

APPENDIX II. Number of common bulls

BSW dce

common bulls below diagonal  
 common three quarter sib group above diagonal

	DEA	NLD	USA	CHE	CAN
DEA	0	42	140	444	56
NLD	31	0	15	26	10
USA	95	14	0	165	65
CHE	348	23	127	0	62
CAN	44	9	55	47	0

BSW mce

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	DEA	NLD	USA	CHE	CAN
DEA	0	45	81	365	20
NLD	37	0	20	23	6
USA	70	19	0	77	18
CHE	271	18	69	0	21
CAN	17	5	16	17	0

HOL dce

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
AUS	0	378	171	371	340	29	380	354	436	202	237	87	367	154	216
CAN	318	0	367	960	883	41	1250	770	2154	422	658	181	1484	241	326
CHE	141	255	0	303	301	15	325	287	376	164	215	172	434	172	201
DFS	275	648	263	0	1100	59	1255	1336	1473	563	636	145	1694	286	438
FRA	248	516	251	464	0	52	1325	1147	1578	608	655	136	1438	298	392
ISR	20	27	10	43	26	0	55	67	62	29	46	6	56	18	37
ITA	268	683	246	680	591	36	0	1198	2094	613	769	169	1764	284	408
NLD	236	442	228	789	450	55	589	0	1517	594	623	193	1725	310	480
USA	330	1848	274	839	672	45	952	795	0	682	918	221	2158	268	437
GBR	150	237	129	233	201	11	242	218	294	0	358	84	687	178	283
HUN	190	580	170	464	481	35	639	422	875	202	0	108	863	203	275
CHR	69	143	173	118	123	4	139	165	188	75	90	0	286	101	102
DEU	284	821	341	970	573	43	818	1018	1101	258	658	236	0	351	499
BEL	143	228	164	254	276	11	238	295	226	137	173	97	324	0	207
IRL	193	303	194	377	313	26	326	396	391	228	254	94	449	202	0

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	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	GBR	HUN	CHR	DEU	BEL
CAN	0	260	726	685	41	898	590	1457	344	557	170	1312	152
CHE	175	0	241	222	13	232	234	263	177	161	157	332	97
DFS	481	195	0	1088	63	1060	1253	1219	425	590	152	1818	172
FRA	379	195	397	0	60	1144	1140	1391	375	605	126	1562	191
ISR	28	7	42	27	0	60	74	72	41	50	5	74	8
ITA	553	184	584	449	38	0	1017	1544	409	652	160	1564	172
NLD	433	203	765	444	60	564	0	1274	422	570	211	1849	209
USA	1167	199	702	537	49	816	748	0	451	820	198	2003	175
GBR	358	179	399	342	28	427	440	489	0	299	90	462	100
HUN	495	119	437	389	35	539	408	772	293	0	99	843	124
CHR	139	159	116	111	2	126	178	163	79	74	0	299	76
DEU	644	250	865	554	53	754	1145	958	474	618	245	0	235
BEL	132	82	137	172	3	118	194	130	99	100	68	173	0

## HOL dsb

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	AUS	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	HUN	CHR	DEU
AUS	0	251	120	256	184	14	261	262	288	150	57	242
CAN	168	0	363	918	744	36	1188	892	1872	653	180	1466
CHE	83	253	0	306	285	15	324	330	351	214	172	433
DFS	141	677	267	0	952	60	1269	1456	1362	649	146	1723
FRA	105	458	236	425	0	40	1123	1034	1183	621	134	1349
ISR	7	26	10	44	24	0	54	67	57	44	6	55
ITA	124	677	244	696	486	35	0	1286	1907	763	169	1759
NLD	161	727	305	1062	543	58	794	0	1473	683	228	1936
USA	160	1648	252	828	476	43	872	979	0	860	191	1977
HUN	87	577	168	486	462	35	627	532	824	0	108	859
CHR	42	143	173	121	121	4	139	207	159	90	0	286
DEU	138	819	339	1005	539	42	810	1354	993	653	237	0

## HOL msb

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	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	HUN	CHR	DEU
CAN	0	256	702	613	40	874	626	1273	550	170	1276
CHE	175	0	242	210	12	231	240	238	159	157	330
DFS	484	197	0	986	65	1057	1283	994	585	153	1817
FRA	351	178	375	0	54	1025	1051	1004	577	123	1447
ISR	28	7	42	24	0	60	72	64	50	5	73
ITA	547	184	584	398	38	0	1044	1255	647	160	1545
NLD	473	212	816	423	58	593	0	1080	586	228	1893
USA	1080	187	684	418	47	775	705	0	737	174	1630
HUN	492	119	435	375	35	530	428	742	0	98	835
CHR	139	159	117	107	2	126	195	146	74	0	296
DEU	619	246	860	492	52	731	1189	848	602	242	0

## RDC dce

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common bulls below diagonal

common three quarter sib group above diagonal

	CAN	DFS	NOR	NLD	DEU
CAN	0	84	3	3	6
DFS	83	0	70	21	42
NOR	3	54	0	15	13
NLD	3	21	15	0	9
DEU	6	37	13	9	0

## RDC mce

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common bulls below diagonal

common three quarter sib group above diagonal

	CAN	DFS	NOR	DEU
CAN	0	59	3	5
DFS	57	0	84	31
NOR	3	67	0	8
DEU	5	24	8	0