

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:

BEL HOL Corrections in pedigree causing some bulls losing information (daughters, herds), sometimes causing decrease in EDC and reliabilities.
Improvement in the program determining the type of proof of the bull.

FRA BSW/HOL Some animals changed from official to unofficial as they do not pass the publication rules anymore.

JPN HOL There are small changes in proofs caused by additional records and modification of pedigree.

NOR RDC The rolling definition of used by NOR hys is causing the daughters to distribute somewhat differently over hys-classes at each evaluation. Therefore some bulls occasionally may lose EDC (with the number of daughters staying the same). There may be also the reliability changes as a function of the EDC changes.
They deliver RBV's for all traits. The scaling is according to a rolling base that, as mentioned, changes somewhat at each evaluation causing slight changes in sire standard deviation.

EST HOL There was an update in the field data resulting in a decrease in a number of daughters/herds for some bulls.

SVN BSW/HOL There is a decrease in some information (herds/daughters/EDC). These are mostly the consequences of changes in the data base related to the pedigree completeness as well as an improvement of phenotypic data.

DEU HOL There have been corrections in the data and pedigree, resulting in general small decrease in the number of daughters and/or herds.

ZAF HOL/JER/RDC Some clean-ups on data were done, especially with regards to alias numbers of foreign bulls.

USA HOL There is a decrease in some information due to parentage verification corrections.

CHE BSW/HOL There is a decrease of information due to the continuous work on the raw data by herd-book organizations. CHE corrected an error in the way to calculate number of daughters for STA from previous evaluation: Until 2008 stature was only measured as height at withers. Between 2008 and 2011 stature was measured as height at withers and rump height. Since 2011 stature is measured only as rump height. In the evaluation models BVs are estimated for both traits in a multi-trait model. Until December 2016 CHE used to count daughters for stature if either measure was available, since correlations between these two traits are very high.

NLD BSW There was a change in type and frame of evaluation, reducing SD for ocs

INTERBULL CHANGES COMPARED TO THE DECEMBER ROUTINE RUN

Sub-setting:

As decided by the ITC in Orlando, new sub-setting was introduced in the September test run. Sub-setting is necessary for operational purposes and restrictions of time scales. To minimize the effect of sub-setting, larger subsets with 10-12 countries and with 4 link providing countries have been applied.

Window:

According to the decision taken by ITC in Orlando, the following changes have been introduced in regards to the windows used for post processing:

The upper bounds have been set to 0.99 as these were judged to have very little effect on evaluations. The lower values have been set to about the 25% percentile value. The largest changes are for the lower values for conformation traits, with the lowest window being 40% for OFL otherwise it is about 50% for all other confirmation traits.

It is anticipated that these low values may not have large impact on evaluations since there were very few countries combinations whose estimated correlations fell between the old limit of 0.30 and these new limits.

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 calving 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 analyzed 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.

Table 1. National evaluation data considered in the Interbull evaluation for conformation traits (August Routine Evaluation 2017). Number of records for stature by breed

Country	BSW	GUE	HOL	JER	RDC	SIM
AUS		62	3630	694	261	
BEL			1102			
CAN	166	94	10672	631	793	
CHE	2517		2940			
CZE			3709			
DEA	3214					
DEU			20265		251	
DFS			11287	1835	5831	
ESP			3376			
EST			615			
FRA	317		16115			
FRM						
GBR	15	186	5315	382	273	
HUN			2377			
IRL			1482			
ISR						
ITA	1946		8636	97		
JPN			5121			
KOR			1059			
LTU						
LVA						
NLD	109		13864	36	41	
NOR					2170	
NZL			5450	3540	548	
POL			7824			
PRT			1821			

SVK									
SVN	271			407					
URY									
USA	788		666	30644		3658		232	
ZAF				803		501			
HRV									
MEX									
=====									
==									
No. Records	9343		1008	158514		11374		10400	
Pub. Proofs	7607		858	130652		9970		11314	0

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

BSW	sta								
	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	6.57								
CHE	0.95	12.39							
FRA	0.98	0.97	0.90						
ITA	0.96	0.95	0.95	14.81					
NLD	0.95	0.94	0.96	0.92	4.71				
USA	0.98	0.95	0.96	0.95	0.94	1.62			
DEA	0.96	0.98	0.97	0.96	0.95	0.96	11.36		
SVN	0.91	0.89	0.90	0.93	0.91	0.89	0.91	16.71	
GBR	0.96	0.93	0.95	0.94	0.93	0.95	0.90	0.90	0.82

BSW	cwi								
	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	8.76								
CHE	0.89	10.17							
FRA	0.85	0.82	0.90						
ITA	0.81	0.84	0.85	22.07					
NLD	0.88	0.78	0.79	0.71	4.40				
USA	0.92	0.90	0.87	0.86	0.81	0.87			
DEA	0.86	0.83	0.67	0.74	0.76	0.81	12.01		
SVN	0.84	0.81	0.78	0.85	0.73	0.83	0.89	23.04	
GBR	0.91	0.85	0.83	0.73	0.89	0.82	0.82	0.81	1.44

BSW	bde								
	CAN	CHE	FRA	ITA	NLD	DEA	SVN	GBR	USA
CAN	6.63								
CHE	0.86	10.25							
FRA	0.75	0.87	0.90						
ITA	0.80	0.90	0.90	18.06					
NLD	0.83	0.83	0.85	0.83	4.18				
DEA	0.88	0.90	0.92	0.90	0.83	11.57			
SVN	0.80	0.82	0.78	0.88	0.79	0.81	25.76		
GBR	0.86	0.88	0.83	0.86	0.90	0.84	0.84	1.37	
USA	0.74	0.78	0.86	0.78	0.86	0.80	0.79	0.88	0.80

BSW ang

	CAN	CHE	FRA	NLD	USA	GBR			
CAN	8.18								
CHE	0.70	10.92							
FRA	0.89	0.67	0.89						
NLD	0.73	0.63	0.64	3.58					
USA	0.86	0.70	0.76	0.67	1.23				
GBR	0.87	0.76	0.79	0.78	0.89	0.81			

BSW ran

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	6.21								
CHE	0.93	10.64							
FRA	0.97	0.96	0.94						
ITA	0.95	0.93	0.94	23.00					
NLD	0.96	0.92	0.95	0.93	4.43				
USA	0.97	0.94	0.97	0.92	0.95	1.13			
DEA	0.96	0.95	0.95	0.95	0.91	0.97	12.06		
SVN	0.92	0.91	0.91	0.91	0.91	0.91	0.92	20.79	
GBR	0.96	0.94	0.96	0.94	0.96	0.96	0.91	0.90	1.99

BSW rwi

	CAN	CHE	FRA	NLD	USA	DEA	GBR	SVN	
CAN	6.89								
CHE	0.90	9.90							
FRA	0.88	0.83	0.95						
NLD	0.92	0.86	0.88	3.86					
USA	0.90	0.82	0.87	0.80	0.74				
DEA	0.93	0.88	0.79	0.81	0.86	12.53			
GBR	0.92	0.86	0.91	0.88	0.92	0.80	1.21		
SVN	0.91	0.83	0.83	0.87	0.84	0.87	0.89	26.90	

BSW rls

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	6.91								
CHE	0.91	12.99							
FRA	0.91	0.90	1.00						
ITA	0.92	0.85	0.92	23.87					
NLD	0.89	0.83	0.89	0.86	5.20				
USA	0.94	0.92	0.90	0.86	0.87	0.75			
DEA	0.91	0.91	0.93	0.89	0.82	0.92	12.08		
SVN	0.85	0.83	0.86	0.87	0.83	0.88	0.87	21.96	
GBR	0.85	0.90	0.91	0.85	0.88	0.85	0.87	0.81	1.14

BSW fan

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	8.30								
CHE	0.70	13.77							
FRA	0.75	0.72	1.06						
ITA	0.71	0.86	0.78	22.89					
NLD	0.75	0.65	0.81	0.68	5.65				
USA	0.83	0.69	0.84	0.85	0.81	0.71			
DEA	0.67	0.90	0.68	0.89	0.65	0.63	11.39		
SVN	0.71	0.83	0.70	0.85	0.67	0.68	0.93	25.45	
GBR	0.81	0.69	0.89	0.71	0.87	0.83	0.67	0.69	1.03

BSW	hde								
	CAN	CHE	FRA	ITA	NLD	DEA	SVN	USA	
CAN	8.41								
CHE	0.87	12.70							
FRA	0.82	0.80	1.13						
ITA	0.79	0.82	0.84	23.07					
NLD	0.77	0.72	0.84	0.73	5.65				
DEA	0.79	0.86	0.83	0.90	0.77	12.21			
SVN	0.76	0.76	0.82	0.89	0.75	0.88	31.14		
USA	0.85	0.74	0.86	0.89	0.82	0.76	0.82	0.71	

BSW	fua								
	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	6.93								
CHE	0.84	11.54							
FRA	0.85	0.81	0.92						
ITA	0.87	0.85	0.81	21.33					
NLD	0.91	0.81	0.87	0.82	4.61				
USA	0.93	0.81	0.81	0.86	0.86	1.30			
DEA	0.87	0.80	0.91	0.79	0.84	0.84	11.76		
SVN	0.82	0.76	0.84	0.86	0.81	0.78	0.90	22.25	
GBR	0.92	0.85	0.86	0.90	0.90	0.91	0.77	0.72	1.34

BSW	ruh								
	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	6.98								
CHE	0.91	11.49							
FRA	0.88	0.83	0.94						
ITA	0.79	0.86	0.85	13.27					
NLD	0.80	0.83	0.86	0.87	4.46				
USA	0.87	0.84	0.88	0.89	0.87	1.19			
DEA	0.82	0.85	0.88	0.92	0.92	0.88	12.55		
SVN	0.79	0.78	0.78	0.85	0.88	0.81	0.89	19.82	
GBR	0.78	0.83	0.86	0.86	0.88	0.91	0.78	0.76	1.33

BSW	ruw								
	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	
CAN	7.73								
CHE	0.91	11.60							
FRA	0.88	0.88	0.87						
ITA	0.81	0.88	0.80	13.70					
NLD	0.73	0.65	0.78	0.71	4.46				
USA	0.87	0.88	0.85	0.90	0.79	1.05			
DEA	0.83	0.90	0.76	0.96	0.56	0.90	12.29		
SVN	0.78	0.78	0.73	0.82	0.69	0.78	0.81	18.38	

BSW	usu								
	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	8.08								
CHE	0.90	11.86							
FRA	0.84	0.91	0.92						
ITA	0.91	0.87	0.87	18.63					
NLD	0.84	0.84	0.90	0.84	4.53				
USA	0.85	0.88	0.85	0.84	0.89	1.08			
DEA	0.92	0.90	0.87	0.93	0.79	0.78	11.76		
SVN	0.82	0.84	0.72	0.79	0.68	0.72	0.84	24.61	
GBR	0.84	0.80	0.87	0.88	0.91	0.92	0.77	0.68	2.65

BSW	ude								
	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	6.40								
CHE	0.95	11.95							
FRA	0.95	0.95	0.99						
ITA	0.95	0.97	0.96	21.41					
NLD	0.96	0.96	0.95	0.95	4.24				
USA	0.95	0.95	0.95	0.95	0.95	1.22			
DEA	0.93	0.98	0.92	0.97	0.95	0.91	12.06		
SVN	0.91	0.94	0.90	0.96	0.94	0.91	0.94	21.59	
GBR	0.96	0.94	0.95	0.94	0.96	0.95	0.91	0.89	2.03

BSW	ftp								
	CAN	CHE	FRA	NLD	USA	DEA	SVN	GBR	ITA
CAN	6.99								
CHE	0.97	14.14							
FRA	0.97	0.95	0.93						
NLD	0.97	0.95	0.95	4.86					
USA	0.92	0.91	0.88	0.91	1.19				
DEA	0.96	0.99	0.95	0.95	0.90	11.41			
SVN	0.93	0.93	0.93	0.91	0.89	0.92	18.14		
GBR	0.95	0.92	0.90	0.94	0.94	0.89	0.91	1.37	
ITA	0.87	0.85	0.85	0.86	0.87	0.85	0.86	0.89	23.82

BSW	ftl								
	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	6.07								
CHE	0.90	14.76							
FRA	0.91	0.95	0.96						
ITA	0.91	0.94	0.95	19.10					
NLD	0.91	0.95	0.92	0.93	4.93				
USA	0.90	0.96	0.96	0.95	0.96	1.37			
DEA	0.86	0.97	0.97	0.96	0.93	0.96	11.46		
SVN	0.88	0.92	0.89	0.94	0.93	0.90	0.92	18.41	
GBR	0.93	0.92	0.92	0.94	0.96	0.95	0.90	0.90	1.38

BSW rtp

	CAN	CHE	FRA	ITA	NLD	DEA	SVN	USA
CAN	6.91							
CHE	0.97	14.65						
FRA	0.97	0.98	0.94					
ITA	0.92	0.93	0.94	21.66				
NLD	0.97	0.97	0.97	0.93	4.59			
DEA	0.95	0.98	0.96	0.94	0.96	11.47		
SVN	0.93	0.94	0.93	0.94	0.94	0.94	17.90	
USA	0.93	0.90	0.92	0.91	0.94	0.90	0.91	1.19

BSW ocs

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	7.92								
CHE	0.87	8.74							
FRA	0.83	0.89	1.00						
ITA	0.83	0.84	0.89	9.67					
NLD	0.78	0.77	0.81	0.78	3.54				
USA	0.87	0.77	0.85	0.85	0.83	0.62			
DEA	0.79	0.90	0.91	0.89	0.76	0.74	10.95		
SVN	0.79	0.78	0.78	0.77	0.78	0.79	0.78	23.44	
GBR	0.84	0.88	0.88	0.84	0.89	0.89	0.80	0.79	1.68

BSW ous

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	7.86								
CHE	0.89	13.01							
FRA	0.90	0.94	1.02						
ITA	0.85	0.93	0.88	13.65					
NLD	0.89	0.89	0.92	0.84	4.45				
USA	0.87	0.90	0.89	0.92	0.87	0.94			
DEA	0.86	0.95	0.91	0.93	0.89	0.88	11.89		
SVN	0.77	0.78	0.75	0.81	0.77	0.79	0.89	21.69	
GBR	0.83	0.85	0.76	0.84	0.80	0.88	0.76	0.76	1.44

BSW ofl

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	7.49								
CHE	0.86	11.19							
FRA	0.65	0.69	1.32						
ITA	0.69	0.72	0.86	18.07					
NLD	0.66	0.66	0.74	0.67	4.47				
USA	0.72	0.68	0.78	0.75	0.67	1.00			
DEA	0.67	0.82	0.72	0.81	0.64	0.61	11.66		
SVN	0.75	0.86	0.68	0.77	0.69	0.74	0.86	29.47	
GBR	0.75	0.77	0.80	0.70	0.75	0.73	0.67	0.68	1.65

BSW ofr

	CAN	CHE	DEA	ITA	SVN	USA	FRA
CAN	7.62						
CHE	0.84	11.98					
DEA	0.86	0.90	11.19				
ITA	0.84	0.91	0.95	18.94			
SVN	0.82	0.85	0.80	0.88	24.39		
USA	0.85	0.83	0.91	0.86	0.80	1.62	
FRA	0.83	0.86	0.93	0.90	0.84	0.90	0.87

BSW tpl

	CAN	CHE	DEA	ITA	SVN	FRA
CAN	7.44					
CHE	0.92	11.82				
DEA	0.91	0.92	11.79			
ITA	0.93	0.92	0.93	24.40		
SVN	0.92	0.89	0.90	0.89	23.94	
FRA	0.97	0.94	0.91	0.91	0.90	1.30

BSW oru

	CAN	CHE	DEA	ITA	SVN	USA	FRA
CAN	7.63						
CHE	0.79	15.35					
DEA	0.68	0.89	12.77				
ITA	0.92	0.81	0.78	19.44			
SVN	0.82	0.69	0.65	0.71	28.69		
USA	0.92	0.57	0.47	0.83	0.76	0.74	
FRA	0.91	0.89	0.83	0.90	0.78	0.84	1.06

BSW rle

	CHE	DEA	ITA	SVN	USA	FRA
CHE	11.79					
DEA	0.96	12.11				
ITA	0.83	0.88	22.12			
SVN	0.80	0.85	0.82	27.49		
USA	0.53	0.50	0.77	0.72	0.74	
FRA	0.92	0.93	0.91	0.84	0.73	1.01

BSW thp

	CAN	CHE	DEA	ITA	SVN	USA	FRA
CAN	7.76						
CHE	0.86	11.17					
DEA	0.79	0.88	12.31				
ITA	0.89	0.93	0.86	31.89			
SVN	0.80	0.87	0.90	0.86	37.64		
USA	0.90	0.87	0.72	0.86	0.76	1.13	
FRA	0.89	0.87	0.87	0.85	0.86	0.81	1.03

BSW	hoq					
	CAN	CHE	DEA	ITA	SVN	FRA
CAN	6.57					
CHE	0.93	11.72				
DEA	0.90	0.89	11.69			
ITA	0.89	0.82	0.86	20.58		
SVN	0.91	0.80	0.83	0.84	21.64	
FRA	0.88	0.83	0.91	0.88	0.87	0.98

BSW	ful				
	CHE	DEA	ITA	SVN	FRA
CHE	11.60				
DEA	0.91	12.32			
ITA	0.91	0.97	12.92		
SVN	0.77	0.87	0.86	21.93	
FRA	0.68	0.81	0.73	0.73	0.97

BSW	udb				
	CHE	DEA	ITA	SVN	FRA
CHE	11.01				
DEA	0.97	13.10			
ITA	0.94	0.97	26.91		
SVN	0.81	0.87	0.80	26.12	
FRA	0.90	0.89	0.85	0.78	0.96

BSW	tdi				
	CHE	DEA	ITA	SVN	FRA
CHE	15.62				
DEA	0.96	11.44			
ITA	0.94	0.95	21.34		
SVN	0.91	0.92	0.94	18.36	
FRA	0.97	0.96	0.92	0.91	0.93

BSW	tth				
	CHE	DEA	ITA	SVN	FRA
CHE	14.34				
DEA	0.97	12.74			
ITA	0.92	0.94	22.85		
SVN	0.90	0.92	0.88	20.04	
FRA	0.93	0.92	0.95	0.88	0.89

GUE	sta			
	CAN	GBR	USA	AUS
CAN	6.24			
GBR	0.97	1.10		
USA	0.98	0.95	2.46	
AUS	0.88	0.91	0.89	4.60

GUE	cwi			
	CAN	GBR	USA	AUS
CAN	6.84			
GBR	0.92	1.64		
USA	0.89	0.87	1.33	
AUS	0.75	0.80	0.64	7.68

GUE	bde			
	CAN	GBR	USA	AUS
CAN	5.99			
GBR	0.88	1.35		
USA	0.78	0.90	1.49	
AUS	0.82	0.79	0.76	5.38

GUE	ang			
	CAN	GBR	USA	AUS
CAN	7.73			
GBR	0.83	1.45		
USA	0.83	0.91	1.81	
AUS	0.55	0.78	0.71	6.63

GUE	ran			
	CAN	GBR	USA	AUS
CAN	6.43			
GBR	0.97	1.66		
USA	0.97	0.97	1.61	
AUS	0.93	0.96	0.91	8.34

GUE	rwi			
	CAN	GBR	USA	AUS
CAN	6.87			
GBR	0.94	1.41		
USA	0.92	0.91	1.38	
AUS	0.89	0.89	0.80	5.04

GUE	rls			
	CAN	GBR	USA	AUS
CAN	7.63			
GBR	0.79	1.79		
USA	0.92	0.77	1.01	
AUS	0.75	0.85	0.72	6.20

GUE	rlr		
	CAN	USA	AUS
CAN	7.13		
USA	0.86	0.73	
AUS	0.61	0.62	6.90

GUE	fan				
	CAN	GBR	USA	AUS	
CAN	8.38				
GBR	0.74	1.63			
USA	0.83	0.73	0.83		
AUS	0.61	0.82	0.67	8.89	

GUE	fua				
	CAN	GBR	USA	AUS	
CAN	7.14				
GBR	0.94	1.54			
USA	0.92	0.91	1.68		
AUS	0.82	0.82	0.73	8.91	

GUE	ruh				
	CAN	GBR	USA	AUS	
CAN	6.61				
GBR	0.76	1.79			
USA	0.82	0.90	1.54		
AUS	0.78	0.73	0.74	6.42	

GUE	usu				
	CAN	GBR	USA	AUS	
CAN	7.20				
GBR	0.79	1.55			
USA	0.81	0.84	1.16		
AUS	0.79	0.77	0.79	7.43	

GUE	ude				
	CAN	GBR	USA	AUS	
CAN	6.16				
GBR	0.97	1.58			
USA	0.95	0.93	1.64		
AUS	0.90	0.91	0.85	4.92	

GUE	ftp				
	CAN	GBR	USA	AUS	
CAN	5.72				
GBR	0.96	1.24			
USA	0.92	0.90	1.37		
AUS	0.88	0.88	0.86	7.01	

GUE	ftl				
	CAN	GBR	USA	AUS	
CAN	4.84				
GBR	0.89	1.80			
USA	0.92	0.97	1.49		
AUS	0.83	0.94	0.92	6.73	

GUE rtp

	CAN	AUS	USA
CAN	5.45		
AUS	0.85	8.26	
USA	0.93	0.92	1.37

GUE ocs

	CAN	GBR	USA	AUS
CAN	8.10			
GBR	0.86	1.54		
USA	0.80	0.85	1.20	
AUS	0.54	0.59	0.61	9.04

GUE ous

	CAN	GBR	USA	AUS
CAN	7.91			
GBR	0.86	1.42		
USA	0.89	0.83	0.75	
AUS	0.63	0.68	0.64	5.07

GUE ofl

	CAN	GBR	USA	AUS
CAN	7.49			
GBR	0.70	1.43		
USA	0.81	0.66	1.25	
AUS	0.55	0.50	0.49	8.89

HOL ang

	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	
NLD	USA	HUN	POL	ZAF	JPN	CZE	EST	IRL	KOR	PRT	SVN
AUS	6.38										
BEL	0.59	1.08									
CAN	0.67	0.76	6.38								
CHE	0.59	0.77	0.87	11.61							
DEU	0.60	0.75	0.86	0.78	12.58						
DFS	0.65	0.85	0.89	0.80	0.87	10.73					
ESP	0.68	0.77	0.88	0.78	0.74	0.84	0.74				
FRA	0.62	0.82	0.89	0.86	0.81	0.88	0.84	0.97			
GBR	0.80	0.76	0.90	0.79	0.81	0.88	0.82	0.80	1.21		
ITA	0.72	0.74	0.90	0.76	0.83	0.86	0.84	0.81	0.89	1.30	
NLD	0.74	0.60	0.72	0.67	0.58	0.65	0.75	0.63	0.78	0.71	
4.57											
USA	0.71	0.77	0.94	0.80	0.86	0.90	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	0.77	
0.57	0.79	1.00									
POL	0.57	0.67	0.72	0.72	0.64	0.72	0.77	0.76	0.68	0.75	
0.66	0.70	0.60	6.52								
ZAF	0.67	0.80	0.72	0.66	0.78	0.80	0.71	0.73	0.85	0.79	
0.59	0.76	0.77	0.62	8.89							
JPN	0.67	0.80	0.89	0.77	0.82	0.91	0.87	0.86	0.86	0.90	
0.73	0.86	0.73	0.76	0.77	1.54						
CZE	0.61	0.77	0.83	0.74	0.79	0.85	0.73	0.78	0.74	0.81	
0.59	0.79	0.81	0.63	0.68	0.77	14.45					
EST	0.54	0.68	0.63	0.60	0.65	0.72	0.61	0.60	0.61	0.61	
0.58	0.60	0.71	0.58	0.68	0.63	0.71	14.82				
IRL	0.76	0.78	0.91	0.81	0.85	0.88	0.81	0.86	0.96	0.87	
0.67	0.92	0.78	0.70	0.84	0.85	0.76	0.59	0.81			
KOR	0.68	0.79	0.79	0.74	0.73	0.75	0.78	0.74	0.80	0.75	
0.61	0.76	0.71	0.61	0.81	0.82	0.65	0.64	0.79	2.41		
PRT	0.60	0.71	0.78	0.62	0.76	0.78	0.74	0.72	0.79	0.81	
0.58	0.79	0.70	0.62	0.70	0.78	0.71	0.61	0.75	0.79	1.52	
SVN	0.62	0.74	0.74	0.82	0.62	0.67	0.73	0.70	0.71	0.72	
0.75	0.71	0.62	0.81	0.62	0.69	0.68	0.64	0.69	0.71	0.68	22.91

HOL rlr

	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	
NLD	USA	HUN	POL	ZAF	JPN	CZE	EST	IRL	KOR	SVN	PRT
AUS	6.63										
BEL	0.67	1.90									
CAN	0.63	0.84	6.56								
CHE	0.79	0.85	0.75	12.04							
DEU	0.60	0.90	0.89	0.74	11.29						
DFS	0.65	0.86	0.91	0.76	0.92	12.93					
ESP	0.62	0.86	0.86	0.73	0.86	0.90	1.12				
FRA	0.73	0.91	0.84	0.87	0.84	0.82	0.86	1.08			
GBR	0.51	0.63	0.69	0.58	0.65	0.62	0.70	0.64	1.28		
ITA	0.56	0.77	0.81	0.66	0.79	0.74	0.79	0.81	0.74	1.86	
NLD	0.61	0.89	0.87	0.72	0.91	0.91	0.85	0.82	0.66	0.75	
4.73											
USA	0.57	0.77	0.87	0.64	0.77	0.83	0.78	0.77	0.70	0.87	
0.81	1.82										
HUN	0.65	0.88	0.79	0.81	0.83	0.83	0.79	0.86	0.54	0.80	
0.82	0.81	1.07									
POL	0.65	0.84	0.85	0.72	0.82	0.84	0.77	0.82	0.55	0.78	
0.78	0.81	0.79	13.98								
ZAF	0.62	0.71	0.55	0.62	0.54	0.56	0.54	0.65	0.54	0.63	
0.55	0.70	0.68	0.67	8.98							
JPN	0.70	0.81	0.90	0.79	0.82	0.91	0.81	0.81	0.54	0.71	
0.83	0.79	0.79	0.79	0.58	1.90						
CZE	0.61	0.82	0.81	0.67	0.85	0.81	0.78	0.77	0.57	0.82	
0.78	0.78	0.83	0.87	0.67	0.76	18.18					
EST	0.58	0.65	0.60	0.58	0.72	0.78	0.69	0.64	0.52	0.57	
0.73	0.58	0.61	0.64	0.54	0.71	0.59	15.23				
IRL	0.51	0.57	0.63	0.54	0.56	0.56	0.63	0.58	0.78	0.72	
0.61	0.60	0.53	0.56	0.55	0.54	0.57	0.51	1.78			
KOR	0.56	0.73	0.81	0.69	0.75	0.83	0.82	0.80	0.53	0.70	
0.73	0.76	0.73	0.76	0.55	0.86	0.73	0.65	0.53	2.19		
SVN	0.57	0.85	0.79	0.74	0.79	0.84	0.77	0.79	0.55	0.71	
0.86	0.80	0.85	0.73	0.55	0.82	0.69	0.63	0.56	0.74	25.22	
PRT	0.58	0.83	0.74	0.70	0.85	0.77	0.76	0.79	0.59	0.70	
0.76	0.69	0.78	0.75	0.55	0.69	0.78	0.58	0.54	0.70	0.85	2.72

HOL fan

	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	
NLD	USA	HUN	POL	ZAF	JPN	CZE	EST	IRL	KOR	SVN	PRT
AUS	5.82										
BEL	0.71	1.97									
CAN	0.66	0.84	6.74								
CHE	0.70	0.87	0.74	11.39							
DEU	0.73	0.88	0.84	0.74	12.78						
DFS	0.64	0.90	0.88	0.74	0.85	13.18					
ESP	0.71	0.77	0.86	0.66	0.85	0.82	1.04				
FRA	0.82	0.78	0.78	0.70	0.89	0.70	0.86	1.05			
GBR	0.82	0.78	0.83	0.68	0.91	0.74	0.86	0.92	1.35		
ITA	0.62	0.68	0.76	0.64	0.74	0.70	0.74	0.71	0.73	1.64	
NLD	0.74	0.79	0.76	0.67	0.90	0.77	0.80	0.85	0.89	0.70	
5.20											
USA	0.68	0.76	0.88	0.65	0.83	0.79	0.85	0.81	0.84	0.86	
0.81	1.62										
HUN	0.82	0.78	0.80	0.76	0.86	0.71	0.85	0.92	0.88	0.67	
0.82	0.80	1.11									
POL	0.65	0.75	0.81	0.73	0.73	0.75	0.75	0.75	0.75	0.73	
0.65	0.80	0.80	12.38								
ZAF	0.87	0.77	0.77	0.74	0.84	0.72	0.80	0.87	0.89	0.73	
0.77	0.81	0.87	0.70	10.97							
JPN	0.78	0.75	0.70	0.79	0.80	0.71	0.74	0.77	0.75	0.64	
0.78	0.74	0.87	0.66	0.77	2.15						
CZE	0.75	0.84	0.84	0.71	0.91	0.81	0.85	0.86	0.84	0.70	
0.83	0.82	0.92	0.76	0.79	0.85	18.31					
EST	0.70	0.72	0.67	0.63	0.77	0.71	0.82	0.79	0.73	0.62	
0.81	0.71	0.79	0.64	0.66	0.79	0.81	15.70				
IRL	0.77	0.73	0.81	0.64	0.83	0.71	0.80	0.81	0.95	0.73	
0.79	0.78	0.76	0.73	0.81	0.64	0.76	0.64	1.71			
KOR	0.63	0.64	0.74	0.61	0.74	0.65	0.80	0.77	0.76	0.69	
0.73	0.78	0.80	0.69	0.68	0.65	0.76	0.64	0.66	1.69		
SVN	0.65	0.65	0.74	0.65	0.69	0.72	0.72	0.65	0.66	0.65	
0.65	0.71	0.64	0.65	0.64	0.64	0.67	0.62	0.72	0.64	22.67	
PRT	0.65	0.65	0.65	0.65	0.75	0.65	0.70	0.74	0.68	0.65	
0.70	0.72	0.66	0.65	0.66	0.65	0.71	0.71	0.65	0.72	0.65	2.52

HOL ude

	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	
NLD	USA	HUN	POL	ZAF	JPN	CZE	EST	IRL	KOR	SVN	PRT
AUS	4.15										
BEL	0.95	1.43									
CAN	0.94	0.96	5.65								
CHE	0.96	0.95	0.95	11.56							
DEU	0.94	0.96	0.98	0.96	12.98						
DFS	0.93	0.95	0.97	0.96	0.97	11.66					
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	0.96	0.98	0.97	0.95	1.40	
NLD	0.94	0.96	0.97	0.96	0.98	0.97	0.96	0.98	0.97	0.95	
5.09											
USA	0.94	0.95	0.96	0.96	0.96	0.97	0.97	0.97	0.97	0.96	
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	9.25								
ZAF	0.95	0.95	0.97	0.93	0.96	0.94	0.94	0.95	0.98	0.94	
0.96	0.96	0.95	0.93	11.43							
JPN	0.95	0.95	0.98	0.96	0.95	0.97	0.98	0.97	0.96	0.97	
0.96	0.97	0.97	0.95	0.95	1.32						
CZE	0.93	0.95	0.98	0.94	0.97	0.94	0.96	0.95	0.95	0.95	
0.95	0.94	0.97	0.95	0.96	0.94	14.74					
EST	0.90	0.91	0.94	0.90	0.94	0.94	0.94	0.92	0.92	0.92	
0.94	0.93	0.94	0.94	0.91	0.92	0.94	13.01				
IRL	0.95	0.95	0.94	0.93	0.93	0.91	0.93	0.94	0.98	0.92	
0.94	0.95	0.91	0.91	0.96	0.93	0.92	0.89	1.37			
KOR	0.89	0.88	0.89	0.90	0.89	0.89	0.89	0.91	0.90	0.89	
0.90	0.90	0.89	0.89	0.90	0.93	0.88	0.85	0.88	4.85		
SVN	0.90	0.92	0.93	0.91	0.95	0.92	0.92	0.92	0.91	0.93	
0.93	0.90	0.92	0.93	0.91	0.90	0.95	0.91	0.88	0.89	16.76	
PRT	0.90	0.93	0.92	0.91	0.93	0.92	0.91	0.90	0.91	0.92	
0.92	0.91	0.93	0.90	0.92	0.91	0.94	0.89	0.90	0.90	0.90	1.79

HOL ftl

	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	
NLD	USA	HUN	POL	ZAF	JPN	CZE	EST	IRL	KOR	SVN	PRT
AUS	5.85										
BEL	0.95	1.52									
CAN	0.95	0.92	5.61								
CHE	0.93	0.96	0.91	11.45							
DEU	0.96	0.98	0.95	0.95	13.52						
DFS	0.95	0.97	0.93	0.98	0.97	10.89					
ESP	0.95	0.98	0.93	0.95	0.98	0.97	1.10				
FRA	0.95	0.91	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	1.32		
ITA	0.90	0.92	0.92	0.91	0.93	0.93	0.93	0.92	0.96	1.59	
NLD	0.95	0.98	0.93	0.96	0.98	0.98	0.98	0.91	0.97	0.92	
4.99											
USA	0.95	0.95	0.96	0.93	0.96	0.96	0.96	0.94	0.97	0.95	
0.95	1.46										
HUN	0.92	0.96	0.90	0.96	0.95	0.96	0.96	0.89	0.93	0.89	
0.96	0.91	1.18									
POL	0.95	0.96	0.92	0.96	0.97	0.98	0.96	0.90	0.96	0.92	
0.96	0.94	0.96	11.47								
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	0.94	10.60							
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	1.44						
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	0.98	16.41					
EST	0.91	0.92	0.90	0.92	0.95	0.95	0.95	0.93	0.89	0.92	0.89
0.94	0.91	0.94	0.95	0.88	0.94	0.95	13.98				
IRL	0.96	0.96	0.96	0.93	0.97	0.95	0.95	0.96	0.95	0.99	0.94
0.96	0.96	0.91	0.95	0.92	0.96	0.95	0.92	1.80			
KOR	0.92	0.94	0.89	0.94	0.94	0.94	0.94	0.95	0.88	0.93	0.89
0.95	0.92	0.94	0.94	0.91	0.96	0.94	0.89	0.91	4.79		
SVN	0.90	0.94	0.90	0.95	0.94	0.95	0.95	0.95	0.90	0.94	0.92
0.95	0.92	0.93	0.94	0.90	0.94	0.94	0.93	0.93	0.90	17.74	
PRT	0.90	0.94	0.91	0.92	0.95	0.95	0.95	0.94	0.90	0.94	0.90
0.95	0.94	0.93	0.96	0.90	0.94	0.95	0.92	0.94	0.92	0.90	1.98

HOL rtp

	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	
NLD	USA	POL	NZL	JPN	CZE	EST	IRL	KOR	SVN	PRT	ZAF
AUS	5.57										
BEL	0.96	1.40									
CAN	0.96	0.96	6.00								
CHE	0.96	0.97	0.98	11.94							
DEU	0.94	0.96	0.97	0.97	13.82						
DFS	0.92	0.95	0.96	0.95	0.97	11.03					
ESP	0.94	0.96	0.97	0.96	0.98	0.97	0.90				
FRA	0.96	0.97	0.98	0.98	0.97	0.97	0.98	1.06			
GBR	0.96	0.96	0.97	0.96	0.97	0.97	0.97	0.98	1.29		
ITA	0.88	0.90	0.90	0.89	0.94	0.93	0.93	0.93	0.92	1.27	
NLD	0.95	0.95	0.98	0.97	0.98	0.98	0.98	0.98	0.98	0.98	0.92
4.78											
USA	0.92	0.93	0.95	0.93	0.95	0.97	0.96	0.94	0.97	0.97	0.91
0.96	1.61										
POL	0.90	0.92	0.94	0.92	0.97	0.95	0.97	0.95	0.95	0.95	0.92
0.95	0.92	10.17									
NZL	0.96	0.95	0.95	0.94	0.94	0.92	0.93	0.95	0.95	0.95	0.89
0.94	0.91	0.92	0.45								
JPN	0.96	0.97	0.99	0.97	0.97	0.97	0.98	0.98	0.97	0.97	0.92
0.98	0.95	0.95	0.95	1.57							
CZE	0.92	0.95	0.94	0.93	0.96	0.95	0.95	0.94	0.95	0.95	0.91
0.93	0.94	0.96	0.93	0.94	14.62						
EST	0.91	0.93	0.93	0.91	0.96	0.92	0.94	0.93	0.94	0.94	0.90
0.94	0.91	0.93	0.91	0.93	0.93	13.16					
IRL	0.94	0.95	0.96	0.95	0.95	0.95	0.94	0.94	0.96	0.97	0.90
0.95	0.93	0.91	0.94	0.96	0.91	0.89	1.34				
KOR	0.89	0.91	0.93	0.92	0.93	0.93	0.93	0.95	0.93	0.91	0.93
0.93	0.93	0.92	0.90	0.94	0.89	0.86	0.91	2.42			
SVN	0.91	0.94	0.94	0.95	0.96	0.93	0.96	0.95	0.94	0.94	0.91
0.95	0.92	0.92	0.92	0.93	0.92	0.92	0.92	0.93	15.10		
PRT	0.89	0.92	0.93	0.92	0.94	0.93	0.94	0.93	0.94	0.94	0.90
0.91	0.92	0.94	0.90	0.93	0.92	0.90	0.90	0.90	0.92	1.80	
ZAF	0.92	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
0.89	0.89	0.88	0.89	0.89	0.89	0.86	0.88	0.88	0.89	0.89	7.09

HOL ocs

	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	
NLD	USA	HUN	POL	NZL	JPN	CZE	EST	IRL	KOR	SVN	PRT
AUS	6.36										
BEL	0.58	1.20									
CAN	0.57	0.74	5.49								
CHE	0.55	0.78	0.92	11.74							
DEU	0.61	0.71	0.86	0.84	12.95						
DFS	0.65	0.72	0.80	0.79	0.88	10.32					
ESP	0.66	0.75	0.79	0.79	0.86	0.87	0.81				
FRA	0.57	0.74	0.79	0.87	0.85	0.87	0.88	1.11			
GBR	0.67	0.74	0.86	0.90	0.93	0.89	0.87	0.90	0.92		
ITA	0.58	0.71	0.82	0.82	0.83	0.82	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	0.72	0.85	0.85	0.89	0.88	0.86	0.86	0.91	0.84	
0.86	0.90										
HUN	0.55	0.74	0.82	0.80	0.84	0.75	0.77	0.81	0.83	0.80	
0.76	0.80	1.12									
POL	0.52	0.70	0.68	0.71	0.69	0.72	0.75	0.73	0.72	0.72	
0.73	0.72	0.72	6.85								
NZL	0.78	0.55	0.64	0.60	0.63	0.57	0.62	0.56	0.70	0.55	
0.64	0.66	0.59	0.53	0.30							
JPN	0.55	0.79	0.89	0.93	0.80	0.80	0.80	0.85	0.83	0.84	
0.80	0.85	0.74	0.74	0.56	0.70						
CZE	0.64	0.72	0.85	0.79	0.88	0.78	0.78	0.76	0.83	0.77	
0.78	0.80	0.85	0.68	0.71	0.73	13.84					
EST	0.55	0.71	0.77	0.70	0.80	0.72	0.74	0.71	0.73	0.72	
0.75	0.72	0.73	0.64	0.60	0.73	0.77	12.92				
IRL	0.63	0.53	0.71	0.68	0.76	0.69	0.68	0.63	0.77	0.67	
0.64	0.68	0.69	0.51	0.60	0.58	0.72	0.60	1.57			
KOR	0.54	0.67	0.68	0.70	0.69	0.68	0.74	0.69	0.69	0.71	
0.72	0.69	0.69	0.70	0.53	0.72	0.64	0.69	0.52	7.04		
SVN	0.58	0.80	0.76	0.77	0.76	0.76	0.76	0.76	0.76	0.76	
0.76	0.76	0.77	0.76	0.61	0.77	0.76	0.79	0.59	0.78	19.66	
PRT	0.58	0.75	0.75	0.75	0.78	0.80	0.78	0.77	0.81	0.77	
0.78	0.75	0.75	0.75	0.54	0.74	0.75	0.75	0.61	0.75	0.77	0.30

HOL ous

	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA
NLD	USA	HUN	POL	NZL	JPN	CZE	EST	IRL	SVN	PRT
AUS	4.28									
BEL	0.56	1.31								
CAN	0.65	0.78	5.37							
CHE	0.69	0.86	0.95	11.72						
DEU	0.64	0.79	0.90	0.91	13.51					
DFS	0.48	0.81	0.85	0.90	0.89	12.89				
ESP	0.70	0.70	0.84	0.86	0.84	0.76	0.88			
FRA	0.55	0.82	0.86	0.92	0.90	0.95	0.81	1.03		
GBR	0.79	0.69	0.84	0.86	0.86	0.69	0.89	0.76	1.09	
ITA	0.64	0.72	0.88	0.91	0.86	0.84	0.92	0.89	0.85	1.03
NLD	0.59	0.84	0.89	0.93	0.90	0.91	0.83	0.93	0.80	0.86
4.83										
USA	0.68	0.77	0.93	0.94	0.89	0.86	0.90	0.89	0.89	0.94
0.90	1.14									
HUN	0.59	0.82	0.86	0.88	0.88	0.85	0.82	0.85	0.77	0.83
0.79	0.83	1.28								
POL	0.67	0.79	0.73	0.79	0.79	0.71	0.71	0.73	0.77	0.72
0.72	0.74	0.70	7.42							
NZL	0.79	0.76	0.84	0.89	0.82	0.76	0.75	0.83	0.82	0.77
0.83	0.85	0.79	0.74	0.44						
JPN	0.71	0.83	0.93	0.93	0.89	0.80	0.81	0.84	0.87	0.87
0.86	0.93	0.79	0.81	0.82	0.76					
CZE	0.58	0.84	0.89	0.91	0.94	0.91	0.80	0.92	0.77	0.86
0.88	0.85	0.92	0.78	0.80	0.84	13.86				
EST	0.54	0.79	0.82	0.83	0.84	0.89	0.75	0.88	0.70	0.81
0.87	0.84	0.81	0.70	0.74	0.78	0.88	12.78			
IRL	0.83	0.62	0.76	0.79	0.78	0.59	0.84	0.68	0.96	0.78
0.70	0.83	0.74	0.75	0.82	0.80	0.71	0.61	1.04		
SVN	0.59	0.72	0.71	0.73	0.71	0.71	0.71	0.71	0.72	0.71
0.71	0.71	0.72	0.76	0.65	0.72	0.72	0.74	0.67	19.97	
PRT	0.71	0.70	0.79	0.80	0.80	0.71	0.79	0.76	0.80	0.79
0.78	0.80	0.74	0.73	0.72	0.80	0.79	0.72	0.74	0.72	0.47

HOL ofl

	AUS	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA
NLD	USA	HUN	POL	JPN	CZE	EST	IRL	SVN	PRT	
AUS	5.82									
BEL	0.45	1.75								
CAN	0.37	0.74	6.20							
CHE	0.39	0.80	0.90	11.62						
DEU	0.37	0.74	0.85	0.77	11.82					
DFS	0.37	0.66	0.87	0.78	0.79	13.01				
ESP	0.40	0.73	0.82	0.76	0.72	0.82	0.93			
FRA	0.37	0.78	0.68	0.70	0.74	0.63	0.75	1.08		
GBR	0.38	0.73	0.78	0.79	0.75	0.72	0.81	0.83	1.22	
ITA	0.38	0.71	0.71	0.69	0.72	0.61	0.69	0.78	0.71	1.69
NLD	0.39	0.83	0.68	0.67	0.74	0.64	0.66	0.82	0.76	0.67
5.21										
USA	0.40	0.72	0.82	0.77	0.74	0.66	0.72	0.72	0.75	0.77
0.68	1.55									
HUN	0.47	0.72	0.64	0.64	0.67	0.60	0.65	0.76	0.65	0.75
0.69	0.72	1.13								
POL	0.47	0.76	0.73	0.71	0.74	0.61	0.65	0.69	0.66	0.75
0.64	0.80	0.71	10.76							
JPN	0.39	0.65	0.87	0.81	0.77	0.71	0.68	0.63	0.65	0.71
0.63	0.86	0.63	0.75	0.63						
CZE	0.44	0.77	0.81	0.72	0.79	0.64	0.65	0.67	0.67	0.77
0.65	0.84	0.80	0.89	0.79	18.26					
EST	0.42	0.66	0.63	0.61	0.66	0.63	0.68	0.71	0.63	0.66
0.73	0.66	0.66	0.66	0.64	0.67	15.37				
IRL	0.57	0.75	0.76	0.82	0.70	0.68	0.73	0.68	0.83	0.70
0.65	0.70	0.68	0.65	0.70	0.69	0.48	1.52			
SVN	0.44	0.70	0.68	0.66	0.66	0.66	0.66	0.66	0.66	0.66
0.69	0.84	0.76	0.72	0.78	0.79	0.73	0.59	25.81		
PRT	0.40	0.66	0.65	0.65	0.67	0.65	0.66	0.76	0.68	0.72
0.72	0.69	0.72	0.65	0.63	0.66	0.80	0.54	0.67	0.20	

HOL loc

	BEL	CAN	CHE	DEU	DFS	ESP	FRA	GBR	ITA	NLD
USA	CZE	IRL	KOR	SVN	PRT					
BEL	1.90									
CAN	0.84	6.56								
CHE	0.57	0.62	12.41							
DEU	0.62	0.73	0.65	11.80						
DFS	0.85	0.91	0.52	0.65	12.92					
ESP	0.56	0.71	0.70	0.74	0.71	0.98				
FRA	0.77	0.75	0.70	0.80	0.69	0.75	1.08			
GBR	0.62	0.66	0.86	0.79	0.61	0.78	0.84	1.28		
ITA	0.57	0.66	0.65	0.71	0.54	0.73	0.76	0.74	1.94	
NLD	0.83	0.78	0.65	0.83	0.77	0.68	0.81	0.73	0.62	4.75
USA	0.52	0.70	0.51	0.76	0.63	0.70	0.73	0.69	0.79	0.59
1.55										
CZE	0.45	0.53	0.56	0.66	0.50	0.57	0.61	0.61	0.66	0.49
0.65	18.89									
IRL	0.62	0.64	0.62	0.70	0.58	0.71	0.73	0.77	0.64	0.67
0.65	0.48	1.78								
KOR	0.61	0.77	0.62	0.56	0.73	0.75	0.70	0.70	0.66	0.61
0.60	0.68	0.60	10.81							
SVN	0.59	0.63	0.58	0.62	0.61	0.59	0.70	0.63	0.58	0.70
0.62	0.56	0.53	0.71	29.22						
PRT	0.50	0.50	0.51	0.62	0.50	0.58	0.52	0.60	0.53	0.51
0.50	0.65	0.51	0.66	0.57	2.77					

HOL	bcs										
	BEL	CHE	DEU	DFS	FRA	GBR	ITA	NLD	USA	CZE	
JPN	IRL	KOR	CAN	PRT	ESP	SVN					
BEL	1.06										
CHE	0.74	11.59									
DEU	0.75	0.90	13.13								
DFS	0.76	0.88	0.95	12.18							
FRA	0.75	0.93	0.93	0.95	1.00						
GBR	0.75	0.92	0.90	0.89	0.93	1.21					
ITA	0.75	0.89	0.95	0.94	0.95	0.89	6.71				
NLD	0.75	0.93	0.95	0.95	0.94	0.90	0.93	4.86			
USA	0.79	0.73	0.74	0.77	0.76	0.75	0.75	0.75	1.38		
CZE	0.76	0.86	0.96	0.94	0.91	0.88	0.93	0.93	0.74	14.84	
JPN	0.76	0.92	0.95	0.96	0.96	0.92	0.94	0.94	0.78	0.93	
1.82											
IRL	0.72	0.89	0.83	0.83	0.89	0.96	0.82	0.87	0.72	0.81	
0.87	1.09										
KOR	0.71	0.77	0.81	0.82	0.84	0.80	0.84	0.77	0.72	0.79	
0.84	0.75	2.58									
CAN	0.75	0.92	0.93	0.93	0.94	0.96	0.93	0.94	0.76	0.92	
0.97	0.91	0.83	6.08								
PRT	0.76	0.83	0.87	0.85	0.87	0.84	0.86	0.87	0.75	0.85	
0.86	0.78	0.82	0.87	2.28							
ESP	0.77	0.88	0.94	0.94	0.95	0.94	0.93	0.93	0.75	0.93	
0.95	0.88	0.87	0.95	0.88	1.09						
SVN	0.77	0.80	0.87	0.88	0.81	0.76	0.84	0.87	0.76	0.87	
0.84	0.78	0.78	0.81	0.77	0.86	21.97					

JER	sta									
	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD	
AUS	6.19									
CAN	0.86	6.47								
DFS	0.87	0.96	11.88							
GBR	0.89	0.95	0.94	1.03						
ITA	0.89	0.94	0.92	0.95	1.19					
NZL	0.89	0.86	0.87	0.93	0.90	0.37				
USA	0.89	0.97	0.95	0.97	0.93	0.90	1.30			
ZAF	0.86	0.87	0.86	0.94	0.88	0.93	0.89	9.16		
NLD	0.88	0.96	0.97	0.94	0.92	0.86	0.93	0.88	4.93	

JER	cwi									
	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD	
AUS	5.66									
CAN	0.69	6.58								
DFS	0.82	0.82	15.54							
GBR	0.77	0.90	0.81	1.62						
ITA	0.65	0.85	0.72	0.74	1.34					
NZL	0.81	0.67	0.68	0.81	0.66	0.36				
USA	0.75	0.91	0.80	0.83	0.88	0.65	0.89			
ZAF	0.75	0.83	0.73	0.85	0.74	0.75	0.80	8.89		
NLD	0.70	0.88	0.90	0.87	0.74	0.67	0.85	0.79	4.13	

JER		bde								
	AUS	CAN	DFS	GBR	ITA	NZL	ZAF	NLD	USA	
AUS	5.16									
CAN	0.76	5.87								
DFS	0.85	0.86	13.64							
GBR	0.73	0.83	0.82	1.56						
ITA	0.65	0.73	0.74	0.84	1.39					
NZL	0.75	0.70	0.71	0.71	0.71	0.36				
ZAF	0.84	0.75	0.84	0.79	0.75	0.76	9.25			
NLD	0.71	0.83	0.83	0.88	0.86	0.66	0.77	3.12		
USA	0.71	0.72	0.74	0.78	0.90	0.71	0.73	0.87	0.89	

JER		ang								
	AUS	CAN	DFS	GBR	ITA	USA	ZAF	NLD		
AUS	6.16									
CAN	0.61	7.31								
DFS	0.69	0.78	13.26							
GBR	0.84	0.74	0.87	1.12						
ITA	0.73	0.81	0.83	0.88	1.29					
USA	0.78	0.82	0.88	0.86	0.81	0.95				
ZAF	0.65	0.63	0.75	0.83	0.74	0.75	9.14			
NLD	0.75	0.72	0.66	0.78	0.71	0.68	0.64	3.99		

JER		ran								
	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD	
AUS	6.17									
CAN	0.90	5.58								
DFS	0.91	0.96	11.44							
GBR	0.96	0.94	0.95	1.18						
ITA	0.89	0.96	0.94	0.92	1.44					
NZL	0.97	0.90	0.90	0.93	0.89	0.29				
USA	0.92	0.94	0.95	0.97	0.93	0.91	1.06			
ZAF	0.95	0.91	0.91	0.96	0.91	0.91	0.92	9.55		
NLD	0.92	0.96	0.96	0.96	0.93	0.89	0.95	0.93	4.91	

JER		rwi								
	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD	
AUS	6.09									
CAN	0.87	6.47								
DFS	0.81	0.90	12.05							
GBR	0.82	0.94	0.87	1.36						
ITA	0.76	0.83	0.82	0.84	1.46					
NZL	0.89	0.87	0.81	0.81	0.79	0.29				
USA	0.80	0.84	0.83	0.86	0.86	0.77	0.78			
ZAF	0.81	0.81	0.82	0.83	0.81	0.79	0.82	9.62		
NLD	0.86	0.91	0.91	0.85	0.79	0.83	0.77	0.79	4.28	

JER rls

	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD
AUS	7.26								
CAN	0.69	5.81							
DFS	0.68	0.94	12.74						
GBR	0.75	0.83	0.79	1.75					
ITA	0.64	0.82	0.81	0.79	1.56				
NZL	0.73	0.72	0.71	0.77	0.73	0.12			
USA	0.73	0.92	0.92	0.89	0.81	0.74	0.68		
ZAF	0.86	0.74	0.73	0.83	0.74	0.88	0.79	12.53	
NLD	0.74	0.90	0.91	0.86	0.87	0.71	0.87	0.76	3.51

JER rlr

	AUS	CAN	DFS	ITA	ZAF	NLD	USA
AUS	8.36						
CAN	0.51	6.96					
DFS	0.59	0.76	12.94				
ITA	0.53	0.72	0.63	1.12			
ZAF	0.58	0.60	0.57	0.59	13.58		
NLD	0.61	0.83	0.87	0.74	0.66	5.79	
USA	0.56	0.77	0.66	0.80	0.57	0.75	0.68

JER fan

	AUS	CAN	DFS	GBR	ITA	USA	ZAF	NLD
AUS	6.39							
CAN	0.66	5.64						
DFS	0.68	0.87	12.76					
GBR	0.78	0.79	0.73	1.37				
ITA	0.63	0.75	0.66	0.75	1.82			
USA	0.70	0.87	0.79	0.86	0.81	0.73		
ZAF	0.80	0.68	0.72	0.90	0.69	0.81	10.30	
NLD	0.72	0.76	0.77	0.87	0.71	0.79	0.75	4.60

JER fua

	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD
AUS	5.87								
CAN	0.73	5.23							
DFS	0.82	0.85	12.63						
GBR	0.80	0.93	0.84	1.61					
ITA	0.68	0.86	0.80	0.86	1.51				
NZL	0.85	0.72	0.73	0.80	0.73	0.40			
USA	0.80	0.94	0.87	0.93	0.89	0.72	1.21		
ZAF	0.76	0.90	0.84	0.93	0.83	0.75	0.91	11.92	
NLD	0.78	0.90	0.91	0.91	0.82	0.82	0.86	0.87	4.98

JER		ruh							
	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD
AUS	5.44								
CAN	0.74	7.00							
DFS	0.76	0.88	10.94						
GBR	0.85	0.82	0.86	1.16					
ITA	0.78	0.81	0.83	0.88	1.36				
NZL	0.76	0.76	0.79	0.79	0.82	0.41			
USA	0.80	0.85	0.90	0.91	0.83	0.77	1.07		
ZAF	0.87	0.76	0.85	0.91	0.82	0.76	0.89	9.49	
NLD	0.78	0.80	0.93	0.88	0.85	0.80	0.85	0.80	4.52

JER		usu							
	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD
AUS	5.18								
CAN	0.83	6.36							
DFS	0.74	0.87	12.74						
GBR	0.85	0.90	0.85	1.70					
ITA	0.64	0.76	0.71	0.73	1.56				
NZL	0.62	0.63	0.61	0.64	0.66	0.39			
USA	0.74	0.86	0.87	0.82	0.79	0.59	0.80		
ZAF	0.79	0.83	0.79	0.82	0.69	0.61	0.82	10.59	
NLD	0.82	0.83	0.89	0.89	0.80	0.62	0.88	0.80	5.22

JER		ude							
	AUS	CAN	DFS	GBR	ITA	USA	ZAF	NLD	
AUS	5.35								
CAN	0.94	5.00							
DFS	0.94	0.94	12.38						
GBR	0.95	0.96	0.93	1.57					
ITA	0.95	0.94	0.94	0.92	1.42				
USA	0.94	0.96	0.96	0.94	0.95	1.40			
ZAF	0.93	0.92	0.94	0.93	0.92	0.93	11.09		
NLD	0.94	0.96	0.96	0.96	0.95	0.95	0.94	4.42	

JER		ftp							
	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD
AUS	6.05								
CAN	0.90	6.07							
DFS	0.87	0.95	12.96						
GBR	0.91	0.92	0.90	1.38					
ITA	0.78	0.84	0.84	0.80	1.61				
NZL	0.90	0.92	0.87	0.87	0.84	0.30			
USA	0.88	0.95	0.94	0.92	0.87	0.88	1.09		
ZAF	0.87	0.93	0.91	0.93	0.85	0.90	0.91	10.62	
NLD	0.93	0.96	0.95	0.93	0.84	0.89	0.90	0.92	5.24

JER ftl

	AUS	CAN	DFS	GBR	ITA	USA	ZAF	NLD
AUS	6.36							
CAN	0.87	5.58						
DFS	0.93	0.90	13.93					
GBR	0.95	0.90	0.94	1.39				
ITA	0.90	0.85	0.90	0.93	1.63			
USA	0.93	0.92	0.95	0.96	0.93	0.93		
ZAF	0.95	0.90	0.92	0.94	0.91	0.97	11.12	
NLD	0.94	0.93	0.97	0.97	0.91	0.96	0.95	4.88

JER rtp

	AUS	CAN	DFS	NZL	ZAF	NLD	USA
AUS	5.84						
CAN	0.95	6.32					
DFS	0.91	0.95	13.01				
NZL	0.94	0.95	0.91	0.40			
ZAF	0.96	0.95	0.92	0.90	10.21		
NLD	0.92	0.95	0.96	0.91	0.89	4.60	
USA	0.90	0.91	0.92	0.89	0.89	0.94	1.39

JER ocs

	AUS	CAN	DFS	GBR	ITA	NZL	USA	NLD
AUS	6.21							
CAN	0.53	5.95						
DFS	0.57	0.74	12.84					
GBR	0.66	0.85	0.82	1.95				
ITA	0.52	0.81	0.73	0.80	0.76			
NZL	0.64	0.59	0.56	0.63	0.60	0.31		
USA	0.67	0.79	0.81	0.86	0.81	0.60	0.91	
NLD	0.62	0.79	0.87	0.88	0.81	0.63	0.84	2.65

JER ous

	AUS	CAN	DFS	GBR	NZL	USA	NLD
AUS	5.07						
CAN	0.64	6.13					
DFS	0.51	0.86	13.07				
GBR	0.72	0.87	0.72	1.34			
NZL	0.79	0.74	0.66	0.76	0.46		
USA	0.64	0.91	0.81	0.87	0.68	0.65	
NLD	0.59	0.89	0.90	0.80	0.78	0.90	4.47

JER ofl

	AUS	CAN	DFS	GBR	ITA	USA	NLD
AUS	6.39						
CAN	0.57	6.01					
DFS	0.41	0.80	13.68				
GBR	0.58	0.74	0.63	1.35			
ITA	0.48	0.75	0.64	0.73	1.16		
USA	0.65	0.84	0.66	0.73	0.77	0.93	
NLD	0.43	0.69	0.65	0.75	0.68	0.68	5.57

RDC	sta								
	AUS	CAN	DEU	DFS	GBR	NOR	NZL	USA	NLD
AUS	6.22								
CAN	0.88	5.90							
DEU	0.89	0.96	13.12						
DFS	0.86	0.97	0.97	8.74					
GBR	0.91	0.95	0.95	0.92	1.21				
NOR	0.89	0.94	0.96	0.98	0.93	13.64			
NZL	0.89	0.90	0.87	0.90	0.92	0.93	0.49		
USA	0.89	0.97	0.95	0.94	0.96	0.93	0.89	2.16	
NLD	0.86	0.96	0.97	0.97	0.93	0.96	0.85	0.93	4.83

RDC	cwi								
	AUS	CAN	DEU	DFS	GBR	NZL	USA	NLD	
AUS	6.66								
CAN	0.70	7.11							
DEU	0.71	0.86	11.97						
DFS	0.77	0.84	0.87	12.73					
GBR	0.80	0.86	0.90	0.86	1.50				
NZL	0.79	0.68	0.74	0.72	0.81	0.35			
USA	0.67	0.86	0.82	0.81	0.83	0.71	1.17		
NLD	0.67	0.90	0.92	0.88	0.90	0.66	0.83	3.96	

RDC	bde								
	AUS	CAN	DEU	DFS	GBR	NOR	NZL	USA	NLD
AUS	6.68								
CAN	0.83	5.86							
DEU	0.80	0.88	9.94						
DFS	0.85	0.84	0.92	11.72					
GBR	0.80	0.83	0.91	0.88	1.38				
NOR	0.85	0.83	0.81	0.90	0.83	15.17			
NZL	0.79	0.70	0.73	0.78	0.75	0.82	0.35		
USA	0.72	0.76	0.87	0.81	0.90	0.83	0.74	1.05	
NLD	0.72	0.83	0.90	0.83	0.91	0.77	0.68	0.90	3.94

RDC	ang						
	AUS	CAN	DEU	DFS	GBR	USA	NLD
AUS	7.83						
CAN	0.66	6.65					
DEU	0.62	0.86	12.70				
DFS	0.65	0.83	0.86	9.21			
GBR	0.79	0.80	0.81	0.83	1.28		
USA	0.72	0.87	0.86	0.83	0.86	1.04	
NLD	0.76	0.73	0.60	0.66	0.78	0.67	4.68

RDC	ran								
	AUS	CAN	DEU	DFS	GBR	NOR	NZL	USA	NLD
AUS	7.44								
CAN	0.92	5.82							
DEU	0.93	0.97	8.96						
DFS	0.92	0.95	0.95	10.09					
GBR	0.95	0.97	0.97	0.95	1.48				
NOR	0.92	0.95	0.93	0.91	0.95	12.43			
NZL	0.94	0.92	0.91	0.90	0.93	0.93	0.29		
USA	0.92	0.98	0.96	0.95	0.97	0.95	0.91	1.08	
NLD	0.93	0.97	0.98	0.96	0.97	0.95	0.90	0.96	5.68

RDC	rwi								
	AUS	CAN	DEU	DFS	GBR	NZL	USA	NLD	
AUS	6.22								
CAN	0.88	5.98							
DEU	0.84	0.93	9.46						
DFS	0.85	0.93	0.92	10.61					
GBR	0.86	0.89	0.89	0.87	1.32				
NZL	0.87	0.87	0.82	0.89	0.88	0.32			
USA	0.81	0.91	0.84	0.88	0.93	0.85	1.19		
NLD	0.88	0.94	0.95	0.93	0.88	0.83	0.81	5.81	

RDC	rls								
	AUS	CAN	DEU	DFS	GBR	NOR	NZL	USA	NLD
AUS	7.63								
CAN	0.76	6.31							
DEU	0.78	0.94	9.17						
DFS	0.75	0.97	0.93	9.11					
GBR	0.85	0.79	0.87	0.79	1.56				
NOR	0.77	0.89	0.88	0.95	0.82	15.50			
NZL	0.75	0.72	0.73	0.72	0.75	0.78	0.12		
USA	0.75	0.94	0.92	0.93	0.83	0.86	0.72	0.75	
NLD	0.78	0.92	0.92	0.89	0.88	0.80	0.72	0.90	5.31

RDC	rlr						
	AUS	CAN	DEU	DFS	NOR	NLD	USA
AUS	7.42						
CAN	0.63	6.59					
DEU	0.62	0.88	9.86				
DFS	0.64	0.85	0.91	10.74			
NOR	0.64	0.77	0.84	0.90	15.91		
NLD	0.62	0.86	0.90	0.89	0.84	5.75	
USA	0.58	0.73	0.76	0.70	0.74	0.81	0.75

RDC fan

	AUS	CAN	DEU	DFS	GBR	NOR	USA	NLD
AUS	7.14							
CAN	0.66	6.38						
DEU	0.73	0.82	14.61					
DFS	0.67	0.71	0.79	9.39				
GBR	0.81	0.78	0.91	0.71	1.56			
NOR	0.70	0.74	0.79	0.67	0.76	16.55		
USA	0.71	0.84	0.82	0.73	0.84	0.76	0.89	
NLD	0.74	0.76	0.88	0.77	0.89	0.72	0.81	4.99

RDC fua

	AUS	CAN	DEU	DFS	GBR	NOR	NZL	USA	NLD
AUS	6.80								
CAN	0.76	5.89							
DEU	0.77	0.90	11.74						
DFS	0.77	0.82	0.83	11.78					
GBR	0.78	0.86	0.95	0.87	1.65				
NOR	0.78	0.84	0.76	0.87	0.84	14.06			
NZL	0.77	0.80	0.82	0.72	0.79	0.77	0.34		
USA	0.74	0.93	0.89	0.84	0.91	0.84	0.84	1.17	
NLD	0.76	0.92	0.93	0.91	0.92	0.88	0.83	0.87	4.42

RDC ruh

	AUS	CAN	DEU	DFS	GBR	NOR	NZL	USA	NLD
AUS	6.31								
CAN	0.79	5.80							
DEU	0.82	0.87	13.96						
DFS	0.78	0.91	0.91	10.66					
GBR	0.83	0.78	0.87	0.85	1.37				
NOR	0.79	0.85	0.90	0.90	0.83	14.32			
NZL	0.82	0.77	0.82	0.79	0.90	0.80	0.32		
USA	0.78	0.87	0.89	0.92	0.89	0.84	0.84	1.16	
NLD	0.78	0.79	0.92	0.93	0.88	0.89	0.82	0.85	4.95

RDC usu

	AUS	CAN	DEU	DFS	GBR	NOR	NZL	USA	NLD
AUS	7.37								
CAN	0.78	5.53							
DEU	0.74	0.89	12.20						
DFS	0.69	0.77	0.79	12.42					
GBR	0.82	0.83	0.75	0.76	1.89				
NOR	0.72	0.77	0.71	0.78	0.79	15.60			
NZL	0.70	0.70	0.64	0.62	0.69	0.73	0.31		
USA	0.78	0.84	0.75	0.79	0.89	0.79	0.71	1.04	
NLD	0.79	0.84	0.78	0.90	0.92	0.88	0.63	0.90	4.69

RDC	ude							
	AUS	CAN	DEU	DFS	GBR	NOR	USA	NLD
AUS	8.36							
CAN	0.93	5.31						
DEU	0.94	0.97	11.91					
DFS	0.92	0.98	0.95	11.02				
GBR	0.95	0.96	0.96	0.94	1.82			
NOR	0.93	0.95	0.92	0.93	0.95	12.78		
USA	0.94	0.97	0.96	0.96	0.96	0.95	1.06	
NLD	0.94	0.97	0.98	0.97	0.97	0.92	0.96	4.56

RDC	ftp								
	AUS	CAN	DEU	DFS	GBR	NOR	NZL	USA	NLD
AUS	6.18								
CAN	0.94	5.09							
DEU	0.94	0.97	13.01						
DFS	0.90	0.95	0.91	11.74					
GBR	0.94	0.93	0.96	0.89	1.54				
NOR	0.92	0.91	0.89	0.91	0.92	12.98			
NZL	0.92	0.90	0.89	0.85	0.89	0.90	0.27		
USA	0.89	0.93	0.92	0.92	0.92	0.92	0.87	1.20	
NLD	0.95	0.98	0.97	0.95	0.95	0.92	0.90	0.91	4.23

RDC	ftl							
	AUS	CAN	DEU	DFS	GBR	NOR	USA	NLD
AUS	7.07							
CAN	0.94	5.00						
DEU	0.95	0.94	13.60					
DFS	0.95	0.89	0.97	10.53				
GBR	0.95	0.92	0.98	0.94	1.45			
NOR	0.93	0.93	0.94	0.94	0.94	13.75		
USA	0.95	0.93	0.96	0.93	0.97	0.94	1.14	
NLD	0.95	0.93	0.98	0.97	0.97	0.93	0.95	5.76

RDC	rtp							
	AUS	CAN	DEU	DFS	NOR	NZL	NLD	USA
AUS	6.76							
CAN	0.95	6.10						
DEU	0.93	0.97	14.40					
DFS	0.91	0.95	0.96	12.27				
NOR	0.92	0.93	0.91	0.90	15.12			
NZL	0.94	0.95	0.94	0.91	0.92	0.34		
NLD	0.94	0.97	0.97	0.96	0.91	0.94	5.04	
USA	0.92	0.92	0.95	0.93	0.94	0.91	0.96	1.20

RDC	ocs								
	AUS	CAN	DEU	DFS	GBR	NOR	NZL	USA	NLD
AUS	4.65								
CAN	0.59	5.36							
DEU	0.62	0.84	18.47						
DFS	0.63	0.75	0.79	9.37					
GBR	0.68	0.81	0.93	0.82	1.53				
NOR	0.65	0.84	0.81	0.77	0.86	13.77			
NZL	0.74	0.60	0.65	0.64	0.67	0.79	0.26		
USA	0.63	0.83	0.89	0.82	0.87	0.86	0.69	0.80	
NLD	0.64	0.79	0.88	0.87	0.89	0.80	0.65	0.86	3.24

RDC	ous								
	AUS	CAN	DEU	DFS	GBR	NOR	NZL	USA	NLD
AUS	5.74								
CAN	0.68	5.50							
DEU	0.66	0.88	15.45						
DFS	0.57	0.80	0.83	11.12					
GBR	0.79	0.84	0.86	0.70	1.46				
NOR	0.62	0.88	0.80	0.84	0.87	13.13			
NZL	0.80	0.77	0.81	0.75	0.75	0.73	0.36		
USA	0.70	0.92	0.89	0.87	0.88	0.89	0.83	0.98	
NLD	0.61	0.89	0.90	0.90	0.80	0.83	0.82	0.90	4.31

RDC	ofl							
	AUS	CAN	DEU	DFS	GBR	NOR	USA	NLD
AUS	7.14							
CAN	0.42	5.82						
DEU	0.43	0.83	15.13					
DFS	0.43	0.81	0.79	13.14				
GBR	0.42	0.74	0.74	0.68	1.41			
NOR	0.49	0.72	0.75	0.66	0.73	16.51		
USA	0.46	0.74	0.73	0.64	0.72	0.73	1.15	
NLD	0.43	0.68	0.73	0.65	0.75	0.75	0.68	7.68

^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	88	58	86	31	100	81	17	13	
CHE	62	0	138	394	58	243	451	47	12	
FRA	43	104	0	152	52	86	151	36	11	
ITA	58	338	123	0	77	181	482	63	13	
NLD	22	54	41	59	0	51	72	27	7	
USA	76	220	58	131	37	0	196	24	14	
DEA	53	360	111	404	61	158	0	63	10	
SVN	14	46	35	62	26	19	59	0	5	
GBR	9	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	82	58	86	26	100	79	16	13
CHE	61	0	121	339	53	214	387	44	12
FRA	43	88	0	152	48	86	149	35	11
ITA	58	284	123	0	69	181	447	61	13
NLD	20	51	38	55	0	37	66	27	7
USA	76	187	58	131	28	0	178	23	14
DEA	52	301	110	368	59	133	0	61	9
SVN	13	43	34	60	26	18	58	0	5
GBR	9	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	88	58	86	26	81	12	13	100
CHE	62	0	138	394	57	451	33	12	243
FRA	43	104	0	152	48	151	24	11	86
ITA	58	338	123	0	69	482	45	13	181
NLD	20	54	38	55	0	67	19	7	37
DEA	53	360	111	404	60	0	44	10	196
SVN	11	31	25	43	19	42	0	4	16
GBR	9	11	11	12	7	9	3	0	14
USA	76	220	58	131	28	158	13	13	0

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	FRA	NLD	USA	GBR
CAN	0	87	58	17	99	13
CHE	62	0	134	35	241	12
FRA	43	100	0	32	86	11
NLD	11	34	26	0	22	4
USA	75	220	58	17	0	14
GBR	9	11	11	4	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	88	58	86	31	100	81	17	13
CHE	62	0	138	394	58	243	451	47	12
FRA	43	104	0	152	52	86	151	36	11
ITA	58	338	123	0	77	181	482	63	13
NLD	22	54	41	59	0	51	72	27	7
USA	76	220	58	131	37	0	196	24	14
DEA	53	360	111	404	61	158	0	63	10
SVN	14	46	35	62	26	19	59	0	5
GBR	9	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 88 58 31 100 81 13 12
CHE 62 0 137 58 242 446 12 33
FRA 43 103 0 52 86 151 11 23
NLD 22 54 41 0 51 72 7 19
USA 76 220 58 37 0 196 14 16
DEA 53 359 110 61 158 0 10 44
GBR 9 11 11 7 13 9 0 4
SVN 11 31 24 19 13 42 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 88 58 86 31 100 81 17 13
CHE 62 0 138 394 58 243 451 47 12
FRA 43 104 0 152 52 86 151 36 11
ITA 58 338 123 0 77 181 482 63 13
NLD 22 54 41 59 0 51 72 27 7
USA 76 220 58 131 37 0 196 24 14
DEA 53 360 111 404 61 158 0 63 10
SVN 14 46 35 62 26 19 59 0 5
GBR 9 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 88 58 86 25 100 81 17 13
CHE 62 0 138 394 56 243 451 47 12
FRA 43 104 0 152 48 86 151 36 11
ITA 58 338 123 0 68 181 482 63 13
NLD 19 53 38 54 0 36 66 27 7
USA 76 220 58 131 26 0 196 24 14
DEA 53 360 111 404 59 158 0 63 10
SVN 14 46 35 62 26 19 59 0 5
GBR 9 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 88 58 84 25 81 17 100
CHE 62 0 138 388 56 451 47 243
FRA 43 104 0 151 48 151 36 86
ITA 58 333 123 0 68 476 63 169
NLD 19 53 38 54 0 66 27 36
DEA 53 360 111 397 59 0 63 196
SVN 14 46 35 62 26 59 0 24
USA 76 220 58 119 26 158 19 0

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	0	88	32	56	25	100	53	12	13
CHE	62	0	75	221	57	242	257	33	12
FRA	27	53	0	71	32	50	79	24	8
ITA	44	177	57	0	49	84	201	39	10
NLD	19	54	27	44	0	36	54	19	7
USA	76	220	32	60	27	0	99	16	14
DEA	40	194	55	173	48	69	0	42	7
SVN	11	31	25	38	19	13	40	0	4
GBR	9	11	8	9	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	88	58	86	26	100	81	17	13
CHE	62	0	138	394	57	243	451	47	12
FRA	43	104	0	152	48	86	151	36	11
ITA	58	338	123	0	69	181	482	63	13
NLD	20	54	38	55	0	37	67	27	7
USA	76	220	58	131	28	0	196	24	14
DEA	53	360	111	404	60	158	0	63	10
SVN	14	46	35	62	26	19	59	0	5
GBR	9	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	88	58	86	26	100	81	17
CHE	62	0	138	394	57	243	451	47
FRA	43	104	0	152	48	86	151	36
ITA	58	338	123	0	69	181	482	63
NLD	20	54	38	55	0	37	67	27
USA	76	220	58	131	28	0	196	24
DEA	53	360	111	404	60	158	0	63
SVN	14	46	35	62	26	19	59	0

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	0	88	58	86	31	100	81	12	13
CHE	62	0	138	394	58	243	451	33	12
FRA	43	104	0	152	52	86	151	24	11
ITA	58	338	123	0	77	181	482	45	13
NLD	22	54	41	59	0	51	72	19	7
USA	76	220	58	131	37	0	196	16	14
DEA	53	360	111	404	61	158	0	44	10
SVN	11	31	25	43	19	13	42	0	4
GBR	9	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	88	58	85	31	98	81	17	13
CHE	62	0	138	394	58	243	451	47	12
FRA	43	104	0	152	52	86	151	36	11
ITA	58	338	123	0	77	181	482	63	13
NLD	22	54	41	59	0	51	72	27	7
USA	76	220	58	131	37	0	196	24	14
DEA	53	360	111	404	61	158	0	63	10
SVN	14	46	35	62	26	19	59	0	5
GBR	9	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	ITA
CAN	0	88	58	31	100	71	16	13	78
CHE	62	0	138	58	243	419	45	12	352
FRA	43	104	0	52	86	141	35	11	139
NLD	22	54	41	0	51	66	27	7	68
USA	76	220	58	37	0	171	23	14	139
DEA	49	329	103	59	130	0	61	9	390
SVN	13	44	34	26	18	58	0	5	61
GBR	9	11	11	7	13	9	4	0	13
ITA	54	301	111	55	100	334	60	12	0

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	0	88	58	86	31	100	81	16	13
CHE	62	0	138	394	58	243	451	46	12
FRA	43	104	0	152	52	86	151	35	11
ITA	58	338	123	0	77	179	482	62	13
NLD	22	54	41	59	0	51	72	27	7
USA	76	220	58	130	37	0	196	23	14
DEA	53	360	111	404	61	158	0	62	10
SVN	13	45	34	61	26	18	58	0	5
GBR	9	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	88	58	56	22	53	16	100
CHE	62	0	135	221	53	257	45	242
FRA	43	101	0	91	45	99	35	86
ITA	44	177	71	0	48	201	49	84
NLD	17	52	36	44	0	53	26	31
DEA	40	194	66	173	48	0	54	99
SVN	13	44	34	49	26	49	0	22
USA	76	220	58	60	23	69	18	0

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	FRA	ITA	NLD	USA	DEA	SVN	GBR
CAN	0	82	49	86	31	100	53	12	13
CHE	61	0	100	338	53	214	252	33	12
FRA	40	76	0	118	42	71	88	24	11
ITA	58	282	99	0	75	178	236	45	13
NLD	22	51	36	59	0	51	54	19	7
USA	76	187	51	131	37	0	99	16	14
DEA	40	190	63	207	48	69	0	42	7
SVN	11	31	25	43	19	13	40	0	4
GBR	9	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	82	49	86	31	100	81	12	13
CHE	61	0	100	339	53	214	396	33	12
FRA	40	76	0	118	42	71	120	24	11
ITA	58	284	99	0	77	181	475	45	13
NLD	22	51	36	59	0	51	72	19	7
USA	76	187	51	131	37	0	194	16	14
DEA	52	311	89	400	61	154	0	44	10
SVN	11	31	25	43	19	13	42	0	4
GBR	9	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	82	49	84	31	100	81	12	13
CHE	61	0	100	338	53	214	396	33	12
FRA	40	76	0	117	42	71	120	24	11
ITA	58	283	99	0	76	169	470	45	13
NLD	22	51	36	59	0	51	72	19	7
USA	76	187	51	119	37	0	194	16	14
DEA	52	311	89	394	61	154	0	44	10
SVN	11	31	25	43	19	13	42	0	4
GBR	9	11	11	12	7	13	9	3	0

BSW

common bulls below diagonal
common three quarter sib group above diagonal

	CAN	CHE	DEA	ITA	SVN	USA	FRA
CAN	0	90	87	59	11	117	35
CHE	59	0	390	221	33	213	75
DEA	51	308	0	240	44	190	89
ITA	43	176	197	0	39	84	71
SVN	10	31	42	38	0	16	24
USA	74	187	153	60	13	0	50
FRA	27	53	62	57	25	32	0

BSW

common bulls below diagonal
common three quarter sib group above diagonal
CAN CHE DEA ITA SVN FRA

CAN 0 95 89 95 18 65
CHE 60 0 451 394 46 138
DEA 51 360 0 481 63 151
ITA 57 337 403 0 62 152
SVN 13 46 59 62 0 36
FRA 43 104 111 123 35 0

BSW

common bulls below diagonal
common three quarter sib group above diagonal
CAN CHE DEA ITA SVN USA FRA

CAN 0 90 65 59 11 117 35
CHE 59 0 287 221 33 213 75
DEA 44 221 0 208 43 127 81
ITA 43 176 180 0 39 84 71
SVN 10 31 41 38 0 16 24
USA 74 187 93 60 13 0 50
FRA 27 53 57 57 25 32 0

BSW

common bulls below diagonal
common three quarter sib group above diagonal
CHE DEA ITA SVN USA FRA

CHE 0 433 221 33 242 136
DEA 345 0 240 44 181 147
ITA 177 197 0 39 84 91
SVN 31 42 38 0 16 24
USA 220 142 60 13 0 85
FRA 103 109 71 25 58 0

BSW

common bulls below diagonal
common three quarter sib group above diagonal
CAN CHE DEA ITA SVN USA FRA

CAN 0 50 39 42 10 55 24
CHE 37 0 287 221 30 213 75
DEA 26 221 0 208 40 127 81
ITA 32 176 180 0 34 84 71
SVN 9 29 38 34 0 15 24
USA 43 187 93 60 12 0 50
FRA 19 53 57 57 25 32 0

BSW

common bulls below diagonal
common three quarter sib group above diagonal
CAN CHE DEA ITA SVN FRA

CAN 0 95 89 94 17 65
CHE 60 0 451 388 44 138
DEA 51 360 0 475 62 151
ITA 57 332 396 0 60 151
SVN 12 44 58 60 0 35
FRA 43 104 111 123 34 0

BSW

common bulls below diagonal
common three quarter sib group above diagonal
CHE DEA ITA SVN FRA

CHE 0 450 391 32 135
DEA 359 0 481 44 150
ITA 335 403 0 44 150
SVN 31 42 43 0 24
FRA 103 110 123 25 0

BSW

common bulls below diagonal
common three quarter sib group above diagonal
CHE DEA ITA SVN FRA

CHE 0 223 197 31 88
DEA 179 0 200 42 98
ITA 161 173 0 39 90
SVN 30 40 38 0 24
FRA 66 65 71 25 0

BSW

common bulls below diagonal
common three quarter sib group above diagonal
CHE DEA ITA SVN FRA

CHE 0 450 385 45 135
DEA 359 0 475 62 150
ITA 330 396 0 61 149
SVN 45 58 61 0 35
FRA 103 110 123 34 0

BSW

common bulls below diagonal
common three quarter sib group above diagonal
CHE DEA ITA SVN FRA

CHE 0 256 219 45 71
DEA 193 0 201 54 77
ITA 175 173 0 49 70
SVN 45 49 49 0 27
FRA 52 54 56 27 0

GUE

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

CAN 0 20 56 24
GBR 17 0 64 15
USA 45 63 0 32
AUS 23 13 29 0

GUE

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

CAN 0 20 56 24
GBR 17 0 64 15
USA 45 63 0 32
AUS 23 13 29 0

GUE

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

CAN 0 20 56 24
GBR 17 0 64 16
USA 45 63 0 33
AUS 23 14 30 0

GUE

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

CAN 0 20 56 24
GBR 17 0 64 15
USA 45 63 0 32
AUS 23 13 29 0

GUE

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

CAN 0 20 56 24
GBR 17 0 64 16
USA 45 63 0 33
AUS 23 14 30 0

GUE

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

CAN 0 20 56 24
GBR 17 0 64 16
USA 45 63 0 33
AUS 23 14 30 0

GUE

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

CAN 0 20 56 24
GBR 17 0 64 16
USA 45 63 0 33
AUS 23 14 30 0

GUE

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

CAN 0 28 9
USA 26 0 13
AUS 8 13 0

GUE

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

CAN 0 20 56 24
GBR 17 0 64 16
USA 45 63 0 33
AUS 23 14 30 0

GUE

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

CAN 0 20 56 24
GBR 17 0 64 16
USA 45 63 0 33
AUS 23 14 30 0

GUE

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

CAN 0 20 56 24
GBR 17 0 64 16
USA 45 63 0 33
AUS 23 14 30 0

GUE

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

CAN 0 20 56 24
GBR 17 0 64 16
USA 45 63 0 33
AUS 23 14 30 0

GUE

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

CAN 0 20 54 23
GBR 17 0 64 16
USA 44 63 0 33
AUS 22 14 30 0

GUE

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

CAN 0 20 56 24
GBR 17 0 64 16
USA 45 63 0 33
AUS 23 14 30 0

GUE

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

CAN 0 20 56 24
GBR 17 0 64 16
USA 45 63 0 33
AUS 23 14 30 0

GUE

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

CAN 0 8 56
AUS 8 0 14
USA 45 13 0

GUE

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

CAN 0 12 56 24
GBR 9 0 33 11
USA 45 31 0 32
AUS 23 9 29 0

GUE

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

CAN 0 18 54 23
GBR 15 0 62 16
USA 44 61 0 33
AUS 22 14 30 0

GUE

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

CAN 0 18 56 24
GBR 15 0 62 16
USA 45 61 0 33
AUS 23 14 30 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	IRL	KOR	SVN	PRT												
AUS	0	376	767	409	769	692	543	730	786	691	806	945	417	489	456	295	492
495	70	375	260	105	448												
BEL	318	0	429	378	602	472	407	547	503	514	723	518	292	379	220	195	303
382	46	304	174	109	371												
CAN	689	391	0	687	1619	961	1051	1097	1221	1379	1035	2426	703	827	324	347	994
872	105	370	518	134	732												
CHE	357	361	526	0	810	508	470	500	576	627	695	749	334	434	223	203	342
435	51	310	206	99	395												
DEU	390	464	509	518	0	1776	1167	1880	1473	2057	2100	2383	851	1299	407	350	1051
1401	151	507	425	199	789												
DFS	441	401	615	432	719	0	797	1284	1171	1263	1423	1463	625	930	421	357	702
947	113	487	348	165	671												
ESP	413	381	576	371	507	527	0	919	894	1101	872	1268	580	713	282	339	720
718	88	364	364	135	634												
FRA	436	490	557	408	610	495	571	0	1243	1436	1594	2041	688	1102	448	333	980
1008	104	476	378	131	640												
GBR	648	482	1172	556	680	746	706	641	0	1349	1387	1686	652	864	431	367	766
875	108	630	394	158	727												
ITA	522	454	961	548	953	833	764	604	1032	0	1420	2107	795	1081	381	360	923
1111	128	464	482	184	816												
NLD	649	764	821	652	1051	969	707	740	1082	1049	0	1873	675	1035	541	355	777
1149	143	584	358	170	768												
USA	759	413	2221	650	751	814	742	847	1413	1331	1363	0	939	1235	495	434	1494
1300	145	477	656	159	939												
HUN	297	235	594	267	483	420	433	377	512	613	478	813	0	576	248	277	504
708	77	292	333	108	489												
POL	305	286	517	303	623	550	418	505	587	700	708	893	423	0	276	263	611
874	123	344	371	160	633												
NZL	364	168	272	185	228	262	229	211	332	287	478	410	190	162	0	197	284
296	33	310	148	50	259												
ZAF	265	166	318	174	241	275	308	227	337	308	316	451	230	182	175	0	280
276	39	219	199	63	286												
JPN	225	165	282	165	206	241	232	206	259	267	242	331	192	175	119	169	0
635	77	285	391	101	472												
CZE	311	271	553	300	795	514	478	550	580	731	930	889	600	555	187	203	169
0	98	345	380	153	599												
EST	32	32	40	23	69	52	36	33	47	58	83	83	45	65	16	16	17
53	0	51	41	32	82												
IRL	349	294	345	306	351	386	353	371	685	423	536	438	246	250	257	207	153
261	27	0	172	79	332												
KOR	181	108	453	137	192	218	250	176	288	385	223	728	270	264	97	157	162
260	17	120	0	72	346												
SVN	78	84	96	71	170	132	96	90	119	153	141	123	80	126	36	43	47
115	22	60	45	0	116												
PRT	331	344	717	334	503	552	587	487	647	758	737	924	449	571	192	265	205
485	48	283	285	86	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	IRL	KOR	SVN	PRT												
AUS	0	376	767	409	769	692	548	730	786	691	806	945	417	489	456	295	492
495	70	375	256	105	448												
BEL	318	0	429	378	602	472	410	547	503	514	723	518	292	379	220	195	303
382	46	304	172	109	372												
CAN	689	391	0	687	1619	961	1055	1097	1221	1379	1035	2426	703	827	324	347	994
872	105	370	507	134	732												
CHE	357	361	526	0	810	508	472	500	576	627	695	749	334	434	223	203	342
435	51	310	203	99	395												
DEU	390	464	509	518	0	1776	1179	1880	1473	2057	2100	2383	851	1299	407	350	1051
1401	151	507	414	199	789												
DFS	441	401	615	432	719	0	807	1284	1171	1263	1423	1463	625	930	421	357	702
947	113	487	342	165	672												
ESP	417	385	579	376	524	537	0	928	903	1111	881	1277	582	719	285	340	724
723	89	367	355	136	638												
FRA	436	490	557	408	610	496	584	0	1243	1436	1594	2041	688	1102	448	333	980
1008	104	476	370	131	641												
GBR	648	482	1172	556	680	746	718	641	0	1349	1387	1686	652	864	431	367	766
875	108	630	387	158	727												
ITA	522	454	961	548	953	833	780	604	1032	0	1420	2107	795	1081	381	360	923
1111	128	464	473	184	817												
NLD	649	764	821	652	1051	969	719	740	1082	1049	0	1873	675	1035	541	355	777
1149	143	584	350	170	769												
USA	759	413	2221	650	751	815	750	847	1413	1331	1363	0	939	1235	495	434	1494
1300	145	477	644	159	940												
HUN	297	235	594	267	483	420	434	377	512	613	478	813	0	576	248	277	504
708	77	292	327	108	490												
POL	305	286	517	303	623	550	426	505	587	700	708	893	423	0	276	263	611
874	123	344	365	160	634												
NZL	364	168	272	185	228	262	231	211	332	287	478	410	190	162	0	197	284
296	33	310	146	50	259												
ZAF	265	166	318	174	241	275	310	227	337	308	316	451	230	182	175	0	280
276	39	219	198	63	286												
JPN	225	165	282	165	206	241	233	206	259	267	242	331	192	175	119	169	0
635	77	285	384	101	472												
CZE	311	271	553	300	795	514	482	550	580	731	930	889	600	555	187	203	169
0	98	345	376	153	600												
EST	32	32	40	23	69	52	36	33	47	58	83	83	45	65	16	16	17
53	0	51	41	32	82												
IRL	349	294	345	306	351	386	356	371	685	423	536	438	246	250	257	207	153
261	27	0	168	79	332												
KOR	180	107	448	136	190	216	250	173	286	383	220	716	269	262	96	156	160
259	17	118	0	72	341												
SVN	78	84	96	71	170	132	100	90	119	153	141	123	80	126	36	43	47
115	22	60	45	0	116												
PRT	332	346	717	334	503	554	596	489	649	758	740	924	451	573	192	265	205
486	48	284	283	86	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	ZAF	JPN	CZE
EST	IRL	KOR	SVN	PRT													
AUS	0	314	584	369	621	551	455	430	638	586	596	667	349	400	225	371	347
62	326	165	100	395													
BEL	306	0	392	364	559	435	385	415	463	488	605	456	273	341	164	266	305
45	281	124	106	350													
CAN	566	381	0	650	1538	865	987	771	1126	1341	895	2232	681	775	284	870	738
100	340	406	131	715													
CHE	342	355	511	0	810	507	474	405	576	627	662	749	332	408	181	334	357
51	301	154	96	391													
DEU	363	448	505	518	0	1775	1181	1441	1471	2057	1966	2383	848	1246	306	1015	1170
151	489	336	196	786													
DFS	419	393	612	432	719	0	802	884	1165	1260	1306	1461	620	876	305	658	761
113	460	258	164	665													
ESP	382	380	567	378	531	542	0	720	901	1115	829	1276	583	689	295	690	620
90	355	279	136	640													
FRA	324	387	428	335	438	408	487	0	873	1162	1046	1253	553	935	206	662	777
87	335	257	123	516													
GBR	579	465	1099	555	680	744	725	487	0	1347	1272	1677	649	819	313	718	721
107	584	301	155	721													
ITA	487	450	955	548	953	832	786	501	1030	0	1365	2105	792	1050	328	900	976
128	453	394	181	813													
NLD	540	643	744	623	998	940	684	547	1004	1015	0	1542	637	961	288	674	981
139	521	266	167	740													
USA	618	399	2108	650	751	814	753	513	1412	1331	1091	0	936	1183	368	1365	1092
145	449	514	156	932													
HUN	276	229	588	267	483	420	437	317	511	613	464	813	0	549	250	488	592
77	278	273	106	488													
POL	287	273	496	290	602	526	402	455	564	688	673	863	405	0	224	576	772
121	306	319	157	611													
ZAF	223	152	273	159	217	252	270	153	289	282	258	369	214	166	0	228	215
38	179	134	62	270													
JPN	218	164	278	165	205	239	229	180	256	265	237	326	190	169	160	0	525
75	258	299	101	465													
CZE	250	226	475	244	666	434	386	405	468	635	819	737	491	499	155	155	0
90	266	307	144	528													
EST	31	32	40	23	69	52	37	29	47	58	82	83	45	64	16	17	48
0	49	36	32	82													
IRL	324	285	342	303	349	384	357	283	650	421	506	432	244	236	177	152	206
27	0	115	78	319													
KOR	121	88	361	110	156	174	188	149	213	319	167	566	221	241	99	130	216
15	85	0	64	285													
SVN	77	82	95	70	168	132	100	86	118	151	138	122	79	125	43	47	111
22	60	43	0	115													
PRT	326	338	696	331	503	551	599	432	647	758	718	922	450	560	255	203	427
48	281	239	86	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	ZAF	JPN	CZE
EST	IRL	KOR	SVN	PRT													
AUS	0	348	759	408	449	686	548	720	780	688	769	937	415	485	295	491	492
68	372	256	103	447													
BEL	317	0	409	368	427	448	400	501	480	493	635	475	276	364	184	281	365
45	294	164	108	359													
CAN	688	386	0	686	1148	960	1060	1081	1221	1376	988	2426	700	822	347	994	866
102	370	508	132	731													
CHE	357	359	526	0	569	507	478	492	575	624	683	748	333	432	203	341	432
51	310	202	98	394													
DEU	293	361	412	390	0	1080	883	1168	965	1533	1359	1543	598	993	208	691	994
120	320	310	176	568													
DFS	441	398	615	432	551	0	820	1253	1168	1256	1366	1459	620	924	357	702	939
110	486	343	163	671													
ESP	424	395	585	382	388	551	0	932	917	1121	876	1291	586	727	344	729	730
90	376	361	136	649													
FRA	434	481	557	408	386	494	611	0	1228	1428	1423	2000	684	1091	332	967	1001
101	470	367	130	639													
GBR	647	477	1172	556	497	746	740	641	0	1347	1342	1683	650	859	366	766	869
107	624	389	157	725													
ITA	522	452	961	547	712	831	801	603	1031	0	1393	2105	790	1074	359	920	1107
126	462	474	182	815													
NLD	640	681	808	649	737	965	737	698	1061	1042	0	1701	657	1010	343	736	1134
140	570	344	168	759													
USA	757	404	2221	650	531	814	764	811	1413	1331	1310	0	936	1228	434	1494	1295
144	475	643	157	937													
HUN	297	232	594	267	349	417	441	377	512	611	475	813	0	573	276	503	704
75	291	327	106	489													
POL	305	284	517	302	520	547	438	505	585	697	699	893	421	0	262	608	866
119	342	365	157	633													
ZAF	265	164	318	174	150	275	312	227	337	308	310	451	230	182	0	280	275
39	219	198	63	286													
JPN	225	165	282	165	168	241	235	206	259	267	241	331	192	175	169	0	632
76	285	386	99	474													
CZE	311	268	553	299	596	513	496	550	579	729	927	889	598	552	203	169	0
94	344	376	151	596													
EST	32	31	40	23	55	51	39	33	46	57	82	83	44	62	16	17	51
0	50	41	31	81													
IRL	347	292	345	306	249	386	369	371	679	423	532	438	246	250	207	153	261
27	0	169	78	331													
KOR	180	107	448	136	159	217	251	174	287	384	218	711	269	263	156	161	260
17	119	0	72	340													
SVN	78	83	96	71	159	130	103	90	119	151	140	123	79	124	43	47	114
21	60	45	0	115													
PRT	332	344	717	335	405	554	610	490	651	760	736	927	453	575	265	205	488
47	285	283	86	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	ZAF	JPN	CZE
EST	IRL	KOR	SVN	PRT													
AUS	0	373	759	408	767	688	539	722	780	690	802	937	417	487	295	491	494
70	372	257	105	446													
BEL	318	0	427	377	598	470	409	543	501	511	719	515	290	377	194	301	380
46	302	170	109	369													
CAN	688	390	0	687	1619	961	1054	1097	1221	1379	1035	2426	703	827	347	994	872
105	370	512	134	732													
CHE	357	361	526	0	810	508	471	500	576	627	695	749	334	434	203	342	435
51	310	203	99	395													
DEU	390	464	509	518	0	1776	1173	1880	1473	2057	2100	2383	851	1299	350	1051	1401
151	507	419	199	789													
DFS	441	401	616	432	719	0	803	1284	1171	1263	1423	1463	625	930	357	702	947
113	487	344	165	671													
ESP	415	384	578	373	516	533	0	924	901	1107	878	1274	582	717	339	724	721
89	366	359	135	637													
FRA	435	490	557	408	610	496	578	0	1243	1436	1594	2041	688	1102	333	980	1008
104	476	374	131	640													
GBR	647	482	1172	556	680	746	714	641	0	1349	1387	1686	652	864	367	766	875
108	627	391	158	727													
ITA	522	454	961	548	953	833	773	604	1032	0	1420	2107	795	1081	360	923	1111
128	464	478	184	816													
NLD	649	760	821	652	1051	969	714	740	1082	1049	0	1873	675	1035	355	777	1149
143	584	354	170	768													
USA	757	412	2221	650	751	816	748	847	1413	1331	1363	0	939	1235	434	1494	1300
145	477	650	159	939													
HUN	297	235	594	267	483	421	434	377	512	613	478	813	0	576	277	504	708
77	292	330	108	489													
POL	305	286	517	303	623	550	423	505	587	700	708	893	423	0	263	611	874
123	344	368	160	633													
ZAF	265	166	318	174	241	276	308	227	337	308	316	451	230	182	0	280	276
39	219	198	63	286													
JPN	225	165	282	165	206	241	233	206	259	267	242	331	192	175	169	0	635
77	285	388	101	472													
CZE	311	271	553	300	795	514	480	550	580	731	930	889	600	555	203	169	0
98	345	379	153	599													
EST	32	32	40	23	69	52	36	33	47	58	83	83	45	65	16	17	53
0	51	41	32	82													
IRL	347	294	345	306	351	386	354	371	682	423	536	438	246	250	207	153	261
27	0	170	79	332													
KOR	180	107	452	136	191	217	251	175	287	384	222	723	270	263	157	161	260
17	119	0	72	344													
SVN	78	84	96	71	170	132	97	90	119	153	141	123	80	126	43	47	115
22	60	45	0	116													
PRT	331	343	717	334	503	552	592	487	647	758	737	924	449	571	265	205	485
48	283	284	86	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	POL	NZL	JPN	CZE	EST
IRL	KOR	SVN	PRT	ZAF													
AUS	0	299	524	336	537	459	412	467	552	521	519	539	344	292	267	326	56
285	133	99	316	151													
BEL	292	0	419	356	566	425	406	524	442	502	600	426	304	210	213	309	46
258	106	107	314	109													
CAN	522	389	0	651	1551	803	1056	1095	1040	1373	879	2014	721	317	692	740	103
304	334	132	613	195													
CHE	319	345	496	0	699	447	468	486	522	599	567	635	346	217	259	343	49
262	126	95	327	114													
DEU	334	453	497	452	0	1532	1154	1776	1256	2025	1815	1928	1134	377	770	1158	147
408	278	197	665	187													
DFS	376	371	585	391	664	0	703	1054	926	1167	1199	1067	772	333	461	731	104
372	200	160	545	185													
ESP	345	388	580	375	518	488	0	934	793	1113	783	1107	622	286	544	616	89
297	231	135	541	190													
FRA	353	489	557	399	541	457	595	0	958	1426	1193	1346	939	437	646	826	101
363	229	129	516	167													
GBR	517	439	1014	500	607	642	610	533	0	1212	1088	1309	719	322	511	692	96
435	239	154	583	193													
ITA	446	454	960	526	942	778	784	603	935	0	1310	1832	973	373	736	971	127
396	316	182	703	211													
NLD	480	625	705	538	924	869	642	623	847	973	0	1260	873	416	523	959	135
445	210	165	617	184													
USA	525	384	1948	569	656	716	644	581	1192	1237	922	0	1038	321	935	1041	135
351	411	154	734	224													
POL	245	232	458	238	526	471	335	419	493	619	600	771	0	197	487	738	110
259	268	148	533	160													
NZL	262	167	270	182	221	230	232	211	264	282	378	280	118	0	168	205	31
245	77	49	190	93													
JPN	183	137	239	146	177	208	191	176	213	235	200	274	153	94	0	467	64
183	232	88	338	136													
CZE	241	226	475	235	664	429	386	421	461	633	812	721	478	137	147	0	88
250	252	144	491	175													
EST	29	32	40	23	68	49	37	33	44	58	79	80	56	16	17	47	0
42	32	31	74	31													
IRL	291	262	301	269	307	323	302	305	455	372	438	362	197	213	129	202	25
0	88	76	259	109													
KOR	105	77	295	92	128	139	148	121	168	257	130	464	206	55	106	174	15
67	0	59	220	95													
SVN	76	84	96	70	169	130	100	90	117	152	139	122	115	36	42	111	22
60	40	0	108	53													
PRT	264	285	574	268	422	442	473	391	503	640	582	716	487	139	163	397	43
223	187	79	0	176													
ZAF	144	98	175	94	129	161	161	128	167	173	156	218	125	81	100	131	14
103	67	36	161	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	JPN	CZE
EST	IRL	KOR	SVN	PRT													
AUS	0	376	767	409	769	692	551	610	786	691	806	942	417	488	456	492	495
70	375	260	77	448													
BEL	318	0	428	377	602	471	412	501	502	513	722	515	292	378	220	303	382
46	304	174	80	370													
CAN	689	391	0	687	1619	961	1057	938	1221	1379	1035	2414	703	826	324	994	872
105	370	520	109	732													
CHE	357	361	526	0	810	508	475	460	576	627	695	745	334	432	223	342	435
51	310	206	74	395													
DEU	390	464	509	518	0	1776	1185	1698	1473	2057	2100	2374	851	1294	407	1051	1401
151	507	425	165	788													
DFS	441	401	616	432	719	0	812	1120	1171	1263	1423	1461	625	928	421	702	947
113	486	349	133	670													
ESP	418	388	580	378	532	542	0	857	911	1117	891	1279	586	726	292	726	728
90	372	367	107	644													
FRA	418	469	524	394	516	487	587	0	1106	1356	1312	1616	643	1019	369	826	964
99	431	349	107	600													
GBR	648	482	1172	556	680	746	726	629	0	1349	1387	1680	652	863	431	766	875
108	629	394	125	725													
ITA	522	454	961	548	953	833	787	591	1032	0	1420	2102	795	1081	381	923	1111
128	464	484	150	816													
NLD	649	764	821	652	1051	969	729	671	1082	1049	0	1868	675	1033	541	777	1149
143	584	358	131	768													
USA	756	411	2202	645	744	813	753	689	1405	1324	1357	0	937	1230	494	1491	1295
144	474	658	127	936													
HUN	297	235	594	267	483	421	437	374	512	613	478	812	0	575	248	504	708
77	292	333	91	489													
POL	305	286	517	303	623	550	430	473	587	700	708	889	423	0	276	610	874
123	344	371	135	633													
NZL	364	168	272	185	228	262	235	205	332	287	478	407	190	162	0	284	296
33	310	149	40	259													
JPN	225	165	282	165	206	241	234	205	259	267	242	331	192	175	119	0	635
77	285	392	78	472													
CZE	311	271	553	300	795	514	487	534	580	731	930	885	600	555	187	169	0
98	345	380	125	598													
EST	32	32	40	23	69	52	37	33	47	58	83	83	45	65	16	17	53
0	51	41	28	82													
IRL	349	294	345	306	351	386	361	367	685	423	536	435	246	250	257	153	261
27	0	172	57	332													
KOR	181	108	453	137	192	218	253	173	288	385	223	728	270	264	97	162	260
17	120	0	59	346													
SVN	58	61	79	56	144	106	78	74	93	122	108	100	66	106	29	32	95
18	46	38	0	90													
PRT	332	344	717	334	503	553	600	479	648	758	738	916	449	572	192	205	485
48	284	285	66	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	JPN	CZE
EST	IRL	SVN	PRT														
AUS	0	376	767	409	769	692	551	730	786	691	806	945	417	489	456	492	495
70	363	78	448														
BEL	318	0	429	378	602	472	413	547	503	514	723	518	292	379	220	303	382
46	295	80	371														
CAN	689	391	0	687	1619	961	1057	1097	1221	1379	1035	2426	703	827	324	994	872
105	356	109	732														
CHE	357	361	526	0	810	508	475	500	576	627	695	749	334	434	223	342	435
51	301	75	395														
DEU	390	464	509	518	0	1776	1185	1880	1473	2057	2100	2383	851	1299	407	1051	1401
151	490	166	789														
DFS	441	401	616	432	719	0	812	1284	1171	1263	1423	1463	625	930	421	702	947
113	463	134	671														
ESP	418	388	580	378	532	542	0	936	911	1117	891	1284	586	726	292	726	728
90	358	107	644														
FRA	436	490	557	408	610	496	595	0	1243	1436	1594	2041	688	1102	448	980	1008
104	447	107	640														
GBR	648	481	1171	556	678	745	723	640	0	1349	1387	1686	652	864	431	766	875
108	591	126	727														
ITA	522	454	961	548	953	833	787	604	1030	0	1420	2107	795	1081	381	923	1111
128	453	151	816														
NLD	649	764	821	652	1051	969	729	740	1080	1049	0	1873	675	1035	541	777	1149
143	548	132	768														
USA	759	413	2221	650	751	816	756	847	1413	1331	1363	0	939	1235	495	1494	1300
145	451	128	939														
HUN	297	235	594	267	483	421	437	377	512	613	478	813	0	576	248	504	708
77	281	91	489														
POL	305	286	517	303	623	550	430	505	587	700	708	893	423	0	276	611	874
123	333	136	633														
NZL	364	168	272	185	228	262	235	211	332	287	478	410	190	162	0	284	296
33	296	40	259														
JPN	225	165	282	165	206	241	234	206	259	267	242	331	192	175	119	0	635
77	271	78	472														
CZE	311	271	553	300	795	514	487	550	579	731	930	889	600	555	187	169	0
98	330	126	599														
EST	32	32	40	23	69	52	37	33	47	58	83	83	45	65	16	17	53
0	50	28	82														
IRL	348	293	344	304	349	385	358	366	660	421	528	432	244	250	253	153	260
27	0	57	322														
SVN	58	61	79	56	144	106	78	74	93	123	109	100	66	106	29	32	95
18	46	0	90														
PRT	332	344	717	334	503	553	600	488	647	758	738	924	449	572	192	205	485
48	284	66	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	JPN	CZE	EST
IRL	SVN	PRT															
AUS	0	368	759	408	767	688	545	590	780	690	783	935	405	485	484	494	70
360	77	448															
BEL	318	0	423	375	596	467	410	485	496	510	682	500	285	375	293	381	46
293	80	371															
CAN	688	391	0	687	1619	961	1058	920	1221	1379	1004	2418	689	826	978	871	105
356	109	736															
CHE	357	360	526	0	810	508	476	444	576	627	684	747	328	432	341	435	51
301	74	397															
DEU	390	464	509	518	0	1776	1188	1671	1473	2057	2061	2377	833	1293	1044	1401	151
490	165	793															
DFS	441	401	616	432	719	0	815	1100	1171	1263	1396	1449	610	928	691	947	113
463	133	675															
ESP	418	390	580	379	536	545	0	838	912	1120	877	1282	576	727	715	729	91
359	107	649															
FRA	388	452	498	369	482	464	558	0	1083	1335	1264	1586	628	1008	807	952	98
407	106	597															
GBR	647	481	1171	556	678	745	727	586	0	1349	1363	1679	637	863	754	875	108
588	125	727															
ITA	522	454	961	548	953	833	791	557	1030	0	1401	2104	786	1081	917	1111	128
453	150	820															
NLD	624	722	774	630	1021	946	705	609	1042	1019	0	1763	650	1022	739	1139	141
543	131	761															
USA	757	411	2221	650	749	816	755	644	1412	1331	1156	0	909	1232	1442	1297	145
449	127	943															
HUN	286	228	580	263	474	412	423	356	496	602	449	787	0	569	493	695	77
276	91	490															
POL	305	286	517	303	623	550	431	461	587	700	700	893	419	0	608	874	123
333	135	637															
JPN	225	165	282	165	206	241	234	200	259	267	240	331	186	175	0	632	76
267	78	474															
CZE	311	271	553	300	795	514	488	514	579	731	914	888	588	555	169	0	98
330	125	600															
EST	32	32	40	23	69	52	38	32	47	58	82	83	45	65	17	53	0
50	28	82															
IRL	346	293	344	304	349	385	359	339	657	421	518	432	237	250	153	260	27
0	57	323															
SVN	58	61	79	56	144	106	78	73	93	122	108	100	66	106	32	95	18
46	0	90															
PRT	333	348	718	336	506	557	606	477	652	761	729	927	451	576	205	489	48
285	66	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	391	297	453	432	369	456	462	358	555	457	298	279	97	60	302
CAN	381	0	536	1211	864	943	890	1124	1054	813	2229	720	340	273	82	597
CHE	293	416	0	547	391	372	372	455	446	480	568	311	235	108	56	295
DEU	376	429	362	0	1227	925	1257	1061	1256	1450	1695	1016	351	218	118	554
DFS	389	613	344	586	0	724	1095	1158	784	1161	1440	740	460	170	100	539
ESP	360	513	283	406	498	0	781	810	804	733	1152	605	320	190	83	524
FRA	445	496	304	389	464	533	0	1080	839	1069	1585	795	406	192	81	494
GBR	464	1098	424	525	743	624	587	0	895	1097	1667	702	583	199	95	586
ITA	353	782	389	579	599	536	439	721	0	863	1371	747	291	249	104	555
NLD	582	671	449	765	864	582	566	848	697	0	1286	928	463	180	99	590
USA	399	2106	486	570	815	623	644	1410	978	893	0	1057	448	331	98	750
CZE	223	463	215	605	421	384	405	454	511	785	710	0	254	199	90	470
IRL	285	341	230	266	385	318	339	651	297	451	432	199	0	76	41	257
KOR	72	253	83	110	121	133	108	143	215	114	377	139	58	0	41	183
SVN	48	63	41	105	83	64	57	75	86	80	78	69	33	28	0	73
PRT	277	566	244	390	435	458	384	492	519	556	712	376	217	155	50	0

HOL

 common bulls below diagonal

common three quarter sib group above diagonal

	BEL	CHE	DEU	DFS	FRA	GBR	ITA	NLD	USA	CZE	JPN	IRL	KOR	CAN	PRT	ESP	SVN
BEL	0	357	459	267	344	480	386	624	477	278	169	262	105	331	219	383	79
CHE	349	0	626	261	334	535	510	630	698	318	202	257	126	503	224	436	73
DEU	379	422	0	772	1049	1066	1393	1501	1705	955	577	310	256	1059	424	934	159
DFS	213	205	319	0	423	626	519	785	685	436	209	270	125	322	246	407	79
FRA	312	277	343	171	0	671	817	810	985	604	448	232	190	612	310	603	99
GBR	472	516	528	351	398	0	983	1245	1632	635	400	519	236	818	393	839	124
ITA	377	437	598	351	399	769	0	975	1541	775	536	292	303	1004	438	877	140
NLD	655	597	795	501	456	971	754	0	1496	884	388	457	206	668	401	784	130
USA	405	618	573	343	418	1399	1057	1037	0	966	738	405	408	1598	514	1204	126
CZE	207	222	577	231	323	412	524	749	656	0	365	203	242	592	334	549	121
JPN	108	111	143	99	137	171	189	159	220	124	0	122	207	501	219	441	68
IRL	268	263	247	203	212	582	289	442	397	156	89	0	77	235	148	309	52
KOR	77	92	127	75	118	167	254	129	463	169	104	59	0	299	190	223	57
CAN	331	425	414	244	364	837	766	619	1671	418	193	254	280	0	389	751	105
PRT	201	182	292	180	262	323	401	354	505	268	120	125	161	375	0	354	83
ESP	377	347	397	265	409	673	575	637	696	337	155	318	147	447	289	0	106
SVN	61	56	144	55	71	93	118	108	100	94	31	42	38	79	59	77	0

JER

 common bulls below diagonal

common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD
AUS	0	127	70	80	42	137	221	118	16
CAN	131	0	63	98	47	69	319	124	12
DFS	44	46	0	79	51	75	120	96	14
GBR	80	101	70	0	48	67	127	84	11
ITA	41	45	48	48	0	36	61	57	14
NZL	137	71	52	68	32	0	141	94	15
USA	214	312	85	132	65	149	0	215	25
ZAF	122	123	76	84	57	92	221	0	22
NLD	13	8	9	9	11	13	26	18	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD
AUS	0	127	70	80	42	137	221	111	16
CAN	131	0	63	98	47	69	319	113	12
DFS	44	46	0	79	51	75	120	87	14
GBR	80	101	70	0	48	67	127	79	11
ITA	41	45	48	48	0	36	61	57	14
NZL	137	71	52	68	32	0	141	85	15
USA	214	312	85	132	65	149	0	195	25
ZAF	117	114	70	80	57	84	203	0	22
NLD	13	8	9	9	11	13	26	18	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	NZL	ZAF	NLD	USA
AUS	0	125	69	78	42	136	111	16	221
CAN	129	0	63	98	47	69	113	12	319
DFS	43	46	0	79	51	75	87	14	120
GBR	78	101	70	0	48	67	79	11	127
ITA	41	45	48	48	0	36	57	14	61
NZL	136	71	52	68	32	0	85	15	141
ZAF	117	114	70	80	57	84	0	22	195
NLD	13	8	9	9	11	13	18	0	25
USA	214	312	85	132	65	149	203	26	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	USA	ZAF	NLD
AUS	0	127	67	79	42	221	117	3
CAN	131	0	63	98	47	319	124	4
DFS	42	46	0	77	51	120	95	4
GBR	79	101	68	0	48	127	84	5
ITA	41	45	48	48	0	61	57	5
USA	214	312	85	132	65	0	214	8
ZAF	121	123	75	84	57	220	0	7
NLD	1	3	4	4	4	7	6	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD
AUS	0	129	70	80	42	138	224	118	16
CAN	133	0	63	98	47	69	319	124	12
DFS	44	46	0	79	51	75	120	96	14
GBR	80	101	70	0	48	67	127	84	11
ITA	41	45	48	48	0	36	61	57	14
NZL	138	71	52	68	32	0	141	94	15
USA	217	312	85	132	65	149	0	215	25
ZAF	122	123	76	84	57	92	221	0	22
NLD	13	8	9	9	11	13	26	18	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD
AUS	0	129	70	80	42	138	224	118	16
CAN	133	0	63	98	47	69	319	124	12
DFS	44	46	0	79	51	75	120	96	14
GBR	80	101	70	0	48	67	127	84	11
ITA	41	45	48	48	0	36	61	57	14
NZL	138	71	52	68	32	0	141	94	15
USA	217	312	85	132	65	149	0	215	25
ZAF	122	123	76	84	57	92	221	0	22
NLD	13	8	9	9	11	13	26	18	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD
AUS	0	129	70	80	42	138	224	118	16
CAN	133	0	63	98	47	69	319	124	12
DFS	44	46	0	79	51	75	120	96	14
GBR	80	101	70	0	48	67	127	84	11
ITA	41	45	48	48	0	36	61	57	14
NZL	138	71	52	68	32	0	141	94	15
USA	217	312	85	132	65	149	0	215	25
ZAF	122	123	76	84	57	92	221	0	22
NLD	13	8	9	9	11	13	26	18	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	ITA	ZAF	NLD	USA
AUS	0	88	42	33	75	9	131
CAN	86	0	63	47	99	12	319
DFS	31	46	0	51	66	14	120
ITA	31	45	48	0	51	14	61
ZAF	80	94	52	49	0	19	160
NLD	8	8	9	11	13	0	25
USA	131	312	85	65	157	26	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	USA	ZAF	NLD
AUS	0	125	67	78	42	221	117	16
CAN	129	0	63	98	47	319	124	12
DFS	42	46	0	77	51	120	95	14
GBR	78	101	68	0	48	127	84	11
ITA	41	45	48	48	0	61	57	14
USA	214	312	85	132	65	0	214	25
ZAF	121	123	75	84	57	220	0	22
NLD	13	8	9	9	11	26	18	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD
AUS	0	129	70	80	42	138	224	118	16
CAN	133	0	63	98	47	69	319	124	12
DFS	44	46	0	79	51	75	120	96	14
GBR	80	101	70	0	48	67	127	84	11
ITA	41	45	48	48	0	36	61	57	14
NZL	138	71	52	68	32	0	141	94	15
USA	217	312	85	132	65	149	0	215	25
ZAF	122	123	76	84	57	92	221	0	22
NLD	13	8	9	9	11	13	26	18	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD
AUS	0	129	68	80	42	138	224	118	16
CAN	133	0	57	98	47	69	319	124	12
DFS	43	44	0	70	51	68	113	89	14
GBR	80	101	65	0	48	66	127	83	11
ITA	41	45	48	48	0	36	61	57	14
NZL	138	71	46	67	32	0	141	93	15
USA	217	312	80	132	65	149	0	215	25
ZAF	122	123	73	83	57	91	221	0	22
NLD	13	8	9	9	11	13	26	18	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD
AUS	0	129	70	80	42	138	224	118	16
CAN	133	0	63	98	47	69	319	124	12
DFS	44	46	0	79	51	75	120	96	14
GBR	80	101	70	0	48	67	127	84	11
ITA	41	45	48	48	0	36	61	57	14
NZL	138	71	52	68	32	0	141	94	15
USA	217	312	85	132	65	149	0	215	25
ZAF	122	123	76	84	57	92	221	0	22
NLD	13	8	9	9	11	13	26	18	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	USA	ZAF	NLD
AUS	0	125	67	78	42	221	117	16
CAN	129	0	63	98	47	316	124	12
DFS	42	46	0	77	51	120	95	14
GBR	78	100	68	0	48	127	84	11
ITA	41	45	48	48	0	61	57	14
USA	214	310	85	132	65	0	214	25
ZAF	121	123	75	84	57	220	0	22
NLD	13	8	9	9	11	26	18	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	NZL	USA	ZAF	NLD
AUS	0	129	70	80	42	138	224	118	16
CAN	133	0	63	98	47	69	319	124	12
DFS	44	46	0	79	51	75	120	96	14
GBR	80	101	70	0	48	67	127	84	11
ITA	41	45	48	48	0	36	61	57	14
NZL	138	71	52	68	32	0	141	94	15
USA	217	312	85	132	65	149	0	215	25
ZAF	122	123	76	84	57	92	221	0	22
NLD	13	8	9	9	11	13	26	18	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	USA	ZAF	NLD
AUS	0	125	67	78	42	221	110	16
CAN	129	0	63	98	47	319	113	12
DFS	42	46	0	77	51	120	86	14
GBR	78	101	68	0	48	127	79	11
ITA	41	45	48	48	0	61	57	14
USA	214	312	85	132	65	0	194	25
ZAF	116	114	69	80	57	202	0	22
NLD	13	8	9	9	11	26	18	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	NZL	ZAF	NLD	USA
AUS	0	84	38	81	74	9	122
CAN	80	0	52	69	110	12	319
DFS	25	41	0	61	78	14	106
NZL	76	71	42	0	80	15	141
ZAF	80	108	62	75	0	22	190
NLD	8	8	9	13	18	0	25
USA	121	312	75	149	190	26	0

JER

common bulls below diagonal
common three quarter sib group above diagonal

	AUS	CAN	DFS	GBR	ITA	NZL	USA	NLD
AUS	0	127	70	34	42	137	221	16
CAN	131	0	63	37	47	69	319	12
DFS	44	46	0	30	51	75	120	14
GBR	38	43	28	0	14	34	37	4
ITA	41	45	48	15	0	36	61	14
NZL	137	71	52	38	32	0	141	15
USA	214	312	85	40	65	149	0	25
NLD	13	8	9	5	11	13	26	0

JER

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

AUS 0 129 68 80 138 224 16
CAN 133 0 57 98 69 316 12
DFS 43 44 0 70 68 113 14
GBR 80 100 65 0 65 127 11
NZL 138 71 46 66 0 141 15
USA 217 310 80 132 149 0 25
NLD 13 8 9 9 13 26 0

JER

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

AUS 0 125 67 78 42 220 16
CAN 129 0 63 98 47 319 12
DFS 42 46 0 77 51 120 14
GBR 78 100 68 0 48 127 11
ITA 41 45 48 48 0 61 14
USA 213 312 85 132 65 0 25
NLD 13 8 9 9 11 26 0

JER

JER

RDC

common bulls below diagonal
common three quarter sib group above diagonal
AUS CAN DEU DFS GBR NOR NZL USA NLD

AUS 0 25 9 42 10 16 20 13 7
CAN 24 0 6 95 52 3 31 124 2
DEU 8 6 0 31 0 9 3 0 8
DFS 31 93 20 0 33 78 52 59 23
GBR 9 51 0 31 0 0 21 39 0
NOR 12 3 8 56 0 0 8 0 15
NZL 20 29 3 50 18 7 0 20 2
USA 13 115 0 55 35 0 19 0 1
NLD 7 2 7 23 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 25 9 42 10 20 13 7
CAN 24 0 6 94 52 31 124 2
DEU 8 6 0 31 0 3 0 6
DFS 31 93 20 0 33 50 58 21
GBR 9 51 0 31 0 21 39 0
NZL 20 29 3 48 18 0 20 2
USA 13 115 0 55 35 19 0 1
NLD 7 2 5 21 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	25	9	42	10	6	20	13	7
CAN	24	0	6	94	52	0	31	122	2
DEU	8	6	0	31	0	4	3	0	7
DFS	31	93	20	0	33	43	50	58	21
GBR	9	51	0	31	0	0	21	38	0
NOR	5	0	3	25	0	0	2	0	11
NZL	20	29	3	48	18	2	0	20	2
USA	13	114	0	55	34	0	19	0	1
NLD	7	2	6	21	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	25	9	42	10	13	7
CAN	24	0	6	94	52	124	2
DEU	8	6	0	31	0	0	6
DFS	31	93	20	0	33	58	20
GBR	9	51	0	31	0	39	0
USA	13	115	0	55	35	0	1
NLD	7	2	5	20	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	25	9	42	10	16	20	13	7
CAN	24	0	6	94	52	3	31	124	2
DEU	8	6	0	31	0	9	3	0	8
DFS	31	93	20	0	33	86	49	58	22
GBR	9	51	0	31	0	0	21	39	0
NOR	12	3	8	62	0	0	8	0	15
NZL	20	29	3	45	18	7	0	20	2
USA	13	115	0	55	35	0	19	0	1
NLD	7	2	7	22	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	25	9	42	10	20	13	7
CAN	24	0	6	94	52	31	124	2
DEU	8	6	0	31	0	3	0	8
DFS	31	93	20	0	33	50	58	22
GBR	9	51	0	31	0	21	39	0
NZL	20	29	3	48	18	0	20	2
USA	13	115	0	55	35	19	0	1
NLD	7	2	7	22	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	25	9	42	10	16	20	13	7
CAN	24	0	6	94	52	3	31	124	2
DEU	8	6	0	31	0	9	3	0	8
DFS	31	93	20	0	33	89	52	58	23
GBR	9	51	0	31	0	0	21	39	0
NOR	12	3	8	64	0	0	8	0	15
NZL	20	29	3	50	18	7	0	20	2
USA	13	115	0	55	35	0	19	0	1
NLD	7	2	7	23	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	13	9	30	14	7	6
CAN	13	0	6	93	3	2	124
DEU	8	6	0	31	9	6	0
DFS	22	92	20	0	86	20	58
NOR	11	3	8	62	0	15	0
NLD	7	2	5	20	14	0	1
USA	6	115	0	55	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	25	6	42	10	16	13	7
CAN	24	0	3	94	52	3	124	2
DEU	5	3	0	18	0	7	0	6
DFS	31	93	11	0	33	86	58	21
GBR	9	51	0	31	0	0	39	0
NOR	12	3	6	62	0	0	0	15
USA	13	115	0	55	35	0	0	1
NLD	7	2	5	21	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	25	9	42	10	16	20	13	7
CAN	24	0	6	94	52	3	31	124	2
DEU	8	6	0	31	0	9	3	0	6
DFS	31	93	20	0	33	89	52	58	21
GBR	9	51	0	31	0	0	21	39	0
NOR	12	3	8	64	0	0	8	0	15
NZL	20	29	3	50	18	7	0	20	2
USA	13	115	0	55	35	0	19	0	1
NLD	7	2	5	21	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	25	9	42	10	16	20	13	7
CAN	24	0	6	94	52	3	31	124	2
DEU	8	6	0	31	0	9	3	0	7
DFS	31	93	20	0	33	86	50	58	21
GBR	9	51	0	31	0	0	21	39	0
NOR	12	3	8	62	0	0	8	0	15
NZL	20	29	3	47	18	7	0	20	2
USA	13	115	0	55	35	0	19	0	1
NLD	7	2	6	21	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	25	9	42	10	16	20	13	7
CAN	24	0	6	94	52	3	31	124	2
DEU	8	6	0	31	0	9	3	0	8
DFS	31	93	20	0	33	79	52	58	23
GBR	9	51	0	31	0	0	21	39	0
NOR	12	3	8	57	0	0	8	0	15
NZL	20	29	3	50	18	7	0	20	2
USA	13	115	0	55	35	0	19	0	1
NLD	7	2	7	23	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	25	9	42	10	16	13	7
CAN	24	0	6	94	52	3	121	2
DEU	8	6	0	31	0	9	0	8
DFS	31	93	20	0	33	89	58	23
GBR	9	51	0	31	0	0	39	0
NOR	12	3	8	64	0	0	0	15
USA	13	114	0	55	35	0	0	1
NLD	7	2	7	23	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	25	9	42	10	16	20	13	7
CAN	24	0	6	94	52	3	31	124	2
DEU	8	6	0	31	0	9	3	0	8
DFS	31	93	20	0	33	86	50	58	22
GBR	9	51	0	31	0	0	21	39	0
NOR	12	3	8	62	0	0	8	0	15
NZL	20	29	3	48	18	7	0	20	2
USA	13	115	0	55	35	0	19	0	1
NLD	7	2	7	22	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 25 9 42 10 16 13 7
CAN 24 0 6 94 52 3 122 2
DEU 8 6 0 31 0 9 0 8
DFS 31 93 20 0 33 83 58 23
GBR 9 51 0 31 0 0 38 0
NOR 12 3 8 59 0 0 0 15
USA 13 114 0 55 34 0 0 1
NLD 7 2 7 23 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 10 8 26 12 10 7 5
CAN 10 0 5 88 3 31 2 124
DEU 7 5 0 24 9 3 6 0
DFS 19 86 17 0 78 44 20 53
NOR 9 3 8 57 0 8 15 0
NZL 10 29 3 44 7 0 1 20
NLD 7 2 5 20 14 1 0 1
USA 5 115 0 51 0 19 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 25 9 42 9 16 20 13 7
CAN 24 0 6 95 49 3 31 124 2
DEU 8 6 0 31 0 9 3 0 8
DFS 31 93 20 0 33 88 51 59 23
GBR 8 48 0 31 0 0 18 37 0
NOR 12 3 8 64 0 0 8 0 15
NZL 20 29 3 49 15 7 0 20 2
USA 13 115 0 55 33 0 19 0 1
NLD 7 2 7 23 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 25 9 42 9 16 20 13 7
CAN 24 0 6 94 49 3 31 121 2
DEU 8 6 0 31 0 9 3 0 8
DFS 31 93 20 0 33 89 52 58 23
GBR 8 48 0 31 0 0 18 37 0
NOR 12 3 8 64 0 0 8 0 15
NZL 20 29 3 50 15 7 0 20 2
USA 13 114 0 55 33 0 19 0 1
NLD 7 2 7 23 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	25	9	42	9	16	13	7
CAN	24	0	6	94	49	3	124	2
DEU	8	6	0	31	0	9	0	8
DFS	31	93	20	0	33	89	58	23
GBR	8	48	0	31	0	0	37	0
NOR	12	3	8	64	0	0	0	15
USA	13	115	0	55	33	0	0	1
NLD	7	2	7	23	0	14	1	0
