.12	1.34	-2.80	-2.80	-0.18	6.01	10.39	-4.38	3.80	-0.93	-1.71	-0.15	6.29	11.40
BH	CRSP	-9.10	-7.52	-9.10	-10.19	-9.03	-6.29	-4.75	-5.97	-5.16	-5.97	-7.38	-6.98	-5.94	-4.24
PPN	CRSP	-2.60	4.00	-1.11	-0.10	1.93	3.63	2.49	-2.04	5.43	-0.41	0.60	2.01	8.44	1.77

Table 269: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	CRSP	7.32	3.50	6.53	3.50	2.39	1.77	1.16	1.06
MV	CRSP	9.98	6.72	9.73	7.81	6.03	4.60	3.09	2.11
PPN	CRSP	20.76	14.63	20.01	15.13	10.48	6.79	4.46	3.00

Table 270: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 1\%$ .



## **16 No capital gains tax burden passed on by ETF**

This section contains detailed tables for the case where the ETF does not pass gains on to the investor.

Panel A: Gain Relative to 1/N				
Data		MV	BH	PPN
FFMF		-6.03	1.48	1.40
INMF		-18.78	-1.64	2.01
CRSP		-0.60	-11.12	3.23

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	1.63	1.35	0.16	11.85
INMF	3.46	3.61	0.24	9.54
CRSP	5.13	5.59	0.47	17.40

Table 271: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-4.91	-10.78	-2.88	-9.56	-7.82	-12.78	-7.49	-10.40
	INMF	-14.04	-15.66	-7.14	-18.52	-18.32	-18.19	-16.63	-20.20
	CRSP	-16.48	-16.08	-12.58	-19.64	-18.06	-17.86	-14.88	-20.31
Exact	FFMF	-3.65	-10.74	-2.88	-5.37	-7.35	-12.76	-7.49	-8.42
	INMF	-8.92	-13.65	-7.14	-12.36	-16.27	-17.23	-16.63	-17.21
	CRSP	-13.27	-13.67	-12.58	-15.58	-15.88	-16.30	-14.88	-17.38
Mtm	FFMF	-12.79	-15.09	-13.23	-13.49	-12.82	-15.11	-13.26	-13.52
	INMF	-23.03	-21.62	-23.31	-23.39	-23.10	-21.66	-23.38	-23.46
	CRSP	-21.92	-20.65	-20.92	-22.40	-21.95	-20.68	-20.94	-22.43

Table 272: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	<b>-11.83</b>	3.64	<b>-3.56</b>	<b>-11.09</b>	1.85	<b>-1.43</b>
	INMF	<b>-20.31</b>	6.26	<b>-3.30</b>	<b>-18.65</b>	0.39	<b>-0.35</b>
	CRSP	<b>-0.13</b>	<b>-6.97</b>	<b>-0.68</b>	<b>-0.36</b>	<b>-7.67</b>	0.39
Exact	FFMF	<b>-12.95</b>	2.29	<b>-0.42</b>	<b>-11.52</b>	1.33	0.23
	INMF	<b>-23.00</b>	0.28	<b>-1.86</b>	<b>-19.71</b>	<b>-2.07</b>	0.85
	CRSP	<b>-1.06</b>	<b>-10.41</b>	0.47	<b>-1.10</b>	<b>-10.06</b>	1.38
Mtm	FFMF	<b>-8.51</b>	0.96	0.58	<b>-8.49</b>	0.96	0.58
	INMF	<b>-17.30</b>	<b>-2.00</b>	1.52	<b>-17.26</b>	<b>-1.99</b>	1.53
	CRSP	1.01	<b>-9.97</b>	2.59	1.01	<b>-9.96</b>	2.59

Table 273: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.52	0.35	1.52	1.97	2.26	0.92	1.00	2.66	0.96	2.66	3.26	3.60	2.28	2.33
	INMF	2.06	0.57	2.06	3.39	4.81	3.97	5.16	5.79	2.02	5.79	8.29	10.38	9.36	11.54
	CRSP	-0.48	0.19	-0.48	0.29	-2.66	-2.09	-5.12	1.95	1.34	1.95	3.43	0.80	1.70	-1.74
MV	FFMF	0.00	0.09	0.11	0.14	0.17	0.07	0.06	0.03	0.11	0.15	0.18	0.21	0.11	0.10
	INMF	1.35	0.81	3.11	6.15	6.26	6.48	8.33	2.39	1.80	4.47	7.73	8.31	8.46	10.17
	CRSP	-0.50	1.05	-0.14	-0.07	-0.61	-2.52	-3.60	0.98	2.37	1.48	1.80	1.54	-2.38	-2.53
PPN	FFMF	0.20	0.76	0.45	0.78	1.45	0.75	2.00	1.96	2.03	2.37	3.84	5.50	1.40	4.24
	INMF	2.01	1.79	2.66	4.09	2.69	1.90	2.58	3.58	4.00	4.75	7.79	8.57	5.03	8.81
	CRSP	2.26	2.19	2.66	1.15	1.27	1.66	-0.51	3.37	4.16	4.20	3.36	4.39	2.21	-1.16

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.34	0.39	1.34	1.50	1.33	0.44	0.34	1.59	0.63	1.59	1.84	1.79	0.91	0.81
	INMF	1.90	0.59	1.90	2.61	3.43	2.60	3.13	2.38	1.43	2.38	3.73	5.12	4.28	5.62
	CRSP	0.11	0.33	0.11	0.66	-2.31	-2.46	-5.32	0.83	1.19	0.83	1.66	-0.71	-0.09	-3.01
MV	FFMF	0.00	0.11	0.13	0.14	0.16	0.06	0.04	0.02	0.13	0.15	0.17	0.19	0.08	0.05
	INMF	1.26	0.88	2.97	5.48	5.07	4.98	6.03	1.35	1.58	3.23	5.59	5.74	5.85	6.72
	CRSP	-0.35	1.12	0.00	0.02	-0.51	-2.87	-4.14	0.08	2.32	0.74	0.57	-0.05	-3.66	-4.11
PPN	FFMF	0.09	0.81	0.38	0.56	1.19	0.42	1.16	1.38	2.00	1.86	2.44	3.15	0.71	2.28
	INMF	1.67	1.72	2.19	2.43	-0.19	0.18	-1.28	2.48	3.84	3.47	4.52	2.55	2.37	1.93
	CRSP	2.30	2.24	2.65	1.33	1.28	0.77	-1.62	2.97	4.12	3.82	2.68	3.25	1.22	-2.84

Table 274: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

		Exact basis rule																
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	Average basis rule									
									PD10	AD1	AD10	AD25	AD50	G0.1	G0.2			
MV	FFMF	-14.25	-13.18	-14.15	-14.52	-14.73	-13.69	-13.76	-14.09	-12.58	-13.99	-14.47	-14.72	-13.71	-13.76			
	INMF	-23.54	-22.82	-22.22	-20.95	-21.93	-21.14	-20.68	-22.87	-20.48	-21.30	-20.73	-21.80	-20.96	-21.29			
	CRSP	-1.08	-0.22	-0.72	-1.42	1.01	-1.50	0.53	-1.09	0.88	-0.59	-1.71	0.61	-4.13	-0.93			
BH	FFMF	0.76	1.93	0.76	0.31	0.02	1.35	1.27	0.95	2.66	0.95	0.36	0.04	1.33	1.28			
	INMF	-1.75	-0.29	-1.75	-3.01	-4.32	-3.55	-4.64	0.45	4.15	0.45	-1.88	-3.73	-2.83	-4.74			
	CRSP	-9.97	-10.58	-9.97	-10.67	-7.96	-8.50	-5.57	-8.75	-8.20	-8.75	-10.06	-7.71	-8.53	-5.32			
PPN	FFMF	-1.70	-0.01	-1.46	-1.58	-1.21	-0.59	0.57	-4.22	-2.54	-3.83	-3.03	-1.79	-4.39	-1.76			
	INMF	-1.91	-0.67	-1.28	-1.19	-3.84	-3.81	-4.26	-5.32	-1.43	-4.25	-3.76	-4.89	-7.13	-5.67			
	CRSP	3.25	2.48	3.65	1.33	4.53	4.32	5.36	0.70	2.09	1.51	-0.75	2.86	-0.18	-0.10			

Panel B: Taxation at end

		Exact basis rule																
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	Average basis rule									
									PD10	AD1	AD10	AD25	AD50	G0.1	G0.2			
MV	FFMF	-12.69	-11.76	-12.58	-12.70	-12.54	-11.86	-11.79	-12.46	-11.53	-12.34	-12.54	-12.48	-11.82	-11.76			
	INMF	-20.22	-19.48	-18.87	-17.46	-18.44	-17.85	-17.45	-19.47	-18.53	-17.98	-17.19	-18.17	-17.43	-17.80			
	CRSP	-1.56	-0.33	-1.21	-1.73	0.73	-1.52	0.13	-1.10	0.75	-0.45	-1.43	0.30	-3.92	-1.49			
BH	FFMF	-0.01	0.94	-0.01	-0.17	0.00	0.88	0.99	0.26	1.21	0.26	0.01	0.06	0.93	1.03			
	INMF	-3.90	-2.65	-3.90	-4.56	-5.32	-4.56	-5.04	-1.94	-1.02	-1.94	-3.22	-4.50	-3.73	-4.95			
	CRSP	-10.15	-10.35	-10.15	-10.65	-7.93	-7.79	-5.00	-8.43	-8.76	-8.43	-9.18	-7.01	-7.59	-4.80			
PPN	FFMF	-1.01	0.65	-0.72	-0.70	0.09	0.20	1.05	-1.63	-0.09	-1.16	-0.85	-0.11	-1.62	0.00			
	INMF	0.62	1.99	1.13	0.67	-2.67	-1.53	-3.46	-0.25	2.02	0.71	0.41	-2.78	-2.18	-3.82			
	CRSP	3.60	3.31	3.95	2.05	5.12	4.73	5.35	2.52	3.29	3.37	1.40	4.40	1.71	0.57			

Table 275: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 0\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.55	0.97	2.05	0.97	0.39	0.13	0.36	0.16
	INMF	5.87	2.61	5.23	2.61	1.49	0.91	1.48	0.77
	CRSP	7.61	3.78	6.82	3.78	2.37	1.67	1.70	1.22
MV	FFMF	1.73	1.20	1.64	1.24	1.03	0.92	1.22	1.07
	INMF	5.78	3.88	5.30	3.48	2.48	1.47	2.72	1.53
	CRSP	7.46	4.74	7.04	4.52	2.98	1.91	2.39	1.47
PPN	FFMF	14.33	9.38	13.64	9.53	5.75	2.62	9.13	5.20
	INMF	12.85	8.34	12.05	8.04	4.73	2.37	6.98	3.79
	CRSP	20.89	15.00	20.12	15.52	10.89	6.87	9.42	4.97

Table 276: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0\%$ .

Panel A: Gain Relative to 1/N				
Data		MV	BH	PPN
FFMF		-5.42	2.29	-3.85
INMF		-18.68	0.38	-1.86
CRSP		-0.96	-8.73	-3.79

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	1.63	1.35	0.16	11.84
INMF	3.46	3.61	0.24	9.54
CRSP	5.13	5.59	0.47	17.38

Table 277: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 0.5\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-5.09	-10.75	-2.87	-9.81	-7.97	-12.77	-7.50	-10.65
	INMF	-15.33	-16.59	-7.12	-19.71	-19.47	-19.00	-16.66	-21.31
	CRSP	-17.48	-16.77	-12.55	-20.64	-18.99	-18.42	-14.87	-21.27
Exact	FFMF	-3.79	-10.71	-2.87	-5.70	-7.52	-12.76	-7.50	-8.83
	INMF	-9.78	-14.28	-7.11	-13.37	-17.12	-17.89	-16.66	-18.21
	CRSP	-13.61	-14.01	-12.54	-16.21	-16.27	-16.71	-14.86	-18.04
Mtm	FFMF	-12.79	-15.08	-13.26	-13.49	-12.83	-15.10	-13.30	-13.53
	INMF	-22.99	-21.60	-23.35	-23.30	-23.07	-21.64	-23.41	-23.37
	CRSP	-21.90	-20.62	-20.90	-22.30	-21.93	-20.65	-20.92	-22.33

Table 278: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	<b>-11.06</b>	4.69	<b>-8.64</b>	<b>-10.35</b>	2.81	<b>-6.65</b>
	INMF	<b>-19.89</b>	10.12	<b>-6.94</b>	<b>-18.20</b>	3.89	<b>-4.10</b>
	CRSP	<b>-0.10</b>	<b>-3.27</b>	<b>-7.47</b>	<b>-0.26</b>	<b>-4.09</b>	<b>-6.50</b>
Exact	FFMF	<b>-12.23</b>	3.27	<b>-5.76</b>	<b>-10.78</b>	2.31	<b>-5.21</b>
	INMF	<b>-22.73</b>	3.35	<b>-5.77</b>	<b>-19.43</b>	0.93	<b>-3.16</b>
	CRSP	<b>-1.41</b>	<b>-7.60</b>	<b>-6.68</b>	<b>-1.48</b>	<b>-7.19</b>	<b>-5.83</b>
Mtm	FFMF	<b>-7.90</b>	1.74	<b>-4.62</b>	<b>-7.89</b>	1.74	<b>-4.62</b>
	INMF	<b>-17.21</b>	<b>-0.08</b>	<b>-2.26</b>	<b>-17.17</b>	<b>-0.07</b>	<b>-2.25</b>
	CRSP	0.67	<b>-7.56</b>	<b>-4.29</b>	0.67	<b>-7.54</b>	<b>-4.29</b>

Table 279: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.



Panel A: No taxation at end

Model	Data	Exact basis rule						Average basis rule							
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.13	0.72	2.13	2.79	3.20	1.74	1.89	3.37	1.36	3.37	4.14	4.61	3.18	3.30
	INMF	3.85	1.29	3.85	5.73	7.55	6.43	8.03	7.93	3.06	7.93	11.22	13.84	12.60	15.26
	CRSP	1.56	1.15	1.56	2.84	0.13	0.44	-2.44	4.49	2.64	4.49	6.62	4.38	5.39	2.07
MV	FFMF	0.02	0.44	0.16	0.19	0.22	0.08	0.08	0.05	0.46	0.19	0.22	0.25	0.13	0.12
	INMF	2.41	2.03	4.64	8.05	8.55	8.01	10.54	3.54	3.23	6.08	9.73	11.10	10.31	12.97
	CRSP	1.05	2.93	1.96	2.46	2.19	-0.27	-0.97	2.63	4.58	3.78	4.61	4.67	0.31	0.65
PPN	FFMF	3.39	2.86	3.99	5.71	7.44	3.63	6.19	5.16	4.19	5.91	8.78	11.65	5.41	9.20
	INMF	5.01	4.00	6.20	9.34	9.13	5.56	8.20	7.21	6.57	8.87	13.58	15.78	9.55	15.18
	CRSP	6.26	6.30	7.42	8.05	9.88	7.98	7.60	7.68	8.82	9.21	10.53	13.59	10.05	8.61

Panel B: Taxation at end

Model	Data	Exact basis rule						Average basis rule							
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.99	0.77	1.99	2.33	2.27	1.28	1.24	2.30	1.04	2.30	2.67	2.72	1.78	1.71
	INMF	3.60	1.30	3.60	4.96	6.16	5.03	5.95	4.42	2.48	4.42	6.43	8.28	7.27	9.01
	CRSP	2.20	1.31	2.20	3.25	0.52	0.12	-2.58	3.33	2.49	3.33	4.75	2.72	3.44	0.65
MV	FFMF	0.02	0.47	0.19	0.21	0.22	0.08	0.06	0.04	0.48	0.21	0.23	0.24	0.11	0.08
	INMF	2.38	2.08	4.55	7.43	7.40	6.54	8.25	2.49	3.03	4.80	7.54	8.39	7.67	9.33
	CRSP	1.27	3.00	2.15	2.64	2.39	-0.55	-1.44	1.71	4.53	2.98	3.31	2.96	-1.06	-1.10
PPN	FFMF	3.30	2.94	3.94	5.52	7.23	3.30	5.36	4.57	4.19	5.40	7.33	9.14	4.69	7.18
	INMF	4.62	3.92	5.62	7.57	6.11	3.77	4.14	6.05	6.40	7.52	10.13	9.28	6.83	7.97
	CRSP	6.24	6.39	7.44	8.27	9.94	7.04	6.50	7.30	8.77	8.83	9.80	12.35	9.03	6.77

Table 280: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule													
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-14.04	-12.47	-13.92	-14.45	-14.76	-13.66	-13.79	-13.91	-11.85	-13.79	-14.40	-14.76	-13.69	-13.79
	INMF	-23.80	-22.17	-22.14	-21.03	-22.01	-21.59	-20.94	-23.15	-19.76	-21.26	-20.97	-21.81	-21.52	-21.48
	CRSP	-1.91	0.32	-1.02	-1.77	0.63	-2.10	0.08	-1.87	1.78	-0.78	-1.99	0.18	-4.92	-1.49
BH	FFMF	1.11	2.53	1.11	0.47	0.07	1.50	1.35	1.27	3.28	1.27	0.52	0.07	1.45	1.34
	INMF	-0.48	2.03	-0.48	-2.25	-3.91	-2.90	-4.33	2.03	6.85	2.03	-1.00	-3.27	-2.21	-4.46
	CRSP	-9.02	-8.65	-9.02	-10.15	-7.71	-8.00	-5.29	-7.42	-5.75	-7.42	-9.27	-7.32	-8.21	-5.23
PPN	FFMF	-4.60	-3.76	-4.05	-3.08	-1.89	-4.01	-1.79	-7.06	-6.08	-6.39	-4.57	-2.48	-6.67	-3.41
	INMF	-4.71	-3.24	-3.63	-2.55	-4.38	-6.54	-5.62	-7.55	-3.77	-6.12	-4.96	-5.35	-9.46	-7.00
	CRSP	-2.37	-1.93	-1.30	-1.96	2.41	0.33	2.91	-4.65	-1.90	-3.29	-4.08	0.70	-3.38	-1.54

Panel B: Taxation at end

Model	Data	Exact basis rule													
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-12.49	-11.04	-12.35	-12.63	-12.57	-11.84	-11.82	-12.33	-10.84	-12.19	-12.49	-12.52	-11.82	-11.79
	INMF	-20.38	-18.81	-18.70	-17.53	-18.49	-18.28	-17.68	-19.70	-17.76	-17.89	-17.34	-18.12	-17.89	-17.95
	CRSP	-2.37	0.17	-1.53	-2.06	0.36	-2.14	-0.32	-1.83	1.72	-0.60	-1.63	-0.03	-4.61	-2.00
BH	FFMF	0.32	1.53	0.32	-0.02	0.03	1.02	1.06	0.50	1.76	0.50	0.14	0.09	1.02	1.09
	INMF	-2.57	-0.36	-2.57	-3.83	-4.92	-3.90	-4.73	-0.51	1.37	-0.51	-2.39	-4.06	-3.15	-4.70
	CRSP	-9.19	-8.39	-9.19	-10.11	-7.67	-7.30	-4.73	-7.18	-6.42	-7.18	-8.44	-6.63	-7.28	-4.71
PPN	FFMF	-4.00	-3.17	-3.39	-2.27	-0.62	-3.32	-1.35	-4.58	-3.74	-3.82	-2.42	-0.82	-3.98	-1.62
	INMF	-2.21	-0.65	-1.27	-0.75	-3.21	-4.32	-4.81	-2.60	-0.43	-1.25	-0.76	-3.22	-4.49	-5.01
	CRSP	-2.11	-1.11	-1.01	-1.25	3.00	0.68	2.94	-2.90	-0.78	-1.53	-1.99	2.26	-1.46	-0.82

Table 281: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 0.5\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.84	0.56	1.36	0.56	0.27	0.12	0.27	0.16
	INMF	4.68	2.10	4.13	2.10	1.26	0.78	1.23	0.68
	CRSP	6.58	3.14	5.84	3.14	2.04	1.46	1.54	1.10
MV	FFMF	1.32	0.87	1.23	0.93	0.76	0.69	0.94	0.83
	INMF	4.54	2.84	4.12	2.50	1.72	1.08	2.04	1.21
	CRSP	6.53	3.96	6.08	3.79	2.48	1.60	2.11	1.35
PPN	FFMF	12.41	7.82	11.76	7.92	4.69	2.21	7.79	4.44
	INMF	11.01	6.95	10.34	6.74	4.05	1.97	6.00	3.41
	CRSP	19.07	13.47	18.36	13.94	9.58	5.94	8.68	4.63

Table 282: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 0.5\%$ .

Panel A: Gain Relative to 1/N				
Data		MV	BH	PPN
FFMF		-4.80	3.11	-8.84
INMF		-18.58	2.44	-5.63
CRSP		-1.31	-6.28	-10.51

  

Panel B: Trading Volume				
Data	1/N	MV	BH	PPN
FFMF	1.63	1.35	0.16	11.84
INMF	3.46	3.60	0.24	9.54
CRSP	5.13	5.58	0.47	17.37

Table 283: **Optimal Portfolio Performance under No Taxes.** This table summarizes optimal portfolio performance under no taxes when brokerage fees are  $\tau_t = 1\%$ . Panel A reports the certainty equivalent gain in percent of initial wealth an investor earns on a particular strategy relative to the 1/N strategy. Panel B reports the average trading volume as a percent of wealth under each strategy.

Taxation	Data	Panel A: No taxation at end				Panel B: Taxation at end			
		1/N	MV	BH	PPN	1/N	MV	BH	PPN
Average	FFMF	-5.14	-10.72	-2.85	-9.93	-8.02	-12.77	-7.52	-10.76
	INMF	-15.65	-16.76	-7.09	-19.95	-19.66	-19.10	-16.69	-21.47
	CRSP	-17.79	-17.03	-12.51	-20.69	-19.22	-18.58	-14.84	-21.27
Exact	FFMF	-3.84	-10.68	-2.85	-5.86	-7.60	-12.75	-7.51	-9.07
	INMF	-10.24	-14.55	-7.09	-13.76	-17.59	-18.14	-16.69	-18.61
	CRSP	-13.84	-14.23	-12.50	-16.34	-16.55	-16.94	-14.83	-18.22
Mtm	FFMF	-12.80	-15.08	-13.30	-13.50	-12.83	-15.10	-13.33	-13.53
	INMF	-22.96	-21.58	-23.38	-23.22	-23.04	-21.62	-23.45	-23.28
	CRSP	-21.88	-20.59	-20.88	-22.19	-21.91	-20.62	-20.90	-22.22

Table 284: **Certainty Equivalent Wealth Loss under Taxation.** This table reports the percentage loss in initial wealth an investor would accept to trade under a no-tax regime under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Taxation	Data	Panel A: No taxation at end			Panel B: Taxation at end		
		MV	BH	PPN	MV	BH	PPN
Average	FFMF	-10.40	5.59	-13.44	-9.72	3.67	-11.55
	INMF	-19.65	12.83	-10.44	-18.01	6.23	-7.75
	CRSP	-0.39	-0.25	-13.67	-0.53	-1.20	-12.79
Exact	FFMF	-11.57	4.17	-10.75	-10.11	3.20	-10.29
	INMF	-22.49	6.04	-9.33	-19.13	3.56	-6.80
	CRSP	-1.75	-4.82	-13.10	-1.78	-4.35	-12.30
Mtm	FFMF	-7.29	2.52	-9.57	-7.27	2.52	-9.57
	INMF	-17.12	1.88	-5.94	-17.08	1.89	-5.93
	CRSP	0.32	-5.08	-10.87	0.32	-5.07	-10.87

Table 285: **Certainty Equivalent Wealth Gain/Loss Relative to the 1/N Strategy.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular portfolio choice strategy earns compared to the 1/N strategy under each data set and trading strategy for three different forms of capital gain taxation (exact basis price rule (Exact), average basis price rule (Average) and on a mark-to-market basis (Mtm)) when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.78	1.09	2.78	3.55	4.07	2.52	2.70	4.05	1.74	4.05	4.92	5.49	3.98	4.12
	INMF	5.33	2.03	5.33	7.77	9.93	8.55	10.52	9.41	3.77	9.41	13.24	16.20	14.77	17.81
	CRSP	3.58	2.32	3.58	5.35	2.87	2.91	0.20	6.53	3.91	6.53	9.18	7.26	8.31	5.15
MV	FFMF	0.04	0.98	0.20	0.23	0.26	0.10	0.10	0.08	1.00	0.24	0.27	0.30	0.15	0.15
	INMF	3.41	3.36	6.03	9.75	10.60	9.34	12.42	4.43	4.55	7.27	11.21	13.06	11.21	14.88
	CRSP	2.61	5.01	4.08	4.99	4.99	2.00	1.59	4.19	6.78	5.93	7.17	7.53	2.73	3.42
PPN	FFMF	6.62	5.26	7.57	10.77	13.64	6.56	10.47	8.40	6.69	9.51	13.90	18.02	9.71	14.46
	INMF	8.08	6.49	9.79	14.39	15.38	9.22	13.61	10.35	9.19	12.50	18.77	22.28	13.86	21.08
	CRSP	10.74	11.40	12.44	15.42	18.83	14.77	16.10	11.99	14.19	14.21	17.91	22.84	18.08	18.01

Panel B: Taxation at end

Model	Data	Exact basis rule					Average basis rule								
		PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	2.65	1.14	2.65	3.11	3.14	2.06	2.05	2.97	1.42	2.97	3.43	3.56	2.55	2.50
	INMF	5.14	2.06	5.14	7.05	8.54	7.17	8.42	5.81	3.16	5.81	8.26	10.38	9.21	11.24
	CRSP	4.27	2.50	4.27	5.81	3.32	2.64	0.11	5.37	3.78	5.37	7.25	5.49	6.22	3.58
MV	FFMF	0.05	1.02	0.24	0.26	0.28	0.10	0.09	0.07	1.04	0.26	0.28	0.30	0.13	0.11
	INMF	3.38	3.42	5.90	9.09	9.44	7.82	10.08	3.44	4.36	6.04	9.05	10.22	8.62	11.12
	CRSP	2.87	5.09	4.26	5.19	5.21	1.72	1.12	3.30	6.73	5.15	5.84	5.80	1.33	1.54
PPN	FFMF	6.55	5.38	7.57	10.63	13.49	6.22	9.67	7.75	6.68	8.95	12.37	15.34	8.91	12.35
	INMF	7.65	6.45	9.17	12.51	12.21	7.35	9.35	9.17	9.02	11.12	15.09	15.34	11.07	13.51
	CRSP	10.75	11.51	12.48	15.68	18.92	13.77	14.99	11.59	14.13	13.82	17.17	21.52	17.07	16.04

Table 286: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Non-Tax-Optimized Strategy for 1/N, MV, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the non-tax-optimized strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the 1/N, MV, and PPN strategies when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Panel A: No taxation at end

		Exact basis rule													
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	Average basis rule						
									PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-13.93	-11.67	-13.79	-14.41	-14.81	-13.66	-13.81	-13.82	-11.04	-13.67	-14.37	-14.81	-13.70	-13.82
	INMF	-23.90	-21.48	-21.97	-21.07	-22.02	-21.93	-21.15	-23.31	-19.05	-21.22	-21.09	-21.82	-22.14	-21.66
	CRSP	-2.67	0.84	-1.28	-2.08	0.28	-2.61	-0.38	-2.59	2.35	-0.96	-2.23	-0.14	-5.52	-2.03
BH	FFMF	1.35	3.04	1.35	0.59	0.09	1.61	1.43	1.49	3.79	1.49	0.64	0.10	1.55	1.41
	INMF	0.68	3.93	0.68	-1.61	-3.54	-2.31	-4.05	3.12	8.73	3.12	-0.36	-2.90	-1.69	-4.23
	CRSP	-8.10	-6.97	-8.10	-9.65	-7.47	-7.50	-5.01	-6.37	-4.00	-6.37	-8.64	-7.00	-7.90	-5.13
PPN	FFMF	-7.41	-7.07	-6.58	-4.53	-2.55	-7.23	-3.99	-9.81	-9.22	-8.89	-6.03	-3.16	-8.67	-4.84
	INMF	-6.96	-5.37	-5.48	-3.76	-4.83	-8.77	-6.80	-9.68	-5.76	-7.92	-6.07	-5.76	-11.15	-7.96
	CRSP	-7.09	-5.39	-5.66	-4.79	0.38	-3.09	0.69	-9.24	-5.13	-7.45	-6.76	-1.13	-5.88	-3.10

Panel B: Taxation at end

		Exact basis rule													
Model	Data	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2	Average basis rule						
									PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
MV	FFMF	-12.39	-10.22	-12.22	-12.59	-12.61	-11.84	-11.84	-12.26	-10.05	-12.09	-12.46	-12.56	-11.84	-11.82
	INMF	-20.48	-18.05	-18.54	-17.58	-18.45	-18.64	-17.89	-19.84	-17.06	-17.82	-17.41	-18.12	-18.45	-18.10
	CRSP	-3.09	0.71	-1.78	-2.35	0.02	-2.66	-0.79	-2.47	2.30	-0.73	-1.84	-0.23	-5.11	-2.48
BH	FFMF	0.53	2.03	0.53	0.09	0.05	1.11	1.12	0.68	2.22	0.68	0.23	0.10	1.09	1.14
	INMF	-1.50	1.47	-1.50	-3.26	-4.59	-3.37	-4.49	0.40	2.98	0.40	-1.87	-3.75	-2.72	-4.50
	CRSP	-8.27	-6.68	-8.27	-9.61	-7.43	-6.81	-4.46	-6.23	-4.80	-6.23	-7.88	-6.34	-6.99	-4.61
PPN	FFMF	-6.89	-6.54	-6.00	-3.75	-1.29	-6.64	-3.59	-7.44	-6.96	-6.42	-3.90	-1.49	-6.06	-3.05
	INMF	-4.56	-2.78	-3.22	-2.03	-3.65	-6.64	-5.99	-4.81	-2.51	-3.12	-1.92	-3.60	-6.18	-5.87
	CRSP	-6.86	-4.60	-5.40	-4.12	0.94	-2.79	0.73	-7.64	-4.09	-5.79	-4.72	0.47	-3.88	-2.30

Table 287: **Certainty Equivalent Wealth Gain/Loss of Each Heuristic Tax Trading Strategy Relative to the Corresponding Heuristic 1/N Strategy for MV, BH, and PPN.** This table reports the certainty equivalent gain/loss in percent of initial wealth a particular heuristic tax trading strategy earns relative to the corresponding heuristic 1/N strategy under each data set for two different forms of capital gain taxation (Exact, Average) under the MV, BH, and PPN strategies when brokerage fees are  $\tau_t = 1\%$ . Panel A shows results when unrealized capital gains are not taxed at the end of the investment horizon, Panel B when they are.

Model	Data	BM	PD10	AD1	AD10	AD25	AD50	G0.1	G0.2
1/N	FFMF	1.71	0.44	1.23	0.44	0.23	0.12	0.24	0.16
	INMF	4.18	1.82	3.66	1.82	1.10	0.69	1.10	0.63
	CRSP	5.99	2.74	5.29	2.74	1.79	1.28	1.40	1.01
MV	FFMF	1.28	0.85	1.20	0.89	0.74	0.67	0.89	0.77
	INMF	4.07	2.48	3.67	2.16	1.46	0.90	1.82	1.09
	CRSP	6.08	3.62	5.61	3.43	2.24	1.48	1.98	1.29
PPN	FFMF	12.00	7.46	11.37	7.56	4.46	2.09	7.43	4.23
	INMF	10.24	6.33	9.60	6.16	3.68	1.80	5.57	3.24
	CRSP	18.16	12.63	17.51	13.16	8.94	5.50	8.15	4.44

Table 288: **Trading Volume under the Tax Heuristic Strategies.** This table reports the trading volume as a percentage of wealth under the benchmark strategies and the tax heuristic strategies under the exact basis rule when brokerage fees are  $\tau_t = 1\%$ .



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