

Introduction

The latest routine international evaluation for **conformation traits** took place as scheduled at the Interbull Centre. Data from twenty four (24) countries were included in this evaluation.

International genetic evaluations for calving traits of bulls from Australia, Belgium, Canada, Switzerland, Czech Republic, Germany, Denmark-Finland-Sweden, Spain, France, United Kingdom, Hungary, Ireland, Italy, Japan, Korea, The Netherlands, Norway, New Zealand, Poland, South Africa, Estonia, Slovenia, Portugal and the United States of America were computed. Brown Swiss, Guernsey, Holstein, Jersey and Red Dairy Cattle breed data were included in this evaluation.

Changes in national procedures

Changes in the national genetic evaluation of conformation traits are as follows:

DFS HOL/RDC Some bulls have lost EDC' s or herds or daughters. But is is only very few animals and less than 1% even if number of animals is big.

JPN HOL Little changes in proofs caused by additional records and modification of pedigree

ZAF RDC Data since Dec 2011 has now been included for herds participating in Milk Recording at the ARC.

SVN HOL/BSW There are still some bulls losing informations (herds/daughters/EDC) from run to run, but in most cases there are changes only for one or two herds, daughters or EDC. These changes are mostly consequences of changes in data base related to the pedigree completeness as well as phenotypic data improvement.

NZL HOL/JER Base change, decrease in information due to parentage testing
RDC/BSW
GUE

EST HOL Decrease in number of daughters/herds and reliability of some bulls is due to the pedigree check of cows and due to additional data check.

CHE HOL/BSW Decrease in information due to continuous work on the raw data by herd-book
SIM organizations. Some bulls are missing in the current proof files. This is because the information changed based on which we define the publication criterion. Some bulls changed from TOP 12 to 11. This is related to changes in the database by the herdbook organizations resulting in a lower number of daughters of these bulls. Reductions in EDCs for conformation traits are due to slight changes in definition of contemporary groups (herd*3 year period, starting with the most recent year with data).

INTERBULL CHANGES COMPARED TO THE APRIL ROUTINE RUN

None

DATA AND METHOD OF ANALYSIS

Data were national genetic evaluations of AI sampled bulls with at least 10 daughters or 10 EDC (for clinical mastitis and maternal calving traits at least 50 daughters or 50 EDC, and for direct calving traits at least 50 calvings or 50 EDC) in at least 10 herds. Table 1 presents the amount of data included in this Interbull evaluation for all breeds.

National proofs were first de-regressed within country and then analysed jointly with a linear model including the effects of evaluation country, genetic group of bull and bull merit. Heritability estimates used in both the de-regression and international evaluation were as in each country's national evaluation.

Table 2 presents the date of evaluation as supplied by each country

Estimated genetic parameters and sire standard deviations are shown in APPENDIX I and the corresponding number of common bulls are listed in APPENDIX II.

SCIENTIFIC LITERATURE

The international genetic evaluation procedure is based on international work described in the following scientific publications:

International genetic evaluation computation:

Schaeffer. 1994. J. Dairy Sci. 77:2671-2678
Klei, 1998. Interbull Bulletin 17:3-7

Verification and Genetic trend validation:

Klei et al., 2002. Interbull Bulletin 29:178-182.
Boichard et al., 1995. J. Dairy Sci. 78:431-437

Weighting factors:

Fikse and Banos, 2001. J. Dairy Sci. 84:1759-1767

De-regression:

Sigurdsson and G. Banos. 1995. Acta Agric. Scand. 45:207-219
Jairath et al. 1998. J. Dairy Sci. Vol. 81:550-562

Genetic parameter estimation:

Klei and Weigel, 1998, Interbull Bulletin 17:8-14
Sullivan, 1999. Interbull Bulletin 22:146-148

Post-processing of estimated genetic correlations:

Mark et al., 2003, Interbull Bulletin 30:126-135
Jorjani et al., 2003. J. Dairy Sci. 86:677-679
<https://wiki.interbull.org/public/rG%20procedure?action=print>

Time edits

Weigel and Banos. 1997. J. Dairy Sci. 80:3425-3430

International reliability estimation

Harris and Johnson. 1998. Interbull Bulletin 17:31-36

NEXT ROUTINE INTERNATIONAL EVALUATION

Dates for the next routine evaluation can be found on
<http://www.interbull.org/ib/servicecalendar>.

NEXT TEST INTERNATIONAL EVALUATION

Dates for the next test run can be found on
<http://www.interbull.org/ib/servicecalendar>.

PUBLICATION OF INTERBULL TEST RUN

Test evaluation results are meant for review purposes only and should not be published.

^LTable 1. National evaluation data considered in the Interbull evaluation for conformation traits (August Routine Evaluation 2016). Number of records for stature by breed

Country	BSW	GUE	HOL	JER	RDC	SIM
AUS		50	3395	658	250	
BEL			1058			
CAN	182	92	10229	593	768	
CHE	2450		2814			
CZE			3483			
DEA	3140					
DEU			19757		243	
DFS			11020	1806	5776	
ESP			3141			
EST			556			
FRA	303		15667			
FRM						
FRR			215			
GBR	15	185	5086	380	270	
HUN			2268			
IRL			1406			
ISR						
ITA	1898		8598	95		
JPN			4918			
KOR			972			
LTU						
LVA						
NLD	105		13525	35	38	
NOR					2063	
NZL			5224	3424	531	
POL			7407			
PRT			1724			
SVK						
SVN	255		368			
URY						
USA	761	655	29906	3467	224	
ZAF			786	488		
HRV						
No. Records	9109	982	153523	10946	10163	
Pub. Proofs	7355	841	127514	9618	11024	0

^LAPPENDIX I. Sire standard deviations in diagonal and genetic correlations below diagonal

BSW sta

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	6.80								
CHE	0.94	12.32							
FRA	0.98	0.95	0.91						
ITA	0.96	0.94	0.95	14.93					
NLD	0.95	0.93	0.96	0.92	4.62				
USA	0.98	0.94	0.96	0.96	0.94	1.46			
DEA	0.95	0.97	0.97	0.96	0.95	0.95	11.33		
SVN	0.88	0.88	0.89	0.92	0.90	0.88	0.91	16.47	
GBR	0.95	0.93	0.95	0.94	0.93	0.95	0.90	0.87	0.81

BSW cwi

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	8.90								
CHE	0.89	10.21							
FRA	0.84	0.81	0.90						
ITA	0.82	0.85	0.86	22.28					
NLD	0.88	0.77	0.77	0.71	4.29				
USA	0.93	0.90	0.86	0.88	0.82	0.81			
DEA	0.87	0.84	0.68	0.75	0.76	0.83	12.04		
SVN	0.84	0.81	0.77	0.84	0.74	0.83	0.91	22.82	
GBR	0.91	0.85	0.83	0.73	0.89	0.82	0.83	0.80	1.39

BSW bde

	CAN	CHE	FRA	ITA	NLD	DEA	SVN	GBR	USA
CAN	6.67								
CHE	0.85	9.63							
FRA	0.77	0.87	0.89						
ITA	0.82	0.90	0.91	18.16					
NLD	0.84	0.82	0.84	0.83	4.02				
DEA	0.90	0.90	0.93	0.90	0.83	11.56			
SVN	0.80	0.80	0.80	0.89	0.79	0.83	26.04		
GBR	0.86	0.88	0.83	0.86	0.90	0.83	0.83	1.34	
USA	0.76	0.82	0.88	0.79	0.86	0.84	0.81	0.88	0.81

BSW ang

	CAN	CHE	FRA	NLD	USA	GBR
CAN	8.26					
CHE	0.69	10.96				
FRA	0.88	0.66	0.89			
NLD	0.70	0.62	0.65	3.58		
USA	0.83	0.70	0.74	0.64	0.99	
GBR	0.86	0.76	0.77	0.77	0.88	0.80

BSW ran

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	6.52								
CHE	0.93	10.64							
FRA	0.96	0.96	0.95						
ITA	0.95	0.93	0.93	22.92					
NLD	0.95	0.91	0.95	0.93	4.50				
USA	0.97	0.94	0.97	0.92	0.94	1.08			
DEA	0.96	0.95	0.95	0.94	0.91	0.96	12.11		
SVN	0.90	0.92	0.91	0.91	0.90	0.89	0.93	22.02	
GBR	0.95	0.94	0.96	0.94	0.96	0.95	0.90	0.88	2.07

BSW rwi

	CAN	CHE	FRA	NLD	USA	DEA	GBR	SVN
CAN	7.15							
CHE	0.89	9.81						
FRA	0.84	0.83	0.96					
NLD	0.92	0.86	0.86	3.89				
USA	0.88	0.82	0.86	0.80	0.69			
DEA	0.91	0.89	0.78	0.81	0.86	12.56		
GBR	0.91	0.86	0.90	0.88	0.92	0.77	1.21	
SVN	0.87	0.83	0.81	0.85	0.80	0.84	0.82	26.86

BSW rls

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	6.81								
CHE	0.91	12.98							
FRA	0.92	0.91	1.01						
ITA	0.92	0.85	0.92	23.87					
NLD	0.88	0.82	0.89	0.87	5.18				
USA	0.93	0.91	0.91	0.86	0.86	0.73			
DEA	0.90	0.92	0.93	0.89	0.81	0.91	12.05		
SVN	0.84	0.82	0.86	0.87	0.83	0.86	0.87	22.36	
GBR	0.85	0.90	0.91	0.85	0.87	0.85	0.86	0.81	1.18

BSW fan

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	8.28								
CHE	0.68	13.75							
FRA	0.74	0.72	1.04						
ITA	0.70	0.86	0.78	23.17					
NLD	0.70	0.65	0.80	0.68	5.69				
USA	0.74	0.69	0.84	0.85	0.81	0.68			
DEA	0.50	0.90	0.68	0.90	0.64	0.63	11.43		
SVN	0.59	0.84	0.70	0.85	0.66	0.66	0.92	25.72	
GBR	0.79	0.69	0.88	0.71	0.87	0.83	0.64	0.69	1.02

BSW	hde								
	CAN	CHE	FRA	ITA	NLD	DEA	SVN	USA	
CAN	8.33								
CHE	0.87	12.76							
FRA	0.85	0.80	1.14						
ITA	0.79	0.82	0.84	23.36					
NLD	0.79	0.72	0.85	0.73	5.69				
DEA	0.82	0.87	0.84	0.90	0.77	12.22			
SVN	0.73	0.77	0.82	0.90	0.75	0.87	31.45		
USA	0.84	0.74	0.86	0.89	0.82	0.76	0.82	0.68	

BSW	fua									
	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR	
CAN	7.04									
CHE	0.76	11.65								
FRA	0.72	0.73	0.97							
ITA	0.77	0.89	0.75	13.06						
NLD	0.91	0.71	0.82	0.76	4.61					
USA	0.91	0.71	0.75	0.77	0.86	1.15				
DEA	0.80	0.69	0.84	0.69	0.84	0.84	11.77			
SVN	0.64	0.72	0.74	0.71	0.75	0.65	0.84	23.72		
GBR	0.89	0.83	0.82	0.89	0.88	0.88	0.73	0.63	1.35	

BSW	ruh									
	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR	
CAN	7.02									
CHE	0.91	11.52								
FRA	0.87	0.83	0.95							
ITA	0.79	0.86	0.85	13.40						
NLD	0.80	0.83	0.86	0.88	4.57					
USA	0.87	0.83	0.86	0.89	0.87	1.02				
DEA	0.80	0.85	0.88	0.92	0.92	0.85	12.50			
SVN	0.77	0.77	0.75	0.84	0.86	0.77	0.86	19.62		
GBR	0.78	0.83	0.85	0.87	0.87	0.90	0.77	0.71	1.30	

BSW	ruw									
	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR	
CAN	7.74									
CHE	0.91	11.60								
FRA	0.88	0.88	0.88							
ITA	0.81	0.88	0.79	13.86						
NLD	0.72	0.64	0.77	0.71	4.57					
USA	0.89	0.87	0.84	0.89	0.80	0.91				
DEA	0.82	0.90	0.74	0.96	0.55	0.87	12.28			
SVN	0.75	0.75	0.69	0.81	0.70	0.74	0.78	18.22		

BSW	usu									
	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR	
CAN	7.87									
CHE	0.90	11.88								
FRA	0.83	0.90	0.93							
ITA	0.91	0.87	0.87	18.68						
NLD	0.84	0.83	0.89	0.84	4.61					
USA	0.85	0.87	0.83	0.85	0.89	0.99				
DEA	0.90	0.90	0.86	0.92	0.79	0.74	11.74			
SVN	0.78	0.76	0.65	0.78	0.67	0.66	0.76	25.27		
GBR	0.85	0.80	0.87	0.88	0.91	0.92	0.76	0.64	2.60	

BSW ude

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	6.60								
CHE	0.95	11.90							
FRA	0.94	0.95	1.00						
ITA	0.95	0.97	0.96	21.67					
NLD	0.96	0.96	0.95	0.95	4.21				
USA	0.92	0.94	0.94	0.93	0.94	1.11			
DEA	0.92	0.98	0.92	0.97	0.94	0.90	12.07		
SVN	0.88	0.94	0.89	0.95	0.92	0.87	0.93	21.95	
GBR	0.95	0.93	0.94	0.94	0.96	0.94	0.90	0.85	2.01

BSW ftp

	CAN	CHE	FRA	NLD	USA	DEA	SVN	GBR
CAN	7.08							
CHE	0.98	14.24						
FRA	0.97	0.95	0.93					
NLD	0.97	0.95	0.95	4.80				
USA	0.92	0.91	0.89	0.90	1.08			
DEA	0.96	0.99	0.95	0.95	0.90	11.43		
SVN	0.91	0.93	0.92	0.90	0.86	0.89	18.53	
GBR	0.95	0.92	0.89	0.94	0.93	0.88	0.87	1.35

BSW ftl

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	5.97								
CHE	0.89	14.76							
FRA	0.89	0.95	0.96						
ITA	0.91	0.94	0.95	19.30					
NLD	0.89	0.95	0.92	0.93	4.84				
USA	0.88	0.95	0.95	0.95	0.95	1.36			
DEA	0.83	0.97	0.96	0.96	0.92	0.96	11.50		
SVN	0.82	0.90	0.85	0.93	0.91	0.86	0.89	19.16	
GBR	0.91	0.91	0.90	0.94	0.95	0.94	0.89	0.84	1.36

BSW rtp

	CAN	CHE	FRA	ITA	NLD	DEA	SVN	USA
CAN	7.10							
CHE	0.98	14.69						
FRA	0.97	0.97	0.94					
ITA	0.91	0.89	0.91	21.46				
NLD	0.97	0.96	0.97	0.92	4.62			
DEA	0.95	0.98	0.96	0.89	0.96	11.44		
SVN	0.90	0.94	0.90	0.90	0.93	0.92	18.11	
USA	0.92	0.90	0.92	0.90	0.94	0.90	0.91	1.08

BSW ocs

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	7.93								
CHE	0.86	8.72							
FRA	0.84	0.89	1.01						
ITA	0.84	0.84	0.89	9.82					
NLD	0.78	0.76	0.81	0.78	4.00				
USA	0.87	0.77	0.85	0.85	0.83	0.55			
DEA	0.74	0.89	0.90	0.89	0.75	0.72	10.95		
SVN	0.72	0.79	0.77	0.77	0.78	0.75	0.82	23.66	
GBR	0.84	0.88	0.88	0.84	0.88	0.89	0.78	0.72	1.71

BSW ous

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	7.82								
CHE	0.90	13.04							
FRA	0.90	0.94	1.05						
ITA	0.85	0.93	0.88	13.91					
NLD	0.88	0.89	0.91	0.85	4.47				
USA	0.84	0.89	0.88	0.92	0.87	0.85			
DEA	0.86	0.95	0.93	0.93	0.89	0.87	11.89		
SVN	0.71	0.82	0.73	0.84	0.78	0.72	0.87	22.92	
GBR	0.82	0.84	0.75	0.84	0.80	0.87	0.73	0.66	1.41

BSW	ofl								
	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	7.48								
CHE	0.85	11.22							
FRA	0.59	0.69	1.34						
ITA	0.69	0.71	0.86	18.38					
NLD	0.62	0.62	0.72	0.67	4.50				
USA	0.58	0.68	0.80	0.73	0.65	0.95			
DEA	0.68	0.82	0.72	0.81	0.60	0.53	11.66		
SVN	0.75	0.84	0.68	0.77	0.67	0.68	0.87	30.36	
GBR	0.75	0.76	0.78	0.71	0.74	0.72	0.63	0.64	1.62

GUE	sta			
	CAN	GBR	USA	AUS
CAN	6.43			
GBR	0.97	1.09		
USA	0.98	0.95	2.32	
AUS	0.87	0.90	0.88	4.38

GUE	cwi			
	CAN	GBR	USA	AUS
CAN	6.72			
GBR	0.93	1.62		
USA	0.90	0.88	1.25	
AUS	0.76	0.80	0.63	7.52

GUE	bde			
	CAN	GBR	USA	AUS
CAN	5.96			
GBR	0.90	1.33		
USA	0.80	0.90	1.41	
AUS	0.80	0.78	0.77	5.18

GUE	ang			
	CAN	GBR	USA	AUS
CAN	7.80			
GBR	0.82	1.45		
USA	0.79	0.91	1.63	
AUS	0.46	0.76	0.69	6.81

GUE	ran			
	CAN	GBR	USA	AUS
CAN	6.29			
GBR	0.97	1.66		
USA	0.97	0.97	1.59	
AUS	0.93	0.96	0.91	8.39

GUE	rwi			
	CAN	GBR	USA	AUS
CAN	6.61			
GBR	0.94	1.42		
USA	0.93	0.91	1.32	
AUS	0.89	0.90	0.79	4.58

GUE	rls			
	CAN	GBR	USA	AUS
CAN	7.30			
GBR	0.76	1.79		
USA	0.89	0.72	0.91	
AUS	0.73	0.85	0.68	6.18

GUE rlr

	CAN	USA	AUS
CAN	7.43		
USA	0.86	0.97	
AUS	0.57	0.66	6.72

GUE fan

	CAN	GBR	USA	AUS
CAN	8.34			
GBR	0.63	1.65		
USA	0.80	0.71	0.77	
AUS	0.52	0.82	0.66	9.07

GUE fua

	CAN	GBR	USA	AUS
CAN	7.27			
GBR	0.94	1.53		
USA	0.91	0.89	1.56	
AUS	0.83	0.82	0.70	8.20

GUE ruh

	CAN	GBR	USA	AUS
CAN	6.49			
GBR	0.75	1.79		
USA	0.80	0.88	1.38	
AUS	0.78	0.67	0.70	6.75

GUE usu

	CAN	GBR	USA	AUS
CAN	6.90			
GBR	0.73	1.55		
USA	0.75	0.80	1.09	
AUS	0.79	0.74	0.79	7.31

GUE ude

	CAN	GBR	USA	AUS
CAN	6.13			
GBR	0.97	1.59		
USA	0.93	0.91	1.67	
AUS	0.85	0.88	0.72	4.72

GUE ftp

	CAN	GBR	USA	AUS
CAN	5.60			
GBR	0.96	1.24		
USA	0.92	0.88	1.28	
AUS	0.84	0.84	0.84	6.38

GUE ftl

	CAN	GBR	USA	AUS
CAN	4.82			
GBR	0.79	1.81		
USA	0.83	0.97	1.47	
AUS	0.65	0.93	0.90	6.15

GUE rtp

	CAN	AUS	USA
CAN	5.41		
AUS	0.77	6.40	
USA	0.93	0.92	1.28

GUE ocs

	CAN	GBR	USA	AUS
CAN	8.00			
GBR	0.87	1.53		
USA	0.78	0.83	1.08	
AUS	0.52	0.53	0.61	8.94

GUE ous

	CAN	GBR	USA	AUS
CAN	7.92			
GBR	0.88	1.43		
USA	0.86	0.78	0.75	
AUS	0.60	0.63	0.62	4.80

GUE ofl

	CAN	GBR	USA	AUS
CAN	7.49			
GBR	0.66	1.42		
USA	0.79	0.58	1.17	
AUS	0.57	0.53	0.50	9.07

HOL sta

	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	NLD	USA	HUN
POL	NZL	ZAF	JPN	CZE	EST	FRR	IRL	KOR	SVN	PRT			
AUS	4.57												
BEL	0.86	1.11											
CAN	0.88	0.95	5.72										
CHE	0.88	0.90	0.95	10.53									
DEU	0.88	0.93	0.97	0.96	12.74								
DFS	0.86	0.95	0.97	0.95	0.98	10.74							
ESP	0.87	0.94	0.98	0.96	0.98	0.97	0.84						
FRA	0.88	0.96	0.98	0.96	0.97	0.97	0.98	1.07					
GBR	0.91	0.93	0.97	0.95	0.95	0.94	0.96	0.97	1.14				
ITA	0.86	0.88	0.95	0.92	0.94	0.93	0.96	0.95	0.95	1.14			
NLD	0.86	0.94	0.96	0.96	0.98	0.98	0.96	0.97	0.94	0.92	4.51		
USA	0.89	0.91	0.98	0.94	0.95	0.94	0.96	0.95	0.97	0.95	0.93	1.21	
HUN	0.88	0.93	0.97	0.93	0.95	0.94	0.97	0.97	0.95	0.94	0.94	0.95	0.97
POL	0.84	0.87	0.92	0.89	0.93	0.93	0.94	0.93	0.90	0.93	0.92	0.91	0.93
7.39													
NZL	0.87	0.85	0.85	0.85	0.84	0.84	0.84	0.88	0.91	0.84	0.82	0.86	0.86
0.81	0.43												
ZAF	0.89	0.91	0.92	0.90	0.91	0.88	0.90	0.92	0.95	0.89	0.87	0.92	0.91
0.86	0.89	8.99											
JPN	0.87	0.95	0.98	0.96	0.96	0.97	0.97	0.98	0.96	0.95	0.96	0.97	0.96
0.92	0.86	0.92	1.25										
CZE	0.87	0.94	0.96	0.92	0.97	0.95	0.96	0.96	0.94	0.93	0.94	0.93	0.95
0.93	0.85	0.92	0.95	14.91									
EST	0.79	0.87	0.90	0.86	0.92	0.93	0.90	0.91	0.87	0.88	0.94	0.88	0.88
0.88	0.77	0.80	0.91	0.90	12.19								
FRR	0.77	0.85	0.86	0.88	0.93	0.91	0.89	0.88	0.85	0.86	0.92	0.84	0.83
0.89	0.76	0.79	0.86	0.87	0.85	0.11							
IRL	0.90	0.91	0.94	0.92	0.92	0.90	0.93	0.95	0.98	0.92	0.90	0.94	0.93
0.87	0.92	0.94	0.93	0.93	0.83	0.81	0.80						
KOR	0.83	0.85	0.84	0.82	0.82	0.81	0.84	0.84	0.84	0.80	0.83	0.82	0.84
0.78	0.83	0.84	0.85	0.83	0.76	0.74	0.82	4.67					
SVN	0.85	0.90	0.93	0.90	0.94	0.95	0.95	0.93	0.90	0.90	0.95	0.90	0.91
0.92	0.81	0.84	0.93	0.92	0.87	0.87	0.87	0.80	15.28				
PRT	0.86	0.91	0.93	0.91	0.94	0.93	0.93	0.94	0.94	0.91	0.91	0.92	0.94
0.90	0.84	0.89	0.92	0.94	0.87	0.84	0.90	0.85	0.85	0.56			

HOL cwi

	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	NLD	USA	HUN
POL	NZL	ZAF	JPN	CZE	EST	FRR	IRL	KOR	SVN	PRT			
AUS	5.10												
BEL	0.65	1.69											
CAN	0.68	0.86	6.36										
CHE	0.63	0.84	0.93	11.34									
DEU	0.67	0.85	0.88	0.84	12.30								
DFS	0.68	0.86	0.92	0.86	0.92	12.43							
ESP	0.65	0.88	0.93	0.88	0.82	0.85	1.07						
FRA	0.57	0.90	0.88	0.92	0.85	0.83	0.86	1.16					
GBR	0.78	0.86	0.91	0.87	0.90	0.89	0.85	0.83	1.26				
ITA	0.48	0.78	0.81	0.82	0.71	0.68	0.81	0.88	0.72	1.22			
NLD	0.65	0.88	0.91	0.88	0.93	0.91	0.86	0.89	0.90	0.74	4.65		
USA	0.56	0.82	0.89	0.88	0.82	0.80	0.86	0.92	0.81	0.92	0.83	1.27	
HUN	0.58	0.83	0.84	0.83	0.83	0.83	0.82	0.88	0.76	0.82	0.81	0.87	1.11
POL	0.60	0.86	0.88	0.83	0.84	0.84	0.88	0.85	0.83	0.76	0.85	0.83	0.85
13.00													
NZL	0.77	0.67	0.70	0.66	0.70	0.68	0.70	0.65	0.80	0.64	0.65	0.67	0.63
0.65	0.36												
ZAF	0.65	0.89	0.88	0.89	0.86	0.88	0.87	0.87	0.92	0.81	0.87	0.87	0.82
0.85	0.74	10.41											
JPN	0.52	0.81	0.78	0.83	0.70	0.69	0.80	0.90	0.65	0.91	0.73	0.90	0.81
0.73	0.57	0.75	1.51										
CZE	0.66	0.89	0.92	0.86	0.90	0.89	0.92	0.83	0.87	0.78	0.88	0.84	0.85
0.88	0.69	0.88	0.77	13.81									
EST	0.66	0.76	0.79	0.68	0.68	0.80	0.80	0.68	0.74	0.60	0.77	0.63	0.65
0.76	0.64	0.69	0.63	0.75	14.58								
FRR	0.59	0.60	0.63	0.64	0.62	0.63	0.66	0.59	0.66	0.55	0.72	0.62	0.58
0.62	0.63	0.65	0.55	0.64	0.59	0.06							
IRL	0.76	0.82	0.85	0.84	0.89	0.84	0.78	0.82	0.97	0.73	0.87	0.80	0.76
0.81	0.84	0.90	0.65	0.83	0.68	0.65	1.47						
KOR	0.61	0.75	0.64	0.64	0.66	0.70	0.68	0.68	0.65	0.62	0.66	0.67	0.69
0.59	0.67	0.66	0.69	0.75	0.59	0.56	0.66	2.75					
SVN	0.54	0.71	0.82	0.79	0.76	0.77	0.82	0.74	0.78	0.72	0.81	0.81	0.76
0.80	0.63	0.83	0.65	0.77	0.64	0.69	0.75	0.56	20.88				
PRT	0.65	0.83	0.82	0.80	0.86	0.83	0.82	0.84	0.79	0.75	0.84	0.83	0.85
0.86	0.62	0.81	0.77	0.84	0.66	0.64	0.80	0.68	0.75	0.29			

HOL bde

	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	NLD	USA	HUN
POL	NZL	ZAF	JPN	CZE	EST	FRR	IRL	KOR	PRT	SVN			
AUS	5.24												
BEL	0.70	1.40											
CAN	0.86	0.79	5.95										
CHE	0.71	0.90	0.85	11.11									
DEU	0.80	0.88	0.89	0.90	11.67								
DFS	0.85	0.83	0.92	0.85	0.93	11.58							
ESP	0.76	0.89	0.89	0.92	0.91	0.88	0.99						
FRA	0.59	0.92	0.68	0.89	0.80	0.71	0.85	1.08					
GBR	0.79	0.91	0.87	0.91	0.91	0.88	0.92	0.84	1.19				
ITA	0.63	0.86	0.73	0.85	0.86	0.75	0.88	0.89	0.88	1.18			
NLD	0.71	0.88	0.83	0.92	0.91	0.84	0.90	0.86	0.91	0.88	4.73		
USA	0.64	0.90	0.75	0.91	0.87	0.78	0.90	0.91	0.89	0.92	0.90	1.17	
HUN	0.69	0.91	0.77	0.86	0.88	0.84	0.90	0.85	0.87	0.86	0.84	0.91	1.09
POL	0.77	0.76	0.87	0.79	0.90	0.89	0.86	0.67	0.82	0.76	0.80	0.77	0.84
12.95													
NZL	0.78	0.67	0.68	0.66	0.70	0.70	0.68	0.64	0.68	0.65	0.61	0.66	0.67
0.70	0.36												
ZAF	0.80	0.86	0.86	0.85	0.88	0.88	0.90	0.76	0.93	0.82	0.83	0.85	0.85
0.90	0.72	10.71											
JPN	0.64	0.92	0.70	0.89	0.85	0.76	0.87	0.95	0.85	0.90	0.89	0.93	0.87
0.70	0.59	0.78	1.42										
CZE	0.82	0.83	0.92	0.81	0.94	0.92	0.87	0.68	0.87	0.78	0.83	0.78	0.87
0.91	0.69	0.89	0.75	15.18									
EST	0.72	0.82	0.85	0.78	0.84	0.84	0.86	0.76	0.84	0.78	0.82	0.83	0.84
0.82	0.64	0.80	0.77	0.85	13.90								
FRR	0.63	0.80	0.75	0.85	0.86	0.75	0.82	0.79	0.79	0.84	0.88	0.78	0.72
0.73	0.61	0.70	0.80	0.75	0.71	0.11							
IRL	0.83	0.90	0.87	0.89	0.92	0.91	0.92	0.82	0.97	0.87	0.89	0.87	0.87
0.86	0.72	0.94	0.82	0.88	0.82	0.78	1.28						
KOR	0.68	0.78	0.69	0.77	0.78	0.82	0.77	0.73	0.73	0.67	0.71	0.70	0.78
0.69	0.66	0.73	0.78	0.77	0.65	0.63	0.74	3.51					
PRT	0.74	0.83	0.78	0.78	0.89	0.87	0.83	0.70	0.83	0.79	0.79	0.82	0.86
0.86	0.69	0.86	0.78	0.86	0.77	0.70	0.87	0.72	0.32				
SVN	0.70	0.86	0.80	0.86	0.88	0.82	0.91	0.82	0.86	0.82	0.90	0.84	0.85
0.79	0.65	0.82	0.84	0.83	0.75	0.78	0.85	0.73	0.78	21.08			

HOL ang

	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	NLD	USA	HUN
POL	ZAF	JPN	CZE	EST	FRR	IRL	KOR	PRT	SVN				
AUS	6.40												
BEL	0.59	1.09											
CAN	0.66	0.77	6.38										
CHE	0.58	0.77	0.87	11.63									
DEU	0.60	0.75	0.86	0.77	12.59								
DFS	0.64	0.85	0.89	0.80	0.87	10.76							
ESP	0.68	0.77	0.88	0.77	0.74	0.84	0.74						
FRA	0.62	0.82	0.89	0.86	0.81	0.87	0.84	0.97					
GBR	0.79	0.77	0.90	0.79	0.81	0.88	0.83	0.80	1.23				
ITA	0.72	0.74	0.89	0.75	0.83	0.86	0.83	0.81	0.89	1.30			
NLD	0.72	0.60	0.71	0.67	0.56	0.64	0.76	0.64	0.77	0.70	4.56		
USA	0.70	0.77	0.94	0.80	0.85	0.89	0.85	0.85	0.91	0.88	0.66	1.38	
HUN	0.60	0.72	0.77	0.71	0.87	0.79	0.70	0.80	0.72	0.78	0.55	0.79	1.01
POL	0.54	0.67	0.72	0.73	0.65	0.72	0.78	0.76	0.68	0.75	0.67	0.70	0.59
6.81													
ZAF	0.66	0.80	0.73	0.66	0.78	0.80	0.72	0.73	0.85	0.79	0.58	0.77	0.78
0.62	8.96												
JPN	0.67	0.80	0.89	0.76	0.82	0.90	0.87	0.86	0.86	0.89	0.73	0.86	0.73
0.76	0.77	1.54											
CZE	0.60	0.77	0.82	0.73	0.80	0.84	0.73	0.77	0.74	0.81	0.58	0.78	0.81
0.62	0.68	0.76	14.34										
EST	0.48	0.66	0.62	0.58	0.64	0.69	0.61	0.59	0.59	0.60	0.56	0.58	0.71
0.55	0.68	0.62	0.68	14.88									
FRR	0.52	0.62	0.60	0.55	0.75	0.63	0.62	0.65	0.60	0.62	0.54	0.62	0.68
0.47	0.64	0.65	0.56	0.61	0.09								
IRL	0.75	0.79	0.92	0.81	0.85	0.89	0.82	0.86	0.96	0.88	0.67	0.93	0.78
0.70	0.84	0.85	0.76	0.57	0.60	0.80							
KOR	0.68	0.79	0.78	0.75	0.73	0.75	0.78	0.74	0.80	0.75	0.60	0.75	0.71
0.59	0.82	0.81	0.63	0.63	0.62	0.79	2.43						
PRT	0.60	0.71	0.77	0.61	0.76	0.78	0.74	0.72	0.79	0.81	0.56	0.79	0.71
0.61	0.71	0.77	0.70	0.61	0.65	0.74	0.79	0.25					
SVN	0.57	0.67	0.72	0.78	0.58	0.63	0.76	0.70	0.71	0.68	0.78	0.69	0.56
0.80	0.59	0.67	0.57	0.56	0.51	0.66	0.64	0.69	23.80				

HOL ran

	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	NLD	USA	HUN
POL	NZL	ZAF	JPN	CZE	EST	FRR	IRL	KOR	SVN	PRT			
AUS	5.76												
BEL	0.95	1.64											
CAN	0.93	0.96	6.00										
CHE	0.93	0.96	0.96	11.45									
DEU	0.93	0.96	0.98	0.95	11.93								
DFS	0.93	0.98	0.98	0.95	0.98	11.66							
ESP	0.94	0.97	0.97	0.96	0.98	0.97	1.14						
FRA	0.96	0.97	0.97	0.96	0.96	0.97	0.97	1.08					
GBR	0.96	0.95	0.97	0.94	0.97	0.96	0.96	0.98	1.28				
ITA	0.90	0.94	0.96	0.93	0.95	0.95	0.96	0.96	0.95	1.56			
NLD	0.93	0.96	0.97	0.94	0.98	0.97	0.97	0.96	0.97	0.95	5.04		
USA	0.92	0.95	0.97	0.94	0.96	0.96	0.96	0.96	0.97	0.95	0.96	1.46	
HUN	0.94	0.97	0.96	0.95	0.97	0.97	0.98	0.97	0.95	0.95	0.96	0.95	1.07
POL	0.91	0.95	0.96	0.95	0.96	0.95	0.96	0.95	0.93	0.95	0.95	0.92	0.96
12.45													
NZL	0.96	0.90	0.90	0.90	0.90	0.90	0.90	0.94	0.95	0.89	0.89	0.90	0.90
0.88	0.33												
ZAF	0.97	0.96	0.94	0.92	0.94	0.94	0.95	0.96	0.96	0.93	0.95	0.93	0.96
0.91	0.93	10.90											
JPN	0.90	0.95	0.98	0.95	0.96	0.97	0.97	0.95	0.93	0.95	0.95	0.95	0.96
0.96	0.86	0.91	1.49										
CZE	0.89	0.94	0.96	0.91	0.96	0.96	0.95	0.93	0.94	0.95	0.95	0.96	0.95
0.93	0.88	0.92	0.94	13.12									
EST	0.85	0.89	0.91	0.86	0.92	0.91	0.89	0.89	0.89	0.90	0.94	0.90	0.89
0.90	0.84	0.86	0.91	0.91	14.01								
FRR	0.88	0.92	0.89	0.88	0.92	0.91	0.90	0.93	0.91	0.89	0.93	0.88	0.88
0.91	0.85	0.88	0.87	0.88	0.85	0.12							
IRL	0.96	0.93	0.94	0.93	0.94	0.93	0.94	0.96	0.99	0.93	0.95	0.95	0.92
0.91	0.95	0.94	0.90	0.91	0.87	0.89	1.72						
KOR	0.87	0.89	0.89	0.89	0.90	0.89	0.91	0.90	0.87	0.88	0.89	0.87	0.90
0.90	0.87	0.90	0.91	0.87	0.83	0.83	0.85	5.40					
SVN	0.90	0.94	0.94	0.92	0.95	0.95	0.94	0.93	0.90	0.93	0.92	0.92	0.93
0.94	0.86	0.89	0.94	0.92	0.86	0.86	0.89	0.87	18.96				
PRT	0.90	0.93	0.93	0.91	0.95	0.93	0.95	0.94	0.94	0.93	0.94	0.93	0.94
0.92	0.89	0.91	0.91	0.93	0.89	0.88	0.93	0.90	0.93	0.49			

HOL rwi

	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	NLD	USA	HUN
POL	NZL	ZAF	JPN	CZE	EST	FRR	IRL	KOR	PRT	SVN			
AUS	5.20												
BEL	0.87	1.43											
CAN	0.90	0.95	5.87										
CHE	0.87	0.95	0.93	11.06									
DEU	0.85	0.92	0.95	0.88	11.31								
DFS	0.82	0.92	0.95	0.89	0.97	12.39							
ESP	0.92	0.93	0.97	0.91	0.95	0.94	1.03						
FRA	0.89	0.96	0.96	0.92	0.95	0.95	0.95	1.11					
GBR	0.86	0.90	0.94	0.87	0.90	0.91	0.91	0.94	1.17				
ITA	0.80	0.83	0.88	0.82	0.83	0.85	0.87	0.89	0.92	1.27			
NLD	0.88	0.94	0.95	0.92	0.96	0.94	0.95	0.95	0.89	0.82	4.64		
USA	0.79	0.85	0.91	0.81	0.84	0.87	0.87	0.89	0.95	0.90	0.81	1.29	
HUN	0.83	0.92	0.92	0.86	0.92	0.92	0.90	0.94	0.91	0.89	0.91	0.89	1.08
POL	0.85	0.91	0.91	0.90	0.90	0.90	0.90	0.91	0.89	0.86	0.89	0.83	0.90
11.23													
NZL	0.87	0.82	0.85	0.80	0.81	0.80	0.85	0.82	0.84	0.79	0.82	0.80	0.80
0.77	0.29												
ZAF	0.80	0.82	0.85	0.80	0.84	0.84	0.81	0.85	0.92	0.82	0.81	0.89	0.87
0.82	0.80	11.08											
JPN	0.85	0.94	0.96	0.92	0.94	0.95	0.93	0.97	0.94	0.89	0.93	0.90	0.94
0.91	0.82	0.88	1.51										
CZE	0.86	0.91	0.94	0.87	0.94	0.92	0.94	0.91	0.89	0.85	0.92	0.85	0.92
0.92	0.83	0.81	0.91	12.91									
EST	0.81	0.86	0.87	0.84	0.88	0.86	0.86	0.87	0.80	0.78	0.90	0.77	0.85
0.88	0.77	0.79	0.85	0.83	13.25								
FRR	0.84	0.89	0.89	0.85	0.91	0.89	0.90	0.91	0.88	0.85	0.92	0.82	0.85
0.88	0.79	0.80	0.88	0.88	0.83	0.17							
IRL	0.74	0.78	0.82	0.77	0.81	0.82	0.80	0.81	0.91	0.80	0.79	0.90	0.83
0.77	0.80	0.85	0.82	0.81	0.71	0.78	1.60						
KOR	0.76	0.86	0.80	0.81	0.82	0.81	0.80	0.85	0.79	0.73	0.80	0.77	0.84
0.77	0.79	0.80	0.85	0.80	0.74	0.78	0.77	3.67					
PRT	0.80	0.86	0.86	0.80	0.87	0.89	0.85	0.85	0.85	0.83	0.82	0.84	0.89
0.85	0.78	0.82	0.85	0.85	0.81	0.81	0.80	0.80	0.37				
SVN	0.82	0.88	0.91	0.86	0.90	0.88	0.92	0.87	0.87	0.77	0.90	0.83	0.84
0.90	0.78	0.81	0.87	0.90	0.83	0.84	0.79	0.77	0.81	23.22			

HOL	rls													
	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	NLD	USA	HUN	
POL	NZL	ZAF	JPN	CZE	EST	FRR	IRL	KOR	SVN	PRT				
AUS	6.39													
BEL	0.82	1.83												
CAN	0.76	0.94	6.46											
CHE	0.84	0.93	0.92	11.48										
DEU	0.78	0.93	0.95	0.90	11.80									
DFS	0.73	0.93	0.97	0.90	0.95	13.42								
ESP	0.78	0.95	0.95	0.91	0.96	0.95	1.19							
FRA	0.82	0.90	0.87	0.89	0.88	0.86	0.90	1.08						
GBR	0.87	0.87	0.85	0.89	0.87	0.82	0.85	0.91	1.30					
ITA	0.70	0.87	0.89	0.83	0.90	0.88	0.90	0.87	0.84	1.56				
NLD	0.77	0.92	0.92	0.89	0.94	0.92	0.92	0.88	0.88	0.88	5.22			
USA	0.74	0.94	0.96	0.88	0.93	0.94	0.95	0.86	0.84	0.88	0.90	1.64		
HUN	0.77	0.93	0.93	0.87	0.95	0.91	0.95	0.88	0.85	0.91	0.88	0.92	1.06	
POL	0.78	0.93	0.93	0.87	0.95	0.91	0.92	0.89	0.84	0.89	0.86	0.91	0.94	
14.04														
NZL	0.79	0.69	0.69	0.72	0.70	0.68	0.69	0.73	0.78	0.69	0.66	0.68	0.70	
0.71	0.15													
ZAF	0.89	0.82	0.79	0.82	0.76	0.72	0.80	0.84	0.89	0.76	0.79	0.78	0.78	
0.79	0.73	10.47												
JPN	0.72	0.91	0.97	0.88	0.94	0.96	0.94	0.86	0.81	0.87	0.89	0.94	0.90	
0.93	0.66	0.74	1.84											
CZE	0.75	0.92	0.91	0.81	0.94	0.91	0.90	0.85	0.84	0.86	0.88	0.90	0.92	
0.95	0.69	0.77	0.91	16.19										
EST	0.70	0.80	0.81	0.73	0.84	0.83	0.84	0.78	0.72	0.78	0.86	0.83	0.78	
0.81	0.62	0.66	0.83	0.81	14.87									
FRR	0.67	0.81	0.70	0.71	0.76	0.74	0.77	0.81	0.74	0.81	0.79	0.74	0.69	
0.73	0.62	0.67	0.69	0.71	0.69	0.13								
IRL	0.89	0.82	0.76	0.83	0.79	0.74	0.76	0.85	0.96	0.75	0.82	0.75	0.77	
0.77	0.78	0.89	0.73	0.79	0.65	0.67	1.63							
KOR	0.64	0.84	0.86	0.77	0.84	0.87	0.88	0.80	0.72	0.79	0.83	0.85	0.85	
0.83	0.68	0.71	0.87	0.83	0.72	0.66	0.65	2.45						
SVN	0.67	0.86	0.89	0.84	0.91	0.91	0.89	0.84	0.77	0.84	0.89	0.88	0.87	
0.87	0.66	0.69	0.89	0.83	0.78	0.70	0.67	0.84	23.57					
PRT	0.74	0.84	0.81	0.76	0.84	0.84	0.85	0.81	0.80	0.85	0.80	0.84	0.85	
0.82	0.65	0.72	0.81	0.82	0.71	0.73	0.72	0.79	0.81	0.25				

HOL	rlr													
	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	NLD	USA	HUN	
POL	ZAF	JPN	CZE	EST	FRR	IRL	KOR	SVN	PRT					
AUS	6.60													
BEL	0.70	1.90												
CAN	0.63	0.84	6.56											
CHE	0.80	0.85	0.76	11.96										
DEU	0.60	0.89	0.89	0.74	11.27									
DFS	0.65	0.85	0.91	0.77	0.92	12.94								
ESP	0.62	0.86	0.86	0.73	0.86	0.90	1.12							
FRA	0.74	0.90	0.84	0.87	0.84	0.83	0.86	1.08						
GBR	0.49	0.63	0.68	0.58	0.64	0.61	0.70	0.64	1.29					
ITA	0.56	0.76	0.80	0.66	0.79	0.74	0.79	0.81	0.75	1.84				
NLD	0.61	0.89	0.87	0.72	0.91	0.91	0.86	0.81	0.65	0.75	4.71			
USA	0.58	0.78	0.87	0.66	0.77	0.83	0.78	0.76	0.70	0.87	0.81	1.83		
HUN	0.65	0.87	0.79	0.81	0.83	0.83	0.79	0.86	0.54	0.80	0.82	0.81	1.06	
POL	0.69	0.84	0.86	0.74	0.82	0.84	0.77	0.82	0.53	0.78	0.78	0.82	0.79	
14.90														
ZAF	0.61	0.72	0.55	0.63	0.54	0.56	0.54	0.66	0.54	0.63	0.56	0.70	0.68	
0.67	9.04													
JPN	0.71	0.80	0.90	0.80	0.82	0.91	0.80	0.82	0.53	0.70	0.83	0.79	0.79	
0.80	0.58	1.91												
CZE	0.57	0.82	0.80	0.68	0.84	0.79	0.78	0.76	0.57	0.81	0.78	0.78	0.83	
0.86	0.66	0.75	16.13											
EST	0.57	0.66	0.62	0.57	0.73	0.79	0.71	0.67	0.48	0.58	0.73	0.59	0.64	
0.68	0.52	0.71	0.60	15.22										
FRR	0.56	0.78	0.63	0.65	0.79	0.72	0.72	0.79	0.54	0.69	0.74	0.65	0.68	
0.74	0.59	0.59	0.65	0.63	0.11									
IRL	0.48	0.57	0.63	0.53	0.56	0.55	0.63	0.58	0.78	0.72	0.61	0.62	0.52	
0.55	0.54	0.53	0.58	0.46	0.45	1.69								
KOR	0.55	0.72	0.83	0.69	0.76	0.84	0.82	0.80	0.52	0.71	0.74	0.78	0.74	
0.78	0.55	0.87	0.74	0.64	0.61	0.50	2.22							
SVN	0.52	0.83	0.81	0.73	0.82	0.83	0.75	0.80	0.54	0.73	0.87	0.81	0.83	
0.72	0.59	0.82	0.75	0.63	0.68	0.49	0.77	25.11						
PRT	0.58	0.84	0.74	0.72	0.87	0.77	0.77	0.80	0.60	0.69	0.76	0.70	0.78	
0.75	0.55	0.68	0.79	0.61	0.73	0.54	0.72	0.81	0.23					

HOL	fan												

	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	NLD	USA	HUN
POL	ZAF	JPN	CZE	EST	FRR	IRL	KOR	SVN	PRT				
AUS	5.81												
BEL	0.72	2.00											
CAN	0.66	0.84	6.58										
CHE	0.71	0.87	0.74	11.30									
DEU	0.72	0.87	0.84	0.73	12.83								
DFS	0.64	0.91	0.88	0.74	0.84	13.22							
ESP	0.71	0.77	0.87	0.66	0.84	0.83	1.05						
FRA	0.82	0.78	0.78	0.70	0.89	0.69	0.85	1.05					
GBR	0.82	0.77	0.83	0.67	0.90	0.73	0.86	0.92	1.35				
ITA	0.59	0.69	0.77	0.63	0.75	0.71	0.73	0.71	0.74	1.61			
NLD	0.74	0.79	0.76	0.66	0.90	0.76	0.80	0.85	0.88	0.70	5.22		
USA	0.69	0.77	0.88	0.65	0.83	0.79	0.85	0.81	0.85	0.86	0.81	1.63	
HUN	0.82	0.78	0.80	0.76	0.86	0.71	0.85	0.92	0.88	0.67	0.82	0.81	1.12
POL	0.66	0.76	0.82	0.73	0.72	0.74	0.75	0.75	0.75	0.73	0.65	0.80	0.80
13.25													
ZAF	0.88	0.77	0.77	0.74	0.84	0.72	0.80	0.87	0.89	0.74	0.78	0.81	0.87
0.71	11.10												
JPN	0.78	0.74	0.69	0.80	0.79	0.69	0.73	0.77	0.74	0.64	0.78	0.74	0.87
0.67	0.77	2.16											
CZE	0.74	0.83	0.84	0.71	0.91	0.81	0.84	0.86	0.84	0.69	0.83	0.82	0.92
0.75	0.79	0.85	17.45										
EST	0.69	0.69	0.66	0.60	0.75	0.68	0.81	0.78	0.71	0.61	0.80	0.71	0.79
0.63	0.65	0.77	0.80	15.66									
FRR	0.62	0.79	0.62	0.63	0.76	0.70	0.70	0.75	0.69	0.65	0.79	0.63	0.61
0.55	0.63	0.57	0.66	0.63	0.12								
IRL	0.77	0.73	0.81	0.63	0.83	0.71	0.80	0.81	0.95	0.73	0.79	0.78	0.76
0.72	0.82	0.63	0.76	0.62	0.61	1.65							
KOR	0.62	0.63	0.74	0.58	0.75	0.65	0.80	0.77	0.77	0.69	0.74	0.78	0.80
0.69	0.69	0.65	0.77	0.62	0.55	0.67	1.75						
SVN	0.47	0.58	0.66	0.54	0.72	0.71	0.71	0.61	0.64	0.67	0.63	0.66	0.61
0.58	0.63	0.58	0.68	0.56	0.54	0.64	0.61	22.88					
PRT	0.65	0.65	0.65	0.65	0.75	0.65	0.71	0.74	0.69	0.65	0.71	0.73	0.67
0.65	0.68	0.66	0.73	0.73	0.60	0.65	0.71	0.68	0.18				

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	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	NLD	USA	HUN
POL	NZL	ZAF	JPN	CZE	EST	FRR	IRL	KOR	SVN	PRT			
AUS	5.32												
BEL	0.75	1.56											
CAN	0.77	0.76	5.80										
CHE	0.80	0.78	0.90	11.62									
DEU	0.75	0.81	0.93	0.84	12.16								
DFS	0.81	0.84	0.92	0.89	0.90	11.87							
ESP	0.77	0.77	0.88	0.83	0.82	0.82	0.85						
FRA	0.79	0.91	0.89	0.86	0.90	0.92	0.83	1.07					
GBR	0.78	0.76	0.95	0.86	0.95	0.88	0.87	0.88	1.17				
ITA	0.70	0.64	0.90	0.81	0.86	0.80	0.86	0.79	0.91	1.36			
NLD	0.75	0.87	0.92	0.89	0.95	0.92	0.86	0.93	0.92	0.82	5.16		
USA	0.73	0.67	0.95	0.85	0.89	0.85	0.88	0.82	0.94	0.94	0.87	1.43	
HUN	0.80	0.74	0.91	0.87	0.87	0.89	0.82	0.86	0.87	0.82	0.87	0.83	1.11
POL	0.72	0.80	0.83	0.84	0.90	0.88	0.80	0.88	0.85	0.76	0.89	0.79	0.84
10.66													
NZL	0.78	0.79	0.81	0.76	0.83	0.78	0.79	0.84	0.85	0.77	0.84	0.82	0.72
0.75	0.39												
ZAF	0.81	0.78	0.88	0.82	0.91	0.87	0.83	0.84	0.91	0.80	0.88	0.84	0.86
0.83	0.78	10.59											
JPN	0.74	0.73	0.95	0.90	0.88	0.93	0.81	0.84	0.91	0.87	0.89	0.91	0.88
0.83	0.77	0.84	1.55										
CZE	0.79	0.84	0.90	0.85	0.94	0.91	0.80	0.91	0.91	0.79	0.92	0.81	0.93
0.91	0.75	0.91	0.87	15.21									
EST	0.63	0.72	0.78	0.70	0.81	0.83	0.67	0.80	0.76	0.69	0.84	0.72	0.79
0.80	0.68	0.70	0.81	0.81	14.45								
FRR	0.59	0.82	0.71	0.66	0.82	0.75	0.67	0.81	0.72	0.70	0.84	0.69	0.65
0.72	0.69	0.71	0.69	0.75	0.66	0.11							
IRL	0.79	0.78	0.89	0.82	0.89	0.81	0.89	0.86	0.95	0.87	0.86	0.90	0.76
0.81	0.88	0.85	0.82	0.83	0.67	0.68	1.23						
KOR	0.75	0.77	0.74	0.76	0.75	0.79	0.74	0.78	0.79	0.68	0.79	0.70	0.76
0.80	0.71	0.81	0.76	0.82	0.68	0.59	0.76	3.36					
SVN	0.54	0.75	0.53	0.57	0.57	0.58	0.66	0.62	0.53	0.49	0.64	0.50	0.56
0.62	0.63	0.62	0.56	0.58	0.55	0.60	0.55	0.59	19.25				
PRT	0.68	0.74	0.68	0.68	0.68	0.68	0.71	0.68	0.68	0.68	0.68	0.68	0.68
0.68	0.72	0.70	0.69	0.68	0.66	0.62	0.71	0.70	0.80	0.29			

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	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	NLD	USA	HUN
POL	NZL	ZAF	JPN	CZE	EST	FRR	IRL	KOR	SVN	PRT			
AUS	4.96												
BEL	0.83	1.35											
CAN	0.78	0.91	5.76										
CHE	0.77	0.89	0.92	10.85									
DEU	0.82	0.88	0.87	0.87	13.13								
DFS	0.79	0.90	0.89	0.91	0.95	11.55							
ESP	0.83	0.85	0.83	0.85	0.90	0.91	0.81						
FRA	0.78	0.89	0.90	0.88	0.91	0.93	0.88	1.09					
GBR	0.84	0.81	0.80	0.84	0.87	0.90	0.89	0.88	1.18				
ITA	0.75	0.75	0.74	0.76	0.84	0.86	0.91	0.82	0.88	1.30			
NLD	0.78	0.84	0.79	0.84	0.92	0.94	0.91	0.87	0.88	0.86	4.77		
USA	0.78	0.84	0.86	0.86	0.90	0.91	0.89	0.88	0.93	0.89	0.85	1.52	
HUN	0.84	0.78	0.83	0.83	0.88	0.85	0.90	0.85	0.85	0.85	0.84	0.84	1.01
POL	0.74	0.81	0.72	0.78	0.85	0.86	0.87	0.81	0.82	0.84	0.86	0.79	0.81
7.60													
NZL	0.84	0.80	0.78	0.83	0.83	0.85	0.83	0.83	0.90	0.82	0.82	0.88	0.85
0.77	0.38												
ZAF	0.75	0.79	0.75	0.83	0.81	0.83	0.82	0.79	0.87	0.81	0.80	0.83	0.77
0.75	0.81	9.94											
JPN	0.81	0.90	0.90	0.91	0.89	0.93	0.93	0.90	0.84	0.87	0.88	0.87	0.86
0.85	0.81	0.84	1.49										
CZE	0.81	0.87	0.88	0.82	0.89	0.85	0.79	0.85	0.76	0.74	0.77	0.80	0.86
0.74	0.78	0.80	0.84	16.26									
EST	0.71	0.76	0.74	0.70	0.75	0.77	0.74	0.73	0.73	0.74	0.76	0.76	0.74
0.74	0.70	0.71	0.75	0.74	13.30								
FRR	0.69	0.80	0.69	0.72	0.79	0.76	0.76	0.76	0.73	0.78	0.80	0.75	0.65
0.78	0.69	0.66	0.75	0.71	0.67	0.11							
IRL	0.77	0.77	0.76	0.81	0.83	0.88	0.88	0.83	0.96	0.90	0.85	0.92	0.82
0.80	0.88	0.86	0.82	0.73	0.72	0.69	1.10						
KOR	0.73	0.84	0.83	0.77	0.73	0.74	0.78	0.76	0.69	0.70	0.73	0.74	0.75
0.68	0.72	0.74	0.83	0.78	0.68	0.66	0.66	3.80					
SVN	0.68	0.84	0.75	0.72	0.81	0.78	0.75	0.78	0.67	0.66	0.77	0.70	0.71
0.71	0.70	0.71	0.74	0.75	0.73	0.70	0.64	0.74	17.34				
PRT	0.77	0.78	0.75	0.75	0.80	0.81	0.85	0.80	0.85	0.83	0.82	0.81	0.82
0.81	0.74	0.76	0.78	0.75	0.74	0.72	0.80	0.75	0.74	0.32			

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	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	NLD	USA	HUN
POL	NZL	ZAF	JPN	CZE	EST	FRR	IRL	KOR	SVN	PRT			
AUS	5.95												
BEL	0.69	1.40											
CAN	0.82	0.77	5.39										
CHE	0.75	0.89	0.90	11.88									
DEU	0.75	0.79	0.90	0.91	11.59								
DFS	0.71	0.87	0.82	0.90	0.81	11.80							
ESP	0.80	0.72	0.87	0.80	0.79	0.80	0.80						
FRA	0.75	0.87	0.79	0.86	0.73	0.91	0.83	1.08					
GBR	0.83	0.69	0.85	0.80	0.75	0.84	0.92	0.89	1.23				
ITA	0.76	0.72	0.85	0.79	0.79	0.80	0.91	0.81	0.88	1.45			
NLD	0.79	0.81	0.84	0.86	0.78	0.90	0.89	0.92	0.92	0.82	4.60		
USA	0.79	0.72	0.85	0.79	0.74	0.86	0.91	0.89	0.94	0.90	0.90	1.50	
HUN	0.75	0.91	0.83	0.93	0.84	0.92	0.79	0.91	0.80	0.80	0.86	0.82	1.08
POL	0.75	0.80	0.84	0.88	0.90	0.83	0.78	0.74	0.72	0.81	0.75	0.76	0.85
10.24													
NZL	0.67	0.56	0.63	0.59	0.59	0.57	0.67	0.58	0.63	0.67	0.59	0.64	0.58
0.60	0.37												
ZAF	0.85	0.68	0.72	0.70	0.64	0.78	0.81	0.80	0.86	0.78	0.82	0.86	0.77
0.70	0.66	10.38											
JPN	0.63	0.94	0.70	0.84	0.68	0.83	0.62	0.88	0.66	0.66	0.78	0.68	0.88
0.70	0.46	0.64	1.69										
CZE	0.63	0.87	0.79	0.87	0.89	0.79	0.66	0.71	0.63	0.72	0.69	0.65	0.88
0.87	0.56	0.63	0.76	14.11									
EST	0.67	0.84	0.78	0.79	0.84	0.80	0.70	0.76	0.65	0.68	0.79	0.68	0.82
0.81	0.53	0.61	0.79	0.81	14.85								
FRR	0.61	0.69	0.70	0.71	0.67	0.75	0.80	0.73	0.73	0.73	0.85	0.71	0.63
0.63	0.55	0.63	0.60	0.58	0.63	0.11							
IRL	0.85	0.73	0.88	0.83	0.79	0.79	0.91	0.84	0.95	0.90	0.87	0.90	0.80
0.77	0.71	0.82	0.67	0.71	0.67	0.68	1.14						
KOR	0.73	0.75	0.85	0.80	0.82	0.72	0.76	0.67	0.64	0.79	0.66	0.72	0.78
0.83	0.59	0.65	0.68	0.75	0.67	0.58	0.70	2.98					
SVN	0.59	0.72	0.75	0.74	0.86	0.66	0.65	0.56	0.56	0.64	0.62	0.57	0.70
0.80	0.57	0.59	0.61	0.85	0.74	0.56	0.64	0.69	21.26				
PRT	0.71	0.69	0.76	0.73	0.83	0.70	0.80	0.65	0.76	0.82	0.73	0.71	0.72
0.78	0.62	0.64	0.59	0.74	0.69	0.63	0.79	0.73	0.73	0.32			

HOL	ude													
	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	NLD	USA	HUN	
POL	ZAF	JPN	CZE	EST	FRR	IRL	KOR	SVN	PRT					
AUS	4.13													
BEL	0.94	1.45												
CAN	0.94	0.96	5.77											
CHE	0.96	0.95	0.95	11.46										
DEU	0.94	0.96	0.98	0.96	12.98									
DFS	0.93	0.95	0.97	0.96	0.97	11.53								
ESP	0.95	0.96	0.97	0.96	0.96	0.97	1.06							
FRA	0.96	0.96	0.97	0.97	0.98	0.97	0.97	1.10						
GBR	0.95	0.96	0.97	0.95	0.96	0.95	0.96	0.96	1.17					
ITA	0.94	0.94	0.97	0.95	0.96	0.95	0.98	0.97	0.95	1.38				
NLD	0.94	0.96	0.97	0.96	0.98	0.97	0.96	0.98	0.97	0.95	5.10			
USA	0.94	0.95	0.97	0.96	0.96	0.97	0.97	0.98	0.97	0.97	0.97	1.49		
HUN	0.93	0.95	0.97	0.96	0.96	0.97	0.97	0.96	0.95	0.97	0.95	0.96	1.19	
POL	0.94	0.95	0.95	0.96	0.96	0.95	0.95	0.96	0.94	0.95	0.95	0.95	0.95	0.95
9.68														
ZAF	0.95	0.95	0.97	0.93	0.96	0.94	0.95	0.96	0.98	0.94	0.96	0.97	0.95	
0.94	11.55													
JPN	0.95	0.94	0.98	0.96	0.95	0.97	0.97	0.97	0.95	0.96	0.96	0.97	0.96	
0.95	0.95	1.31												
CZE	0.93	0.96	0.98	0.94	0.98	0.95	0.96	0.95	0.95	0.95	0.95	0.94	0.97	
0.95	0.96	0.94	14.76											
EST	0.89	0.91	0.94	0.89	0.93	0.94	0.93	0.91	0.92	0.91	0.94	0.94	0.94	
0.94	0.90	0.92	0.93	13.36										
FRR	0.88	0.93	0.90	0.92	0.94	0.92	0.93	0.94	0.90	0.91	0.95	0.90	0.88	
0.91	0.87	0.90	0.89	0.87	0.10									
IRL	0.95	0.95	0.94	0.94	0.93	0.92	0.94	0.94	0.99	0.92	0.94	0.95	0.92	
0.92	0.96	0.93	0.92	0.88	0.87	1.33								
KOR	0.89	0.87	0.89	0.90	0.88	0.89	0.91	0.90	0.88	0.90	0.89	0.90	0.89	
0.88	0.90	0.93	0.87	0.83	0.85	0.87	4.90							
SVN	0.85	0.89	0.89	0.89	0.92	0.90	0.90	0.89	0.87	0.89	0.90	0.89	0.90	
0.91	0.89	0.88	0.92	0.87	0.85	0.85	0.82	16.89						
PRT	0.90	0.93	0.92	0.90	0.93	0.92	0.92	0.90	0.90	0.92	0.91	0.91	0.93	
0.90	0.92	0.91	0.94	0.89	0.87	0.90	0.90	0.89	0.43					

HOL	ftp													
	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	NLD	USA	HUN	
POL	NZL	ZAF	JPN	CZE	EST	FRR	IRL	KOR	SVN	PRT				
AUS	5.42													
BEL	0.94	1.41												
CAN	0.96	0.95	5.99											
CHE	0.97	0.97	0.97	11.80										
DEU	0.95	0.93	0.98	0.96	13.69									
DFS	0.92	0.95	0.97	0.95	0.95	10.80								
ESP	0.95	0.92	0.97	0.95	0.97	0.93	0.95							
FRA	0.94	0.98	0.96	0.97	0.95	0.96	0.92	1.12						
GBR	0.95	0.90	0.97	0.94	0.96	0.93	0.97	0.91	1.22					
ITA	0.83	0.82	0.88	0.84	0.85	0.86	0.86	0.83	0.88	1.23				
NLD	0.95	0.96	0.98	0.96	0.98	0.96	0.94	0.96	0.95	0.85	4.77			
USA	0.89	0.86	0.93	0.88	0.92	0.93	0.93	0.88	0.95	0.89	0.91	1.40		
HUN	0.97	0.93	0.97	0.95	0.96	0.92	0.97	0.94	0.94	0.86	0.94	0.90	1.01	
POL	0.91	0.88	0.94	0.91	0.95	0.91	0.94	0.90	0.94	0.86	0.93	0.91	0.93	
9.53														
NZL	0.94	0.89	0.92	0.90	0.89	0.88	0.89	0.91	0.91	0.84	0.89	0.88	0.90	
0.85	0.31													
ZAF	0.95	0.92	0.95	0.94	0.94	0.92	0.94	0.93	0.94	0.87	0.94	0.90	0.96	
0.89	0.90	10.25												
JPN	0.95	0.98	0.97	0.97	0.95	0.96	0.92	0.98	0.91	0.83	0.96	0.86	0.94	
0.91	0.89	0.93	1.52											
CZE	0.95	0.94	0.96	0.95	0.95	0.92	0.96	0.93	0.92	0.83	0.95	0.88	0.97	
0.92	0.90	0.94	0.94	12.76										
EST	0.87	0.89	0.92	0.86	0.90	0.88	0.89	0.89	0.87	0.81	0.93	0.84	0.89	
0.89	0.81	0.85	0.91	0.90	12.89									
FRR	0.85	0.91	0.91	0.92	0.92	0.91	0.89	0.92	0.86	0.82	0.93	0.84	0.86	
0.87	0.81	0.85	0.89	0.88	0.83	0.10								
IRL	0.95	0.88	0.96	0.93	0.95	0.92	0.94	0.90	0.99	0.86	0.93	0.92	0.92	
0.91	0.92	0.92	0.90	0.90	0.84	0.83	1.39							
KOR	0.92	0.93	0.92	0.93	0.91	0.92	0.92	0.92	0.88	0.82	0.90	0.85	0.94	
0.87	0.85	0.92	0.93	0.92	0.83	0.82	0.86	3.61						
SVN	0.91	0.90	0.94	0.92	0.95	0.90	0.95	0.90	0.93	0.83	0.94	0.89	0.92	
0.92	0.86	0.88	0.91	0.90	0.87	0.87	0.91	0.87	17.84					
PRT	0.91	0.89	0.93	0.91	0.94	0.89	0.93	0.87	0.94	0.85	0.90	0.89	0.93	
0.93	0.83	0.89	0.89	0.92	0.87	0.84	0.92	0.89	0.91	0.44				

HOL	ftl												

	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	NLD	USA	HUN
POL	ZAF	JPN	CZE	EST	FRR	IRL	KOR	SVN	PRT				
AUS	5.87												
BEL	0.95	1.52											
CAN	0.95	0.92	5.69										
CHE	0.93	0.95	0.91	11.48									
DEU	0.96	0.98	0.94	0.95	13.51								
DFS	0.96	0.97	0.94	0.97	0.98	10.88							
ESP	0.95	0.98	0.94	0.95	0.98	0.97	1.11						
FRA	0.95	0.90	0.98	0.89	0.93	0.92	0.92	1.07					
GBR	0.96	0.97	0.96	0.94	0.98	0.96	0.97	0.94	1.33				
ITA	0.91	0.92	0.92	0.90	0.93	0.93	0.93	0.91	0.96	1.61			
NLD	0.95	0.98	0.93	0.96	0.98	0.98	0.98	0.91	0.97	0.92	5.00		
USA	0.95	0.94	0.96	0.93	0.96	0.96	0.96	0.94	0.97	0.95	0.95	1.47	
HUN	0.93	0.96	0.90	0.96	0.95	0.96	0.96	0.88	0.93	0.89	0.96	0.91	1.19
POL	0.96	0.96	0.92	0.95	0.97	0.97	0.96	0.90	0.96	0.91	0.96	0.94	0.96
11.97													
ZAF	0.94	0.94	0.90	0.92	0.93	0.94	0.95	0.90	0.93	0.91	0.94	0.92	0.94
0.95	10.70												
JPN	0.96	0.98	0.94	0.96	0.98	0.98	0.98	0.92	0.97	0.94	0.98	0.97	0.96
0.97	0.96	1.45											
CZE	0.94	0.96	0.92	0.96	0.97	0.97	0.97	0.90	0.96	0.91	0.97	0.95	0.96
0.98	0.94	0.97	14.22										
EST	0.91	0.91	0.90	0.91	0.95	0.95	0.93	0.89	0.92	0.88	0.94	0.90	0.94
0.95	0.88	0.94	0.94	14.00									
FRR	0.89	0.94	0.90	0.93	0.95	0.93	0.93	0.88	0.93	0.90	0.93	0.91	0.90
0.92	0.88	0.93	0.92	0.88	0.13								
IRL	0.96	0.96	0.95	0.92	0.98	0.95	0.96	0.94	0.99	0.94	0.96	0.96	0.91
0.95	0.92	0.96	0.96	0.92	0.91	1.77							
KOR	0.92	0.94	0.89	0.93	0.94	0.94	0.95	0.87	0.93	0.88	0.95	0.92	0.93
0.93	0.91	0.96	0.94	0.88	0.88	0.90	4.95						
SVN	0.91	0.94	0.89	0.94	0.95	0.95	0.95	0.87	0.94	0.90	0.95	0.92	0.93
0.94	0.89	0.94	0.94	0.90	0.89	0.93	0.91	18.34					
PRT	0.90	0.94	0.91	0.92	0.96	0.95	0.94	0.90	0.94	0.90	0.95	0.94	0.93
0.96	0.90	0.94	0.96	0.91	0.91	0.94	0.92	0.90	0.36				

HOL	rtp												

	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	NLD	USA	POL
NZL	JPN	CZE	EST	FRR	IRL	KOR	SVN	PRT	ZAF				
AUS	5.60												
BEL	0.96	1.41											
CAN	0.96	0.96	6.06										
CHE	0.96	0.96	0.98	11.88									
DEU	0.94	0.96	0.97	0.97	13.77								
DFS	0.93	0.94	0.96	0.95	0.97	10.94							
ESP	0.94	0.96	0.97	0.96	0.98	0.97	0.91						
FRA	0.96	0.96	0.98	0.97	0.97	0.97	0.98	1.06					
GBR	0.96	0.95	0.97	0.96	0.97	0.97	0.97	0.98	1.30				
ITA	0.87	0.89	0.89	0.89	0.94	0.93	0.93	0.92	0.92	1.27			
NLD	0.95	0.95	0.98	0.97	0.98	0.98	0.98	0.98	0.98	0.92	4.80		
USA	0.92	0.93	0.95	0.92	0.95	0.97	0.95	0.94	0.97	0.91	0.95	1.62	
POL	0.89	0.93	0.93	0.92	0.97	0.95	0.96	0.95	0.94	0.92	0.95	0.92	10.57
NZL	0.96	0.95	0.95	0.94	0.94	0.92	0.93	0.95	0.95	0.89	0.94	0.91	0.92
0.45													
JPN	0.96	0.97	0.98	0.97	0.97	0.97	0.98	0.98	0.97	0.91	0.98	0.95	0.95
0.94	1.56												
CZE	0.91	0.95	0.94	0.93	0.97	0.95	0.95	0.95	0.95	0.90	0.93	0.93	0.96
0.93	0.94	13.88											
EST	0.90	0.91	0.92	0.90	0.95	0.92	0.93	0.92	0.92	0.89	0.94	0.90	0.93
0.89	0.92	0.92	13.16										
FRR	0.83	0.85	0.84	0.84	0.84	0.83	0.86	0.85	0.83	0.80	0.85	0.82	0.80
0.82	0.83	0.81	0.80	0.10									
IRL	0.94	0.94	0.95	0.95	0.94	0.94	0.94	0.96	0.97	0.89	0.95	0.93	0.90
0.94	0.95	0.92	0.87	0.81	1.31								
KOR	0.88	0.89	0.92	0.91	0.93	0.93	0.95	0.93	0.91	0.93	0.92	0.92	0.92
0.89	0.94	0.89	0.84	0.77	0.90	2.52							
SVN	0.89	0.91	0.92	0.92	0.94	0.90	0.95	0.92	0.91	0.88	0.93	0.88	0.92
0.91	0.91	0.91	0.87	0.81	0.89	0.88	15.92						
PRT	0.89	0.92	0.94	0.92	0.94	0.93	0.94	0.93	0.94	0.89	0.91	0.93	0.94
0.89	0.92	0.92	0.88	0.81	0.90	0.90	0.90	0.46					
ZAF	0.92	0.89	0.90	0.88	0.89	0.89	0.89	0.89	0.89	0.89	0.88	0.89	0.88
0.88	0.89	0.88	0.84	0.80	0.88	0.88	0.86	0.89	7.29				

HOL	ocs													
	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	NLD	USA	HUN	
	NZL	JPN	CZE	EST	FRR	IRL	KOR	SVN	PRT					
POL														
AUS	6.41													
BEL	0.58	1.21												
CAN	0.57	0.73	5.49											
CHE	0.55	0.78	0.92	11.78										
DEU	0.62	0.67	0.86	0.83	12.97									
DFS	0.64	0.69	0.80	0.79	0.88	10.30								
ESP	0.66	0.75	0.79	0.79	0.86	0.86	0.80							
FRA	0.57	0.74	0.80	0.86	0.85	0.86	0.88	1.12						
GBR	0.68	0.73	0.86	0.89	0.93	0.89	0.87	0.90	0.93					
ITA	0.58	0.68	0.82	0.81	0.83	0.81	0.86	0.87	0.85	0.81				
NLD	0.62	0.74	0.79	0.81	0.88	0.89	0.87	0.85	0.90	0.80	3.03			
USA	0.62	0.70	0.86	0.85	0.89	0.88	0.86	0.86	0.91	0.85	0.86	0.90		
HUN	0.54	0.73	0.82	0.81	0.84	0.75	0.77	0.82	0.83	0.80	0.76	0.80	1.12	
POL	0.48	0.66	0.63	0.67	0.64	0.69	0.75	0.71	0.69	0.69	0.72	0.69	0.69	
7.08														
NZL	0.79	0.55	0.64	0.60	0.64	0.58	0.63	0.57	0.70	0.55	0.65	0.67	0.59	
0.51	0.30													
JPN	0.54	0.79	0.88	0.92	0.79	0.80	0.80	0.85	0.83	0.83	0.80	0.85	0.74	
0.73	0.56	0.70												
CZE	0.64	0.69	0.84	0.78	0.88	0.79	0.78	0.76	0.83	0.76	0.78	0.80	0.85	
0.63	0.71	0.72	15.44											
EST	0.51	0.66	0.75	0.64	0.78	0.69	0.73	0.67	0.70	0.68	0.74	0.69	0.70	
0.55	0.56	0.70	0.76	13.32										
FRR	0.58	0.75	0.66	0.72	0.78	0.76	0.79	0.76	0.78	0.77	0.82	0.71	0.69	
0.75	0.58	0.73	0.70	0.65	0.10									
IRL	0.63	0.51	0.72	0.68	0.76	0.68	0.68	0.63	0.77	0.68	0.63	0.68	0.70	
0.46	0.60	0.57	0.72	0.56	0.57	1.26								
KOR	0.52	0.60	0.62	0.66	0.63	0.62	0.74	0.65	0.63	0.68	0.69	0.64	0.64	
0.66	0.51	0.69	0.56	0.61	0.60	0.49	7.16							
SVN	0.46	0.62	0.63	0.64	0.70	0.66	0.73	0.71	0.66	0.69	0.71	0.68	0.67	
0.71	0.53	0.71	0.65	0.60	0.64	0.47	0.66	19.53						
PRT	0.57	0.74	0.75	0.75	0.78	0.80	0.77	0.76	0.80	0.76	0.77	0.75	0.76	
0.75	0.51	0.73	0.75	0.72	0.78	0.59	0.73	0.72	0.59					

HOL	ous													
	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	NLD	USA	HUN	
	NZL	JPN	CZE	EST	FRR	IRL	SVN	PRT						
POL														
AUS	4.28													
BEL	0.56	1.31												
CAN	0.65	0.78	5.39											
CHE	0.68	0.86	0.95	11.72										
DEU	0.65	0.80	0.90	0.90	13.52									
DFS	0.46	0.82	0.85	0.90	0.88	12.80								
ESP	0.70	0.70	0.84	0.85	0.84	0.75	0.88							
FRA	0.55	0.82	0.86	0.92	0.89	0.94	0.81	1.03						
GBR	0.79	0.67	0.84	0.85	0.86	0.69	0.89	0.76	1.10					
ITA	0.64	0.72	0.89	0.90	0.86	0.84	0.92	0.88	0.85	1.03				
NLD	0.60	0.84	0.89	0.93	0.90	0.90	0.84	0.93	0.81	0.86	4.84			
USA	0.68	0.77	0.93	0.94	0.89	0.86	0.90	0.89	0.89	0.94	0.90	1.15		
HUN	0.59	0.82	0.86	0.88	0.88	0.85	0.82	0.84	0.76	0.84	0.80	0.83	1.28	
POL	0.66	0.77	0.71	0.78	0.78	0.70	0.70	0.71	0.76	0.70	0.72	0.72	0.69	
7.95														
NZL	0.79	0.76	0.83	0.88	0.81	0.76	0.75	0.82	0.82	0.76	0.82	0.85	0.77	
0.73	0.44													
JPN	0.71	0.82	0.93	0.92	0.88	0.79	0.81	0.83	0.87	0.87	0.86	0.93	0.78	
0.80	0.82	0.76												
CZE	0.58	0.83	0.89	0.90	0.93	0.91	0.80	0.91	0.76	0.86	0.88	0.85	0.91	
0.76	0.79	0.83	17.33											
EST	0.51	0.75	0.80	0.79	0.83	0.87	0.74	0.86	0.67	0.79	0.86	0.82	0.79	
0.67	0.71	0.76	0.84	13.23										
FRR	0.55	0.82	0.71	0.78	0.85	0.75	0.79	0.77	0.74	0.74	0.83	0.75	0.72	
0.70	0.65	0.77	0.78	0.68	0.10									
IRL	0.83	0.62	0.77	0.79	0.79	0.59	0.85	0.68	0.96	0.78	0.71	0.83	0.73	
0.75	0.82	0.80	0.70	0.57	0.64	1.03								
SVN	0.48	0.61	0.59	0.61	0.59	0.54	0.68	0.55	0.56	0.56	0.65	0.58	0.57	
0.64	0.52	0.64	0.58	0.59	0.60	0.50	20.16							
PRT	0.72	0.70	0.80	0.81	0.82	0.73	0.81	0.77	0.81	0.79	0.80	0.81	0.76	
0.73	0.74	0.80	0.80	0.71	0.74	0.75	0.69	0.98						

HOL bcs

	BEL	CHE	DEU	DFS	FRA	GBR	ITA	NLD	USA	CZE	FRR	JPN	IRL
KOR	CAN	PRT	ESP										
BEL	1.09												
CHE	0.73	11.61											
DEU	0.75	0.90	13.10										
DFS	0.76	0.88	0.95	12.18									
FRA	0.75	0.93	0.93	0.95	1.01								
GBR	0.75	0.92	0.90	0.88	0.93	1.23							
ITA	0.74	0.90	0.95	0.94	0.96	0.90	6.72						
NLD	0.75	0.93	0.95	0.95	0.94	0.90	0.93	4.86					
USA	0.79	0.72	0.74	0.76	0.76	0.75	0.75	0.74	1.38				
CZE	0.76	0.86	0.95	0.94	0.91	0.88	0.94	0.93	0.72	12.60			
FRR	0.73	0.87	0.83	0.78	0.83	0.86	0.79	0.86	0.67	0.78	0.09		
JPN	0.76	0.92	0.95	0.96	0.96	0.92	0.94	0.94	0.77	0.93	0.82	1.82	
IRL	0.70	0.88	0.83	0.83	0.89	0.95	0.82	0.87	0.69	0.81	0.82	0.87	1.09
KOR	0.68	0.77	0.79	0.81	0.83	0.78	0.83	0.76	0.69	0.77	0.72	0.83	0.72
2.59													
CAN	0.76	0.92	0.93	0.93	0.94	0.96	0.93	0.94	0.76	0.92	0.83	0.97	0.91
0.80	6.05												
PRT	0.76	0.82	0.88	0.85	0.87	0.84	0.86	0.88	0.75	0.86	0.84	0.86	0.78
0.81	0.87	0.34											
ESP	0.78	0.89	0.94	0.94	0.95	0.94	0.93	0.93	0.75	0.93	0.86	0.95	0.88
0.86	0.95	0.88	1.11										

JER sta

	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD
AUS	6.23								
CAN	0.86	6.31							
DFS	0.87	0.96	11.91						
GBR	0.88	0.95	0.94	1.03					
ITA	0.88	0.94	0.91	0.95	1.21				
NZL	0.88	0.86	0.87	0.93	0.90	0.37			
USA	0.89	0.97	0.95	0.97	0.93	0.89	1.27		
ZAF	0.86	0.87	0.86	0.93	0.89	0.94	0.90	9.13	
NLD	0.88	0.96	0.97	0.94	0.92	0.85	0.93	0.87	4.94

JER cwi

	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD
AUS	5.70								
CAN	0.68	6.54							
DFS	0.81	0.83	15.44						
GBR	0.77	0.89	0.81	1.63					
ITA	0.63	0.87	0.74	0.75	1.34				
NZL	0.81	0.66	0.68	0.81	0.64	0.36			
USA	0.74	0.92	0.79	0.82	0.88	0.64	0.86		
ZAF	0.75	0.83	0.74	0.85	0.74	0.74	0.80	8.80	
NLD	0.70	0.87	0.90	0.86	0.74	0.66	0.85	0.78	4.33

JER bde

	AUS	CAN	DFS	GBR	ITA	NZL	ZAF	NLD	USA
AUS	5.23								
CAN	0.76	5.89							
DFS	0.84	0.86	13.52						
GBR	0.71	0.81	0.80	1.59					
ITA	0.60	0.72	0.74	0.83	1.39				
NZL	0.75	0.68	0.70	0.70	0.70	0.36			
ZAF	0.86	0.74	0.84	0.78	0.75	0.76	9.32		
NLD	0.70	0.83	0.83	0.87	0.86	0.62	0.75	3.13	
USA	0.71	0.72	0.74	0.78	0.90	0.71	0.73	0.87	0.86

JER ang

	AUS	CAN	DFS	GBR	ITA	USA	ZAF	NLD
AUS	6.19							
CAN	0.60	7.30						
DFS	0.69	0.76	13.13					
GBR	0.84	0.71	0.87	1.13				
ITA	0.72	0.77	0.83	0.88	1.27			
USA	0.79	0.82	0.87	0.87	0.82	0.92		
ZAF	0.66	0.63	0.76	0.84	0.76	0.76	9.16	
NLD	0.75	0.71	0.65	0.77	0.69	0.68	0.63	3.83

JER		ran								
	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD	
AUS	6.25									
CAN	0.89	5.59								
DFS	0.90	0.96	11.43							
GBR	0.96	0.94	0.95	1.19						
ITA	0.87	0.95	0.94	0.91	1.46					
NZL	0.96	0.89	0.89	0.93	0.88	0.29				
USA	0.92	0.94	0.95	0.97	0.93	0.92	1.05			
ZAF	0.96	0.91	0.91	0.97	0.91	0.92	0.93	9.72		
NLD	0.91	0.95	0.96	0.96	0.92	0.88	0.95	0.93	4.68	

JER		rwi								
	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD	
AUS	6.02									
CAN	0.88	6.48								
DFS	0.80	0.88	11.96							
GBR	0.81	0.94	0.86	1.38						
ITA	0.72	0.82	0.81	0.81	1.46					
NZL	0.89	0.87	0.81	0.81	0.77	0.29				
USA	0.80	0.84	0.83	0.86	0.86	0.74	0.75			
ZAF	0.81	0.81	0.82	0.83	0.81	0.78	0.82	9.68		
NLD	0.85	0.89	0.91	0.82	0.77	0.82	0.74	0.77	4.11	

JER		rls								
	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD	
AUS	7.09									
CAN	0.59	5.83								
DFS	0.63	0.93	12.94							
GBR	0.73	0.82	0.78	1.75						
ITA	0.57	0.79	0.80	0.78	1.55					
NZL	0.73	0.69	0.69	0.75	0.73	0.12				
USA	0.72	0.91	0.91	0.88	0.81	0.73	0.62			
ZAF	0.87	0.73	0.72	0.83	0.73	0.87	0.77	12.59		
NLD	0.72	0.88	0.90	0.84	0.87	0.69	0.86	0.76	3.53	

JER		rlr								
	AUS	CAN	DFS	ITA	ZAF	NLD	USA			
AUS	8.16									
CAN	0.44	6.84								
DFS	0.57	0.77	12.91							
ITA	0.49	0.64	0.61	1.12						
ZAF	0.57	0.60	0.57	0.59	13.72					
NLD	0.61	0.81	0.86	0.75	0.66	5.76				
USA	0.56	0.75	0.66	0.79	0.58	0.75	0.62			

JER		fan								
	AUS	CAN	DFS	GBR	ITA	USA	ZAF	NLD		
AUS	6.37									
CAN	0.66	5.51								
DFS	0.68	0.87	12.83							
GBR	0.78	0.79	0.72	1.37						
ITA	0.60	0.76	0.65	0.76	1.80					
USA	0.69	0.87	0.80	0.85	0.80	0.70				
ZAF	0.79	0.68	0.72	0.90	0.69	0.81	10.44			
NLD	0.72	0.77	0.77	0.87	0.72	0.80	0.76	4.73		

JER		fua								
	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD	
AUS	5.81									
CAN	0.69	5.10								
DFS	0.81	0.83	12.71							
GBR	0.78	0.92	0.83	1.61						
ITA	0.66	0.85	0.79	0.85	1.51					
NZL	0.84	0.70	0.72	0.78	0.70	0.40				
USA	0.79	0.93	0.85	0.92	0.89	0.70	1.08			
ZAF	0.75	0.90	0.82	0.93	0.82	0.73	0.90	11.96		
NLD	0.78	0.89	0.91	0.90	0.82	0.80	0.86	0.87	5.07	

JER	ruh								
	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD
AUS	5.41								
CAN	0.72	6.91							
DFS	0.75	0.88	11.10						
GBR	0.85	0.83	0.84	1.16					
ITA	0.77	0.83	0.83	0.89	1.37				
NZL	0.75	0.75	0.79	0.77	0.82	0.40			
USA	0.80	0.84	0.89	0.91	0.83	0.76	1.03		
ZAF	0.86	0.76	0.85	0.91	0.81	0.76	0.90	9.51	
NLD	0.77	0.81	0.93	0.88	0.86	0.79	0.84	0.79	4.50

JER	usu								
	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD
AUS	5.19								
CAN	0.83	6.43							
DFS	0.74	0.86	12.87						
GBR	0.85	0.90	0.85	1.71					
ITA	0.58	0.74	0.69	0.67	1.57				
NZL	0.61	0.61	0.59	0.63	0.65	0.39			
USA	0.75	0.86	0.87	0.83	0.79	0.56	0.76		
ZAF	0.80	0.82	0.80	0.82	0.69	0.58	0.82	10.72	
NLD	0.81	0.83	0.89	0.87	0.80	0.59	0.87	0.80	5.25

JER	ude								
	AUS	CAN	DFS	GBR	ITA	USA	ZAF	NLD	
AUS	5.42								
CAN	0.94	4.94							
DFS	0.94	0.93	12.28						
GBR	0.94	0.95	0.93	1.58					
ITA	0.95	0.94	0.93	0.90	1.41				
USA	0.94	0.97	0.96	0.94	0.95	1.41			
ZAF	0.94	0.92	0.94	0.94	0.93	0.94	11.22		
NLD	0.94	0.96	0.96	0.96	0.95	0.95	0.94	4.52	

JER	ftp								
	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD
AUS	6.01								
CAN	0.88	5.95							
DFS	0.86	0.94	13.01						
GBR	0.90	0.90	0.89	1.39					
ITA	0.72	0.82	0.82	0.73	1.63				
NZL	0.90	0.91	0.86	0.86	0.82	0.30			
USA	0.88	0.94	0.94	0.92	0.86	0.88	1.03		
ZAF	0.87	0.93	0.91	0.93	0.85	0.90	0.92	10.73	
NLD	0.92	0.96	0.95	0.92	0.82	0.88	0.90	0.92	5.26

JER	ftl								
	AUS	CAN	DFS	GBR	ITA	USA	ZAF	NLD	
AUS	6.46								
CAN	0.83	5.53							
DFS	0.92	0.89	13.88						
GBR	0.95	0.88	0.94	1.38					
ITA	0.90	0.79	0.89	0.92	1.60				
USA	0.93	0.92	0.95	0.96	0.92	0.92			
ZAF	0.95	0.90	0.92	0.94	0.90	0.96	11.45		
NLD	0.94	0.92	0.97	0.96	0.90	0.96	0.95	5.10	

JER	rtp							
	AUS	CAN	DFS	NZL	ZAF	NLD	USA	
AUS	5.79							
CAN	0.95	6.13						
DFS	0.91	0.95	12.93					
NZL	0.94	0.95	0.91	0.40				
ZAF	0.96	0.95	0.92	0.91	10.31			
NLD	0.91	0.94	0.96	0.89	0.87	4.65		
USA	0.90	0.91	0.92	0.90	0.89	0.94	1.03	

JER ocs

	AUS	CAN	DFS	GBR	ITA	NZL	USA	NLD
AUS	6.12							
CAN	0.50	5.97						
DFS	0.54	0.72	13.03					
GBR	0.66	0.84	0.79	1.94				
ITA	0.47	0.81	0.68	0.77	0.78			
NZL	0.63	0.60	0.55	0.62	0.60	0.31		
USA	0.67	0.79	0.81	0.86	0.81	0.61	0.90	
NLD	0.61	0.79	0.87	0.87	0.82	0.62	0.83	2.71

JER ous

	AUS	CAN	DFS	GBR	NZL	USA	NLD
AUS	5.02						
CAN	0.65	6.14					
DFS	0.49	0.86	13.01				
GBR	0.72	0.86	0.73	1.34			
NZL	0.76	0.73	0.66	0.75	0.46		
USA	0.64	0.91	0.81	0.86	0.67	0.65	
NLD	0.60	0.89	0.90	0.79	0.78	0.90	4.56

JER ofl

	AUS	CAN	DFS	GBR	ITA	USA	NLD
AUS	6.37						
CAN	0.57	5.85					
DFS	0.39	0.80	13.82				
GBR	0.58	0.74	0.59	1.34			
ITA	0.53	0.75	0.62	0.71	1.17		
USA	0.63	0.84	0.67	0.74	0.76	0.88	
NLD	0.43	0.69	0.65	0.74	0.68	0.68	5.64

RDC sta

	AUS	CAN	DEU	DFS	GBR	NOR	NZL	USA	NLD
AUS	5.50								
CAN	0.88	5.91							
DEU	0.89	0.96	12.35						
DFS	0.86	0.96	0.97	8.77					
GBR	0.91	0.94	0.95	0.91	1.22				
NOR	0.89	0.94	0.96	0.98	0.93	14.86			
NZL	0.89	0.90	0.86	0.90	0.92	0.93	0.48		
USA	0.89	0.97	0.95	0.94	0.95	0.93	0.89	2.01	
NLD	0.86	0.95	0.97	0.97	0.93	0.96	0.84	0.93	4.62

RDC cwi

	AUS	CAN	DEU	DFS	GBR	NZL	USA	NLD
AUS	6.72							
CAN	0.69	7.21						
DEU	0.71	0.85	11.06					
DFS	0.76	0.84	0.87	12.81				
GBR	0.79	0.85	0.90	0.85	1.50			
NZL	0.79	0.67	0.74	0.72	0.81	0.35		
USA	0.67	0.86	0.82	0.78	0.83	0.71	1.06	
NLD	0.67	0.90	0.92	0.89	0.90	0.66	0.83	3.37

RDC bde

	AUS	CAN	DEU	DFS	GBR	NOR	NZL	USA	NLD
AUS	5.77								
CAN	0.83	5.90							
DEU	0.80	0.88	9.31						
DFS	0.86	0.84	0.92	11.74					
GBR	0.80	0.83	0.91	0.87	1.38				
NOR	0.86	0.83	0.82	0.91	0.84	14.58			
NZL	0.79	0.68	0.72	0.79	0.75	0.83	0.35		
USA	0.72	0.77	0.87	0.80	0.89	0.83	0.73	1.00	
NLD	0.71	0.83	0.90	0.83	0.91	0.77	0.66	0.90	3.98

RDC ang

	AUS	CAN	DEU	DFS	GBR	USA	NLD
AUS	7.05						
CAN	0.66	6.59					
DEU	0.62	0.85	12.00				
DFS	0.65	0.82	0.86	9.26			
GBR	0.78	0.79	0.81	0.82	1.29		
USA	0.72	0.86	0.85	0.80	0.84	0.88	
NLD	0.76	0.72	0.58	0.65	0.77	0.66	5.17

RDC ran

	AUS	CAN	DEU	DFS	GBR	NOR	NZL	USA	NLD
AUS	6.83								
CAN	0.92	5.90							
DEU	0.93	0.97	8.38						
DFS	0.92	0.95	0.95	10.07					
GBR	0.95	0.97	0.96	0.95	1.50				
NOR	0.92	0.94	0.94	0.91	0.95	13.29			
NZL	0.94	0.92	0.90	0.90	0.93	0.93	0.29		
USA	0.92	0.98	0.96	0.95	0.97	0.95	0.91	1.06	
NLD	0.93	0.97	0.98	0.96	0.97	0.95	0.90	0.96	5.70

RDC rwi

	AUS	CAN	DEU	DFS	GBR	NZL	USA	NLD
AUS	6.23							
CAN	0.88	5.89						
DEU	0.84	0.92	8.65					
DFS	0.85	0.93	0.91	10.59				
GBR	0.86	0.87	0.89	0.85	1.32			
NZL	0.87	0.87	0.81	0.89	0.87	0.31		
USA	0.81	0.89	0.84	0.87	0.91	0.85	1.16	
NLD	0.88	0.94	0.95	0.92	0.88	0.83	0.82	5.59

RDC rls

	AUS	CAN	DEU	DFS	GBR	NOR	NZL	USA	NLD
AUS	7.59								
CAN	0.76	6.32							
DEU	0.78	0.94	8.50						
DFS	0.74	0.97	0.93	9.11					
GBR	0.86	0.78	0.87	0.78	1.57				
NOR	0.77	0.89	0.88	0.95	0.82	17.04			
NZL	0.75	0.69	0.72	0.70	0.74	0.78	0.12		
USA	0.75	0.95	0.92	0.93	0.82	0.86	0.68	0.69	
NLD	0.78	0.92	0.92	0.89	0.88	0.80	0.69	0.90	5.57

RDC rlr

	AUS	CAN	DEU	DFS	NOR	NLD	USA
AUS	7.44						
CAN	0.63	6.68					
DEU	0.61	0.88	9.27				
DFS	0.63	0.86	0.91	10.74			
NOR	0.64	0.77	0.83	0.89	14.82		
NLD	0.62	0.86	0.90	0.89	0.87	5.27	
USA	0.59	0.72	0.76	0.71	0.74	0.81	0.69

RDC fan

	AUS	CAN	DEU	DFS	GBR	NOR	USA	NLD
AUS	6.90							
CAN	0.66	6.46						
DEU	0.73	0.82	13.84					
DFS	0.67	0.67	0.78	9.43				
GBR	0.81	0.77	0.90	0.70	1.58			
NOR	0.70	0.74	0.78	0.67	0.76	17.12		
USA	0.71	0.84	0.83	0.73	0.84	0.76	0.80	
NLD	0.74	0.76	0.88	0.74	0.88	0.77	0.81	4.76

RDC fua

	AUS	CAN	DEU	DFS	GBR	NOR	NZL	USA	NLD
AUS	6.85								
CAN	0.75	5.88							
DEU	0.77	0.89	11.00						
DFS	0.77	0.82	0.83	11.79					
GBR	0.78	0.85	0.95	0.86	1.65				
NOR	0.75	0.84	0.76	0.88	0.84	13.27			
NZL	0.77	0.80	0.81	0.72	0.79	0.77	0.34		
USA	0.74	0.93	0.89	0.84	0.91	0.84	0.84	1.13	
NLD	0.76	0.92	0.94	0.91	0.92	0.88	0.83	0.88	4.39

RDC ruh

	AUS	CAN	DEU	DFS	GBR	NOR	NZL	USA	NLD
AUS	5.93								
CAN	0.78	5.77							
DEU	0.82	0.87	13.16						
DFS	0.78	0.91	0.91	10.65					
GBR	0.84	0.77	0.87	0.84	1.39				
NOR	0.79	0.85	0.90	0.89	0.83	14.01			
NZL	0.82	0.77	0.82	0.78	0.90	0.80	0.32		
USA	0.78	0.87	0.90	0.92	0.89	0.84	0.84	1.03	
NLD	0.78	0.80	0.92	0.93	0.88	0.89	0.82	0.85	5.13

RDC usu

	AUS	CAN	DEU	DFS	GBR	NOR	NZL	USA	NLD
AUS	6.65								
CAN	0.78	5.55							
DEU	0.74	0.88	11.57						
DFS	0.69	0.79	0.79	12.45					
GBR	0.82	0.82	0.75	0.75	1.87				
NOR	0.73	0.77	0.71	0.78	0.79	16.34			
NZL	0.70	0.69	0.63	0.59	0.68	0.73	0.31		
USA	0.77	0.84	0.75	0.81	0.88	0.79	0.70	0.96	
NLD	0.79	0.84	0.78	0.89	0.91	0.88	0.62	0.90	4.87

RDC ude

	AUS	CAN	DEU	DFS	GBR	NOR	USA	NLD
AUS	7.13							
CAN	0.93	5.42						
DEU	0.94	0.97	11.11					
DFS	0.92	0.98	0.95	10.58				
GBR	0.95	0.94	0.96	0.93	1.82			
NOR	0.94	0.95	0.92	0.93	0.95	12.80		
USA	0.94	0.97	0.96	0.96	0.95	0.95	1.08	
NLD	0.94	0.97	0.98	0.97	0.97	0.92	0.97	4.62

RDC ftp

	AUS	CAN	DEU	DFS	GBR	NOR	NZL	USA	NLD
AUS	6.71								
CAN	0.94	5.10							
DEU	0.94	0.96	12.10						
DFS	0.90	0.95	0.90	11.80					
GBR	0.94	0.93	0.96	0.88	1.52				
NOR	0.92	0.91	0.89	0.91	0.92	12.58			
NZL	0.92	0.90	0.89	0.84	0.89	0.90	0.27		
USA	0.89	0.93	0.92	0.92	0.92	0.92	0.86	1.10	
NLD	0.95	0.98	0.97	0.95	0.95	0.91	0.90	0.91	4.24

RDC ftl

	AUS	CAN	DEU	DFS	GBR	NOR	USA	NLD
AUS	5.67							
CAN	0.94	5.13						
DEU	0.96	0.92	12.79					
DFS	0.95	0.86	0.96	10.50				
GBR	0.95	0.91	0.98	0.93	1.44			
NOR	0.93	0.93	0.95	0.94	0.94	13.15		
USA	0.94	0.91	0.95	0.93	0.96	0.94	1.14	
NLD	0.95	0.92	0.98	0.96	0.97	0.93	0.95	6.03

RDC	rtp							
	AUS	CAN	DEU	DFS	NOR	NZL	NLD	USA
AUS	6.61							
CAN	0.94	5.98						
DEU	0.92	0.96	13.35					
DFS	0.89	0.94	0.96	12.45				
NOR	0.92	0.93	0.92	0.90	14.54			
NZL	0.93	0.94	0.93	0.91	0.92	0.34		
NLD	0.94	0.97	0.97	0.96	0.91	0.93	5.48	
USA	0.93	0.92	0.95	0.93	0.94	0.91	0.95	1.10

RDC	ocs								
	AUS	CAN	DEU	DFS	GBR	NOR	NZL	USA	NLD
AUS	5.00								
CAN	0.61	5.41							
DEU	0.63	0.84	17.27						
DFS	0.62	0.74	0.76	9.38					
GBR	0.68	0.80	0.92	0.80	1.52				
NOR	0.65	0.84	0.81	0.77	0.86	14.05			
NZL	0.74	0.58	0.66	0.66	0.65	0.79	0.26		
USA	0.64	0.83	0.89	0.82	0.86	0.86	0.70	0.78	
NLD	0.64	0.79	0.88	0.87	0.90	0.80	0.65	0.86	3.27

RDC	ous								
	AUS	CAN	DEU	DFS	GBR	NOR	NZL	USA	NLD
AUS	5.09								
CAN	0.68	5.52							
DEU	0.67	0.88	14.46						
DFS	0.56	0.80	0.83	10.94					
GBR	0.79	0.83	0.86	0.68	1.45				
NOR	0.61	0.88	0.80	0.84	0.86	12.81			
NZL	0.79	0.75	0.80	0.74	0.74	0.71	0.36		
USA	0.69	0.92	0.89	0.87	0.87	0.88	0.82	0.89	
NLD	0.61	0.89	0.90	0.90	0.81	0.82	0.82	0.90	4.47

RDC	ofl							
	AUS	CAN	DEU	DFS	GBR	NOR	USA	NLD
AUS	6.90							
CAN	0.42	5.92						
DEU	0.43	0.84	14.25					
DFS	0.43	0.80	0.78	13.18				
GBR	0.42	0.72	0.75	0.65	1.41			
NOR	0.49	0.73	0.75	0.66	0.74	16.23		
USA	0.45	0.73	0.74	0.59	0.72	0.74	0.99	
NLD	0.42	0.68	0.74	0.64	0.75	0.81	0.68	7.57

^LAPPENDIX II. Number of common bulls

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	0	98	65	98	35	115	85	17	14
CHE	82	0	137	388	55	239	442	41	12
FRA	58	103	0	148	51	84	148	34	11
ITA	82	334	120	0	75	178	461	57	13
NLD	27	51	41	57	0	50	70	25	7
USA	107	214	56	127	36	0	193	20	14
DEA	67	351	111	384	58	154	0	56	10
SVN	15	42	33	57	24	16	54	0	5
GBR	12	11	11	12	7	13	9	4	0

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	0	91	65	98	28	115	83	16	14
CHE	76	0	123	338	51	212	383	39	12
FRA	58	89	0	148	47	84	146	33	11
ITA	82	285	120	0	67	178	426	55	13
NLD	23	48	38	53	0	36	64	25	7
USA	107	186	56	127	27	0	175	19	14
DEA	66	296	110	348	56	129	0	54	9
SVN	14	39	32	55	24	15	53	0	5
GBR	12	11	11	12	7	13	9	4	0

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	FRA	ITA	NLD	DEA	SVN	GBR	USA
CAN	0	98	65	98	28	85	10	14	115
CHE	82	0	137	388	54	442	27	12	239
FRA	58	103	0	148	47	148	22	11	84
ITA	82	334	120	0	67	461	39	13	178
NLD	23	51	38	53	0	65	17	7	36
DEA	67	351	111	384	57	0	37	10	193
SVN	9	27	23	38	17	37	0	4	12
GBR	12	11	11	12	7	9	3	0	14
USA	107	214	56	127	27	154	10	13	0

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	FRA	NLD	USA	GBR
CAN	0	97	65	15	114	14
CHE	82	0	133	31	237	12
FRA	58	99	0	30	84	11
NLD	12	30	25	0	20	3
USA	106	214	56	15	0	14
GBR	12	11	11	3	13	0

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	0	98	65	98	35	115	85	17	14
CHE	82	0	137	388	55	239	442	41	12
FRA	58	103	0	148	51	84	148	34	11
ITA	82	334	120	0	75	178	461	57	13
NLD	27	51	41	57	0	50	70	25	7
USA	107	214	56	127	36	0	193	20	14
DEA	67	351	111	384	58	154	0	56	10
SVN	15	42	33	57	24	16	54	0	5
GBR	12	11	11	12	7	13	9	4	0

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	FRA	NLD	USA	DEA	GBR	SVN
CAN	0	98	65	35	115	85	14	10
CHE	82	0	136	54	238	435	12	27
FRA	58	102	0	51	84	148	11	22
NLD	27	50	41	0	50	69	7	17
USA	107	214	56	36	0	193	14	12
DEA	67	349	110	57	154	0	10	37
GBR	12	11	11	7	13	9	0	4
SVN	9	27	23	17	10	37	3	0

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	0	98	65	98	35	115	85	17	14
CHE	82	0	137	388	55	239	442	41	12
FRA	58	103	0	148	51	84	148	34	11
ITA	82	334	120	0	75	178	461	57	13
NLD	27	51	41	57	0	50	70	25	7
USA	107	214	56	127	36	0	193	20	14
DEA	67	351	111	384	58	154	0	56	10
SVN	15	42	33	57	24	16	54	0	5
GBR	12	11	11	12	7	13	9	4	0

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	0	98	65	98	27	115	85	17	14
CHE	82	0	137	388	53	239	442	41	12
FRA	58	103	0	148	47	84	148	34	11
ITA	82	334	120	0	66	178	461	57	13
NLD	22	50	38	52	0	35	64	25	7
USA	107	214	56	127	25	0	193	20	14
DEA	67	351	111	384	56	154	0	56	10
SVN	15	42	33	57	24	16	54	0	5
GBR	12	11	11	12	7	13	9	4	0

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	FRA	ITA	NLD	DEA	SVN	USA
CAN	0	98	65	95	27	85	17	115
CHE	82	0	137	382	53	442	40	239
FRA	58	103	0	147	47	148	34	84
ITA	80	329	120	0	66	455	57	166
NLD	22	50	38	52	0	64	25	35
DEA	67	351	111	377	56	0	55	193
SVN	15	41	33	57	24	53	0	20
USA	107	214	56	115	25	154	16	0

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	0	98	65	98	27	115	51	10	14
CHE	82	0	137	384	54	239	247	27	12
FRA	58	103	0	148	47	84	95	22	11
ITA	82	331	120	0	65	175	213	39	13
NLD	22	51	38	53	0	35	51	17	7
USA	107	214	56	127	26	0	95	12	14
DEA	40	184	65	185	45	64	0	35	7
SVN	9	27	23	38	17	10	35	0	4
GBR	12	11	11	12	7	13	7	3	0

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	0	98	65	98	28	115	85	17	14
CHE	82	0	137	388	54	239	442	41	12
FRA	58	103	0	148	47	84	148	34	11
ITA	82	334	120	0	67	178	461	57	13
NLD	23	51	38	53	0	36	65	25	7
USA	107	214	56	127	27	0	193	20	14
DEA	67	351	111	384	57	154	0	56	10
SVN	15	42	33	57	24	16	54	0	5
GBR	12	11	11	12	7	13	9	4	0

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN
CAN	0	98	65	98	28	115	85	17
CHE	82	0	137	388	54	239	442	41
FRA	58	103	0	148	47	84	148	34
ITA	82	334	120	0	67	178	461	57
NLD	23	51	38	53	0	36	65	25
USA	107	214	56	127	27	0	193	20
DEA	67	351	111	384	57	154	0	56
SVN	15	42	33	57	24	16	54	0

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	0	98	65	98	35	115	85	10	14
CHE	82	0	137	388	55	239	442	27	12
FRA	58	103	0	148	51	84	148	22	11
ITA	82	334	120	0	75	178	461	39	13
NLD	27	51	41	57	0	50	70	17	7
USA	107	214	56	127	36	0	193	12	14
DEA	67	351	111	384	58	154	0	37	10
SVN	9	27	23	38	17	10	37	0	4
GBR	12	11	11	12	7	13	9	3	0

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	0	98	65	98	35	113	85	17	14
CHE	82	0	137	388	55	239	442	41	12
FRA	58	103	0	148	51	84	148	34	11
ITA	82	334	120	0	75	178	461	57	13
NLD	27	51	41	57	0	50	70	25	7
USA	106	214	56	127	36	0	193	20	14
DEA	67	351	111	384	58	154	0	56	10
SVN	15	42	33	57	24	16	54	0	5
GBR	12	11	11	12	7	13	9	4	0

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	FRA	NLD	USA	DEA	SVN	GBR
CAN	0	98	65	35	115	74	16	14
CHE	82	0	136	54	238	406	39	12
FRA	58	102	0	51	84	138	33	11
NLD	27	50	41	0	50	63	25	7
USA	107	214	56	36	0	168	18	14
DEA	59	319	102	55	126	0	54	9
SVN	14	40	32	24	15	53	0	5
GBR	12	11	11	7	13	9	4	0

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	0	98	65	98	35	115	85	16	14
CHE	82	0	137	388	55	239	442	40	12
FRA	58	103	0	148	51	84	148	33	11
ITA	82	334	120	0	75	176	461	56	13
NLD	27	51	41	57	0	50	70	25	7
USA	107	214	56	126	36	0	193	19	14
DEA	67	351	111	384	58	154	0	55	10
SVN	14	41	32	56	24	15	53	0	5
GBR	12	11	11	12	7	13	9	4	0

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	FRA	ITA	NLD	DEA	SVN	USA
CAN	0	98	65	95	23	51	16	115
CHE	82	0	137	377	50	247	39	239
FRA	58	103	0	147	44	95	33	84
ITA	80	326	120	0	60	213	55	163
NLD	19	49	36	50	0	51	24	30
DEA	40	184	65	185	45	0	46	95
SVN	14	40	32	55	24	44	0	19
USA	107	214	56	115	22	64	15	0

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	0	91	55	98	35	115	51	10	14
CHE	76	0	100	336	50	212	243	27	12
FRA	52	76	0	114	41	69	85	22	11
ITA	82	283	96	0	73	175	213	39	13
NLD	27	48	36	57	0	50	51	17	7
USA	107	186	49	127	36	0	95	12	14
DEA	40	180	63	185	45	64	0	35	7
SVN	9	27	23	38	17	10	35	0	4
GBR	12	11	11	12	7	13	7	3	0

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	0	91	55	98	35	114	85	10	14
CHE	76	0	101	338	51	212	393	27	12
FRA	52	76	0	114	41	69	117	22	11
ITA	82	285	96	0	75	178	454	39	13
NLD	27	48	36	57	0	50	70	17	7
USA	106	186	49	127	36	0	191	12	14
DEA	66	306	89	380	58	150	0	37	10
SVN	9	27	23	38	17	10	37	0	4
GBR	12	11	11	12	7	13	9	3	0

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	0	91	55	95	35	115	85	10	14
CHE	76	0	101	337	51	212	393	27	12
FRA	52	76	0	113	41	69	117	22	11
ITA	80	284	96	0	74	166	449	39	13
NLD	27	48	36	57	0	50	70	17	7
USA	107	186	49	115	36	0	191	12	14
DEA	66	306	89	374	58	150	0	37	10
SVN	9	27	23	38	17	10	37	0	4
GBR	12	11	11	12	7	13	9	3	0

GUE

common bulls below diagonal
common three quarter sib group above diagonal
CAN GBR USA AUS

CAN 0 19 55 20
GBR 16 0 64 11
USA 44 63 0 26
AUS 19 8 21 0

GUE

common bulls below diagonal
common three quarter sib group above diagonal
CAN GBR USA AUS

CAN 0 19 55 20
GBR 16 0 64 11
USA 44 63 0 26
AUS 19 8 21 0

GUE

common bulls below diagonal
common three quarter sib group above diagonal
CAN GBR USA AUS

CAN 0 19 55 20
GBR 16 0 64 11
USA 44 63 0 26
AUS 19 8 21 0

GUE

common bulls below diagonal
common three quarter sib group above diagonal
CAN GBR USA AUS

CAN 0 19 55 20
GBR 16 0 64 11
USA 44 63 0 26
AUS 19 8 21 0

GUE

common bulls below diagonal
common three quarter sib group above diagonal
CAN GBR USA AUS

CAN 0 19 55 20
GBR 16 0 64 11
USA 44 63 0 26
AUS 19 8 21 0

GUE

common bulls below diagonal
common three quarter sib group above diagonal
CAN GBR USA AUS

CAN 0 19 55 20
GBR 16 0 64 11
USA 44 63 0 26
AUS 19 8 21 0

GUE

common bulls below diagonal
common three quarter sib group above diagonal
CAN GBR USA AUS

CAN 0 19 55 20
GBR 16 0 64 11
USA 44 63 0 26
AUS 19 8 21 0

GUE

common bulls below diagonal
common three quarter sib group above diagonal
CAN USA AUS

CAN 0 27 6
USA 25 0 8
AUS 5 7 0

GUE

common bulls below diagonal
common three quarter sib group above diagonal
CAN GBR USA AUS

CAN 0 19 55 20
GBR 16 0 64 11
USA 44 63 0 26
AUS 19 8 21 0

GUE

common bulls below diagonal
common three quarter sib group above diagonal
CAN GBR USA AUS

CAN 0 19 55 20
GBR 16 0 64 11
USA 44 63 0 26
AUS 19 8 21 0

GUE

common bulls below diagonal
common three quarter sib group above diagonal
CAN GBR USA AUS

CAN 0 19 55 20
GBR 16 0 64 11
USA 44 63 0 26
AUS 19 8 21 0

GUE

common bulls below diagonal
common three quarter sib group above diagonal
CAN GBR USA AUS

CAN 0 19 55 20
GBR 16 0 64 11
USA 44 63 0 26
AUS 19 8 21 0

GUE

common bulls below diagonal
common three quarter sib group above diagonal
CAN GBR USA AUS

CAN 0 19 53 19
GBR 16 0 64 11
USA 43 63 0 26
AUS 18 8 21 0

GUE

common bulls below diagonal
common three quarter sib group above diagonal
CAN GBR USA AUS

CAN 0 19 55 20
GBR 16 0 64 11
USA 44 63 0 26
AUS 19 8 21 0

GUE

common bulls below diagonal
common three quarter sib group above diagonal
CAN GBR USA AUS

CAN 0 19 55 20
GBR 16 0 64 11
USA 44 63 0 26
AUS 19 8 21 0

GUE

common bulls below diagonal
common three quarter sib group above diagonal
CAN AUS USA

CAN 0 6 55
AUS 5 0 10
USA 44 8 0

GUE

common bulls below diagonal
common three quarter sib group above diagonal
CAN GBR USA AUS

CAN 0 11 55 20
GBR 8 0 33 9
USA 44 31 0 26
AUS 19 6 21 0

GUE

common bulls below diagonal
common three quarter sib group above diagonal
CAN GBR USA AUS

CAN 0 17 53 19
GBR 14 0 62 11
USA 43 61 0 26
AUS 18 8 21 0

GUE

common bulls below diagonal
common three quarter sib group above diagonal
CAN GBR USA AUS

CAN 0 17 55 20
GBR 14 0 62 11
USA 44 61 0 26
AUS 19 8 21 0

HOL

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	NLD	USA	HUN	POL	NZL	ZAF	JPN	CZE	EST	FRR	IRL			
KOR																								
PRT																								
SVN																								
AUS	0	329	677	348	690	615	470	651	689	625	697	844	369	418	426	263	441	434	54	9	338			
BEL	224	379	57																					
CAN	161	349	70	0	404	363	571	453	391	507	484	491	673	497	280	359	210	182	289	360	44	37	289	
CHE	475	691	93																					
DEU	186	364	66	482	0	768	479	437	449	542	591	650	707	315	402	211	191	320	406	46	35	294		
DFS	388	739	145	454	469	0	1730	1123	1750	1420	2019	1979	2309	812	1229	391	339	1016	1332	134	112	487		
ESP	330	632	117	400	652	0	774	1237	1134	1244	1328	1421	601	884	403	345	680	905	102	26	466			
FRA	337	608	93	334	475	493	0	871	856	1054	825	1212	554	673	272	327	682	677	82	13	350			
GBR	353	597	93	510	369	522	447	528	0	1195	1417	1383	1974	653	999	432	319	938	949	95	17	454		
ITA	371	690	113	1086	522	631	703	666	598	0	1303	1308	1602	628	824	414	356	738	824	96	21	605		
NLD	452	779	130	845	516	906	795	719	568	958	0	1359	2070	762	1025	388	354	912	1051	113	30	455		
USA	330	726	116	745	607	956	908	660	644	1009	988	0	1678	642	984	509	335	714	1072	129	85	557		
HUN	614	888	112	603	690	765	690	798	1298	1203	1253	0	893	1164	480	423	1458	1212	136	23	460			
POL	308	465	80	251	453	401	407	358	487	577	459	757	0	547	235	268	479	676	71	4	283			
NZL	343	586	117	283	567	513	388	407	545	654	659	805	391	0	263	252	570	815	109	77	328			
ZAF	138	244	34	209	241	215	196	314	280	452	395	180	148	0	192	272	283	30	5	294				
JPN	194	273	41	168	209	241	215	196	314	280	452	395	180	148	0	192	272	283	30	5	294			
CZE	364	445	68	231	262	297	219	326	302	302	441	226	174	171	0	270	267	35	5	209				
EST	349	565	112	148	187	223	216	189	243	252	227	312	183	161	113	164	0	606	70	3	273			
FRR	38	72	23	274	741	473	436	498	534	665	833	801	561	501	172	194	152	0	87	26	333			
IRL	1	12	8	36	22	55	47	31	29	40	53	74	78	39	55	14	16	15	43	0	2	49		
KOR	160	310	54	85	26	8	12	17	28	53	13	4	83	5	4	3	22	1	0	9				
PRT	0	321	50	27	85	26	8	12	17	28	53	13	4	83	5	4	3	22	1	0	9			
SVN	259	0	82	285	327	362	330	344	656	406	505	418	236	232	241	198	144	248	26	9	0			
	32	63	0	124	172	201	228	162	273	365	202	670	246	232	90	152	149	235	15	0	108			

HOL

common bulls below diagonal
common three quarter sib group above diagonal

SVN	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	NLD	USA	HUN	POL	ZAF	JPN	CZE	EST	FRR	IRL	KOR	
78	AUS	0	268	502	308	546	477	386	364	552	502	518	578	300	328	195	319	289	47	9	290	137
96	BEL	243	0	367	349	528	417	365	381	444	463	577	435	261	321	151	252	283	43	33	266	113
115	CAN	452	359	0	609	1469	825	931	710	1056	1252	831	2093	633	719	273	833	668	89	12	324	373
88	CHE	251	335	467	0	768	478	439	361	542	591	625	707	313	376	169	312	328	46	32	285	137
176	DEU	266	412	450	469	0	1729	1127	1332	1418	2019	1885	2309	809	1176	295	980	1101	134	100	469	309
148	DFS	323	370	567	400	652	0	772	841	1129	1241	1253	1420	597	831	293	636	719	102	25	441	245
122	ESP	290	350	518	338	486	501	0	665	855	1063	789	1212	555	644	283	648	575	82	12	339	260
107	FRA	235	355	380	297	364	359	433	0	825	1102	964	1188	518	831	192	620	716	78	11	315	238
143	GBR	456	442	1013	521	631	701	675	443	0	1301	1220	1594	625	779	302	690	670	95	19	562	284
161	ITA	364	422	837	516	906	794	731	449	956	0	1310	2067	759	991	318	882	901	113	30	441	367
152	NLD	422	609	675	579	911	880	630	480	942	946	0	1473	613	919	278	644	908	126	76	502	248
141	USA	488	381	1909	603	690	765	696	463	1297	1203	1017	0	890	1112	357	1329	1004	136	21	433	481
95	HUN	215	219	536	251	453	401	410	298	486	577	445	757	0	520	241	463	560	71	4	270	253
139	POL	201	256	442	270	546	489	366	354	522	641	625	775	373	0	213	535	713	107	77	291	296
58	ZAF	187	143	263	149	207	239	259	144	278	273	246	359	210	158	0	218	206	34	5	169	130
91	JPN	178	152	262	148	186	221	212	163	240	249	222	307	181	155	155	0	496	68	3	246	278
131	CZE	169	204	407	218	612	393	340	351	422	561	722	649	452	445	146	138	0	79	25	256	279
27	EST	20	31	36	22	55	47	32	25	40	53	73	78	39	54	16	15	38	0	2	47	33
11	FRR	6	31	9	27	77	25	8	8	16	28	50	13	4	83	4	3	21	1	0	9	1
74	IRL	272	267	321	282	325	360	333	257	624	403	478	412	234	218	168	143	193	26	9	0	105
55	KOR	90	77	328	99	138	158	165	136	200	295	149	518	197	211	95	118	192	13	0	74	0
0	SVN	52	75	84	61	149	118	84	70	108	135	125	110	69	111	41	43	98	19	11	56	37
83	PRT	246	315	656	306	462	516	563	391	605	716	680	858	428	513	244	191	394	44	12	265	214

HOL

common bulls below diagonal
common three quarter sib group above diagonal

SVN	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	NLD	USA	HUN	POL	ZAF	JPN	CZE	EST	FRR	IRL	KOR	
80	AUS	0	302	677	348	390	614	477	650	689	623	687	844	367	416	263	441	432	52	9	337	224
98	BEL	253	0	384	353	396	430	379	466	461	470	608	454	264	344	171	267	343	43	35	279	153
116	CAN	562	364	0	644	1078	919	1004	1019	1151	1296	924	2287	652	766	335	957	796	91	14	352	475
90	CHE	262	339	482	0	529	478	443	445	541	587	646	706	314	400	191	319	403	46	35	294	185
156	DEU	208	326	358	343	0	1032	826	1083	911	1454	1277	1467	558	922	198	656	924	103	49	299	283
147	DFS	337	375	570	400	485	0	788	1209	1132	1237	1313	1418	597	879	345	680	897	99	26	466	330
121	ESP	318	364	534	342	344	509	0	875	869	1069	833	1225	558	681	332	686	684	83	13	358	340
116	FRA	333	448	510	369	332	446	557	0	1180	1408	1340	1935	649	989	318	925	942	92	16	448	348
145	GBR	508	454	1086	522	448	703	689	598	0	1301	1291	1600	626	819	355	738	818	95	21	601	371
162	ITA	393	425	845	515	645	793	746	567	957	0	1343	2068	757	1016	353	909	1044	110	30	453	451
153	NLD	505	648	739	605	650	905	680	630	1000	981	0	1633	633	968	333	706	1061	127	81	550	327
142	USA	604	386	2022	603	469	765	705	763	1298	1203	1237	0	890	1157	423	1458	1207	135	22	459	610
95	HUN	225	222	542	251	320	398	414	358	487	575	456	757	0	544	267	478	672	69	4	282	308
139	POL	216	267	463	282	464	510	402	407	543	651	651	805	389	0	251	567	807	105	76	326	343
59	ZAF	224	155	308	164	141	262	301	219	326	302	298	441	226	174	0	270	266	35	5	209	194
89	JPN	184	153	266	148	149	223	218	189	243	252	226	312	183	161	164	0	603	69	3	273	364
138	CZE	221	246	485	273	542	472	449	498	533	662	830	801	559	498	194	152	0	83	26	332	349
26	EST	20	30	36	22	41	46	35	29	39	52	73	78	38	52	16	15	41	0	2	48	38
13	FRR	6	33	9	27	36	26	8	12	17	28	51	13	4	83	4	3	22	1	0	9	1
74	IRL	291	274	324	285	225	362	343	344	652	406	504	418	236	232	198	144	248	26	9	0	159
63	KOR	143	96	415	124	140	201	227	161	273	364	201	661	246	233	152	149	236	15	0	108	0
0	SVN	52	76	85	62	140	116	87	76	109	135	127	111	69	110	41	43	101	18	12	56	39
83	PRT	250	320	677	310	364	518	573	451	609	718	697	863	430	527	254	193	455	43	12	269	258

HOL

common bulls below diagonal
common three quarter sib group above diagonal

SVN	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	NLD	USA	HUN	POL	ZAF	JPN	CZE	EST	FRR	IRL	KOR	
82	AUS	0	327	677	348	690	616	469	651	689	625	718	844	369	418	263	441	434	54	9	337	224
99	BEL	254	0	402	362	567	452	390	503	482	488	691	494	278	357	181	287	358	44	37	287	159
118	CAN	562	368	0	645	1550	920	999	1034	1151	1299	971	2287	655	771	335	957	802	94	14	352	477
91	CHE	262	341	482	0	768	479	437	449	542	591	658	707	315	402	191	320	406	46	35	294	186
179	DEU	282	428	454	469	0	1730	1120	1750	1420	2019	2020	2309	812	1229	339	1016	1332	134	112	487	390
149	DFS	337	378	571	400	652	0	774	1238	1135	1245	1369	1422	602	885	345	680	905	102	26	467	330
121	ESP	312	354	527	333	470	492	0	869	856	1053	839	1210	554	673	327	682	677	82	13	350	338
117	FRA	333	453	510	369	522	447	524	0	1195	1417	1496	1974	653	999	319	938	949	95	17	454	354
146	GBR	508	459	1086	522	631	703	663	598	0	1303	1336	1603	628	824	356	738	824	96	21	604	371
164	ITA	393	428	845	516	906	795	715	568	958	0	1376	2070	762	1025	354	912	1051	113	30	455	453
155	NLD	512	726	752	608	964	909	659	667	1021	989	0	1805	651	993	345	747	1076	130	88	564	335
144	USA	604	394	2022	603	690	767	688	798	1298	1203	1290	0	893	1164	423	1458	1212	136	23	461	614
97	HUN	225	225	542	251	453	402	407	358	487	577	459	757	0	547	268	479	676	71	4	283	309
142	POL	216	269	463	283	567	513	387	407	545	654	660	805	391	0	252	570	815	109	77	328	344
59	ZAF	224	157	308	164	231	263	296	219	326	302	304	441	226	174	0	270	267	35	5	209	194
91	JPN	184	153	266	148	187	223	216	189	243	252	227	312	183	161	164	0	606	70	3	273	365
140	CZE	221	249	485	274	741	473	435	498	534	665	833	801	561	501	194	152	0	87	26	333	351
27	EST	20	31	36	22	55	47	31	29	40	53	74	78	39	55	16	15	43	0	2	49	38
13	FRR	6	33	9	27	85	26	8	12	17	28	53	13	4	83	4	3	22	1	0	9	1
75	IRL	291	276	324	285	327	362	329	344	655	406	508	418	236	232	198	144	248	26	9	0	160
63	KOR	143	96	417	124	172	201	227	162	273	366	205	672	247	233	153	149	237	15	0	108	0
0	SVN	52	77	85	62	151	118	82	76	109	137	128	111	70	112	41	43	102	19	12	56	39
83	PRT	249	319	677	309	462	516	556	448	605	716	698	860	426	523	254	193	452	44	12	267	259

HOL

common bulls below diagonal
common three quarter sib group above diagonal

SVN	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	NLD	USA	HUN	POL	ZAF	JPN	CZE	EST	FRR	IRL	KOR	
80	AUS	0	329	677	348	690	616	469	651	689	625	718	844	358	418	263	434	434	54	9	337	225
97	BEL	254	0	404	363	571	454	391	507	484	491	695	497	276	359	182	289	360	44	37	289	162
116	CAN	562	369	0	645	1550	920	999	1034	1151	1299	971	2287	641	771	335	950	801	94	14	352	479
89	CHE	262	341	482	0	768	479	437	449	542	591	658	707	309	402	191	320	406	46	35	294	187
177	DEU	282	428	454	469	0	1730	1120	1750	1420	2019	2020	2309	794	1229	339	1013	1332	134	112	487	393
148	DFS	337	378	571	400	652	0	774	1238	1135	1245	1369	1422	587	885	345	674	905	102	26	467	332
120	ESP	312	354	528	333	472	492	0	869	856	1053	839	1210	544	673	327	673	677	82	13	350	340
115	FRA	333	453	510	369	522	447	525	0	1195	1417	1496	1974	635	999	319	925	949	95	17	454	356
144	GBR	508	459	1086	522	631	703	665	598	0	1303	1336	1603	613	824	356	733	824	96	21	604	372
162	ITA	393	428	845	516	906	795	717	568	958	0	1376	2070	750	1025	354	906	1051	113	30	455	455
153	NLD	512	730	752	608	964	909	661	667	1021	989	0	1805	633	993	345	740	1076	130	88	564	338
142	USA	604	395	2022	603	690	767	689	798	1298	1203	1290	0	863	1164	423	1439	1211	136	23	461	617
95	HUN	217	218	528	247	444	393	393	350	471	564	446	731	0	541	259	469	663	71	4	276	308
140	POL	216	269	463	283	567	513	388	407	545	654	660	805	387	0	252	568	815	109	77	328	345
58	ZAF	224	157	308	164	231	263	296	219	326	302	304	441	215	174	0	268	267	35	5	209	195
90	JPN	184	153	266	148	187	223	216	189	243	252	227	312	177	161	164	0	605	69	3	271	366
138	CZE	221	249	485	274	741	473	436	498	534	665	833	801	549	501	194	152	0	87	26	333	351
26	EST	20	31	36	22	55	47	31	29	40	53	74	78	39	55	16	15	43	0	2	49	38
13	FRR	6	33	9	27	85	26	8	12	17	28	53	13	4	83	4	3	22	1	0	9	1
74	IRL	291	276	324	285	327	362	330	344	655	406	508	418	228	232	198	144	248	26	9	0	161
62	KOR	143	96	418	124	172	201	228	162	273	366	205	676	245	234	153	149	237	15	0	108	0
0	SVN	52	77	85	62	150	118	82	76	109	136	127	110	69	111	41	43	102	19	12	56	40
83	PRT	249	320	677	309	462	516	558	448	605	716	698	860	423	523	254	193	452	44	12	267	259

HOL

common bulls below diagonal
common three quarter sib group above diagonal

PRT	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	NLD	USA	HUN	POL	NZL	JPN	CZE	EST	FRR	IRL	SVN	
381	AUS	0	330	685	349	692	620	481	659	695	626	722	852	369	420	432	442	435	54	9	328	57
349	BEL	254	0	404	363	571	454	393	507	484	491	695	497	280	359	210	289	360	44	37	280	70
691	CAN	563	369	0	645	1550	920	1001	1034	1151	1299	971	2287	655	771	308	957	802	94	14	339	93
364	CHE	262	341	482	0	768	479	440	449	542	591	658	707	315	402	211	320	406	46	35	285	67
739	DEU	282	428	454	469	0	1730	1131	1750	1420	2019	2020	2309	812	1229	391	1016	1332	134	112	470	146
632	DFS	337	378	571	400	652	0	782	1238	1135	1245	1369	1422	602	885	404	680	905	102	26	444	118
614	ESP	314	358	531	338	487	501	0	881	865	1066	851	1220	558	681	279	684	683	82	13	342	93
597	FRA	333	453	510	369	522	447	542	0	1195	1417	1496	1974	653	999	432	938	949	95	17	426	93
690	GBR	509	458	1085	522	629	702	673	597	0	1303	1336	1603	628	824	414	738	824	96	21	569	114
779	ITA	393	428	845	516	906	795	733	568	956	0	1376	2070	762	1025	388	912	1051	113	30	441	131
731	NLD	512	730	752	608	964	909	675	667	1019	989	0	1805	651	993	522	747	1076	130	88	529	117
888	USA	606	395	2022	603	690	767	699	798	1298	1203	1290	0	893	1164	480	1458	1212	136	23	435	113
465	HUN	225	225	542	251	453	402	410	358	487	577	459	757	0	547	235	479	676	71	4	273	80
586	POL	216	269	463	283	567	513	394	407	545	654	660	805	391	0	263	570	815	109	77	318	118
244	NZL	315	156	256	168	209	241	219	196	314	280	454	395	180	148	0	272	283	30	5	280	34
445	JPN	184	153	266	148	187	223	217	189	243	252	227	312	183	161	113	0	606	70	3	259	68
565	CZE	221	249	485	274	741	473	441	498	533	665	833	801	561	501	172	152	0	87	26	319	113
72	EST	20	31	36	22	55	47	32	29	40	53	74	78	39	55	14	15	43	0	2	48	23
12	FRR	6	33	9	27	85	26	8	12	17	28	53	13	4	83	5	3	22	1	0	9	9
300	IRL	290	275	323	283	325	361	334	339	634	403	500	412	234	232	237	144	247	26	9	0	54
82	SVN	37	54	68	47	124	92	62	59	83	107	95	88	55	91	25	28	81	15	8	43	0
0	PRT	250	320	677	309	462	517	564	449	605	716	699	860	426	524	178	193	452	44	12	268	63

HOL

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	NLD	USA	HUN	POL	JPN	CZE	EST	IRL	SVN	PRT
AUS	0	322	677	348	690	616	475	527	689	625	698	842	358	416	434	434	54	325	57	381
BEL	254	0	398	360	565	449	390	461	477	487	654	479	273	355	279	359	44	278	70	349
CAN	562	369	0	645	1550	920	1002	862	1151	1299	939	2279	641	770	941	801	94	339	93	695
CHE	262	340	482	0	768	479	441	410	542	591	646	705	309	400	319	406	46	285	66	365
DEU	282	428	454	469	0	1730	1134	1605	1420	2019	1980	2303	794	1222	1009	1332	134	470	145	743
DFS	337	378	571	400	652	0	785	1063	1135	1245	1342	1408	587	883	669	905	102	444	117	636
ESP	314	361	531	339	492	505	0	787	866	1069	835	1218	548	682	673	684	83	343	93	619
FRA	295	429	452	340	438	422	508	0	1042	1306	1209	1528	595	934	766	900	90	388	93	557
GBR	508	458	1085	522	629	702	678	547	0	1303	1311	1596	613	823	726	824	96	566	113	690
ITA	393	428	845	516	906	795	738	519	956	0	1355	2065	750	1025	904	1051	113	441	130	783
NLD	489	688	705	586	934	886	651	556	981	957	0	1694	626	979	708	1065	128	524	116	723
USA	604	393	2022	603	688	767	699	598	1297	1203	1083	0	863	1161	1406	1209	136	433	112	892
HUN	217	218	528	247	444	393	396	339	471	564	430	731	0	540	468	663	71	268	80	466
POL	216	269	463	283	567	513	396	392	545	654	652	805	387	0	567	815	109	318	117	590
JPN	184	153	266	148	187	223	217	184	243	252	225	312	177	161	0	603	69	255	68	447
CZE	221	249	485	274	741	473	442	467	533	665	817	800	549	501	152	0	87	319	112	566
EST	20	31	36	22	55	47	33	29	40	53	73	78	39	55	15	43	0	48	23	72
IRL	290	275	323	283	325	361	335	315	631	403	490	412	227	232	144	247	26	0	54	300
SVN	37	54	68	47	124	92	63	59	83	106	94	88	55	91	28	81	15	43	0	82
PRT	251	324	678	311	465	521	570	440	610	720	690	863	428	528	193	456	44	269	63	0

HOL

common bulls below diagonal
common three quarter sib group above diagonal

	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	NLD	USA	CZE	IRL	KOR	SVN	PRT
BEL	0	366	283	421	414	350	432	443	332	526	436	277	264	84	46	280
CAN	359	0	495	1141	824	889	832	1054	956	749	2090	650	324	241	65	557
CHE	274	372	0	505	364	338	337	422	405	443	527	281	220	89	44	267
DEU	341	373	314	0	1180	871	1191	1007	1179	1367	1620	947	331	195	96	502
DFS	366	568	314	518	0	692	1059	1122	730	1109	1399	698	441	153	83	501
ESP	330	461	245	358	457	0	730	763	737	691	1089	557	304	174	66	493
FRA	422	450	275	344	422	479	0	1039	782	1014	1527	744	387	173	68	455
GBR	441	1012	392	475	700	574	548	0	819	1046	1584	652	561	182	80	550
ITA	322	656	353	514	553	466	393	634	0	782	1266	671	277	226	84	508
NLD	547	604	407	677	806	525	513	788	617	0	1218	855	443	159	83	555
USA	381	1907	441	507	766	564	598	1295	824	821	0	969	432	301	80	699
CZE	202	396	190	550	380	336	359	409	438	688	623	0	245	176	76	435
IRL	267	320	211	241	361	295	315	625	278	423	412	186	0	65	36	236
KOR	60	219	69	91	104	110	92	129	191	95	333	119	48	0	31	159
SVN	38	50	32	83	69	47	44	63	71	65	64	56	30	19	0	62
PRT	255	528	222	351	402	423	351	453	471	521	653	346	204	133	47	0

HOL

common bulls below diagonal
common three quarter sib group above diagonal

	BEL	CHE	DEU	DFS	FRA	GBR	ITA	NLD	USA	CZE	FRR	JPN	IRL	KOR	CAN	PRT	ESP
BEL	0	346	429	263	320	461	359	598	456	256	34	155	248	94	306	195	365
CHE	332	0	585	257	299	502	469	594	657	289	35	182	240	109	464	194	402
DEU	345	374	0	768	982	1012	1314	1419	1629	885	60	542	289	230	990	372	880
DFS	210	200	308	0	420	625	513	783	685	430	4	207	259	122	320	228	404
FRA	289	247	298	168	0	628	759	753	925	550	11	407	211	173	552	269	551
GBR	450	483	478	350	357	0	910	1194	1549	583	20	372	496	220	747	354	793
ITA	343	401	531	347	352	687	0	896	1438	697	22	501	274	276	907	391	810
NLD	623	554	707	499	401	910	672	0	1428	810	74	358	436	189	603	363	744
USA	388	571	510	343	370	1284	906	964	0	877	22	702	388	376	1457	462	1139
CZE	185	196	523	226	275	366	450	652	568	0	25	336	190	215	522	298	505
FRR	32	27	45	4	8	17	20	50	13	21	0	2	6	1	9	7	13
JPN	96	94	124	98	121	155	171	144	201	107	2	0	110	187	464	192	398
IRL	250	241	222	195	185	555	266	411	375	142	6	79	0	67	217	127	292
KOR	66	81	110	71	106	155	231	112	416	146	0	93	48	0	267	168	205
CAN	309	381	359	243	316	751	642	549	1470	350	7	177	231	248	0	348	693
PRT	174	157	252	170	224	279	352	314	441	234	7	107	108	135	335	0	324
ESP	342	305	348	258	352	618	500	579	633	290	8	137	291	124	394	254	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD
AUS	0	113	63	78	38	128	202	105	14
CAN	117	0	60	97	45	65	302	115	11
DFS	40	43	0	75	50	73	116	91	13
GBR	77	100	66	0	47	64	126	84	10
ITA	36	42	47	47	0	35	60	55	13
NZL	123	67	49	65	31	0	138	92	14
USA	189	293	81	131	64	146	0	206	24
ZAF	109	114	70	83	55	89	212	0	21
NLD	11	7	8	8	10	12	25	17	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD
AUS	0	113	63	78	38	128	202	98	14
CAN	117	0	60	97	45	65	302	104	11
DFS	40	43	0	75	50	73	116	82	13
GBR	77	100	66	0	47	64	126	79	10
ITA	36	42	47	47	0	35	60	55	13
NZL	123	67	49	65	31	0	138	83	14
USA	189	293	81	131	64	146	0	186	24
ZAF	104	105	65	79	55	81	194	0	21
NLD	11	7	8	8	10	12	25	17	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	NZL	ZAF	NLD	USA
AUS	0	111	62	76	38	127	98	14	201
CAN	115	0	60	97	45	65	104	11	302
DFS	39	43	0	75	50	73	82	13	116
GBR	75	100	66	0	47	64	79	10	126
ITA	36	42	47	47	0	35	55	13	60
NZL	122	67	49	65	31	0	83	14	138
ZAF	104	105	65	79	55	81	0	21	186
NLD	11	7	8	8	10	12	17	0	24
USA	188	293	81	131	64	146	194	25	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	USA	ZAF	NLD
AUS	0	113	61	77	38	202	104	2
CAN	117	0	60	97	45	302	115	3
DFS	38	43	0	73	50	116	90	3
GBR	76	100	64	0	47	126	84	4
ITA	36	42	47	47	0	60	55	4
USA	189	293	81	131	64	0	205	7
ZAF	108	114	69	83	55	211	0	6
NLD	1	2	3	3	3	6	5	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD
AUS	0	113	63	78	38	128	202	105	14
CAN	117	0	60	97	45	65	302	115	11
DFS	40	43	0	75	50	73	116	91	13
GBR	77	100	66	0	47	64	126	84	10
ITA	36	42	47	47	0	35	60	55	13
NZL	123	67	49	65	31	0	138	92	14
USA	189	293	81	131	64	146	0	206	24
ZAF	109	114	70	83	55	89	212	0	21
NLD	11	7	8	8	10	12	25	17	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD
AUS	0	113	63	78	38	128	202	105	14
CAN	117	0	60	97	45	65	302	115	11
DFS	40	43	0	75	50	73	116	91	13
GBR	77	100	66	0	47	64	126	84	10
ITA	36	42	47	47	0	35	60	55	13
NZL	123	67	49	65	31	0	138	92	14
USA	189	293	81	131	64	146	0	206	24
ZAF	109	114	70	83	55	89	212	0	21
NLD	11	7	8	8	10	12	25	17	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD
AUS	0	113	63	78	38	128	202	105	14
CAN	117	0	60	97	45	65	302	115	11
DFS	40	43	0	75	50	73	116	91	13
GBR	77	100	66	0	47	64	126	84	10
ITA	36	42	47	47	0	35	60	55	13
NZL	123	67	49	65	31	0	138	92	14
USA	189	293	81	131	64	146	0	206	24
ZAF	109	114	70	83	55	89	212	0	21
NLD	11	7	8	8	10	12	25	17	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	ITA	ZAF	NLD	USA
AUS	0	74	38	30	65	9	115
CAN	72	0	60	45	90	11	302
DFS	28	43	0	50	61	13	116
ITA	27	42	47	0	49	13	60
ZAF	68	85	47	47	0	18	152
NLD	7	7	8	10	12	0	24
USA	111	293	81	64	148	25	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	USA	ZAF	NLD
AUS	0	111	61	76	38	201	104	14
CAN	115	0	60	97	45	302	115	11
DFS	38	43	0	73	50	116	90	13
GBR	75	100	64	0	47	126	84	10
ITA	36	42	47	47	0	60	55	13
USA	188	293	81	131	64	0	205	24
ZAF	108	114	69	83	55	211	0	21
NLD	11	7	8	8	10	25	17	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD
AUS	0	113	63	78	38	128	202	105	14
CAN	117	0	60	97	45	65	302	115	11
DFS	40	43	0	75	50	73	116	91	13
GBR	77	100	66	0	47	64	126	84	10
ITA	36	42	47	47	0	35	60	55	13
NZL	123	67	49	65	31	0	138	92	14
USA	189	293	81	131	64	146	0	206	24
ZAF	109	114	70	83	55	89	212	0	21
NLD	11	7	8	8	10	12	25	17	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD
AUS	0	113	61	78	38	128	202	105	14
CAN	117	0	54	97	45	65	302	115	11
DFS	39	41	0	65	50	66	109	83	13
GBR	77	100	60	0	47	63	126	83	10
ITA	36	42	47	47	0	35	60	55	13
NZL	123	67	44	64	31	0	138	91	14
USA	189	293	77	131	64	146	0	206	24
ZAF	109	114	67	82	55	88	212	0	21
NLD	11	7	8	8	10	12	25	17	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD
AUS	0	113	63	78	38	128	202	105	14
CAN	117	0	60	97	45	65	302	115	11
DFS	40	43	0	75	50	73	116	91	13
GBR	77	100	66	0	47	64	126	84	10
ITA	36	42	47	47	0	35	60	55	13
NZL	123	67	49	65	31	0	138	92	14
USA	189	293	81	131	64	146	0	206	24
ZAF	109	114	70	83	55	89	212	0	21
NLD	11	7	8	8	10	12	25	17	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	USA	ZAF	NLD
AUS	0	111	61	76	38	201	104	14
CAN	115	0	60	97	45	299	115	11
DFS	38	43	0	73	50	116	90	13
GBR	75	99	64	0	47	126	84	10
ITA	36	42	47	47	0	60	55	13
USA	188	291	81	131	64	0	205	24
ZAF	108	114	69	83	55	211	0	21
NLD	11	7	8	8	10	25	17	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD
AUS	0	113	63	78	38	128	202	105	14
CAN	117	0	60	97	45	65	302	115	11
DFS	40	43	0	75	50	73	116	91	13
GBR	77	100	66	0	47	64	126	84	10
ITA	36	42	47	47	0	35	60	55	13
NZL	123	67	49	65	31	0	138	92	14
USA	189	293	81	131	64	146	0	206	24
ZAF	109	114	70	83	55	89	212	0	21
NLD	11	7	8	8	10	12	25	17	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	USA	ZAF	NLD
AUS	0	111	61	76	38	201	97	14
CAN	115	0	60	97	45	302	104	11
DFS	38	43	0	73	50	116	81	13
GBR	75	100	64	0	47	126	79	10
ITA	36	42	47	47	0	60	55	13
USA	188	293	81	131	64	0	185	24
ZAF	103	105	64	79	55	193	0	21
NLD	11	7	8	8	10	25	17	0

JER

common bulls below diagonal
 common three quarter sib group above diagonal

	AUS	CAN	DFS	NZL	ZAF	NLD	USA
AUS	0	70	34	74	64	9	106
CAN	66	0	49	65	101	11	302
DFS	22	38	0	59	73	13	102
NZL	65	67	40	0	78	14	138
ZAF	68	99	57	72	0	21	181
NLD	7	7	8	12	17	0	24
USA	101	293	72	146	181	25	0

JER

common bulls below diagonal
 common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	NZL	USA	NLD
AUS	0	113	63	33	38	128	202	14
CAN	117	0	60	37	45	65	302	11
DFS	40	43	0	29	50	73	116	13
GBR	37	43	27	0	14	34	37	4
ITA	36	42	47	15	0	35	60	13
NZL	123	67	49	38	31	0	138	14
USA	189	293	81	40	64	146	0	24
NLD	11	7	8	5	10	12	25	0

JER

common bulls below diagonal
 common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	NZL	USA	NLD
AUS	0	113	61	78	128	202	14
CAN	117	0	54	97	65	299	11
DFS	39	41	0	65	66	109	13
GBR	77	99	60	0	62	126	10
NZL	123	67	44	63	0	138	14
USA	189	291	77	131	146	0	24
NLD	11	7	8	8	12	25	0

JER

common bulls below diagonal
 common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	USA	NLD
AUS	0	111	61	76	38	200	14
CAN	115	0	60	97	45	302	11
DFS	38	43	0	73	50	116	13
GBR	75	99	64	0	47	126	10
ITA	36	42	47	47	0	60	13
USA	187	293	81	131	64	0	24
NLD	11	7	8	8	10	25	0

RDC

common bulls below diagonal
 common three quarter sib group above diagonal

	AUS	CAN	DEU	DFS	GBR	NOR	NZL	USA	NLD
AUS	0	22	9	38	7	16	16	11	6
CAN	21	0	6	91	50	3	29	116	2
DEU	8	6	0	30	0	8	3	0	7
DFS	28	89	19	0	31	78	49	53	20
GBR	6	49	0	29	0	0	19	37	0
NOR	12	3	7	56	0	0	8	0	15
NZL	16	27	3	47	16	7	0	18	2
USA	11	107	0	50	34	0	17	0	1
NLD	6	2	6	20	0	14	2	1	0

RDC

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DEU	DFS	GBR	NZL	USA	NLD
AUS	0	22	9	38	7	16	11	6
CAN	21	0	6	91	50	29	116	2
DEU	8	6	0	30	0	3	0	5
DFS	28	89	19	0	31	47	53	18
GBR	6	49	0	29	0	19	37	0
NZL	16	27	3	45	16	0	18	2
USA	11	107	0	50	34	17	0	1
NLD	6	2	4	18	0	2	1	0

RDC

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DEU	DFS	GBR	NOR	NZL	USA	NLD
AUS	0	22	9	38	7	6	16	11	6
CAN	21	0	6	91	50	0	29	114	2
DEU	8	6	0	30	0	3	3	0	6
DFS	28	89	19	0	31	43	47	53	18
GBR	6	49	0	29	0	0	19	36	0
NOR	5	0	2	25	0	0	2	0	11
NZL	16	27	3	45	16	2	0	18	2
USA	11	106	0	50	33	0	17	0	1
NLD	6	2	5	18	0	10	2	1	0

RDC

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DEU	DFS	GBR	USA	NLD
AUS	0	22	9	38	7	11	6
CAN	21	0	6	91	50	116	2
DEU	8	6	0	30	0	0	5
DFS	28	89	19	0	31	53	17
GBR	6	49	0	29	0	37	0
USA	11	107	0	50	34	0	1
NLD	6	2	4	17	0	1	0

RDC

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DEU	DFS	GBR	NOR	NZL	USA	NLD
AUS	0	22	9	38	7	16	16	11	6
CAN	21	0	6	91	50	3	29	116	2
DEU	8	6	0	30	0	8	3	0	7
DFS	28	89	19	0	31	86	46	53	19
GBR	6	49	0	29	0	0	19	37	0
NOR	12	3	7	62	0	0	8	0	15
NZL	16	27	3	42	16	7	0	18	2
USA	11	107	0	50	34	0	17	0	1
NLD	6	2	6	19	0	14	2	1	0

RDC

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DEU	DFS	GBR	NZL	USA	NLD
AUS	0	22	9	38	7	16	11	6
CAN	21	0	6	91	50	29	116	2
DEU	8	6	0	30	0	3	0	7
DFS	28	89	19	0	31	47	53	19
GBR	6	49	0	29	0	19	37	0
NZL	16	27	3	45	16	0	18	2
USA	11	107	0	50	34	17	0	1
NLD	6	2	6	19	0	2	1	0

RDC

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DEU	DFS	GBR	NOR	NZL	USA	NLD
AUS	0	22	9	38	7	16	16	11	6
CAN	21	0	6	91	50	3	29	116	2
DEU	8	6	0	30	0	8	3	0	7
DFS	28	89	19	0	31	89	49	53	20
GBR	6	49	0	29	0	0	19	37	0
NOR	12	3	7	64	0	0	8	0	15
NZL	16	27	3	47	16	7	0	18	2
USA	11	107	0	50	34	0	17	0	1
NLD	6	2	6	20	0	14	2	1	0

RDC

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DEU	DFS	NOR	NLD	USA
AUS	0	11	9	26	14	6	4
CAN	11	0	6	90	3	2	116
DEU	8	6	0	30	8	5	0
DFS	19	88	19	0	86	17	53
NOR	11	3	7	62	0	15	0
NLD	6	2	4	17	14	0	1
USA	4	107	0	50	0	1	0

RDC

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DEU	DFS	GBR	NOR	USA	NLD
AUS	0	22	6	38	7	16	11	6
CAN	21	0	3	91	50	3	116	2
DEU	5	3	0	17	0	6	0	5
DFS	28	89	10	0	31	86	53	18
GBR	6	49	0	29	0	0	37	0
NOR	12	3	5	62	0	0	0	15
USA	11	107	0	50	34	0	0	1
NLD	6	2	4	18	0	14	1	0

RDC

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DEU	DFS	GBR	NOR	NZL	USA	NLD
AUS	0	22	9	38	7	16	16	11	6
CAN	21	0	6	91	50	3	29	116	2
DEU	8	6	0	30	0	8	3	0	5
DFS	28	89	19	0	31	89	49	53	18
GBR	6	49	0	29	0	0	19	37	0
NOR	12	3	7	64	0	0	8	0	15
NZL	16	27	3	47	16	7	0	18	2
USA	11	107	0	50	34	0	17	0	1
NLD	6	2	4	18	0	14	2	1	0

RDC

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DEU	DFS	GBR	NOR	NZL	USA	NLD
AUS	0	22	9	38	7	16	16	11	6
CAN	21	0	6	91	50	3	29	116	2
DEU	8	6	0	30	0	8	3	0	6
DFS	28	89	19	0	31	86	47	53	18
GBR	6	49	0	29	0	0	19	37	0
NOR	12	3	7	62	0	0	8	0	15
NZL	16	27	3	44	16	7	0	18	2
USA	11	107	0	50	34	0	17	0	1
NLD	6	2	5	18	0	14	2	1	0

RDC

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DEU	DFS	GBR	NOR	NZL	USA	NLD
AUS	0	22	9	38	7	16	16	11	6
CAN	21	0	6	91	50	3	29	116	2
DEU	8	6	0	30	0	8	3	0	7
DFS	28	89	19	0	31	79	49	53	20
GBR	6	49	0	29	0	0	19	37	0
NOR	12	3	7	57	0	0	8	0	15
NZL	16	27	3	47	16	7	0	18	2
USA	11	107	0	50	34	0	17	0	1
NLD	6	2	6	20	0	14	2	1	0

RDC

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DEU	DFS	GBR	NOR	USA	NLD
AUS	0	22	9	38	7	16	11	6
CAN	21	0	6	91	50	3	113	2
DEU	8	6	0	30	0	8	0	7
DFS	28	89	19	0	31	89	53	20
GBR	6	49	0	29	0	0	37	0
NOR	12	3	7	64	0	0	0	15
USA	11	106	0	50	34	0	0	1
NLD	6	2	6	20	0	14	1	0

RDC

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DEU	DFS	GBR	NOR	NZL	USA	NLD
AUS	0	22	9	38	7	16	16	11	6
CAN	21	0	6	91	50	3	29	116	2
DEU	8	6	0	30	0	8	3	0	7
DFS	28	89	19	0	31	86	47	53	19
GBR	6	49	0	29	0	0	19	37	0
NOR	12	3	7	62	0	0	8	0	15
NZL	16	27	3	45	16	7	0	18	2
USA	11	107	0	50	34	0	17	0	1
NLD	6	2	6	19	0	14	2	1	0

RDC

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DEU	DFS	GBR	NOR	USA	NLD
AUS	0	22	9	38	7	16	11	6
CAN	21	0	6	91	50	3	114	2
DEU	8	6	0	30	0	8	0	7
DFS	28	89	19	0	31	83	53	20
GBR	6	49	0	29	0	0	36	0
NOR	12	3	7	59	0	0	0	15
USA	11	106	0	50	33	0	0	1
NLD	6	2	6	20	0	14	1	0

RDC

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DEU	DFS	NOR	NZL	NLD	USA
AUS	0	8	8	22	12	7	6	3
CAN	8	0	5	85	3	29	2	116
DEU	7	5	0	23	8	3	5	0
DFS	16	82	16	0	78	41	17	48
NOR	9	3	7	57	0	8	15	0
NZL	7	27	3	41	7	0	1	18
NLD	6	2	4	17	14	1	0	1
USA	3	107	0	46	0	17	1	0

RDC

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DEU	DFS	GBR	NOR	NZL	USA	NLD
AUS	0	22	9	38	7	16	16	11	6
CAN	21	0	6	91	47	3	29	116	2
DEU	8	6	0	30	0	8	3	0	7
DFS	28	89	19	0	31	88	48	53	20
GBR	6	46	0	29	0	0	16	35	0
NOR	12	3	7	64	0	0	8	0	15
NZL	16	27	3	46	13	7	0	18	2
USA	11	107	0	50	32	0	17	0	1
NLD	6	2	6	20	0	14	2	1	0

RDC

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DEU	DFS	GBR	NOR	NZL	USA	NLD
AUS	0	22	9	38	7	16	16	11	6
CAN	21	0	6	91	47	3	29	113	2
DEU	8	6	0	30	0	8	3	0	7
DFS	28	89	19	0	31	89	49	53	20
GBR	6	46	0	29	0	0	16	35	0
NOR	12	3	7	64	0	0	8	0	15
NZL	16	27	3	47	13	7	0	18	2
USA	11	106	0	50	32	0	17	0	1
NLD	6	2	6	20	0	14	2	1	0

RDC

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DEU	DFS	GBR	NOR	USA	NLD
AUS	0	22	9	38	7	16	11	6
CAN	21	0	6	91	47	3	116	2
DEU	8	6	0	30	0	8	0	7
DFS	28	89	19	0	31	89	53	20
GBR	6	46	0	29	0	0	35	0
NOR	12	3	7	64	0	0	0	15
USA	11	107	0	50	32	0	0	1
NLD	6	2	6	20	0	14	1	0
