

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	40	137	438	55
NLD	31	0	14	25	10
USA	95	13	0	165	63
CHE	345	22	127	0	60
CAN	43	9	54	45	0

BSW mce

common bulls below diagonal
 common three quarter sib group above diagonal

	DEA	NLD	USA	CHE	CAN
DEA	0	43	80	361	20
NLD	35	0	18	21	5
USA	69	17	0	75	17
CHE	267	16	68	0	20
CAN	17	4	15	16	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	364	162	358	332	27	372	342	418	191	226	78	351	144	206
CAN	300	0	359	934	861	40	1237	752	2111	409	637	174	1449	231	305
CHE	138	243	0	291	295	14	318	280	369	159	213	160	419	163	186
DFS	261	617	247	0	1088	58	1237	1310	1440	551	624	139	1661	276	419
FRA	242	499	250	449	0	51	1309	1138	1559	594	633	128	1417	283	378
ISR	19	26	10	42	25	0	54	66	61	29	45	6	55	17	37
ITA	260	673	247	668	576	35	0	1188	2076	604	758	162	1745	273	388
NLD	230	430	224	772	444	54	584	0	1497	586	608	187	1687	293	462
USA	310	1792	273	811	652	44	939	782	0	665	892	212	2110	255	413
GBR	141	221	125	219	193	11	237	212	276	0	348	79	671	168	264
HUN	185	558	170	457	470	34	630	416	849	197	0	100	843	194	264
CHR	66	137	163	113	120	4	134	163	182	71	87	0	278	96	95
DEU	270	785	321	930	556	42	801	990	1061	242	641	230	0	333	475
BEL	135	219	150	243	265	11	228	283	214	128	167	92	308	0	192
IRL	184	286	179	361	304	26	310	389	372	212	248	87	425	189	0

HOL mce

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	254	705	666	39	868	583	1419	335	536	162	1279	135
CHE	172	0	238	221	13	231	228	257	175	158	143	322	82
DFS	454	196	0	1079	61	1045	1236	1198	414	580	145	1793	153
FRA	371	195	388	0	58	1131	1133	1373	364	592	120	1537	171
ISR	26	7	41	26	0	58	73	70	41	49	5	72	7
ITA	538	188	572	442	36	0	1007	1513	399	637	154	1532	147
NLD	425	200	741	438	60	558	0	1267	417	562	206	1828	185
USA	1111	196	671	522	48	799	742	0	439	800	189	1961	151
GBR	346	180	386	331	28	415	434	474	0	293	90	452	86
HUN	476	121	426	381	34	524	401	753	282	0	93	827	110
CHR	129	144	110	106	2	120	173	154	79	70	0	288	66
DEU	622	243	837	542	52	739	1129	928	461	608	236	0	205
BEL	116	70	117	152	3	101	169	110	84	87	60	150	0

HOL dsb

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common bulls below diagonal
common three quarter sib group above diagonal
      AUS  CAN  CHE  DFS  FRA  ISR  ITA  NLD  USA  HUN  CHR  DEU
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AUS    0  240  109  245  179  14  254  251  275  142  50  229
CAN   156    0  354  892  723  35 1175  875 1828  632 173 1431
CHE    80  241    0  293  278  14  317  317  342  212 160  418
DFS   129  641  251    0  939  59 1253 1432 1328  635 140 1691
FRA   103  441  234  409    0  39 1109 1025 1166  599 126 1329
ISR    7   25   10   43   23    0   53   66   56   43   6   54
ITA   119  667  245  682  472  34    0 1270 1890  752 162 1740
NLD   151  707  288 1034  531  57  780    0 1452  667 220 1902
USA   147 1589  250  793  456  42  860  957    0  835 183 1929
HUN    85  555  168  477  451  34  618  523  798    0 100  838
CHR    40  137  163  115  118   4  134  202  153   87   0  278
DEU   128  786  319  960  524  41  792 1317  952  635 230   0
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HOL msb

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common bulls below diagonal
common three quarter sib group above diagonal
      CAN  CHE  DFS  FRA  ISR  ITA  NLD  USA  HUN  CHR  DEU
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CAN    0  250  680  596   38  844  612 1232  529 162 1245
CHE   172    0  239  208   12  230  232  232  156 143  321
DFS   455  198    0  978   63 1039 1262  974  576 145 1790
FRA   346  180  367    0   52 1014 1040  986  565 118 1424
ISR    26   7   41   23    0   58   70   62   49   5   71
ITA   532  188  572  394   36    0 1021 1221  632 154 1514
NLD   459  208  788  415   57  581    0 1060  575 219 1857
USA  1022  185  652  409   46  758  687    0  717 167 1584
HUN   473  121  424  369   34  516  417  723    0   92  819
CHR   129  144  111  104    2  120  186  139   70   0  285
DEU   596  240  833  484   51  715 1159  818  592 233   0
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RDC dce

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common bulls below diagonal
common three quarter sib group above diagonal
      CAN  DFS  NOR  NLD  DEU
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CAN    0   81   3   3   6
DFS   78    0  68  21  41
NOR    3   52   0  15  10
NLD    3   21  15   0   9
DEU    6   36  10   9   0
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RDC mce

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common bulls below diagonal
common three quarter sib group above diagonal
      CAN  DFS  NOR  DEU
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CAN    0   58   3   4
DFS   56    0  81  28
NOR    3   64   0   8
DEU    4   21   8   0
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