

APPENDIX II. Number of common bulls

BSW

common bulls below diagonal
 common three quarter sib group above diagonal

	DEA	NLD	USA	CHE	CAN
DEA	0	51	148	476	61
NLD	39	0	19	35	12
USA	102	16	0	173	70
CHE	377	29	137	0	67
CAN	48	9	61	51	0

BSW

common bulls below diagonal
 common three quarter sib group above diagonal

	DEA	NLD	USA	CHE	CAN
DEA	0	51	87	395	23
NLD	41	0	21	30	8
USA	75	17	0	80	21
CHE	297	24	72	0	22
CAN	20	5	19	18	0

HOL

common bulls below diagonal
 common three quarter sib group above diagonal

	AUS	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	GBR	HUN	CHR	DEU	BEL	IRL	NZL
AUS	0	413	184	390	376	29	412	338	479	221	188	96	405	176	235	369
CAN	357	0	377	956	938	41	1295	699	2239	439	490	190	1541	271	322	498
CHE	151	268	0	305	317	15	341	241	388	172	174	187	444	188	204	207
DFS	287	641	266	0	1128	59	1253	1185	1465	565	437	144	1675	304	420	597
FRA	284	586	276	503	0	52	1379	1074	1645	630	487	147	1514	337	402	548
ISR	20	27	10	45	26	0	56	62	62	27	31	6	55	18	36	54
ITA	293	734	261	686	636	36	0	1099	2152	635	540	179	1829	314	413	601
NLD	195	319	164	561	321	49	425	0	1432	566	366	161	1637	299	431	679
USA	376	1996	288	837	748	45	1014	638	0	706	622	229	2253	300	437	759
GBR	166	253	137	227	226	9	262	182	312	0	272	90	706	187	286	296
HUN	138	383	128	286	291	23	370	188	469	144	0	79	640	163	199	243
CHR	76	157	191	124	141	4	151	138	200	81	63	0	292	110	107	95
DEU	317	894	355	949	640	42	880	854	1215	276	426	252	0	389	500	622
BEL	161	254	180	271	327	12	267	267	256	148	133	109	366	0	211	188
IRL	215	301	198	355	338	25	341	318	397	233	173	103	451	208	0	442
NZL	332	433	185	402	299	42	406	501	666	141	165	83	458	163	395	0

HOL

common bulls below diagonal
 common three quarter sib group above diagonal

	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	GBR	HUN	CHR	DEU	BEL
CAN	0	273	753	723	43	949	581	1523	367	483	184	1366	173
CHE	182	0	252	233	13	245	229	278	182	145	170	343	106
DFS	513	201	0	1124	66	1092	1245	1262	442	509	160	1876	195
FRA	415	200	422	0	62	1194	1146	1443	393	519	137	1621	220
ISR	29	7	45	28	0	62	72	74	41	44	6	76	11
ITA	594	193	608	482	39	0	1000	1613	430	560	175	1650	196
NLD	402	196	734	419	57	525	0	1270	425	476	204	1846	231
USA	1259	213	745	578	50	870	719	0	478	669	217	2092	200
GBR	378	182	414	356	28	447	425	514	0	268	96	487	116
HUN	399	105	345	298	27	404	308	543	256	0	88	732	116
CHR	148	172	124	120	3	139	170	180	85	67	0	310	85
DEU	707	260	918	588	54	804	1098	1036	496	488	260	0	261
BEL	154	94	157	194	6	143	205	155	114	94	80	200	0

HOL

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common three quarter sib group above diagonal

	AUS	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	HUN	CHR	DEU
AUS	0	284	131	278	218	15	289	286	323	125	64	277
CAN	198	0	375	921	799	37	1243	908	1958	480	190	1526
CHE	92	268	0	309	302	15	341	333	362	172	187	444
DFS	155	666	271	0	979	61	1276	1399	1366	446	146	1710
FRA	130	531	263	464	0	41	1180	1078	1246	465	145	1423
ISR	8	26	10	46	24	0	56	65	58	31	6	55
ITA	140	731	261	706	538	36	0	1311	1971	536	179	1828
NLD	176	731	306	965	589	55	800	0	1498	457	229	1985
USA	191	1795	267	826	550	43	932	999	0	580	198	2070
HUN	67	376	125	292	279	23	365	305	434	0	78	633
CHR	48	157	191	126	139	4	151	214	172	60	0	292
DEU	163	900	355	994	610	42	880	1387	1105	421	252	0

HOL

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	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	HUN	CHR	DEU
CAN	0	270	734	653	42	929	658	1337	467	184	1329
CHE	182	0	255	220	13	245	251	251	144	170	343
DFS	520	203	0	1023	68	1095	1323	1045	503	161	1878
FRA	392	184	409	0	57	1081	1081	1059	495	132	1507
ISR	29	7	45	26	0	62	73	66	44	6	76
ITA	591	193	621	438	39	0	1085	1327	552	175	1635
NLD	512	218	861	465	58	638	0	1123	494	234	1954
USA	1176	199	730	463	48	826	752	0	589	193	1718
HUN	387	104	343	288	27	399	339	514	0	86	716
CHR	148	172	126	118	3	139	202	164	65	0	309
DEU	678	259	919	536	54	789	1257	917	474	257	0

RDC

common bulls below diagonal

common three quarter sib group above diagonal

	CAN	DFS	NOR	NLD	DEU	IRL	NZL
CAN	0	96	3	3	6	2	39
DFS	95	0	92	22	48	11	88
NOR	3	66	0	13	20	41	30
NLD	3	22	13	0	11	8	7
DEU	6	43	20	11	0	4	14
IRL	2	9	41	8	4	0	6
NZL	39	73	28	7	13	6	0

RDC

common bulls below diagonal

common three quarter sib group above diagonal

	CAN	DFS	NOR	DEU
CAN	0	66	3	6
DFS	61	0	94	35
NOR	3	76	0	11
DEU	6	27	10	0