

Online Supplemental Appendix for “What Are The Best Liquidity Proxies for Global Research?”

This is an online supplemental appendix to accompany “What Are The Best Liquidity Proxies For Global Research?” It analyzes the robustness of that paper’s results by exchange and for the three U.S. exchanges combined.

We find that our monthly percent-cost and cost-per-dollar volume results are robust by exchange. We also find that our daily percent-cost and cost-per-dollar volume results are robust by exchange.

For US research at both frequencies covering 1996-present, we obtain a bonus result that Closing Percent Quoted Spread is the best percent-cost proxy. Further for US research at the monthly frequency, High-Low is the best percent-cost proxy available before 1996 and, indeed, it goes all the way back to 1926.¹

The plan of the supplement is as follows. Section 1 analyzes monthly percent-cost robustness. Section 2 analyzes monthly cost-per-dollar-volume robustness. Section 3 analyzes daily percent-cost robustness. Section 4 analyzes daily cost-per-dollar-volume robustness. Section 5 concludes.

1. Monthly Percent-Cost Robustness

Online Table 1, Panel A reports the average cross-sectional correlation for each percent-cost proxy with percent effective spread by exchange. Closing Percent Quoted Spread strongly dominates. It has the highest correlation on 41 out of 42 exchanges and is statistically higher than the correlation of any other proxy on all 41 exchanges. Similarly, Panel B reports the average cross-sectional correlation for the three U.S. exchanges combined. It is a weighted average over the three US exchanges, where the weights are based on the number of stocks on each exchange in the sample. Closing Percent Quoted Spread has the highest correlation and is statistically higher than any other proxy. High-Low has the second highest correlation.

¹ Specifically, High-Low can be computed from CRSP High and Low prices that are available for NYSE/AMEX stocks from 1926 – present. By contrast, Closing Percent Quoted Spread requires CRSP Closing Bid and Ask prices, which are only available for NYSE/AMEX stocks from 1926 – 1941 and 1993 – present. Both proxies can be computed for NASDAQ Global Market and Global Select Market stocks from 1982 – present and for NASDAQ Capital Market stocks from 1992 – present.

Online Table 2 Panel A reports the time-series correlation between each portfolio of detrended percent-cost proxy and portfolio of detrended percent effective spread by exchange. Closing Percent Quoted Spread dominates these comparisons, but not quite as strongly as before. Closing Percent Quoted Spread has the highest portfolio time-series correlation on 34 out of 42 exchanges. It has the highest correlation or is insignificantly different from the highest on 38 exchanges. Panel B reports the time-series correlation for the US as a whole weighted by the number of stocks on each exchange. Closing Percent Quoted Spread has the highest time-series correlation and High-Low is second.

Online Table 3 Panel A reports the time-series correlation between each individual stock percent-cost proxy and individual stock percent effective spread by exchange. Closing Percent Quoted Spread strongly dominates these comparisons. Closing Percent Quoted Spread has the highest individual stock time-series correlation on 41 out of 42 exchanges. It has the highest correlation or is insignificantly different from the highest on all 42 exchanges. Panel B reports the individual stock time-series correlation for the US as a whole weighted by the number of stocks on each exchange. Closing Percent Quoted Spread has the highest individual stock time-series correlation and High-Low is second.

Online Table 4, Panel A reports the average RMSE between each percent-cost proxy and percent-cost benchmarks by exchange. Closing Percent Quoted Spread dominates these comparisons too. It has the lowest RMSE on 30 exchanges. It has the lowest RMSE or is insignificantly different from the lowest on 32 exchanges. Panel B reports the average RMSE for the US as a whole. High-Low has the lowest average RMSE and is statistically higher than any other proxy. Closing Percent Quoted Spread has the second lowest average RMSE.

2. Monthly Cost-Per-Dollar-Volume Robustness

Online Table 5, Panel A reports the average cross-sectional correlation for each cost-per-dollar-volume proxies with lambda by exchange. Five proxies do better than the rest. Closing Percent Quoted Spread Impact, LOT Mixed Impact, High-Low Impact, FHT Impact, and Amihud have the highest average cross-sectional correlation on 19 exchanges, 8 exchanges, 8 exchanges, 3 exchanges, and 2 exchange, respectively. The same five has the highest correlation or is insignificantly different from the highest on 22 exchanges, 15 exchanges, 11 exchanges, 10 exchanges, and 5 exchanges, respectively. Panel B reports the average cross-sectional correlation for the US as a whole. High-Low

Impact has the highest correlation and is statistically higher than any other proxy. Closing Percent Quoted Spread Impact and LOT Mixed Impact are close behind.

Online Table 6, Panel A reports portfolio time-series correlation for each detrended cost-per-dollar-volume proxy with detrended lambda by exchange. Although it is hard to tell, Closing Percent Quoted Spread Impact, Amihud, LOT Mixed Impact, and High-Low Impact and have the highest portfolio time-series correlation on 11 exchanges, 11 exchanges, 8 exchanges, and 3 exchanges, respectively, but FHT Impact has none. A large number of exchanges are statistically indistinguishable from the best. Panel B reports High-Low Impact has the highest portfolio time-series correlation in the whole US (0.630) and many others are close behind.

Online Table 7, Panel A reports individual stock time-series correlation for each detrended cost-per-dollar-volume proxy with detrended lambda by exchange. Closing Percent Quoted Spread Impact, High-Low Impact, Amihud, and LOT Mixed Impact have the highest portfolio time-series correlation on 29 exchanges, 6 exchanges, 2 exchanges, and 3 exchanges, respectively, but FHT Impact has none. Panel B reports High-Low Impact has the highest portfolio time-series correlation in the whole US (0.394) and two others are close behind.

3. Daily Percent-Cost Robustness

Online Table 8, Panel A compares daily percent-cost proxies with daily percent-cost benchmarks by exchange and Panel B does the same for the US as a whole. In both panels, daily Closing Percent Quoted Spread strongly dominates the daily percent-cost results across-the-board.

4. Daily Cost-Per-Dollar-Volume Robustness

Online Table 9, Panel A compares daily cost-per-dollar-volume proxies with daily lambda by exchange and Panel B does the same for the US as a whole. Daily Amihud has the highest average cross-sectional correlation on the large majority of exchanges and the highest in the US. However, the detrended portfolio time-series correlations and detrended individual time-series correlations drop to a very low level on most exchanges and in the US. Thus, daily Amihud is strongly correlated with daily lambda in the cross-section, but not in the time-series and doesn't capture its level.

5. Conclusion

In conclusion, we find that our monthly percent-cost and cost-per-dollar volume results are robust by exchange. We also find that our daily percent-cost and cost-per-dollar volume results are robust by exchange.

For US research at both frequencies covering 1996-present, Panel B of Online Tables 1-4 and 8 provide a bonus result that Closing Percent Quoted Spread is the best percent-cost proxy. Further, for US research at the monthly frequency, High-Low is the best percent-cost proxy available before 1996.

Online Table 1

Average Cross-Sectional Correlation of Monthly Percent-Cost Proxies with Percent Effective Spread by Exchange and for U.S. Average (96-07)

Percent effective spread is calculated from every trade and corresponding BBO quote in the SIRCA Thomson Reuters Tick History database for a sample stock-month. All percent-cost proxies are calculated from daily stock price data for a sample stock-month. The primary sample spans 42 exchanges around the world from 1996-2007. It consists of all stock-months with at least five positive-volume days and eleven non-zero return days. A solid box means the highest correlation in the row. Dashed boxes mean correlations that are statistically indistinguishable from the highest correlation in the row at the 5% level. Bold-faced numbers are statistically different from zero at the 5% level.

Country	Exchange	Roll	Extended Roll	Effective Tick	LOT Mixed	LOT Y-split	FHT	Zeros	Zeros2	High -Low	Closing % Quo Sprd	Months
Panel A: By Exchange												
Argentina	Buenos Ar.	0.070	0.159	0.277	0.574	0.583	0.598	0.533	0.268	0.524	0.801	114
Australia	Australian	0.276	0.579	0.460	0.751	0.731	0.786	0.491	0.220	0.665	0.904	144
Austria	Vienna	0.219	0.414	0.359	0.627	0.644	0.663	0.472	0.234	0.517	0.853	108
Belgium	Brussels	0.176	0.359	0.343	0.584	0.581	0.600	0.443	0.305	0.527	0.746	108
Brazil	Sao Paulo	0.131	0.347	0.346	0.629	0.637	0.652	0.588	0.305	0.514	0.806	115
Canada	Toronto	0.400	0.617	0.473	0.719	0.682	0.723	0.455	0.255	0.740	0.885	144
Chile	Santiago	0.080	0.195	0.162	0.521	0.532	0.556	0.457	0.316	0.318	0.663	67
China	Hong Kong	0.215	0.399	0.308	0.537	0.520	0.552	0.356	0.014	0.567	0.773	144
China	Shanghai	0.022	0.027	0.058	0.013	0.009	0.099	0.082	0.082	0.261	0.689	141
China	Shenzhen	0.014	0.035	0.041	0.157	0.096	0.086	0.061	0.055	0.271	0.610	141
Denmark	Copenhag.	0.225	0.442	0.257	0.635	0.608	0.635	0.342	0.046	0.604	0.786	133
France	Paris	0.213	0.341	0.283	0.560	0.549	0.577	0.433	0.230	0.497	0.753	108
Finland	Helsinki	0.342	0.524	0.417	0.724	0.743	0.770	0.576	0.329	0.703	0.885	108
Germany	Frankfurt	0.191	0.325	0.416	0.477	0.453	0.530	0.395	0.316	0.505	0.761	108
Greece	Athens	0.178	0.325	0.314	0.492	0.481	0.513	0.318	0.196	0.538	0.711	84
India	Bombay	0.279	0.484	0.466	0.683	0.622	0.678	0.479	0.097	0.654	0.790	141
Indonesia	Jakarta	0.369	0.540	0.510	0.646	0.648	0.691	0.406	0.163	0.760	0.842	144
Ireland	Irish	0.371	0.660	0.488	0.424	0.347	0.831	0.553	0.270	0.813	0.912	91
Israel	Tel Aviv	0.209	0.417	0.147	0.653	0.635	0.691	0.603	0.147	0.607	0.837	109
Italy	Milan	0.183	0.249	0.217	0.330	0.343	0.362	0.372	0.193	0.403	0.818	108
Japan	Tokyo	0.184	0.339	0.399	0.586	0.620	0.646	0.526	0.350	0.483	0.905	144
Malaysia	Kuala Lum.	0.254	0.405	0.247	0.523	0.528	0.545	0.309	-0.031	0.511	0.858	144
Mexico	Mexican	0.131	0.334	0.401	0.651	0.668	0.686	0.593	0.355	0.570	0.727	116
Netherlands	AEX	0.311	0.472	0.558	0.692	0.689	0.721	0.566	0.457	0.645	0.862	108
New Zealand	New Zea.	0.107	0.357	0.304	0.615	0.579	0.627	0.310	0.152	0.588	0.684	144
Norway	Oslo	0.165	0.359	0.329	0.190	0.132	0.526	0.339	0.121	0.491	0.631	144
Philippines	Phillipine	0.201	0.408	0.336	0.586	0.583	0.623	0.330	-0.045	0.639	0.759	144
Poland	Warsaw	0.154	0.273	0.130	0.139	0.110	0.452	0.271	-0.040	0.390	0.598	86
Portugal	Lisbon	0.402	0.581	0.357	0.639	0.608	0.633	0.446	0.308	0.748	0.856	30
Singapore	Singapore	0.381	0.562	0.403	0.658	0.667	0.718	0.444	0.182	0.740	0.913	144
South Africa	Johannes.	0.336	0.538	0.465	0.721	0.710	0.739	0.412	0.224	0.709	0.793	142
South Korea	Korea	0.197	0.237	0.122	0.305	0.298	0.312	0.237	0.127	0.389	0.829	123
Spain	Barcelona	0.174	0.304	0.417	0.441	0.481	0.530	0.522	0.508	0.562	0.891	108
Sweden	Stockholm	0.290	0.494	0.455	0.649	0.640	0.667	0.419	0.134	0.634	0.844	144
Switzerland	SWX Swiss	0.280	0.467	0.270	0.624	0.614	0.642	0.342	0.094	0.649	0.790	137
Taiwan	Taiwan	0.059	0.082	0.274	0.341	0.353	0.373	0.252	0.186	0.367	0.832	144
Thailand	Thailand	0.260	0.420	0.209	0.557	0.567	0.611	0.359	-0.052	0.639	0.830	144
Turkey	Istanbul	0.170	0.225	0.357	0.419	0.504	0.516	0.370	0.364	0.553	0.884	36
UK	London	0.018	0.193	0.445	0.657	0.597	0.670	0.468	0.437	0.545	0.818	144
US	New York	0.218	0.243	0.799	0.504	0.550	0.579	0.427	0.425	0.484	0.757	144
US	American	0.463	0.307	0.639	0.635	0.603	0.634	0.325	0.267	0.721	0.813	144
US	NASDAQ	0.493	0.151	0.418	0.544	0.558	0.596	0.390	0.271	0.644	0.883	144
Panel B: For U.S. Average												
US Average		0.431	0.184	0.519	0.543	0.560	0.595	0.393	0.304	0.616	0.850	144

Online Table 2

Portfolio Time-Series Correlation of Monthly Detrended Percent-Cost Proxies with Detrended Percent Effective Spread by Exchange and for U.S. Average (1996-2007)

Percent effective spread is calculated from every trade and corresponding BBO quote in the SIRCA Thomson Reuters Tick History database for a sample stock-month. All percent-cost proxies are calculated from daily stock price data for a sample stock-month. The primary sample spans 42 exchanges around the world from 1996-2007. It consists of all stock-months with at least five positive-volume days and eleven non-zero return days. A solid box means the highest correlation in the row. Dashed boxes mean correlations that are statistically indistinguishable from the highest correlation in the row at the 5% level. Bold-faced numbers are statistically different from zero at the 5% level.

Country	Exchange	Roll	Extended Roll	Effective Tick	LOT Mixed	LOT Y-split	FHT	Zeros	Zeros2	High -Low	Closing % Quo Sprd	Portfolio-Months
Panel A: By Exchange												
Argentina	Buenos Ar.	-0.013	0.390	0.416	0.459	0.501	0.566	-0.044	-0.207	0.398	0.863	114
Australia	Australian	-0.276	0.676	0.746	0.613	0.757	0.806	0.330	0.126	0.811	0.970	144
Austria	Vienna	0.133	0.405	0.265	0.478	0.420	0.498	0.172	-0.069	0.279	0.731	108
Belgium	Brussels	-0.076	0.577	0.158	0.532	0.338	0.397	-0.125	-0.274	0.436	0.767	108
Brazil	Sao Paulo	-0.044	0.320	0.132	0.311	0.292	0.282	0.310	-0.010	0.479	0.500	115
Canada	Toronto	0.264	0.702	0.532	0.410	0.497	0.570	0.063	-0.140	0.753	0.728	144
Chile	Santiago	0.190	0.623	0.274	0.531	0.617	0.650	0.486	0.248	0.625	0.431	67
China	Hong Kong	-0.233	0.520	0.552	0.609	0.700	0.702	0.111	-0.241	0.716	0.918	144
China	Shanghai	0.097	0.119	0.545	-0.126	-0.060	0.323	-0.037	-0.141	0.420	0.856	141
China	Shenzhen	0.281	0.144	0.398	0.303	0.302	0.325	0.000	-0.086	0.578	0.536	141
Denmark	Copenhag.	0.019	0.559	0.238	0.510	0.439	0.489	0.020	-0.287	0.556	0.709	133
France	Paris	-0.108	0.735	0.579	0.587	0.524	0.566	-0.212	-0.254	0.726	0.878	108
Finland	Helsinki	-0.018	0.438	0.346	0.511	0.642	0.696	0.202	-0.027	0.802	0.885	108
Germany	Frankfurt	-0.064	0.522	0.662	0.619	0.406	0.419	0.063	-0.022	0.652	0.805	108
Greece	Athens	0.147	0.268	0.467	0.273	0.297	0.445	-0.120	-0.200	0.644	0.533	84
India	Bombay	0.024	0.776	0.550	0.685	0.703	0.663	0.423	0.384	0.742	0.884	141
Indonesia	Jakarta	0.141	0.741	0.726	0.757	0.860	0.867	0.510	0.384	0.896	0.901	144
Ireland	Irish	0.161	0.367	0.185	-0.019	-0.074	0.413	-0.071	-0.270	0.401	0.765	91
Israel	Tel Aviv	-0.139	0.556	0.051	0.569	0.661	0.690	0.264	-0.062	0.814	0.877	109
Italy	Milan	0.026	0.071	0.404	0.072	0.072	0.079	-0.281	-0.407	0.740	0.480	108
Japan	Tokyo	0.012	0.741	0.724	0.546	0.502	0.544	-0.182	-0.307	0.698	0.942	144
Malaysia	Kuala Lum.	0.177	0.504	0.732	0.510	0.645	0.709	0.045	-0.107	0.641	0.934	144
Mexico	Mexican	0.127	0.177	0.085	0.448	0.421	0.570	0.373	0.145	0.514	0.596	116
Netherlands	AEX	0.068	0.719	0.657	0.567	0.674	0.712	-0.046	-0.130	0.719	0.930	108
New Zealand	New Zea.	-0.007	0.185	0.221	0.428	0.345	0.412	0.007	-0.100	0.504	0.599	144
Norway	Oslo	0.183	0.634	0.396	0.252	0.152	0.559	-0.010	-0.204	0.636	0.776	144
Philippines	Phillipine	-0.174	0.395	0.485	0.461	0.499	0.575	0.072	-0.295	0.618	0.751	144
Poland	Warsaw	0.339	0.370	0.046	0.085	0.029	0.467	0.215	0.149	0.389	0.695	86
Portugal	Lisbon	0.326	0.365	0.061	-0.054	0.226	0.225	-0.066	-0.062	0.484	0.551	30
Singapore	Singapore	-0.050	0.663	0.607	0.731	0.772	0.839	0.118	-0.057	0.855	0.967	144
South Africa	Johannes.	0.153	0.399	0.704	0.705	0.701	0.740	0.417	0.300	0.644	0.782	142
South Korea	Korea	-0.028	0.156	-0.132	0.408	-0.142	-0.157	-0.438	-0.495	0.315	0.916	123
Spain	Barcelona	0.067	0.554	0.381	0.248	0.173	0.245	-0.190	-0.248	0.734	0.904	108
Sweden	Stockholm	0.027	0.682	0.587	0.501	0.598	0.707	-0.103	-0.301	0.791	0.948	144
Switzerland	SWX Swiss	0.143	0.748	0.395	0.536	0.648	0.699	0.010	-0.181	0.833	0.602	137
Taiwan	Taiwan	-0.077	-0.067	0.163	0.129	0.213	0.285	-0.031	-0.051	0.310	0.967	144
Thailand	Thailand	0.178	0.731	0.382	0.763	0.853	0.854	0.294	0.072	0.812	0.873	144
Turkey	Istanbul	-0.337	0.293	0.334	0.529	0.253	0.356	-0.487	-0.559	0.604	0.922	36
UK	London	-0.415	0.378	0.542	0.703	0.732	0.708	0.335	0.376	0.559	0.868	144
US	New York	0.058	0.301	0.594	0.095	0.433	0.441	0.108	0.100	0.317	0.222	144
US	American	0.506	0.211	0.359	0.515	0.629	0.623	0.104	0.046	0.639	0.407	144
US	NASDAQ	0.692	0.401	0.406	0.089	0.687	0.724	0.148	0.053	0.794	0.902	144
Panel B: For U.S. Average												
US Average		0.538	0.363	0.443	0.125	0.627	0.654	0.135	0.063	0.677	0.713	144

Online Table 3

Individual Stock Time-Series Correlation of Monthly Detrended Percent-Cost Proxies with Detrended Percent Effective Spread by Exchange & for U.S. Average (1996-2007)

Percent effective spread is calculated from every trade and corresponding BBO quote in the SIRCA Thomson Reuters Tick History database for a sample stock-month. All percent-cost proxies are calculated from daily stock price data for a sample stock-month. The primary sample spans 42 exchanges around the world from 1996-2007. It consists of all stock-months with at least five positive-volume days and eleven non-zero return days. A solid box means the highest correlation in the row. Dashed boxes mean correlations that are statistically indistinguishable from the highest correlation in the row at the 5% level. Bold-faced numbers are statistically different from zero at the 5% level.

Country	Exchange	Roll	Extended Roll	Effective Tick	LOT Mixed	LOT Y-split	FHT	Zeros	Zeros2	High -Low	Closing % Quo Sprd	Months
Panel A: By Exchange												
Argentina	Buenos Ar.	0.050	0.120	0.079	0.249	0.274	0.280	0.106	-0.013	0.234	0.535	114
Australia	Australian	0.049	0.168	0.101	0.243	0.237	0.267	0.071	-0.037	0.288	0.582	144
Austria	Vienna	0.016	0.117	0.061	0.136	0.108	0.122	-0.058	-0.081	0.204	0.367	108
Belgium	Brussels	0.014	0.149	0.044	0.132	0.096	0.118	-0.039	-0.060	0.228	0.392	108
Brazil	Sao Paulo	-0.079	0.057	0.100	0.131	0.116	0.115	0.055	-0.015	0.126	0.447	115
Canada	Toronto	0.048	0.148	0.076	0.154	0.121	0.142	-0.003	-0.045	0.247	0.433	144
Chile	Santiago	-0.014	0.060	0.067	0.101	0.111	0.127	0.081	0.043	0.100	0.297	67
China	Hong Kong	0.044	0.120	0.062	0.154	0.179	0.188	0.110	-0.022	0.238	0.485	144
China	Shanghai	0.018	0.016	0.036	0.007	0.010	0.067	0.029	0.001	0.161	0.427	141
China	Shenzhen	0.012	0.032	0.030	0.072	0.055	0.062	0.006	-0.011	0.197	0.384	141
Denmark	Copenhag.	0.016	0.135	0.018	0.216	0.188	0.211	0.009	-0.044	0.230	0.432	133
France	Paris	0.018	0.110	0.055	0.113	0.069	0.081	-0.042	-0.068	0.241	0.386	108
Finland	Helsinki	0.062	0.140	0.061	0.189	0.193	0.215	0.052	-0.033	0.241	0.489	108
Germany	Frankfurt	-0.008	0.079	0.076	0.097	0.089	0.093	-0.002	-0.010	0.157	0.279	108
Greece	Athens	0.010	0.049	0.033	0.052	0.053	0.068	-0.011	-0.020	0.194	0.439	84
India	Bombay	0.088	0.183	0.143	0.234	0.220	0.252	0.125	-0.032	0.269	0.414	141
Indonesia	Jakarta	0.150	0.307	0.264	0.360	0.379	0.415	0.167	0.025	0.522	0.708	144
Ireland	Irish	0.057	0.166	0.098	0.153	0.144	0.243	-0.010	-0.061	0.243	0.417	91
Israel	Tel Aviv	0.053	0.118	0.053	0.206	0.219	0.262	0.155	-0.026	0.240	0.480	109
Italy	Milan	0.004	0.055	0.072	0.022	0.016	0.028	-0.038	-0.061	0.251	0.365	108
Japan	Tokyo	0.053	0.130	0.054	0.122	0.103	0.127	0.019	-0.012	0.221	0.548	144
Malaysia	Kuala Lum.	0.105	0.181	0.085	0.207	0.227	0.243	0.125	-0.018	0.294	0.603	144
Mexico	Mexican	0.031	0.057	0.040	0.164	0.161	0.147	0.021	-0.032	0.129	0.390	116
Netherlands	AEX	0.037	0.147	0.137	0.151	0.111	0.135	-0.024	-0.037	0.317	0.456	108
New Zealand	New Zea.	-0.018	0.069	0.072	0.227	0.172	0.197	-0.066	-0.120	0.171	0.323	144
Norway	Oslo	0.013	0.102	0.067	0.071	0.074	0.132	0.051	-0.003	0.132	0.297	144
Philippines	Phillipine	0.064	0.183	0.102	0.177	0.219	0.223	0.110	-0.062	0.269	0.521	144
Poland	Warsaw	0.023	0.093	0.005	0.031	0.020	0.113	0.004	-0.040	0.194	0.375	86
Portugal	Lisbon	0.084	0.147	-0.030	0.121	0.118	0.142	0.006	0.006	0.122	0.254	30
Singapore	Singapore	0.133	0.225	0.104	0.228	0.242	0.286	0.134	-0.028	0.393	0.666	144
South Africa	Johannes.	0.042	0.108	0.080	0.219	0.194	0.212	0.046	-0.002	0.227	0.391	142
South Korea	Korea	0.003	0.051	-0.003	0.070	0.036	0.042	-0.010	-0.022	0.138	0.413	123
Spain	Barcelona	0.027	0.109	0.082	0.053	0.039	0.058	-0.045	-0.050	0.328	0.459	108
Sweden	Stockholm	0.042	0.127	0.097	0.143	0.143	0.165	0.053	-0.031	0.212	0.431	144
Switzerland	SWX Swiss	0.054	0.145	0.048	0.175	0.145	0.162	0.000	-0.047	0.236	0.343	137
Taiwan	Taiwan	0.004	0.016	0.071	0.087	0.084	0.098	0.035	0.028	0.146	0.410	144
Thailand	Thailand	0.083	0.183	0.075	0.239	0.251	0.292	0.109	-0.034	0.336	0.618	144
Turkey	Istanbul	0.012	0.095	0.052	0.116	0.107	0.130	0.047	0.039	0.199	0.606	36
UK	London	-0.005	0.065	0.101	0.129	0.117	0.122	0.012	-0.011	0.121	0.342	144
US	New York	0.059	0.105	0.207	0.094	0.052	0.051	-0.021	-0.020	0.129	0.147	144
US	American	0.071	0.045	0.183	0.110	0.041	0.067	-0.054	-0.074	0.164	0.227	144
US	NASDAQ	0.132	0.060	0.218	0.105	0.083	0.103	-0.026	-0.033	0.258	0.442	144
Panel B: For U.S. Average												
US Average		0.111	0.069	0.213	0.103	0.072	0.088	-0.027	-0.034	0.222	0.360	144

Online Table 4

Average Root Mean Squared Error of Monthly Percent-Cost Proxies with Percent Effective Spread by Exchange and for U.S. Average (1996-2007)

for a sample stock-month. All percent-cost proxies are calculated from daily stock price data for a sample stock-month. The primary sample spans 42 exchanges around the world from 1996-2007. It consists of all stock-months with at least five positive-volume days and eleven non-zero return days. A solid box means the lowest average root mean squared error (RMSE) in the row. Dashed boxes mean average RMSEs that are statistically indistinguishable from the lowest average RMSE in the row at the 5% level. Bold-faced proxies have predictive power that is significant at the 5% level.

Country	Exchange	Roll	Extended Roll	Effective Tick	LOT Mixed	LOT Y-split	FHT	Zeros	Zeros2	High -Low	Closing % Quo Sprd	Months
Panel A: By Exchange												
Argentina	Buenos Ar.	0.0227	0.0191	0.0306	0.0299	0.0180	0.0128	0.2273	0.1610	0.0145	0.0088	114
Australia	Australian	0.0332	0.0256	0.0526	0.0615	0.0315	0.0167	0.2560	0.2063	0.0197	0.0139	144
Austria	Vienna	0.0296	0.0252	0.0287	0.0283	0.0242	0.0230	0.1579	0.1153	0.0181	0.0157	108
Belgium	Brussels	0.0156	0.0124	0.0147	0.0203	0.0120	0.0104	0.1673	0.1315	0.0092	0.0073	108
Brazil	Sao Paulo	0.0377	0.0307	0.0355	0.0362	0.0274	0.0259	0.1759	0.1106	0.0271	0.0202	115
Canada	Toronto	0.0357	0.0266	0.0414	0.0473	0.0268	0.0223	0.1848	0.1451	0.0214	0.0080	144
Chile	Santiago	0.0269	0.0240	0.0274	0.0284	0.0230	0.0200	0.2324	0.1809	0.0233	0.0298	67
China	Hong Kong	0.0303	0.0264	0.0345	0.0531	0.0305	0.0203	0.2271	0.1746	0.0186	0.0160	144
China	Shanghai	0.0071	0.0102	0.0041	0.0215	0.0140	0.0044	0.0640	0.0467	0.0066	0.0021	144
China	Shenzhen	0.0071	0.0103	0.0045	0.0150	0.0059	0.0048	0.0624	0.0444	0.0069	0.0037	144
Denmark	Copenhag.	0.0207	0.0163	0.0245	0.0289	0.0165	0.0123	0.2432	0.1777	0.0125	0.0137	133
France	Paris	0.0235	0.0196	0.0229	0.0232	0.0178	0.0178	0.1522	0.1170	0.0182	0.0133	108
Finland	Helsinki	0.0189	0.0160	0.0231	0.0310	0.0149	0.0096	0.2054	0.1484	0.0096	0.0089	108
Germany	Frankfurt	0.0255	0.0207	0.0213	0.0321	0.0246	0.0194	0.1395	0.1021	0.0166	0.0116	108
Greece	Athens	0.0281	0.0237	0.0239	0.0327	0.0210	0.0190	0.1529	0.1413	0.0167	0.0137	84
India	Bombay	0.0734	0.0547	0.0645	0.0695	0.0521	0.0487	0.1600	0.0837	0.0469	0.0406	141
Indonesia	Jakarta	0.0352	0.0286	0.0444	0.0768	0.0434	0.0218	0.2859	0.2400	0.0152	0.0212	144
Ireland	Irish	0.0248	0.0180	0.0301	0.0894	0.0846	0.0141	0.2080	0.1532	0.0134	0.0115	91
Israel	Tel Aviv	0.0443	0.0367	0.0446	0.0348	0.0318	0.0322	0.1835	0.0686	0.0328	0.0154	133
Italy	Milan	0.0228	0.0305	0.0111	0.0408	0.0225	0.0168	0.1246	0.1080	0.0067	0.0049	108
Japan	Tokyo	0.0146	0.0147	0.0147	0.0256	0.0107	0.0075	0.1499	0.1230	0.0073	0.0049	144
Malaysia	Kuala Lum.	0.0235	0.0197	0.0267	0.0380	0.0199	0.0132	0.2349	0.1944	0.0127	0.0133	144
Mexico	Mexican	0.0256	0.0221	0.0251	0.0295	0.0213	0.0176	0.1670	0.1049	0.0193	0.0256	144
Netherlands	AEX	0.0185	0.0162	0.0172	0.0244	0.0141	0.0122	0.1463	0.1202	0.0119	0.0086	108
New Zealand	New Zea.	0.0215	0.0170	0.0314	0.0236	0.0161	0.0127	0.2801	0.2451	0.0156	0.0114	144
Norway	Oslo	0.0298	0.0251	0.0327	0.0934	0.0847	0.0197	0.2161	0.1600	0.0207	0.0186	144
Philippines	Phillipine	0.0321	0.0275	0.0463	0.0666	0.0398	0.0211	0.2918	0.2411	0.0172	0.0217	144
Poland	Warsaw	0.0683	0.0617	0.0672	0.1220	0.1208	0.0579	0.1985	0.1481	0.0551	0.0644	86
Portugal	Lisbon	0.0110	0.0081	0.0146	0.0164	0.0090	0.0073	0.2002	0.1838	0.0064	0.0058	30
Singapore	Singapore	0.0224	0.0183	0.0470	0.0482	0.0256	0.0122	0.2652	0.2263	0.0092	0.0134	144
South Africa	Johannes.	0.0384	0.0311	0.0432	0.0558	0.0325	0.0226	0.2402	0.1897	0.0258	0.0230	142
South Korea	Korea	0.0201	0.0200	0.0172	0.0263	0.0147	0.0146	0.0979	0.0891	0.0116	0.0083	144
Spain	Barcelona	0.0128	0.0102	0.0084	0.0248	0.0106	0.0070	0.1317	0.1261	0.0051	0.0027	108
Sweden	Stockholm	0.0232	0.0186	0.0227	0.0335	0.0167	0.0131	0.1907	0.1526	0.0140	0.0126	144
Switzerland	SWX Swiss	0.0191	0.0153	0.0186	0.0239	0.0138	0.0123	0.2049	0.1420	0.0116	0.0099	137
Taiwan	Taiwan	0.0098	0.0116	0.0103	0.0208	0.0074	0.0062	0.1332	0.1285	0.0055	0.0028	144
Thailand	Thailand	0.0258	0.0227	0.0288	0.0463	0.0240	0.0144	0.2415	0.1984	0.0125	0.0090	144
Turkey	Istanbul	0.0109	0.0115	0.0129	0.0269	0.0097	0.0059	0.1820	0.1797	0.0048	0.0019	36
UK	London	0.0245	0.0220	0.0219	0.0349	0.0251	0.0150	0.2337	0.2188	0.0188	0.0189	144
US	New York	0.0149	0.0097	0.0100	0.0192	0.0077	0.0072	0.0746	0.0735	0.0074	0.0113	144
US	American	0.0324	0.0454	0.0413	0.0450	0.0305	0.0297	0.1659	0.1362	0.0273	0.0558	144
US	NASDAQ	0.0261	0.0327	0.0325	0.0415	0.0217	0.0220	0.1136	0.0972	0.0172	0.0136	144
Panel B: For U.S. Average												
US Average		0.0241	0.0287	0.0283	0.0369	0.0194	0.0194	0.1093	0.0952	0.0159	0.0165	144

Online Table 5

Average Cross-Sectional Correlation of Monthly Cost-Per-Dollar-Volume Proxies with Lambda by Exchange and for U.S. Average (1996-2007)

SIRCA Thomson Reuters Tick History database for a sample stock-month. All cost-per-dollar-volume proxies are calculated from daily stock price and volume data for a sample stock-month. The primary sample spans 42 exchanges around the world from 1996-2007. It consists of all stock-months with at least five positive-volume days and eleven non-zero return days. A solid box means the highest correlation in the row. Dashed boxes mean correlations that are statistically indistinguishable from the highest correlation in the row at the 5% level. Bold-faced numbers are statistically different from zero at the 5% level.

Country	Exchange	Roll Impact	Extended Roll Impact	Effective Tick Impact	LOT Mixed Impact	LOT Y-split Impact	FHT Impact	Zeros Impact	Zeros2 Impact	High -Low Impact	Closing % Quo Sprd Impact	Amihud	Pastor & Stam- baugh	Amivest	Months
Panel A: By Exchange															
Argentina	Buenos Ar.	0.132	0.439	0.458	0.646	0.603	0.631	0.576	0.556	0.603	0.703	0.563	0.046	-0.376	114
Australia	Australian	0.196	0.382	0.344	0.466	0.452	0.468	0.453	0.404	0.397	0.450	0.307	0.034	-0.127	144
Austria	Vienna	0.189	0.463	0.464	0.600	0.526	0.544	0.420	0.404	0.565	0.616	0.592	0.048	-0.318	108
Belgium	Brussels	0.240	0.476	0.363	0.548	0.477	0.503	0.449	0.440	0.539	0.557	0.535	0.074	-0.253	108
Brazil	Sao Paulo	0.166	0.381	0.454	0.469	0.476	0.472	0.441	0.381	0.480	0.449	0.439	-0.003	-0.184	115
Canada	Toronto	0.394	0.570	0.514	0.615	0.567	0.576	0.566	0.556	0.559	0.696	0.559	0.000	-0.149	144
Chile	Santiago	0.028	0.113	0.057	0.220	0.218	0.221	0.237	0.213	0.199	0.126	0.225	0.017	-0.082	67
China	Hong Kong	0.226	0.392	0.312	0.473	0.459	0.466	0.419	0.311	0.435	0.455	0.353	0.034	-0.110	144
China	Shanghai	0.104	0.476	0.438	0.387	0.207	0.451	0.418	0.385	0.812	0.738	0.785	-0.135	-0.494	141
China	Shenzhen	0.079	0.457	0.428	0.541	0.399	0.410	0.383	0.346	0.795	0.649	0.756	-0.118	-0.530	141
Denmark	Copenhag.	0.167	0.323	0.237	0.375	0.365	0.374	0.339	0.264	0.345	0.404	0.353	0.093	-0.148	133
France	Paris	0.286	0.517	0.378	0.574	0.492	0.522	0.480	0.440	0.611	0.569	0.543	0.088	-0.196	108
Finland	Helsinki	0.134	0.206	0.159	0.230	0.232	0.232	0.217	0.157	0.203	0.238	0.217	0.040	-0.048	108
Germany	Frankfurt	0.217	0.439	0.377	0.486	0.418	0.470	0.376	0.408	0.501	0.517	0.512	0.023	-0.227	108
Greece	Athens	0.259	0.514	0.560	0.632	0.571	0.607	0.610	0.618	0.652	0.702	0.620	0.054	-0.205	84
India	Bombay	0.296	0.480	0.439	0.543	0.487	0.518	0.517	0.421	0.534	0.582	0.529	-0.019	-0.174	141
Indonesia	Jakarta	0.178	0.311	0.271	0.368	0.356	0.369	0.386	0.311	0.354	0.384	0.258	0.092	-0.121	144
Ireland	Irish	0.257	0.520	0.516	0.512	0.466	0.587	0.575	0.560	0.575	0.609	0.570	0.120	-0.250	91
Israel	Tel Aviv	0.171	0.452	0.302	0.630	0.597	0.629	0.617	0.413	0.611	0.611	0.581	0.094	-0.228	109
Italy	Milan	0.239	0.358	0.293	0.390	0.349	0.365	0.383	0.357	0.431	0.438	0.418	0.020	-0.188	108
Japan	Tokyo	0.308	0.598	0.534	0.663	0.586	0.624	0.605	0.608	0.654	0.688	0.695	0.054	-0.257	144
Malaysia	Kuala Lum.	0.352	0.622	0.549	0.685	0.647	0.677	0.667	0.598	0.652	0.685	0.587	0.099	-0.238	144
Mexico	Mexican	0.139	0.497	0.573	0.684	0.663	0.674	0.656	0.599	0.663	0.682	0.556	0.064	-0.238	116
Netherlands	AEX	0.333	0.610	0.543	0.683	0.626	0.646	0.584	0.570	0.641	0.646	0.618	0.166	-0.183	108
New Zealand	New Zea.	0.122	0.421	0.481	0.619	0.604	0.613	0.575	0.568	0.581	0.604	0.533	0.049	-0.199	144
Norway	Oslo	0.146	0.280	0.270	0.306	0.279	0.345	0.328	0.286	0.351	0.368	0.349	0.039	-0.108	144
Philippines	Phillipine	0.086	0.185	0.193	0.252	0.252	0.255	0.225	0.170	0.244	0.230	0.204	-0.026	-0.114	144
Poland	Warsaw	0.194	0.350	0.208	0.317	0.260	0.386	0.374	0.304	0.446	0.479	0.378	0.152	-0.193	86
Portugal	Lisbon	0.440	0.737	0.643	0.809	0.782	0.791	0.734	0.692	0.791	0.798	0.753	-0.001	-0.260	30
Singapore	Singapore	0.337	0.498	0.379	0.549	0.532	0.544	0.525	0.446	0.531	0.569	0.465	0.046	-0.162	144
South Africa	Johannes.	0.297	0.471	0.479	0.570	0.551	0.566	0.573	0.533	0.548	0.590	0.398	0.046	-0.149	142
South Korea	Korea	0.355	0.654	0.443	0.733	0.635	0.650	0.584	0.581	0.770	0.732	0.670	0.055	-0.258	123
Spain	Barcelona	0.321	0.634	0.509	0.667	0.600	0.629	0.584	0.584	0.703	0.692	0.704	0.073	-0.221	108
Sweden	Stockholm	0.193	0.325	0.298	0.364	0.340	0.351	0.349	0.311	0.355	0.372	0.368	0.042	-0.111	144
Switzerland	SWX Swiss	0.362	0.601	0.410	0.664	0.609	0.629	0.559	0.496	0.640	0.659	0.633	0.087	-0.212	137
Taiwan	Taiwan	0.217	0.586	0.630	0.723	0.641	0.673	0.628	0.647	0.780	0.798	0.664	-0.064	-0.279	144
Thailand	Thailand	0.207	0.300	0.214	0.330	0.318	0.331	0.319	0.233	0.324	0.328	0.231	0.065	-0.104	144
Turkey	Istanbul	0.310	0.681	0.637	0.765	0.714	0.743	0.766	0.765	0.807	0.790	0.763	0.135	-0.309	36
UK	London	0.111	0.435	0.437	0.675	0.623	0.656	0.641	0.649	0.625	0.673	0.584	0.015	-0.216	144
US	New York	0.583	0.463	0.685	0.706	0.653	0.660	0.590	0.591	0.737	0.681	0.698	0.024	-0.198	144
US	American	0.502	0.346	0.541	0.597	0.572	0.587	0.494	0.474	0.611	0.588	0.552	0.052	-0.216	144
US	NASDAQ	0.571	0.336	0.456	0.590	0.553	0.565	0.510	0.448	0.600	0.600	0.511	-0.030	-0.114	144
Panel B: For U.S. Average															
US Average		0.568	0.364	0.513	0.616	0.576	0.587	0.526	0.481	0.631	0.617	0.555	-0.012	-0.140	144

Online Table 6

Portfolio Time-Series Correlation of Monthly Detrended Cost-Per-Dollar-Volume Proxies with Detrended Lambda by Exchange and for U.S. Average (1996-2007)

Lambda is calculated from every trade and corresponding BBO quote in the SIRCA Thomson Reuters Tick History database for a sample stock-month. All cost-per-dollar-volume proxies are calculated from daily stock price data for a sample stock-month. The primary sample spans 42 exchanges around the world from 1996-2007. It consists of all stock-months with at least five positive-volume days and eleven non-zero return days. A solid box means the highest correlation in the row. Dashed boxes mean correlations that are statistically indistinguishable from the highest correlation in the row at the 5% level. Bold-faced numbers are statistically different from zero at the 5% level.

Country	Exchange	Roll Impact	Extended Roll Impact	Effective Tick Impact	LOT Mixed Impact	LOT Y-split Impact	FHT Impact	Zeros Impact	Zeros2 Impact	High -Low Impact	Closing % Quo Sprd Impact	Amihud	Pastor & Stam-baugh	Aminvest	Months
Panel A: By Exchange															
Argentina	Buenos Ar.	-0.080	0.312	0.083	0.382	0.317	0.364	0.359	0.196	0.325	0.951	0.568	0.095	-0.233	113
Australia	Australian	0.131	0.358	0.320	0.363	0.377	0.423	0.322	0.387	0.364	0.437	0.262	0.128	-0.147	143
Austria	Vienna	0.060	0.033	0.118	0.033	0.065	0.084	0.208	0.270	0.046	0.010	0.063	-0.048	-0.094	107
Belgium	Brussels	0.096	0.482	0.208	0.368	0.236	0.265	0.061	0.088	0.271	0.290	0.418	-0.092	-0.116	107
Brazil	Sao Paulo	0.241	0.328	0.060	0.136	0.139	0.115	0.067	0.036	0.157	0.032	-0.087	0.092	-0.020	114
Canada	Toronto	0.207	0.477	0.510	0.510	0.533	0.513	0.388	0.462	0.430	0.699	0.368	0.003	-0.319	143
Chile	Santiago	-0.026	0.468	0.138	0.406	0.424	0.449	0.459	0.340	0.486	0.040	0.494	-0.067	0.032	66
China	Hong Kong	0.092	0.331	0.194	0.497	0.515	0.510	0.292	0.195	0.383	0.435	0.380	0.121	-0.367	143
China	Shanghai	-0.006	0.495	0.577	0.501	0.424	0.591	0.525	0.495	0.693	0.511	0.732	-0.396	-0.278	140
China	Shenzhen	0.253	0.648	0.631	0.644	0.543	0.444	0.426	0.413	0.762	0.682	0.709	-0.228	-0.339	140
Denmark	Copenhag.	0.184	0.349	0.290	0.448	0.394	0.435	0.307	0.250	0.331	0.410	0.411	0.113	-0.245	132
France	Paris	0.032	0.564	0.410	0.394	0.316	0.324	-0.021	0.026	0.422	0.598	0.521	0.132	-0.320	107
Finland	Helsinki	-0.111	0.049	-0.021	0.092	0.118	0.102	0.097	0.063	0.100	0.118	0.112	-0.148	-0.062	107
Germany	Frankfurt	0.202	0.480	0.585	0.637	0.545	0.571	0.440	0.461	0.510	0.586	0.630	0.123	-0.292	107
Greece	Athens	0.278	0.556	0.497	0.551	0.554	0.589	0.356	0.287	0.606	0.400	0.658	0.323	-0.305	83
India	Bombay	0.100	0.298	0.280	0.449	0.338	0.373	0.204	0.274	0.262	0.355	0.662	0.095	-0.187	140
Indonesia	Jakarta	-0.051	0.101	0.167	0.230	0.236	0.236	0.248	0.144	0.194	0.209	0.179	0.124	-0.207	143
Ireland	Irish	0.145	0.068	0.105	0.090	0.017	0.226	0.174	0.242	0.063	0.132	0.002	-0.007	0.009	90
Israel	Tel Aviv	-0.059	0.432	0.282	0.512	0.496	0.556	0.408	0.269	0.524	0.866	0.564	0.080	-0.371	108
Italy	Milan	-0.023	0.170	0.022	0.082	0.076	0.085	-0.238	-0.210	-0.031	0.112	0.199	-0.016	-0.185	107
Japan	Tokyo	0.071	0.691	0.653	0.696	0.593	0.660	0.206	0.176	0.636	0.769	0.784	0.241	-0.340	143
Malaysia	Kuala Lum.	0.177	0.593	0.589	0.577	0.566	0.656	0.268	0.195	0.613	0.669	0.636	0.261	-0.475	128
Mexico	Mexican	0.189	0.235	0.190	0.360	0.342	0.345	0.276	0.248	0.248	0.308	0.143	0.248	-0.160	115
Netherlands	AEX	0.148	0.517	0.364	0.465	0.415	0.441	0.267	0.137	0.492	0.543	0.507	0.281	-0.098	107
New Zealand	New Zea.	0.090	0.363	0.598	0.451	0.398	0.403	0.368	0.414	0.445	0.428	0.074	-0.008	-0.250	104
Norway	Oslo	0.097	0.267	0.242	0.266	0.222	0.276	0.267	0.263	0.266	0.314	0.425	0.244	-0.036	143
Philippines	Phillipine	0.096	0.176	0.109	0.246	0.245	0.237	0.195	0.090	0.199	0.225	0.208	0.005	-0.261	143
Poland	Warsaw	-0.284	-0.126	0.071	-0.017	0.023	-0.132	-0.173	-0.012	-0.091	-0.246	-0.013	0.223	-0.009	85
Portugal	Lisbon	0.368	0.497	0.404	0.432	0.473	0.428	0.165	0.205	0.395	0.305	0.514	0.144	-0.198	29
Singapore	Singapore	0.320	0.541	0.430	0.553	0.556	0.566	0.330	0.217	0.551	0.605	0.524	-0.034	-0.331	143
South Africa	Johannes.	0.355	0.380	0.483	0.442	0.403	0.395	0.496	0.389	0.413	0.332	0.269	0.044	-0.162	141
South Korea	Korea	0.144	0.649	0.566	0.727	0.616	0.641	0.491	0.516	0.744	0.762	0.468	-0.378	-0.293	122
Spain	Barcelona	-0.079	0.394	0.321	0.346	0.202	0.253	-0.084	-0.090	0.335	0.312	0.432	0.277	-0.116	107
Sweden	Stockholm	0.305	0.464	0.472	0.446	0.369	0.393	0.418	0.379	0.499	0.441	0.482	-0.059	-0.117	138
Switzerland	SWX Swiss	0.287	0.677	0.590	0.718	0.645	0.667	0.396	0.429	0.620	0.606	0.701	0.229	-0.172	136
Taiwan	Taiwan	0.163	0.422	0.426	0.445	0.458	0.459	0.375	0.348	0.484	0.707	0.475	0.208	-0.564	143
Thailand	Thailand	0.450	0.617	0.657	0.587	0.654	0.666	0.562	0.610	0.543	0.260	0.693	0.535	-0.050	143
Turkey	Istanbul	-0.019	0.778	0.672	0.887	0.732	0.783	0.397	0.390	0.848	0.851	0.927	-0.196	-0.490	35
UK	London	-0.024	0.619	0.277	0.681	0.618	0.630	0.627	0.646	0.558	0.487	0.575	0.471	-0.479	143
US	New York	0.272	0.166	0.467	0.506	0.606	0.606	0.522	0.489	0.613	0.463	0.550	0.010	-0.072	143
US	American	0.130	0.053	0.053	0.314	0.313	0.188	0.335	0.324	0.214	0.234	-0.252	0.286	-0.010	143
US	NASDAQ	0.626	0.282	0.468	0.426	0.613	0.660	0.654	0.488	0.684	0.696	0.576	-0.010	-0.076	143
Panel B: For U.S. Average															
US Average		0.508	0.238	0.434	0.434	0.587	0.610	0.600	0.475	0.630	0.608	0.503	0.018	-0.070	143

Online Table 7

Individual Stock Time-Series Correlation of Monthly Detrended Cost-Per-Dollar-Volume Proxies with Detrended Lambda by Exchange & for U.S. Average (96-07)

Lambda is calculated from every trade and corresponding BBO quote in the SIRCA Thomson Reuters Tick History database for a sample stock-month. All cost-per-dollar-volume proxies are calculated from daily stock price data for a sample stock-month. The primary sample spans 42 exchanges around the world from 1996-2007. It consists of all stock-months with at least five positive-volume days and eleven non-zero return days. A solid box means the highest correlation in the row. Dashed boxes mean correlations that are statistically indistinguishable from the highest correlation in the row at the 5% level. Bold-faced numbers are statistically different from zero at the 5% level.

Country	Exchange	Roll Impact	Extended Roll Impact	Effective Tick Impact	LOT Mixed Impact	LOT Y-split Impact	FHT Impact	Zeros Impact	Zeros2 Impact	High -Low Impact	Closing % Quo Sprd Impact	Pastor & Stam-baugh Amihud	Amivest	
Panel A: By Exchange														
Argentina	Buenos Ar.	0.027	0.184	0.227	0.349	0.304	0.336	0.282	0.258	0.304	0.375	0.327	-0.072	-0.182
Australia	Australian	0.033	0.137	0.112	0.211	0.191	0.210	0.156	0.124	0.204	0.216	0.141	0.014	-0.093
Austria	Vienna	-0.014	0.095	0.085	0.145	0.097	0.111	0.023	0.003	0.151	0.111	0.224	0.003	-0.137
Belgium	Brussels	0.011	0.210	0.167	0.229	0.122	0.137	0.056	0.039	0.291	0.317	0.263	-0.002	-0.087
Brazil	Sao Paulo	0.046	0.178	0.266	0.264	0.224	0.213	0.200	0.154	0.321	0.369	0.263	-0.009	-0.115
Canada	Toronto	0.073	0.237	0.196	0.305	0.237	0.260	0.178	0.142	0.353	0.447	0.250	0.024	-0.140
Chile	Santiago	0.000	0.082	0.008	0.125	0.168	0.156	0.165	0.150	0.107	0.070	0.026	0.064	-0.025
China	Hong Kong	0.043	0.142	0.072	0.225	0.202	0.209	0.105	0.030	0.191	0.190	0.145	0.009	-0.073
China	Shanghai	0.077	0.251	0.292	0.241	0.136	0.276	0.229	0.204	0.623	0.585	0.613	-0.025	-0.145
China	Shenzhen	0.042	0.253	0.306	0.328	0.253	0.270	0.230	0.209	0.623	0.576	0.593	-0.025	-0.181
Denmark	Copenhag.	0.045	0.095	0.029	0.141	0.133	0.142	0.090	0.050	0.130	0.150	0.093	0.045	-0.047
France	Paris	0.043	0.222	0.207	0.261	0.164	0.188	0.109	0.085	0.361	0.368	0.338	0.028	-0.155
Finland	Helsinki	0.029	0.044	0.058	0.058	0.073	0.064	0.048	0.034	0.044	0.072	0.050	-0.011	-0.011
Germany	Frankfurt	0.006	0.108	0.082	0.135	0.121	0.125	0.047	0.032	0.159	0.152	0.184	0.000	-0.091
Greece	Athens	0.089	0.219	0.228	0.310	0.245	0.281	0.240	0.228	0.450	0.527	0.328	0.011	-0.188
India	Bombay	0.095	0.218	0.235	0.289	0.238	0.257	0.231	0.146	0.303	0.333	0.234	-0.002	-0.090
Indonesia	Jakarta	0.058	0.105	0.105	0.130	0.129	0.131	0.127	0.090	0.120	0.146	0.083	0.015	-0.062
Ireland	Irish	-0.034	0.110	0.219	0.148	0.122	0.130	0.116	0.113	0.215	0.260	0.082	-0.021	-0.107
Israel	Tel Aviv	0.030	0.188	0.250	0.339	0.308	0.316	0.282	0.123	0.359	0.464	0.262	0.045	-0.129
Italy	Milan	0.005	0.072	0.091	0.101	0.062	0.073	0.060	0.043	0.238	0.214	0.139	0.007	-0.111
Japan	Tokyo	0.051	0.221	0.148	0.272	0.191	0.218	0.122	0.098	0.373	0.435	0.384	0.022	-0.153
Malaysia	Kuala Lum.	0.126	0.330	0.263	0.416	0.381	0.417	0.333	0.268	0.424	0.465	0.264	0.034	-0.159
Mexico	Mexican	0.023	0.090	0.115	0.268	0.222	0.217	0.194	0.131	0.242	0.315	0.198	0.041	-0.111
Netherlands	AEX	0.021	0.115	0.152	0.146	0.102	0.127	0.026	0.020	0.264	0.247	0.212	-0.007	-0.094
New Zealand	New Zea.	-0.011	0.089	0.132	0.227	0.196	0.227	0.143	0.145	0.205	0.273	0.155	-0.025	-0.124
Norway	Oslo	0.024	0.104	0.095	0.105	0.100	0.139	0.114	0.070	0.142	0.161	0.119	0.026	-0.061
Philippines	Phillipine	0.050	0.109	0.035	0.112	0.124	0.123	0.099	0.051	0.096	0.118	0.081	-0.009	-0.086
Poland	Warsaw	0.040	0.244	0.179	0.162	0.116	0.285	0.224	0.193	0.404	0.417	0.276	0.081	-0.132
Portugal	Lisbon	0.100	0.148	-0.012	0.244	0.155	0.187	0.051	0.060	0.313	0.314	0.212	-0.002	-0.230
Singapore	Singapore	0.089	0.212	0.171	0.287	0.251	0.270	0.205	0.150	0.280	0.297	0.242	0.014	-0.138
South Africa	Johannes.	0.019	0.148	0.130	0.238	0.200	0.218	0.172	0.155	0.231	0.271	0.122	0.044	-0.106
South Korea	Korea	0.049	0.307	0.258	0.388	0.303	0.323	0.258	0.252	0.555	0.571	0.354	0.013	-0.141
Spain	Barcelona	0.038	0.206	0.241	0.222	0.147	0.179	0.120	0.122	0.414	0.425	0.320	0.056	-0.159
Sweden	Stockholm	0.007	0.091	0.092	0.127	0.090	0.102	0.057	0.029	0.166	0.176	0.140	0.017	-0.036
Switzerland	SWX Swiss	0.030	0.182	0.084	0.263	0.207	0.226	0.133	0.104	0.288	0.307	0.247	0.035	-0.129
Taiwan	Taiwan	0.064	0.213	0.198	0.335	0.252	0.291	0.228	0.229	0.467	0.525	0.333	0.002	-0.211
Thailand	Thailand	0.041	0.044	0.020	0.042	0.042	0.050	0.018	-0.023	0.057	0.014	0.046	0.016	-0.018
Turkey	Istanbul	0.026	0.336	0.324	0.502	0.404	0.455	0.412	0.407	0.671	0.710	0.561	0.029	-0.398
UK	London	0.028	0.115	0.161	0.214	0.183	0.196	0.145	0.145	0.246	0.261	0.205	0.021	-0.113
US	New York	0.110	0.043	0.290	0.127	0.121	0.141	0.114	0.116	0.276	0.266	0.260	-0.004	-0.101
US	American	0.166	0.105	0.227	0.214	0.199	0.196	0.200	0.137	0.277	0.293	0.159	0.010	-0.088
US	NASDAQ	0.274	0.074	0.382	0.298	0.235	0.255	0.202	0.180	0.445	0.442	0.306	0.016	-0.123
Panel B: For U.S. Average														
US Average		0.230	0.070	0.349	0.253	0.207	0.226	0.183	0.163	0.394	0.392	0.284	0.012	-0.115

Online Table 8

The Performance of Daily Percent-Cost Proxies Compared to Daily Percent-Cost Benchmarks by Exchange and for

The percent-cost benchmarks (percent effective spread, percent quoted spread, percent realized spread, and percent price impact) are calculated from every trade and corresponding BBO quote in the SIRCA Thomson Reuters Tick History database for a sample stock-day. All percent-cost proxies are calculated from daily stock data for a sample stock-day. The primary sample spans 42 exchanges around the world from 1996-2007. A solid box means the highest correlation or the lowest average root mean squared error (RMSE) among the compared proxies. Dashed boxes mean correlations that are statistically indistinguishable from the highest correlation or average RMSEs that are statistically indistinguishable from the lowest average RMSE among the compared proxies at the 1% level. Bold-faced numbers are statistically different from zero or have predictive power that is significant at the 1% level.

Country	Exchange	Ave. C.S. Corr.		Port. T.S. Corr.		Ind. Stk. T.S. Corr.		Ave. RMSE	
		High -Low	Closing % Quo Sprd	High -Low	Closing % Quo Sprd	High -Low	Closing % Quo Sprd	High -Low	Closing % Quo Sprd
Panel A: Daily Percent-Cost Proxies Compared with Daily Percent Effective Spread By Exchange									
Argentina	Buenos Ar.	0.206	0.622	-0.116	0.342	0.034	0.257	0.0124	0.0123
Australia	Australian	0.466	0.736	0.092	0.748	-0.018	0.235	0.0263	0.0234
Austria	Vienna	0.305	0.704	0.080	0.384	-0.009	0.232	0.0110	0.0094
Belgium	Brussels	0.324	0.692	-0.030	0.230	0.012	0.259	0.0104	0.0084
Brazil	Sao Paulo	0.230	0.638	0.013	0.147	-0.007	0.129	0.0347	0.0311
Canada	Toronto	0.445	0.774	0.004	0.510	-0.006	0.206	0.0150	0.0119
Chile	Santiago	0.060	0.555	-0.013	0.083	0.003	0.234	0.0178	0.0335
China	Hong Kong	0.342	0.701	-0.058	0.621	0.006	0.287	0.0272	0.0203
China	Shanghai	0.120	0.407	0.027	0.379	0.004	0.144	0.0099	0.0021
China	Shenzhen	0.117	0.421	-0.014	0.349	-0.004	0.137	0.0104	0.0020
Denmark	Copenhag.	0.280	0.653	0.011	0.328	-0.026	0.245	0.0161	0.0155
France	Paris	0.337	0.743	0.023	0.225	-0.002	0.271	0.0150	0.0120
Finland	Helsinki	0.419	0.761	0.177	0.428	-0.006	0.245	0.0150	0.0127
Germany	Frankfurt	0.236	0.584	-0.004	0.453	-0.014	0.068	0.0183	0.0168
Greece	Athens	0.247	0.625	0.050	0.559	-0.010	0.283	0.0148	0.0114
India	Bombay	0.284	0.611	0.068	0.588	-0.015	0.249	0.0585	0.0569
Indonesia	Jakarta	0.559	0.824	0.005	0.217	0.026	0.344	0.0249	0.0178
Ireland	Irish	0.419	0.792	0.030	0.298	-0.032	0.281	0.0149	0.0124
Israel	Tel Aviv	0.251	0.705	-0.419	0.927	0.010	0.324	0.0244	0.0201
Italy	Milan	0.173	0.633	-0.019	0.292	-0.009	0.222	0.0092	0.0070
Japan	Tokyo	0.219	0.680	0.663	-0.181	-0.011	0.221	0.0095	0.0082
Malaysia	Kuala Lum.	0.267	0.693	-0.091	0.638	-0.006	0.312	0.0204	0.0178
Mexico	Mexican	0.210	0.643	0.018	0.390	0.021	0.260	0.0222	0.0252
Netherlands	AEX	0.389	0.756	-0.034	0.350	-0.014	0.228	0.0127	0.0101
New Zealand	New Zea.	0.332	0.597	0.040	0.279	-0.031	0.205	0.0147	0.0130
Norway	Oslo	0.306	0.672	-0.112	0.367	-0.014	0.234	0.0192	0.0169
Philippines	Phillipine	0.338	0.727	0.030	0.341	-0.004	0.386	0.0252	0.0192
Poland	Warsaw	0.233	0.603	0.081	0.134	-0.015	0.257	0.0345	0.0425
Portugal	Lisbon	0.470	0.807	-0.025	0.074	-0.038	0.185	0.0071	0.0049
Singapore	Singapore	0.624	0.793	0.074	0.507	-0.004	0.214	0.0179	0.0167
South Africa	Johannes.	0.467	0.718	-0.008	0.465	-0.012	0.271	0.0285	0.0275
South Korea	Korea	0.192	0.648	-0.161	0.777	-0.021	0.191	0.0154	0.0091
Spain	Barcelona	0.311	0.720	0.053	0.328	0.014	0.176	0.0078	0.0050
Sweden	Stockholm	0.420	0.761	-0.004	0.551	-0.015	0.206	0.0204	0.0170
Switzerland	SWX Swiss	0.350	0.709	-0.049	0.340	-0.008	0.228	0.0133	0.0117
Taiwan	Taiwan	0.200	0.762	-0.390	0.600	-0.030	0.160	0.0086	0.0042
Thailand	Thailand	0.234	0.699	-0.156	0.415	-0.002	0.231	0.0150	0.0109
Turkey	Istanbul	0.282	0.782	-0.323	0.447	-0.029	0.174	0.0096	0.0027
UK	London	0.320	0.836	0.015	0.503	0.013	0.213	0.0228	0.0195
US	New York	0.175	0.611	-0.007	0.126	-0.013	0.041	0.0076	0.0111
US	American	0.317	0.586	0.002	0.120	0.003	0.063	0.0227	0.0290
US	NASDAQ	0.328	0.813	-0.083	0.252	0.006	0.198	0.0190	0.0123

Panel B: Daily Percent-Cost Proxies Compared with Daily Percent Effective Spread For U.S. Average

US Average	0.293	0.751	-0.059	0.214	0.002	0.153	0.0168	0.0134
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Online Table 9

The Performance of Daily Cost-Per-Dollar-Volume Proxies Compared to Daily Lambda by Exchange and for U.S. Average (1996-2007)

The cost-per-dollar-volume benchmark (slope of the price function lambda) is calculated from every trade and corresponding BBO quote in the SIRCA Thomson Reuters Tick History database for a sample stock-day. All cost-per-dollar-volume proxies are calculated from daily stock data for a sample stock-day. The primary sample spans 42 exchanges around the world from 1996-2007. A solid box means the highest correlation or the lowest average root mean squared error (RMSE) among the compared proxies. Dashed boxes mean correlations that are statistically indistinguishable from the highest correlation or average RMSEs that are statistically indistinguishable from the lowest average RMSE among the compared proxies at the 1% level. Bold-faced numbers are statistically different from zero or have predictive power that is significant at the 1% level.

Country	Exchange	Average Cross-Sectional Correlation				Detr. Portfolio Time-Series Corr.				Detr. Indiv. Stock Time-Series Corr.			
		High	Closing %	Amihud	Amivest	High	Closing %	Amihud	Amivest	High	Closing %	Amihud	Amivest
		-Low	Quo Sprd			-Low	Quo Sprd			-Low	Quo Sprd		
Panel A: By Exchange													
Argentina	Buenos Ar.	0.380	0.567	0.525	-0.440	-0.122	-0.032	0.045	-0.019	0.186	0.252	0.233	-0.128
Australia	Australian	0.304	0.397	0.439	-0.171	-0.030	-0.013	0.045	-0.050	0.008	0.072	0.103	-0.044
Austria	Vienna	0.517	0.595	0.647	-0.431	-0.009	-0.018	0.025	-0.014	0.016	0.057	0.139	-0.049
Belgium	Brussels	0.464	0.565	0.570	-0.326	-0.058	-0.055	-0.002	0.023	0.107	0.190	0.206	-0.083
Brazil	Sao Paulo	0.156	0.191	0.190	-0.174	-0.041	-0.008	0.005	-0.002	0.167	0.216	0.234	-0.088
Canada	Toronto	0.436	0.486	0.546	-0.178	-0.199	-0.137	-0.054	0.114	0.141	0.212	0.242	-0.146
Chile	Santiago	0.071	0.127	0.113	-0.097	-0.043	0.082	0.045	-0.055	0.011	0.067	0.005	0.005
China	Hong Kong	0.237	0.311	0.393	-0.165	-0.105	-0.073	-0.010	0.037	-0.054	0.026	0.119	-0.037
China	Shanghai	0.477	0.491	0.545	-0.314	0.100	0.150	0.070	-0.052	0.094	0.131	0.127	-0.017
China	Shenzhen	0.466	0.483	0.539	-0.325	0.193	0.250	0.054	-0.025	0.118	0.149	0.116	-0.016
Denmark	Copenhagen	0.275	0.346	0.347	-0.268	0.024	0.068	0.098	-0.005	0.037	0.072	0.097	-0.018
France	Paris	0.513	0.618	0.626	-0.258	0.003	0.080	0.016	-0.004	0.113	0.199	0.197	-0.065
Finland	Helsinki	0.096	0.122	0.149	-0.086	-0.027	-0.024	0.003	-0.040	-0.011	0.019	0.046	-0.021
Germany	Frankfurt	0.276	0.324	0.389	-0.272	-0.143	-0.116	-0.057	-0.004	-0.031	-0.018	0.035	-0.027
Greece	Athens	0.491	0.568	0.537	-0.294	-0.070	0.001	-0.070	0.040	0.171	0.218	0.128	-0.051
India	Bombay	0.433	0.521	0.514	-0.322	-0.060	-0.035	-0.082	0.016	0.092	0.150	0.159	-0.037
Indonesia	Jakarta	0.209	0.256	0.251	-0.199	-0.038	-0.047	-0.082	-0.016	0.032	0.053	0.073	-0.022
Ireland	Irish	0.358	0.455	0.436	-0.369	-0.030	-0.030	0.001	-0.005	0.067	0.144	0.120	-0.111
Israel	Tel Aviv	0.431	0.602	0.604	-0.275	-0.039	0.102	0.186	0.164	0.179	0.275	0.210	-0.077
Italy	Milan	0.341	0.390	0.376	-0.192	-0.039	-0.023	0.129	0.002	0.045	0.095	0.057	-0.020
Japan	Tokyo	0.435	0.517	0.550	-0.260	-0.300	0.037	0.420	-0.011	0.049	0.134	0.136	-0.029
Malaysia	Kuala Lum.	0.435	0.549	0.545	-0.316	-0.284	-0.177	-0.059	0.028	0.109	0.221	0.239	-0.075
Mexico	Mexican	0.449	0.573	0.573	-0.322	-0.034	-0.021	0.017	-0.015	0.107	0.194	0.202	-0.084
Netherlands	AEX	0.485	0.559	0.599	-0.386	-0.066	-0.018	-0.037	0.012	0.058	0.132	0.163	-0.064
New Zealand	New Zea.	0.304	0.492	0.455	-0.386	-0.056	-0.009	0.000	-0.033	0.084	0.135	0.179	-0.144
Norway	Oslo	0.232	0.307	0.312	-0.208	-0.044	0.029	0.023	-0.020	0.049	0.095	0.120	-0.052
Philippines	Phillipine	0.146	0.188	0.209	-0.190	-0.007	0.003	-0.007	0.000	0.015	0.091	0.117	-0.052
Poland	Warsaw	0.422	0.508	0.524	-0.386	-0.027	0.024	-0.062	0.003	0.156	0.224	0.221	-0.071
Portugal	Lisbon	0.434	0.515	0.553	-0.433	-0.037	-0.020	0.002	0.027	0.087	0.102	0.137	-0.059
Singapore	Singapore	0.325	0.384	0.379	-0.231	-0.059	-0.050	-0.007	-0.039	0.044	0.068	0.093	-0.058
South Africa	Johannes.	0.405	0.529	0.520	-0.272	-0.023	-0.020	0.003	-0.030	0.101	0.182	0.225	-0.076
South Korea	Korea	0.498	0.515	0.541	-0.274	0.155	0.216	0.231	0.053	0.109	0.148	0.118	-0.025
Spain	Barcelona	0.480	0.521	0.536	-0.251	-0.118	-0.102	0.011	-0.006	0.128	0.172	0.122	-0.026
Sweden	Stockholm	0.262	0.321	0.346	-0.156	-0.151	-0.104	-0.055	0.010	0.043	0.089	0.107	-0.010
Switzerland	SWX Swiss	0.468	0.561	0.587	-0.308	-0.082	-0.034	0.009	0.023	0.096	0.138	0.195	-0.082
Taiwan	Taiwan	0.550	0.556	0.593	-0.270	-0.169	-0.087	0.065	0.178	0.076	0.143	0.141	-0.051
Thailand	Thailand	0.121	0.138	0.146	-0.156	-0.020	0.023	0.000	-0.054	-0.035	-0.015	0.006	-0.018
Turkey	Istanbul	0.596	0.676	0.598	-0.332	0.021	0.416	0.564	-0.019	0.291	0.428	0.273	-0.103
UK	London	0.372	0.446	0.543	-0.265	-0.013	0.009	0.132	-0.080	0.111	0.139	0.215	-0.103
US	New York	0.475	0.538	0.567	-0.298	-0.029	-0.022	0.080	0.000	0.053	0.064	0.089	-0.021
US	American	0.391	0.497	0.472	-0.425	-0.030	-0.036	-0.046	0.001	0.023	0.041	0.087	-0.025
US	NASDAQ	0.418	0.482	0.510	-0.234	-0.042	-0.029	-0.034	0.001	0.045	0.095	0.131	-0.010
Panel B: For U.S. Average													
US Average		0.428	0.495	0.520	-0.263	-0.038	-0.028	-0.010	0.001	0.045	0.084	0.118	-0.014

Online Table 10

The Global Pooled Distribution of Unwinsorized Monthly Benchmarks and Proxies

The sample spans 42 exchanges around the world from 1996-2007 and it consists of all stock-months with at least five positive-volume days and eleven non-zero return days. The distribution is computed from the pooled sample of raw (unwinsorized) benchmarks and proxies across the world. The benchmarks (percent effective spread, percent quoted spread, percent realized spread, percent price impact, and lambda) are calculated from every trade and corresponding BBO quote in the SIRCA Thomson Reuters Tick History database for a sample stock-month. All proxies are calculated from daily stock data for a sample stock-day. The statistics of all cost-per-dollar-volume benchmarks and proxies are multiplied by 1,000 except for the statistics of Amivest which is divided by 1,000,000.

Panel A: Percent-Cost Benchmarks and Proxies

Statistic	Percent Cost Benchmarks				Percent Cost Proxies									
	% Effective Spread	% Quoted Spread	% Realized Spread	% Price Impact	Roll	Extended Roll	Effective Tick	LOT Mixed	LOT Y-split	FHT	Zeros	Zeros2	High -Low	Closing % Quo Sprd
Mean	0.017	0.021	0.008	0.009	0.006	0.017	0.013	0.038	0.018	0.012	0.147	0.116	0.013	0.021
Std Deviation	0.027	0.031	0.021	0.017	0.026	0.035	0.031	0.239	0.193	0.021	0.135	0.111	0.015	0.031
Minimum	0.000	0.000	-1.723	-1.865	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Percentile 1	0.001	0.001	-0.007	-0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.001
Percentile 5	0.002	0.002	-0.001	0.001	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.003	0.002
Percentile 10	0.003	0.002	0.000	0.001	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.004	0.002
Percentile 25	0.005	0.005	0.001	0.003	0.000	0.000	0.001	0.012	0.002	0.002	0.045	0.043	0.006	0.005
Percentile 50	0.009	0.011	0.003	0.005	0.000	0.010	0.003	0.024	0.008	0.006	0.100	0.091	0.009	0.011
Percentile 75	0.020	0.025	0.009	0.010	0.000	0.023	0.012	0.045	0.019	0.015	0.227	0.182	0.014	0.025
Percentile 90	0.039	0.050	0.021	0.020	0.016	0.041	0.034	0.082	0.043	0.030	0.364	0.278	0.024	0.049
Percentile 95	0.057	0.074	0.034	0.030	0.038	0.059	0.057	0.119	0.068	0.045	0.429	0.348	0.034	0.073
Percentile 99	0.119	0.149	0.082	0.067	0.107	0.119	0.145	0.243	0.159	0.094	0.500	0.450	0.072	0.151
Maximum	5.816	1.648	3.267	5.717	4.279	20.209	1.048	267.056	223.826	2.245	0.522	0.522	1.142	1.312
% Missing or Default					87%	35%	0%	0%	0%	0%	0%	0%	3%	25%

Panel B: Cost-Per-Dollar-Volume Benchmark and Proxies

Statistic	Cost / \$Volume Benchmark	Cost Per Dollar Volume Proxies												
	Slope of the Price Function Lambda	Extended Roll Impact	Effective Roll Impact	Tick Impact	LOT Mixed Impact	LOT Y-split Impact	FHT Impact	Zeros Impact	Zeros2 Impact	High -Low Impact	Closing % Quo Sprd Impact	Amihud	Pastor and Staugh	Amivest
Mean	0.551	10.087	19.764	10.657	42.721	25.432	16.496	71.151	19.819	16.081	36.038	65.316	0.000	6.9E+09
Std Deviation	12.44	290.87	349.67	221.11	692.50	607.54	265.96	808.29	202.96	289.14	484.00	870.17	0.09	1.8E+12
Minimum	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-28.162	0
Percentile 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-0.021	0
Percentile 5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.001	-0.001	0
Percentile 10	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.004	0.000	0
Percentile 25	0.008	0.000	0.000	0.001	0.011	0.001	0.001	0.014	0.002	0.007	0.004	0.021	0.000	0
Percentile 50	0.038	0.000	0.014	0.014	0.107	0.030	0.023	0.419	0.302	0.039	0.050	0.155	0.000	1
Percentile 75	0.153	0.000	0.309	0.246	1.113	0.438	0.334	5.029	3.281	0.341	0.679	1.547	0.000	31
Percentile 90	0.552	0.098	2.886	2.268	8.080	3.864	2.777	31.715	16.490	2.741	6.039	12.322	0.000	1,055
Percentile 95	1.427	1.558	10.717	7.852	28.185	13.897	9.767	87.811	39.498	10.759	25.970	53.732	0.001	5,685
Percentile 99	10.700	50.0	294.7	137.2	712.6	357.2	253.1	1493.1	359.4	258.2	704.4	1270.5	0.022	126,317
Maximum	12,322	143,639	115,271	56,022	247,885	474,251	66,758	139,262	31,175	103,913	102,826	231,704	15	1.2E+15
% Missing or Default							0%	0%	0%	0%	3%	22%	0%	0%

Online Table 11

The Global Pooled Distribution of Unwinsorized Daily Benchmarks and Proxies

The sample spans 42 exchanges around the world from 1996-2007 and it consists of all stock-days contained within a stock-month that has at least five positive-volume days and eleven non-zero return days in the stock-month. The distribution is computed from the pooled sample of raw (unwinsorized) benchmarks and proxies across the world. The benchmarks (percent effective spread, percent quoted spread, percent realized spread, percent price impact, and lambda) are calculated from every trade and corresponding BBO quote in the SIRCA Thomson Reuters Tick History database for a sample stock-day. All percent-cost proxies and cost-per-dollar-volume proxies are calculated from daily stock data for a sample stock-day. All proxies are calculated from daily stock data for a sample stock-day. The statistics of all cost-per-dollar-volume benchmarks and proxies are multiplied by 1,000 except for the statistics of Amivest which is divided by 1,000,000.

Statistic	Percent Cost Benchmarks				Percent Cost Proxies	
	% Effective Spread	% Quoted Spread	% Real ized Spread	% Price Impact	High -Low	Closing % Quo Sprd
Mean	0.014	0.019	0.008	0.006	0.012	0.020
Std Deviation	0.025	0.034	0.026	0.019	0.020	0.037
Minimum	0.000	0.000	-9.147	-13.666	0.000	0.000
Percentile 1	0.001	0.001	-0.015	-0.004	0.000	0.000
Percentile 5	0.001	0.001	-0.001	0.000	0.000	0.001
Percentile 10	0.002	0.002	0.000	0.000	0.000	0.002
Percentile 25	0.003	0.004	0.001	0.001	0.002	0.004
Percentile 50	0.007	0.009	0.003	0.003	0.007	0.009
Percentile 75	0.016	0.021	0.009	0.006	0.015	0.022
Percentile 90	0.032	0.046	0.022	0.013	0.027	0.047
Percentile 95	0.049	0.070	0.038	0.022	0.039	0.072
Percentile 99	0.109	0.154	0.094	0.059	0.083	0.162
Maximum	12.431	1.999	13.856	9.183	1.546	2.000
% Missing or default					13%	0.0%

Panel B: Cost-Per-Dollar-Volume Benchmark and Proxies

Statistic	Cost / \$Volume Benchmark		Cost Per Dollar Volume Proxies		
	Slope of the Price Function Lambda	High-Low Impact	Closing % Quo Sprd Impact	Amihud	Amivest
Mean	0.161	0.025	0.064	34.188	7.0E+09
Std Deviation	1.514	0.955	1.839	1510.075	3.8E+12
Minimum	0.000	0.000	0.000	0.000	0
Percentile 1	0.000	0.000	0.000	0.000	0
Percentile 5	0.000	0.000	0.000	0.000	0
Percentile 10	0.000	0.000	0.000	0.000	0
Percentile 25	0.005	0.000	0.000	0.003	0
Percentile 50	0.026	0.000	0.000	0.037	1
Percentile 75	0.075	0.000	0.001	0.394	24
Percentile 90	0.222	0.003	0.007	3.562	864
Percentile 95	0.471	0.011	0.031	14.217	5245
Percentile 99	2.571	0.203	0.698	304.526	1.3E+05
Maximum	2722	2208.339	2297.944	3871167.050	4.6E+15
% Missing or default		15%	0%	0%	54%