INTERNATIONAL REAL ESTATE REVIEW

Asymmetric Causal Relations Between COVID-19 Economic Supports and Real Estate Price Shocks

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Özlem Sayilir
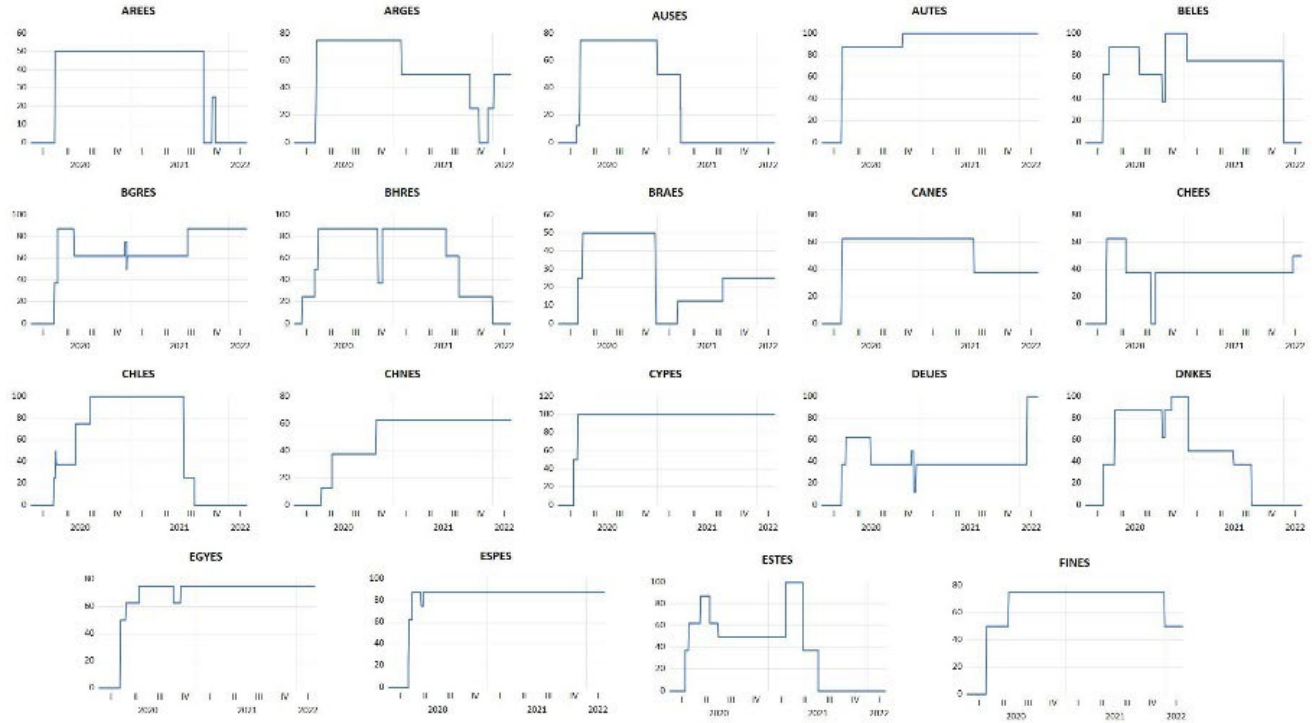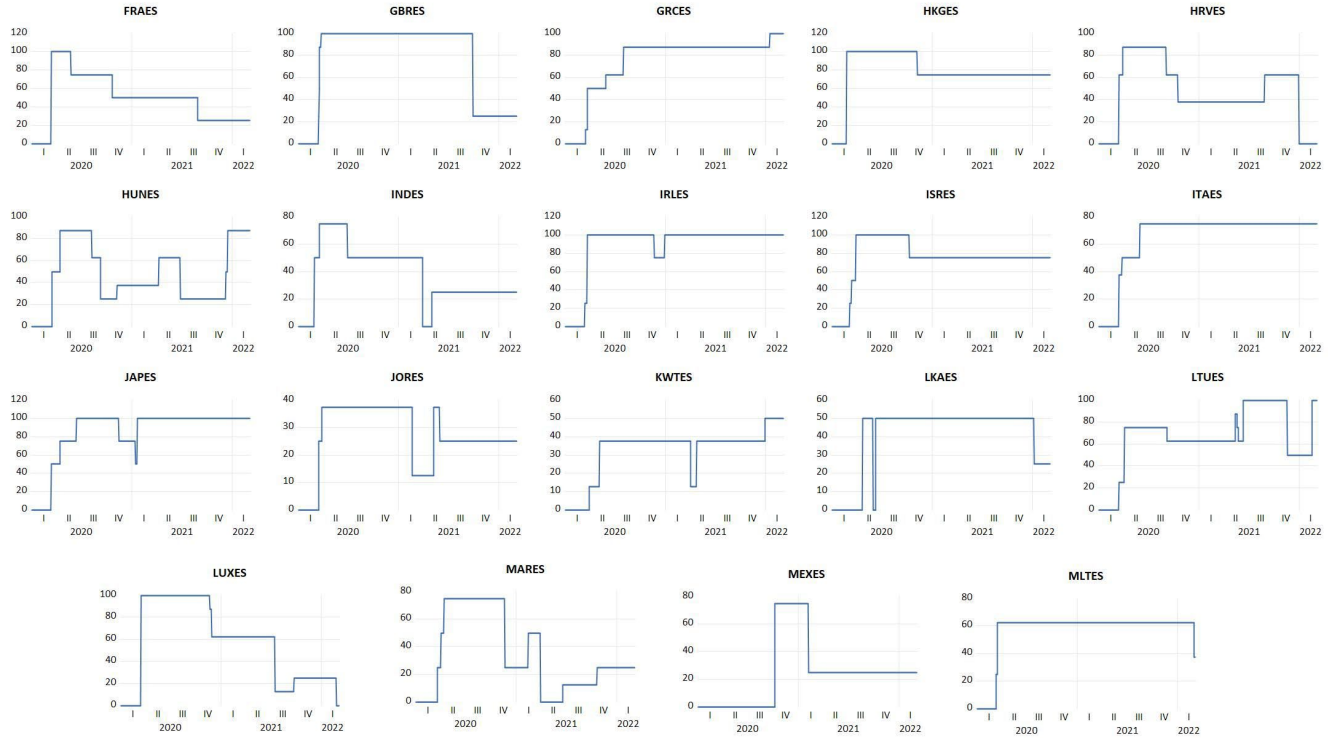Faculty of Business Administration, Anadolu University, Eskişehir, Turkey
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Online Appendix

Figure 1   Economic supports across the sample countries
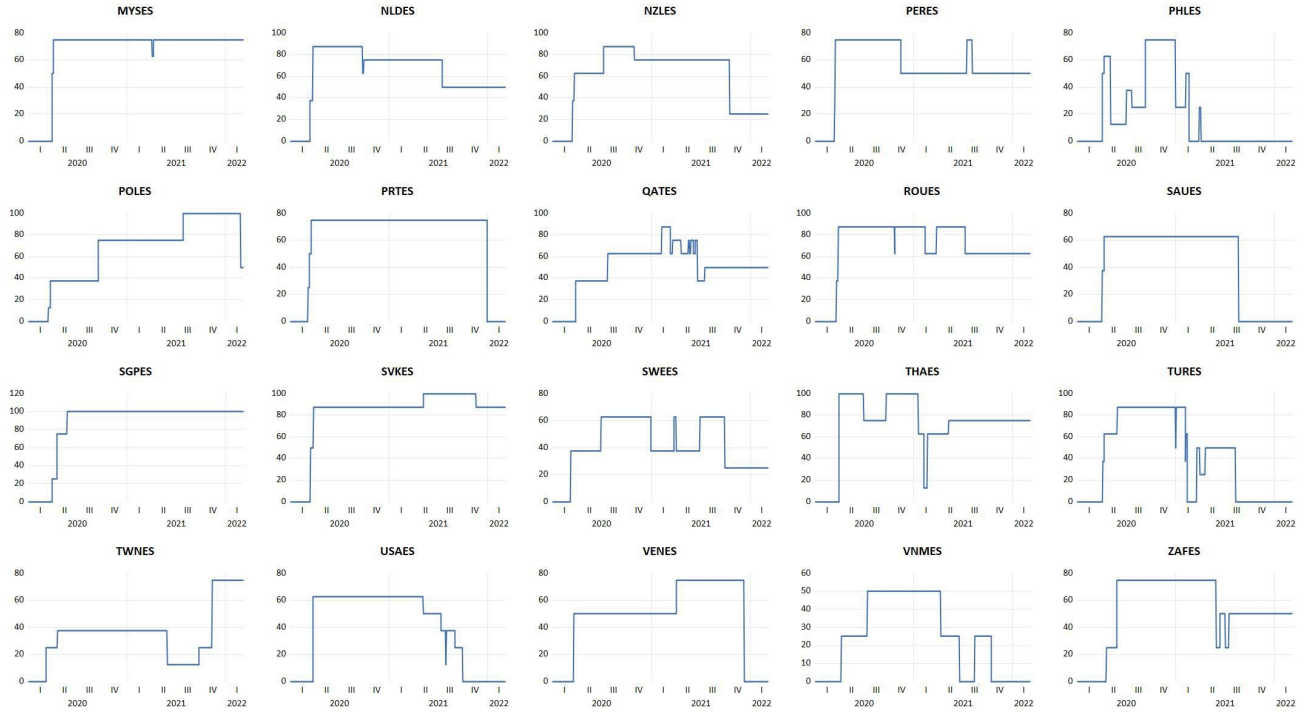
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Table 1   FFFF-TY Results (Immediate Market Reaction, Days 0-2)

	W-statistics	Bootstrap prob.value	p	k		W-statistics	Bootstrap prob.value	p	k
AREES ≠ > ARERE [+]	0.013	0.412	1	0.8	AREES ≠ > ARERE [-]	0.008	0.508	1	0.8
ARGES ≠ > ARGRE [+]	37.01	0.001	1	0.8	**ARGES ≠ > ARGRE [-]**	35.37	<0.001	1	0.8
AUSES ≠ > AUSRE [+]	3.604	0.083	1	0.8	**AUSES ≠ > AUSRE [-]**	4.665	0.053	1	0.8
AUTES ≠ > AUTRE [+]	4.240	0.037	1	0.8	**AUTES ≠ > AUTRE [-]**	10.51	0.018	1	0.8
BELES ≠ > BELRE [+]	0.014	0.464	1	0.8	BELES ≠ > BELRE [-]	0.007	0.575	1	0.8
BGRES ≠ > BGRRE [+]	0.182	0.214	1	0.8	BGRES ≠ > BGRRE [-]	0.042	0.437	1	0.8
BHRES ≠ > BHRRE [+]	0.007	0.684	1	0.8	BHRES ≠ > BHRRE [-]	0.085	0.350	1	0.8
BRAES ≠ > BRARE [+]	0.007	0.494	1	0.8	BRAES ≠ > BRARE [-]	0.001	0.788	1	0.8
CANES ≠ > CANRE [+]	46.23	0.005	1	0.8	**CANES ≠ > CANRE [-]**	44.17	0.007	1	0.8
CHEES ≠ > CHERE [+]	3.819	0.048	1	0.8	**CHEES ≠ > CHERE [-]**	3.792	0.054	1	0.8
CHLES ≠ > CHLRE [+]	0.462	0.164	1	0.8	CHLES ≠ > CHLRE [-]	0.000	0.992	1	0.8
CHNES ≠ > CHNRE [+]	0.001	0.866	1	0.8	CHNES ≠ > CHNRE [-]	0.006	0.631	1	0.8
CYPES ≠ > CYPRE [+]	4.591	0.322	5	0.1	CYPES ≠ > CYPRE [-]	3.385	0.395	5	0.1
DEUES ≠ > DEURE [+]	0.105	0.372	1	0.8	DEUES ≠ > DEURE [-]	0.030	0.522	1	0.8
DNKES ≠ > DNKRE [+]	<0.001	0.959	1	0.8	DNKES ≠ > DNKRE [-]	0.011	0.559	1	0.8
EGYES ≠ > EGYRE [+]	0.005	0.669	1	0.8	EGYES ≠ > EGYRE [-]	0.027	0.416	1	0.8
ESPES ≠ > ESPRE [+]	19.23	0.025	5	0.1	**ESPES ≠ > ESPRE [-]**	31.81	<0.001	5	0.1
ESTES ≠ > ESTRE [+]	7.297	0.230	5	0.1	ESTES ≠ > ESTRE [-]	3.825	0.374	5	0.1
FINES ≠ > FINRE [+]	0.006	0.426	1	0.8	FINES ≠ > FINRE [-]	0.001	0.729	1	0.8
FRAES ≠ > FRARE [+]	0.349	0.143	1	0.8	FRAES ≠ > FRARE [-]	0.441	0.132	1	0.8
GBRES ≠ > GBRRE [+]	1.761	0.043	1	0.8	**GBRES ≠ > GBRRE [-]**	1.565	0.050	1	0.8
GRCES ≠ > GRCRE [+]	0.056	0.371	1	0.8	GRCES ≠ > GRCRE [-]	0.065	0.342	1	0.8
HKGES ≠ > HKGRE [+]	0.001	0.769	1	0.8	HKGES ≠ > HKGRE [-]	0.003	0.588	1	0.8
HRVES ≠ > HRVRE [+]	<0.001	1.000	1	0.8	HRVES ≠ > HRVRE [-]	<0.001	1.000	1	0.8

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(Table 1 Continued)

	W-statistics	Bootstrap prob.value	p	k		W-statistics	Bootstrap prob.value	p	k
HUNES ≠ > HUNRE [+]	0.011	0.602	1	0.8	HUNES ≠ > HUNRE [-]	0.003	0.781	1	0.8
INDES ≠ > INDRE [+]	<0.001	0.964	1	0.8	INDES ≠ > INDRE [-]	<0.001	0.872	1	0.8
IRLES ≠ > IRLRE [+]	0.573	0.086	1	0.8	IRLES ≠ > IRLRE [-]	0.024	0.335	1	0.8
ISRES ≠ > ISRRE [+]	0.008	0.474	1	0.8	ISRES ≠ > ISRRE [-]	0.008	0.503	1	0.8
ITAES ≠ > ITARE [+]	0.028	0.353	1	0.8	ITAES ≠ > ITARE [-]	0.001	0.785	1	0.8
JAPES ≠ > JAPRE [+]	0.021	0.439	1	0.8	JAPES ≠ > JAPRE [-]	0.058	0.323	1	0.8
JORES ≠ > JORRE [+]	5.228	0.319	5	0.1	JORES ≠ > JORRE [-]	3.283	0.597	5	0.1
KWTES ≠ > KWTRE [+]	0.003	0.721	1	0.8	KWTES ≠ > KWTRE [-]	0.008	0.612	1	0.8
LKAES ≠ > LKARE [+]	<0.001	0.981	1	0.8	LKAES ≠ > LKARE [-]	0.011	0.437	1	0.8
LTUES ≠ > LTURE [+]	0.232	0.243	1	0.8	LTUES ≠ > LTURE [-]	0.010	0.655	1	0.8
LUXES ≠ > LUXRE [+]	0.039	0.345	1	0.8	LUXES ≠ > LUXRE [-]	0.342	0.139	1	0.8
MARES ≠ > MARRE [+]	0.001	0.806	1	0.8	MARES ≠ > MARRE [-]	<0.001	0.949	1	0.8
MEXES ≠ > MEXRE [+]	0.008	0.526	1	0.8	MEXES ≠ > MEXRE [-]	0.018	0.401	1	0.8
MLTES ≠ > MLTRE [+]	74.23	<0.001	5	0.1	**MLTES ≠ > MLTRE [-]**	3.580	0.073	1	0.8
MYSES ≠ > MYSRE [+]	3.684	0.048	1	0.8	**MYSES ≠ > MYSRE [-]**	5.004	0.040	1	0.8
NLDES ≠ > NLDRE [+]	0.040	0.284	1	0.8	NLDES ≠ > NLDRE [-]	<0.001	0.849	1	0.8
NZLES ≠ > NZLRE [+]	5.820	0.292	5	0.8	**NZLES ≠ > NZLRE [-]**	12.27	0.063	5	0.1
PERES ≠ > PERRE [+]	51.53	0.002	1	0.8	**PERES ≠ > PERRE [-]**	51.53	0.001	1	0.8
PHLES ≠ > PHLRE [+]	0.036	0.605	1	0.8	PHLES ≠ > PHLRE [-]	0.047	0.585	1	0.8
POLES ≠ > POLRE [+]	<0.001	0.946	1	0.8	POLES ≠ > POLRE [-]	0.056	0.282	1	0.8
PRTES ≠ > PRTRE [+]	3.125	0.059	1	0.8	**PRTES ≠ > PRTRE [-]**	2.059	0.083	1	0.8
QATES ≠ > QATRE [+]	0.000	0.964	1	0.8	QATES ≠ > QATRE [-]	<0.001	0.962	1	0.8
ROUES ≠ > ROURE [+]	0.042	0.400	1	0.1	ROUES ≠ > ROURE [-]	0.012	0.587	1	0.8
SAUES ≠ > SAURE [+]	79.14	<0.001	5	0.8	**SAUES ≠ > SAURE [-]**	54.45	0.014	5	0.1
SGPES ≠ > SGPRE [+]	0.076	0.181	1	0.8	SGPES ≠ > SGPRE [-]	0.181	0.141	1	0.8

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(Table 1 Continued)

	W-statistics	Bootstrap prob.value	p	k		W-statistics	Bootstrap prob.value	p	k
SVKES ≠ > SVKRE [+]	0.003	0.593	1	0.8	SVKES ≠ > SVKRE [-]	0.003	0.580	1	0.8
SWEES ≠ > SWERE [+]	0.004	0.635	1	0.8	SWEES ≠ > SWERE [-]	0.015	0.474	1	0.8
THAES ≠ > THARE [+]	0.037	0.366	1	0.8	THAES ≠ > THARE [-]	<0.001	0.987	1	0.8
TURES ≠ > TURRE [+]	0.171	0.342	1	0.8	TURES ≠ > TURRE [-]	0.033	0.551	1	0.8
TWNES ≠ > TWNRE [+]	0.106	0.229	1	0.8	TWNES ≠ > TWNRE [-]	0.143	0.194	1	0.8
USAES ≠ > USARE [+]	0.001	0.884	1	0.8	USAES ≠ > USARE [-]	0.008	0.629	1	0.8
VENES ≠ > VENRE [+]	0.095	0.142	1	0.8	VENES ≠ > VENRE [-]	<0.001	0.916	1	0.8
VNMES ≠ > VNMRE [+]	0.079	0.315	1	0.8	VNMES ≠ > VNMRE [-]	0.032	0.433	1	0.8
ZAFES ≠ > ZAFRE [+]	0.030	0.378	1	0.8	ZAFES ≠ > ZAFRE [-]	<0.001	0.872	1	0.8

Table 2   FFFF-TY Results (Short-term, Days 4-32)

	W-statistics	Bootstrap prob.value	p	k		W-statistics	Bootstrap prob.value	p	k
AREES ≠ > ARERE [+]	1.160	0.207	1	0.8	AREES ≠ > ARERE [-]	0.156	0.600	1	0.8
ARGES ≠ > ARGRE [+]	1.532	0.204	1	0.8	ARGES ≠ > ARGRE [-]	0.914	0.296	1	0.8
AUSES ≠ > AUSRE [+]	29.07	<0.001	1	0.8	**AUSES ≠ > AUSRE** [-]	23.53	<0.001	1	0.8
AUTES ≠ > AUTRE [+]	57.24	<0.001	1	0.8	**AUTES ≠ > AUTRE** [-]	300.2	<0.001	1	0.8
BELES ≠ > BELRE [+]	0.876	0.286	1	0.8	BELES ≠ > BELRE [-]	0.942	0.274	1	0.8
BGRES ≠ > BGRRE [+]	1.993	0.125	1	0.8	BGRES ≠ > BGRRE [-]	0.120	0.713	1	0.8
BHRES ≠ > BHRRE [+]	0.456	0.438	1	0.8	BHRES ≠ > BHRRE [-]	0.438	0.451	1	0.8
BRAES ≠ > BRARE [+]	2.295	0.117	1	0.8	BRAES ≠ > BRARE [-]	2.318	0.106	1	0.8
CANES ≠ > CANRE [+]	0.600	0.391	1	0.8	CANES ≠ > CANRE [-]	1.609	0.181	1	0.8
CHEES ≠ > CHERE [+]	24.13	<0.001	1	0.8	**CHEES ≠ > CHERE** [-]	28.25	<0.001	1	0.8

(Continued…)

(Table 2 Continued)

	W-statistics	Bootstrap prob.value	p	k		W-statistics	Bootstrap prob.value	p	k
CHLES ≠ > CHLRE [+]	0.305	0.525	1	0.8	CHLES ≠ > CHLRE [-]	0.330	0.502	1	0.8
CHNES ≠ > CHNRE [+]	0.238	0.565	1	0.8	CHNES ≠ > CHNRE [-]	0.004	0.951	1	0.8
CYPES ≠ > CYPRE [+]	0.035	0.341	1	0.8	CYPES ≠ > CYPRE [-]	0.015	0.495	1	0.8
DEUES ≠ > DEURE [+]	1.851	0.133	1	0.8	**DEUES ≠ > DEURE [-]**	3.328	0.070	1	0.8
DNKES ≠ > DNKRE [+]	0.031	0.830	1	0.8	DNKES ≠ > DNKRE [-]	0.059	0.785	1	0.8
EGYES ≠ > EGYRE [+]	0.413	0.460	1	0.8	EGYES ≠ > EGYRE [-]	0.742	0.349	1	0.8
ESPES ≠ > ESPRE [+]	58.38	<0.001	1	0.8	**ESPES ≠ > ESPRE [-]**	49.90	<0.001	1	0.8
ESTES ≠ > ESTRE [+]	<0.001	0.983	1	0.8	ESTES ≠ > ESTRE [-]	0.114	0.731	1	0.8
FINES ≠ > FINRE [+]	0.002	0.963	1	0.8	FINES ≠ > FINRE [-]	<0.001	0.979	1	0.8
FRAES ≠ > FRARE [+]	0.332	0.505	1	0.8	FRAES ≠ > FRARE [-]	1.588	0.166	1	0.8
GBRES ≠ > GBRRE [+]	1.761	0.064	1	0.8	**GBRES ≠ > GBRRE [-]**	8.625	0.016	1	0.8
GRCES ≠ > GRCRE [+]	0.691	0.337	1	0.8	GRCES ≠ > GRCRE [-]	2.131	0.122	1	0.8
HKGES ≠ > HKGRE [+]	0.071	0.712	1	0.8	HKGES ≠ > HKGRE [-]	0.000	0.974	1	0.8
HRVES ≠ > HRVRE [+]	1.558	0.194	1	0.8	HRVES ≠ > HRVRE [-]	2.531	0.125	1	0.8
HUNES ≠ > HUNRE [+]	0.011	0.639	1	0.8	HUNES ≠ > HUNRE [-]	0.086	0.733	1	0.8
INDES ≠ > INDRE [+]	0.069	0.775	1	0.8	INDES ≠ > INDRE [-]	0.001	0.970	1	0.8
IRLES ≠ > IRLRE [+]	3.265	0.056	1	0.8	**IRLES ≠ > IRLRE [-]**	4.313	0.043	1	0.8
ISRES ≠ > ISRRE [+]	3.654	0.057	1	0.8	**ISRES ≠ > ISRRE [-]**	3.029	0.069	1	0.8
ITAES ≠ > ITARE [+]	<0.001	0.982	1	0.8	ITAES ≠ > ITARE [-]	0.593	0.349	1	0.8
JAPES ≠ > JAPRE [+]	0.021	0.460	1	0.8	JAPES ≠ > JAPRE [-]	0.264	0.551	1	0.8
JORES ≠ > JORRE [+]	0.047	0.797	1	0.8	JORES ≠ > JORRE [-]	0.020	0.875	1	0.8
KWTES ≠ > KWTRE [+]	0.147	0.656	1	0.8	KWTES ≠ > KWTRE [-]	0.115	0.702	1	0.8
LKAES ≠ > LKARE [+]	1.678	0.182	1	0.8	LKAES ≠ > LKARE [-]	1.533	0.174	1	0.8
LTUES ≠ > LTURE [+]	2.999	0.079	1	0.8	LTUES ≠ > LTURE [-]	1.955	0.139	1	0.8
LUXES ≠ > LUXRE [+]	0.109	0.675	1	0.8	LUXES ≠ > LUXRE [-]	0.002	0.956	1	0.8

(Continued…)

(Table 2 Continued)

	W-statistics	Bootstrap prob.value	p	k		W-statistics	Bootstrap prob.value	p	k
MARES ≠ > MARRE [+]	1.170	0.244	1	0.8	MARES ≠ > MARRE [-]	1.231	0.221	1	0.8
MEXES ≠ > MEXRE [+]	0.008	0.911	1	0.8	MEXES ≠ > MEXRE [-]	0.022	0.839	1	0.8
MLTES ≠ > MLTRE [+]	50.00	<0.001	1	0.8	MLTES ≠ > MLTRE [-]	2.060	0.158	1	0.8
MYSES ≠ > MYSRE [+]	36.37	<0.001	1	0.8	**MYSES ≠ > MYSRE [-]**	39.75	0.001	1	0.8
NLDES ≠ > NLDRE [+]	0.537	0.404	1	0.8	NLDES ≠ > NLDRE [-]	0.481	0.418	1	0.8
NZLES ≠ > NZLRE [+]	0.812	0.296	1	0.8	NZLES ≠ > NZLRE [-]	1.536	0.193	1	0.8
PERES ≠ > PERRE [+]	0.342	0.524	1	0.8	PERES ≠ > PERRE [-]	0.133	0.691	1	0.8
PHLES ≠ > PHLRE [+]	0.038	0.851	1	0.8	PHLES ≠ > PHLRE [-]	0.116	0.749	1	0.8
POLES ≠ > POLRE [+]	2.160	0.126	1	0.8	**POLES ≠ > POLRE [-]**	2.911	0.074	1	0.8
PRTES ≠ > PRTRE [+]	1.662	0.158	1	0.8	PRTES ≠ > PRTRE [-]	1.914	0.146	1	0.8
QATES ≠ > QATRE [+]	0.011	0.919	1	0.8	QATES ≠ > QATRE [-]	0.041	0.810	1	0.8
ROUES ≠ > ROURE [+]	1.582	0.174	1	0.8	**ROUES ≠ > ROURE [-]**	3.570	0.069	1	0.8
SAUES ≠ > SAURE [+]	2.553	0.076	1	0.8	SAUES ≠ > SAURE [-]	2.211	0.114	1	0.8
SGPES ≠ > SGPRE [+]	3.508	0.054	1	0.8	**SGPES ≠ > SGPRE [-]**	4.237	0.067	1	0.8
SVKES ≠ > SVKRE [+]	0.065	0.766	1	0.8	SVKES ≠ > SVKRE [-]	0.044	0.796	1	0.8
SWEES ≠ > SWERE [+]	0.001	0.964	1	0.8	SWEES ≠ > SWERE [-]	0.008	0.931	1	0.8
THAES ≠ > THARE [+]	<0.001	0.996	1	0.8	THAES ≠ > THARE [-]	0.017	0.899	1	0.8
TURES ≠ > TURRE [+]	0.494	0.450	1	0.8	TURES ≠ > TURRE [-]	0.059	0.786	1	0.8
TWNES ≠ > TWNRE [+]	0.002	0.954	1	0.8	TWNES ≠ > TWNRE [-]	0.017	0.856	1	0.8
USAES ≠ > USARE [+]	0.951	0.318	1	0.8	USAES ≠ > USARE [-]	1.980	0.146	1	0.8
VENES ≠ > VENRE [+]	0.009	0.883	1	0.8	VENES ≠ > VENRE [-]	0.019	0.853	1	0.8
VNMES ≠ > VNMRE [+]	0.189	0.650	1	0.8	VNMES ≠ > VNMRE [-]	0.030	0.868	1	0.8
ZAFES ≠ > ZAFRE [+]	0.029	0.850	1	0.8	ZAFES ≠ > ZAFRE [-]	0.029	0.854	1	0.8

Table 3   FFFF-TY Results (Medium-term, Days 64-128)

	W-statistics	Bootstrap prob.value	p	k		W-statistics	Bootstrap prob.value	p	k
AREES ≠ > ARERE [+]	144.9	<0.001	5	4.1	**AREES ≠ > ARERE** [-]	139.1	<0.001	5	3.7
ARGES ≠ > ARGRE [+]	116.7	<0.001	5	2.1	**ARGES ≠ > ARGRE** [-]	113.5	<0.001	5	2.1
AUSES ≠ > AUSRE [+]	109.8	<0.001	5	1.2	**AUSES ≠ > AUSRE** [-]	114.1	<0.001	5	3.4
AUTES ≠ > AUTRE [+]	125.6	<0.001	5	2.0	**AUTES ≠ > AUTRE** [-]	94.10	<0.001	5	2.0
BELES ≠ > BELRE [+]	4.421	0.475	5	4.1	BELES ≠ > BELRE [-]	3.915	0.535	5	4.1
BGRES ≠ > BGRRE [+]	51.95	<0.001	5	2.6	**BGRES ≠ > BGRRE** [-]	49.56	<0.001	5	2.6
BHRES ≠ > BHRRE [+]	21.48	0.004	5	2.0	**BHRES ≠ > BHRRE** [-]	13.08	0.033	5	2.0
BRAES ≠ > BRARE [+]	1.227	0.929	5	2.1	BRAES ≠ > BRARE [-]	1.413	0.899	5	2.1
CANES ≠ > CANRE [+]	60.21	<0.001	5	2.7	**CANES ≠ > CANRE** [-]	50.86	<0.001	5	2.7
CHEES ≠ > CHERE [+]	11.98	0.053	5	2.1	**CHEES ≠ > CHERE** [-]	10.55	0.089	5	2.1
CHLES ≠ > CHLRE [+]	35.40	<0.001	5	0.1	**CHLES ≠ > CHLRE** [-]	34.10	<0.001	5	0.1
CHNES ≠ > CHNRE [+]	90.40	<0.001	5	2.0	**CHNES ≠ > CHNRE** [-]	81.03	<0.001	5	2.0
CYPES ≠ > CYPRE [+]	127.6	<0.001	5	4.9	**CYPES ≠ > CYPRE** [-]	142.7	<0.001	5	4.7
DEUES ≠ > DEURE [+]	13.30	0.022	5	2.1	**DEUES ≠ > DEURE** [-]	15.21	0.018	5	2.1
DNKES ≠ > DNKRE [+]	78.31	<0.001	5	1.9	**DNKES ≠ > DNKRE** [-]	90.29	<0.001	5	1.9
EGYES ≠ > EGYRE [+]	5.255	0.378	5	2.0	EGYES ≠ > EGYRE [-]	5.085	0.400	5	4.1
ESPES ≠ > ESPRE [+]	121.9	<0.001	5	2.0	**ESPES ≠ > ESPRE** [-]	137.8	<0.001	5	2.0
ESTES ≠ > ESTRE [+]	55.33	<0.001	5	3.3	**ESTES ≠ > ESTRE** [-]	40.37	<0.001	5	3.3
FINES ≠ > FINRE [+]	31.94	<0.001	5	4.5	**FINES ≠ > FINRE** [-]	28.95	0.001	5	4.6
FRAES ≠ > FRARE [+]	0.918	0.902	4	2.2	FRAES ≠ > FRARE [-]	1.832	0.859	5	2.2
GBRES ≠ > GBRRE [+]	19.24	0.015	5	2.6	**GBRES ≠ > GBRRE** [-]	20.10	0.013	5	2.6
GRCES ≠ > GRCRE [+]	130.5	0.000	5	4.4	**GRCES ≠ > GRCRE** [-]	133.9	<0.001	5	2.0
HKGES ≠ > HKGRE [+]	3.179	0.472	4	2.2	HKGES ≠ > HKGRE [-]	2.543	0.565	4	2.2
HRVES ≠ > HRVRE [+]	0.000	1.000	1	0.8	**HRVES ≠ > HRVRE** [-]	26.38	0.001	5	2.1

(Continued…)

(Table 3 Continued)

	W-statistics	Bootstrap prob.value	p	k		W-statistics	Bootstrap prob.value	p	k
HUNES ≠ > HUNRE [+]	7.757	0.101	4	1.9	**HUNES ≠ > HUNRE [-]**	8.142	0.082	4	1.9
INDES ≠ > INDRE [+]	8.377	0.154	5	3.0	INDES ≠ > INDRE [-]	9.820	0.109	5	3.0
IRLES ≠ > IRLRE [+]	69.50	<0.001	5	2.9	**IRLES ≠ > IRLRE [-]**	64.17	<0.001	5	2.9
ISRES ≠ > ISRRE [+]	37.87	<0.001	5	2.1	**ISRES ≠ > ISRRE [-]**	38.09	<0.001	5	2.1
ITAES ≠ > ITARE [+]	46.12	<0.001	5	2.1	**ITAES ≠ > ITARE [-]**	50.22	<0.001	5	2.1
JAPES ≠ > JAPRE [+]	34.79	<0.001	4	2.1	**JAPES ≠ > JAPRE [-]**	29.99	<0.001	4	2.0
JORES ≠ > JORRE [+]	2.707	0.687	5	2.7	JORES ≠ > JORRE [-]	2.746	0.718	5	2.7
KWTES ≠ > KWTRE [+]	17.28	0.011	5	4.2	**KWTES ≠ > KWTRE [-]**	18.01	0.004	5	4.2
LKAES ≠ > LKARE [+]	212.8	<0.001	5	2.1	**LKAES ≠ > LKARE [-]**	226.5	<0.001	5	2.1
LTUES ≠ > LTURE [+]	31.60	<0.001	5	1.9	**LTUES ≠ > LTURE [-]**	22.45	0.006	5	1.9
LUXES ≠ > LUXRE [+]	2.248	0.650	4	2.8	LUXES ≠ > LUXRE [-]	2.485	0.729	5	2.9
MARES ≠ > MARRE [+]	2.316	0.632	4	3.8	MARES ≠ > MARRE [-]	0.345	0.991	4	2.2
MEXES ≠ > MEXRE [+]	7.643	0.126	4	2.2	**MEXES ≠ > MEXRE [-]**	9.956	0.067	4	2.3
MLTES ≠ > MLTRE [+]	56.63	<0.001	5	4.4	MLTES ≠ > MLTRE [-]	0.334	0.872	4	0.1
MYSES ≠ > MYSRE [+]	75.94	<0.001	5	2.6	**MYSES ≠ > MYSRE [-]**	64.07	<0.001	5	2.7
NLDES ≠ > NLDRE [+]	59.81	<0.001	5	2.0	**NLDES ≠ > NLDRE [-]**	61.94	<0.001	5	2.7
NZLES ≠ > NZLRE [+]	38.69	<0.001	5	2.0	**NZLES ≠ > NZLRE [-]**	41.01	<0.001	5	2.0
PERES ≠ > PERRE [+]	55.58	<0.001	5	2.5	**PERES ≠ > PERRE [-]**	98.51	<0.001	5	2.2
PHLES ≠ > PHLRE [+]	39.34	<0.001	5	1.6	**PHLES ≠ > PHLRE [-]**	28.24	<0.001	5	1.6
POLES ≠ > POLRE [+]	67.73	<0.001	5	2.0	**POLES ≠ > POLRE [-]**	64.20	<0.001	5	2.0
PRTES ≠ > PRTRE [+]	92.16	<0.001	5	2.2	**PRTES ≠ > PRTRE [-]**	72.83	<0.001	5	4.9
QATES ≠ > QATRE [+]	3.099	0.519	4	3.2	QATES ≠ > QATRE [-]	0.937	0.911	4	3.3
ROUES ≠ > ROURE [+]	58.00	<0.001	5	2.8	**ROUES ≠ > ROURE [-]**	74.10	<0.001	5	2.9
SAUES ≠ > SAURE [+]	80.66	<0.001	5	2.4	**SAUES ≠ > SAURE [-]**	81.49	<0.001	5	2.4
SGPES ≠ > SGPRE [+]	3.440	0.448	4	4.9	SGPES ≠ > SGPRE [-]	1.676	0.778	4	2.0

(Continued…)

(Table 3 Continued)

	W-statistics	Bootstrap prob.value	p	k		W-statistics	Bootstrap prob.value	p	k
SVKES ≠ > SVKRE [+]	1.779	0.756	4	2.0	SVKES ≠ > SVKRE [-]	4.260	0.377	4	2.0
SWEES ≠ > SWERE [+]	6.029	0.211	4	2.4	SWEES ≠ > SWERE [-]	6.644	0.143	4	2.4
THAES ≠ > THARE [+]	8.871	0.125	5	3.2	THAES ≠ > THARE [-]	7.575	0.195	5	3.2
TURES ≠ > TURRE [+]	1.593	0.786	4	2.0	TURES ≠ > TURRE [-]	1.593	0.806	4	2.0
TWNES ≠ > TWNRE [+]	21.89	0.014	5	2.0	**TWNES ≠ > TWNRE [-]**	4.216	0.005	5	2.0
USAES ≠ > USARE [+]	43.61	<0.001	4	2.1	**USAES ≠ > USARE [-]**	50.00	<0.001	4	2.1
VENES ≠ > VENRE [+]	3.671	0.067	1	0.8	**VENES ≠ > VENRE [-]**	6.676	0.008	1	0.8
VNMES ≠ > VNMRE [+]	12.29	0.016	4	2.1	**VNMES ≠ > VNMRE [-]**	12.16	0.026	4	2.1
ZAFES ≠ > ZAFRE [+]	26.37	0.003	4	3.4	**ZAFES ≠ > ZAFRE [-]**	56.61	<0.001	5	2.0

Table 4   FFFF-TY Results (Long-term' Days 256-512)

	W-statistics	Bootstrap prob.value	p	k		W-statistics	Bootstrap prob.value	p	k
AREES ≠ > ARERE [+]	90.91	<0.001	5	0.9	**AREES ≠ > ARERE [-]**	0.364	<0.001	5	0.9
ARGES ≠ > ARGRE [+]	141.9	<0.001	5	3.0	**ARGES ≠ > ARGRE [-]**	121.2	<0.001	5	2.9
AUSES ≠ > AUSRE [+]	186.7	<0.001	5	4.8	**AUSES ≠ > AUSRE [-]**	175.0	<0.001	5	2.9
AUTES ≠ > AUTRE [+]	142.9	<0.001	5	2.0	**AUTES ≠ > AUTRE [-]**	111.8	<0.001	5	3.0
BELES ≠ > BELRE [+]	25.52	<0.001	5	0.9	**BELES ≠ > BELRE [-]**	21.73	0.002	5	0.9
BGRES ≠ > BGRRE [+]	66.51	<0.001	5	2.0	**BGRES ≠ > BGRRE [-]**	54.62	<0.001	5	2.0
BHRES ≠ > BHRRE [+]	13.95	0.010	4	0.9	**BHRES ≠ > BHRRE [-]**	13.31	0.005	4	0.9
BRAES ≠ > BRARE [+]	18.60	0.002	5	0.9	**BRAES ≠ > BRARE [-]**	21.29	0.001	5	0.9
CANES ≠ > CANRE [+]	96.61	<0.001	5	2.0	**CANES ≠ > CANRE [-]**	91.78	<0.001	5	2.0
CHEES ≠ > CHERE [+]	82.52	<0.001	5	0.9	**CHEES ≠ > CHERE [-]**	87.48	<0.001	5	0.9

(Continued…)

(Table 4 Continued)

	W-statistics	Bootstrap prob.value	p	k		W-statistics	Bootstrap prob.value	p	k
CHLES $\neq$ > CHLRE [+]	6.596	0.241	5	2.0	CHLES $\neq$ > CHLRE [-]	9.076	0.123	5	2.0
CHNES $\neq$ > CHNRE [+]	6.438	0.180	4	1.9	CHNES $\neq$ > CHNRE [-]	7.822	0.110	4	1.9
CYPES $\neq$ > CYPRE [+]	122.8	<0.001	5	0.9	**CYPES $\neq$ > CYPRE [-]**	158.4	<0.001	5	2.1
DEUES $\neq$ > DEURE [+]	32.27	<0.001	5	0.9	**DEUES $\neq$ > DEURE [-]**	53.53	<0.001	5	0.7
DNKES $\neq$ > DNKRE [+]	87.29	<0.001	5	2.0	**DNKES $\neq$ > DNKRE [-]**	92.78	<0.001	5	2.0
EGYES $\neq$ > EGYRE [+]	29.02	<0.001	4	1.9	**EGYES $\neq$ > EGYRE [-]**	17.37	0.002	4	0.7
ESPES $\neq$ > ESPRE [+]	99.30	<0.001	5	3.1	**ESPES $\neq$ > ESPRE [-]**	97.76	<0.001	5	1.9
ESTES $\neq$ > ESTRE [+]	18.87	0.004	5	0.9	**ESTES $\neq$ > ESTRE [-]**	21.53	0.002	5	0.9
FINES $\neq$ > FINRE [+]	31.16	<0.001	5	0.9	**FINES $\neq$ > FINRE [-]**	28.32	0.001	5	0.9
FRAES $\neq$ > FRARE [+]	36.81	<0.001	5	2.0	**FRAES $\neq$ > FRARE [-]**	52.31	<0.001	5	2.1
GBRES $\neq$ > GBRRE [+]	22.50	0.002	5	2.0	**GBRES $\neq$ > GBRRE [-]**	24.09	<0.001	5	2.0
GRCES $\neq$ > GRCRE [+]	85.52	<0.001	5	2.0	**GRCES $\neq$ > GRCRE [-]**	103.1	<0.001	5	2.0
HKGES $\neq$ > HKGRE [+]	5.855	0.224	4	0.9	HKGES $\neq$ > HKGRE [-]	6.887	0.143	4	0.9
HRVES $\neq$ > HRVRE [+]	232.8	<0.001	5	2.0	**HRVES $\neq$ > HRVRE [-]**	71.23	<0.001	4	2.0
HUNES $\neq$ > HUNRE [+]	120.7	<0.001	5	2.9	**HUNES $\neq$ > HUNRE [-]**	150.5	<0.001	5	2.9
INDES $\neq$ > INDRE [+]	38.21	<0.001	5	2.0	**INDES $\neq$ > INDRE [-]**	36.16	<0.001	5	2.0
IRLES $\neq$ > IRLRE [+]	50.59	<0.001	5	0.9	**IRLES $\neq$ > IRLRE [-]**	52.81	<0.001	5	0.9
ISRES $\neq$ > ISRRE [+]	20.00	0.003	5	0.9	**ISRES $\neq$ > ISRRE [-]**	20.89	0.001	5	0.9
ITAES $\neq$ > ITARE [+]	11.01	0.058	5	0.9	**ITAES $\neq$ > ITARE [-]**	13.78	0.028	5	0.9
JAPES $\neq$ > JAPRE [+]	14.17	0.009	4	0.9	**JAPES $\neq$ > JAPRE [-]**	9.340	0.065	4	0.9
JORES $\neq$ > JORRE [+]	99.27	<0.001	5	2.0	**JORES $\neq$ > JORRE [-]**	70.52	<0.001	5	1.9
KWTES $\neq$ > KWTRE [+]	37.94	<0.001	5	2.0	**KWTES $\neq$ > KWTRE [-]**	42.25	<0.001	5	0.9
LKAES $\neq$ > LKARE [+]	111.4	<0.001	5	0.9	**LKAES $\neq$ > LKARE [-]**	112.0	<0.001	5	0.9
LTUES $\neq$ > LTURE [+]	61.31	<0.001	5	0.9	**LTUES $\neq$ > LTURE [-]**	57.78	<0.001	5	0.9
LUXES $\neq$ > LUXRE [+]	28.55	<0.001	4	2.2	**LUXES $\neq$ > LUXRE [-]**	23.58	0.001	4	0.7

(Continued…)

(Table 4 Continued)

	W-statistics	Bootstrap prob.value	p	k		W-statistics	Bootstrap prob.value	p	k
MARES ≠ > MARRE [+]	80.58	<0.001	5	0.9	**MARES ≠ > MARRE** [-]	74.56	<0.001	5	0.9
MEXES ≠ > MEXRE [+]	90.99	<0.001	5	2.0	**MEXES ≠ > MEXRE** [-]	87.51	<0.001	5	2.0
MLTES ≠ > MLTRE [+]	720.3	<0.001	5	0.9	MLTES ≠ > MLTRE [-]	3.291	0.386	4	1.9
MYSES ≠ > MYSRE [+]	78.50	<0.001	5	2.0	**MYSES ≠ > MYSRE** [-]	52.55	<0.001	5	2.0
NLDES ≠ > NLDRE [+]	18.41	0.006	5	2.0	**NLDES ≠ > NLDRE** [-]	22.70	0.001	5	2.0
NZLES ≠ > NZLRE [+]	37.83	<0.001	5	2.0	**NZLES ≠ > NZLRE** [-]	38.98	<0.001	5	2.0
PERES ≠ > PERRE [+]	23.15	<0.001	5	2.0	**PERES ≠ > PERRE** [-]	23.15	0.001	5	2.0
PHLES ≠ > PHLRE [+]	47.56	<0.001	5	2.9	**PHLES ≠ > PHLRE** [-]	51.21	<0.001	5	2.9
POLES ≠ > POLRE [+]	147.3	<0.001	5	2.0	**POLES ≠ > POLRE** [-]	148.7	<0.001	5	2.0
PRTES ≠ > PRTRE [+]	45.90	<0.001	5	0.9	**PRTES ≠ > PRTRE** [-]	69.49	<0.001	5	1.9
QATES ≠ > QATRE [+]	60.13	<0.001	5	2.0	**QATES ≠ > QATRE** [-]	54.90	<0.001	5	2.0
ROUES ≠ > ROURE [+]	41.99	<0.001	5	0.7	**ROUES ≠ > ROURE** [-]	53.33	<0.001	5	0.7
SAUES ≠ > SAURE [+]	76.88	<0.001	4	2.0	**SAUES ≠ > SAURE** [-]	132.7	<0.001	5	2.0
SGPES ≠ > SGPRE [+]	6.809	0.163	4	1.0	**SGPES ≠ > SGPRE** [-]	27.90	<0.001	4	1.9
SVKES ≠ > SVKRE [+]	50.38	<0.001	5	0.9	**SVKES ≠ > SVKRE** [-]	44.46	<0.001	5	0.9
SWEES ≠ > SWERE [+]	3.865	0.445	4	2.0	SWEES ≠ > SWERE [-]	2.986	0.577	4	2.0
THAES ≠ > THARE [+]	16.40	0.002	4	1.9	**THAES ≠ > THARE** [-]	23.37	<0.001	4	1.9
TURES ≠ > TURRE [+]	65.80	<0.001	5	2.0	**TURES ≠ > TURRE** [-]	84.00	<0.001	5	2.0
TWNES ≠ > TWNRE [+]	30.17	<0.001	4	0.9	**TWNES ≠ > TWNRE** [-]	28.21	<0.001	4	0.9
USAES ≠ > USARE [+]	34.75	<0.001	5	2.0	**USAES ≠ > USARE** [-]	26.84	<0.001	4	2.0
VENES ≠ > VENRE [+]	8.303	0.003	1	0.8	**VENES ≠ > VENRE** [-]	16.88	<0.001	1	0.8
VNMES ≠ > VNMRE [+]	7.080	0.118	4	2.0	VNMES ≠ > VNMRE [-]	5.672	0.262	4	2.0
ZAFES ≠ > ZAFRE [+]	7.883	<0.001	5	2.0	**ZAFES ≠ > ZAFRE** [-]	50.51	<0.001	5	2.0