1 Background Trading Strategies

Strategy	ZI_1	ZI_2	ZI_3	ZI_4	ZI_5	HBL_1	HBL_2	HBL_3	HBL_4	HBL_5	HBL_6	HBL_7	HBL_8	HBL_9	HBL_{10}
K	NA	NA	NA	NA	NA	0	1	2	0	0	0	0	2	2	2
R_{min}	0	0	0	0	0	0	0	0	-10	-20	-40	-80	-10	-20	-40
R_{max}	1000	1000	1000	500	250	0	0	0	0	0	0	0	0	0	0
η	0.4	0.8	1	0.8	0.8	1	1	1	1	1	1	1	1	1	1

Table 1: Background trading strategies used in empirical game-theoretic analysis.

2 Strategic Equilibria

2.1 Standard HBL

Env	Baseline	ZI_1	ZI_2	ZI_3	ZI_4	ZI_5	HBL_1	95% CI Background Surplus
LSHN	✓	0	0	0	0	0	1.00	[41609, 41703]
LSHN - Spoof	✓	0	0	0	0	0	1.00	[41300, 41393]
MSMN	✓	0	0.2688	0	0	0	0.7312	[41737, 41912]
		0	0	0	0	0.2537	0.7463	[41772, 41958]
		0	0	0.3174	0	0	0.6826	[41630, 41806]
MSMN - Spoof	✓	0	0	0.3900	0	0	0.6100	[41433, 41609]
		0.2250	0	0	0	0	0.7750	[41702, 41876]
		0	0.2705	0	0	0	0.7295	[41642, 41814]
		0	0	0	0	0.2614	0.7386	[41609, 41793]
		0	0	0	0.3181	0	0.6719	[41610, 41796]
HSLN	✓	0.3419	0	0	0	0	0.6581	[41568, 41816]
		0	0	0.6407	0	0	0.3593	[41054, 41259]
		0	0.4508	0	0	0	0.5492	[41308, 41546]
		0	0	0	0.4632	0	0.5368	[41311, 41568]
HSLN - Spoof	✓	0	0	0	0	0	0.5992	[41381, 41625]
		0	0	0	0.5231	0	0.4769	[41184, 41432]
		0	0	0.7081	0	0	0.2919	[40995, 41181]
		0	0.4319	0	0	0	0.4319	[41110, 41329]

Table 2: Equilibria for games where the learning-based trading strategy set is restricted to standard HBL. Each row describes an equilibrium found for the game described by the *Env* column, detailing the adoption rate of each strategy considered and the corresponding background surplus. The equilibrium strategy profiles with checkmarks in the "Baseline" column indicates those used as baseline strategy profiles for controlled experiments such as those described by Figures 2, 3, and 5 of the paper.
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2.2 HBL with Price Level Blocking

Env	ZI_1	ZI_2	ZI_3	ZI_4	ZI_5	HBL_1	HBL_2	HBL_3	95% CI Background Surplus
LSHN	0	0	0	0	0	0	0	1.00	[41690, 41784]
	0	0	0	0	0	1.00	0	0	[41609, 41703]
	0.0936	0	0	0	0	0	0.9064	0	[41301, 41398]
LSHN - Spoof	0	0	0	0	0	0	0	1.00	[41690, 41784]
	0	0	0	0	0	1.00	0	0	[41300, 41393]
MSMN	0.2253	0	0	0	0	0	0	0.7747	[41815, 41993]
	0	0	0	0	0.2537	0.7463	0	0	[41772, 41958]
	0	0	0.3174	0	0	0.6826	0	0	[41630, 41806]
MSMN - Spoof	0.2526	0	0	0	0	0	0	0.7474	[41808, 41988]
	0	0.2705	0	0	0	0.7295	0	0	[41642, 41814]
	0	0	0	0.3281	0	0.6719	0	0	[41610, 41796]
	0	0	0.3900	0	0	0.6100	0	0	[41433, 41609]
	0.2250	0	0	0	0	0.7750	0	0	[41702, 41876]
HSLN	0.4019	0	0	0	0	0	0	0.5981	[41443, 41690]
	0	0.4508	0	0	0	0.5492	0	0	[41308, 41546]
	0	0	0.5410	0	0	0	0	0.4590	[41105, 41333]
	0	0	0.6407	0	0	0.3593	0	0	[41054, 41259]
HSLN - Spoof	0	0.4962	0	0	0	0	0	0.5038	[41260, 41497]
	0.4013	0	0	0	0	0	0	0.5987	[41453, 41701]
	0	0	0.7120	0	0	0	0	0.2880	[40994, 41180]

Table 3: Equilibria for games where the learning-based trading strategy set is comprised of standard HBL and HBL with price level blocking. Each row describes an equilibrium found for the game described by the *Env* column, detailing the adoption rate of each strategy considered and the corresponding background surplus.

2.3 HBL with Price Offsets

Env	ZI_1	ZI_2	ZI_3	ZI_4	ZI_5	HBL_1	HBL_4	HBL_5	HBL_6	95% CI Background Surplus
LSHN	0	0	0	0	0	0	0	0	1.00	[42420, 42507]
	0	0	0	0	0	0	0	1.00	0	[42551, 42640]
	0	0	0	0	0	0	1.00	0	0	[42551, 42639]
LSHN - Spoof	0	0	0	0	0	0	0	0	1.00	[42406, 42492]
	0	0	0	0	0	0	0	1.00	0	[42527, 42614]
	0	0	0	0	0	0	1.00	0	0	[42516, 42603]
MSMN	0	0	0	0	0	0	0	0	1.00	[42085, 42229]
	0.0307	0	0	0	0	0	0	0.9693	0	[42227, 42383]
	0	0	0	0	0	0	1.00	0	0	[42219, 42366]
MSMN - Spoof	0	0	0	0	0	0	0	0	1.00	[42054, 42197]
	0	0.1623	0	0	0	0	0	0.8377	0	[41951, 42119]
	0	0.1276	0	0	0	0	0.8724	0	0	[42021, 42185]
HSLN	0	0	0	0	0	0	0	0	1.00	[42087, 42279]
	0.1180	0	0	0	0	0	0	0.8820	0	[42085, 42311]
	0	0	0	0.2479	0	0	0.7521	0	0	[41793, 42040]
HSLN - Spoof	0	0	0	0.1526	0	0	0	0	0.8474	[41799, 42022]
	0	0	0.3249	0	0	0	0	0.6751	0	[41550, 41784]
	0.4008	0	0	0	0	0.5992	0	0	0	[41381, 41625]

Table 4: Equilibria for games where the learning-based trading strategy set is comprised of standard HBL and HBL with price offsets. Each row describes an equilibrium found for the game described by the *Env* column, detailing the adoption rate of each strategy considered and the corresponding background surplus.

2.4 HBL Price Offsets and Price Level Blocking

Env	ZI_1	ZI_2	ZI_3	ZI_4	ZI_5	HBL_3	HBL_4	HBL_5	HBL_6	HBL_8	HBL_9	HBL_{10}	95% CI Background Surplus
LSHN	0	0	0	0	0	0	0	0	0	0	0	1.00	[42423, 42509]
	0	0	0	0	0	0	0	0	0	0	1.00	0	[42550, 42638]
	0	0	0	0	0	0	0	0	0	1.00	0	0	[42555, 42642]
	0	0	0	0	0	0	0	0	1.00	0	0	0	[42420, 42507]
	0	0	0	0	0	0	0	1.00	0	0	0	0	[42551, 42640]
	0	0	0	0	0	0	1.00	0	0	0	0	0	[42551, 42639]
LSHN - Spoof	0	0	0	0	0	0	0	0	0	0	0	1.00	[42422, 42509]
	0	0	0	0	0	0	0	0	0	0	1.00	0	[42551, 42639]
	0	0	0	0	0	0	0	0	0	1.00	0	0	[42554, 42641]
	0	0	0	0	0	0	0	0	1.00	0	0	0	[42406, 42492]
	0	0	0	0	0	0	0	1.00	0	0	0	0	[42527, 42614]
	0	0	0	0	0	0	1.00	0	0	0	0	0	[42516, 42603]
MSMN	0.1118	0	0	0	0	0	0	0	0	0	0.8882	0	[42123, 42291]
	0	0	0.1978	0	0	0	0	0	0	0	0	0.8022	[41755, 41921]
	0	0	0	0	0	0	0	0	1.00	0	0	0	[42085, 42229]
	0.0307	0	0	0	0	0	0	0.9693	0	0	0	0	[42227, 42383]
	0	0	0	0	0	0	1.00	0	0	0	0	0	[42219, 42366]
MSMN - Spoof	0	0	0	0	0	0	0	0	0	0	1.00	0	[42246, 42395]
	0	0.1276	0	0	0	0	0.8724	0	0	0	0	0	[42021, 42185]
	0.2526	0	0	0	0	0.7474	0	0	0	0	0	0	[41808, 41988]
HSLN	0.2275	0	0	0	0	0	0	0	0	0	0.7725	0	[41845, 42085]
	0.1109	0	0	0	0	0	0	0	0	0	0	0.8891	[41947, 42162]
	0	0	0	0	0	0.1517	0	0	0.8483	0	0	0	[41714, 41949]
	0	0	0	0.2479	0	0	0.7521	0	0	0	0	0	[41793, 42040]
HSLN - Spoof	0.2884	0	0	0	0	0	0	0	0	0.7116	0	0	[41754, 41997]
	0	0.3231	0	0	0	0	0	0	0	0	0.6769	0	[41639, 41877]

Table 5: Equilibria for games where the learning-based trading strategy set is comprised of standard HBL, HBL with price level blocking, HBL with price offsets and HBL with both price offsets and price level blocking (HBL_1 and HBL_2 are not shown because they do not appear in any equilibrium). Each row describes an equilibrium found for the game described by the *Env* column, detailing the adoption rate of each strategy considered and the corresponding background surplus.