



Speed up rG estimation

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Organizational Background (1)

ISO – 9001 – 2008 → ISO – 9001 – 2015

Risk Management

Suppliers ← ICBF

Discussion with Thierry Pabiou

Renzo Bonifazi



What is the problem? (1)

- Interbeef workshop, March 2016, Salzburg;
- Difficulties in estimation of across country genetic correlations:
 - Common for all trait groups: Adjusted weaning weight, Calving traits, Fertility traits;
 - Common for all methods;
 - Common for all software;
 - "non-estimability" ← Non-convergence
 - Unreasonably very low or very high r_G
 - AND requiring a **LOOOOONG** time
- → Something must be done

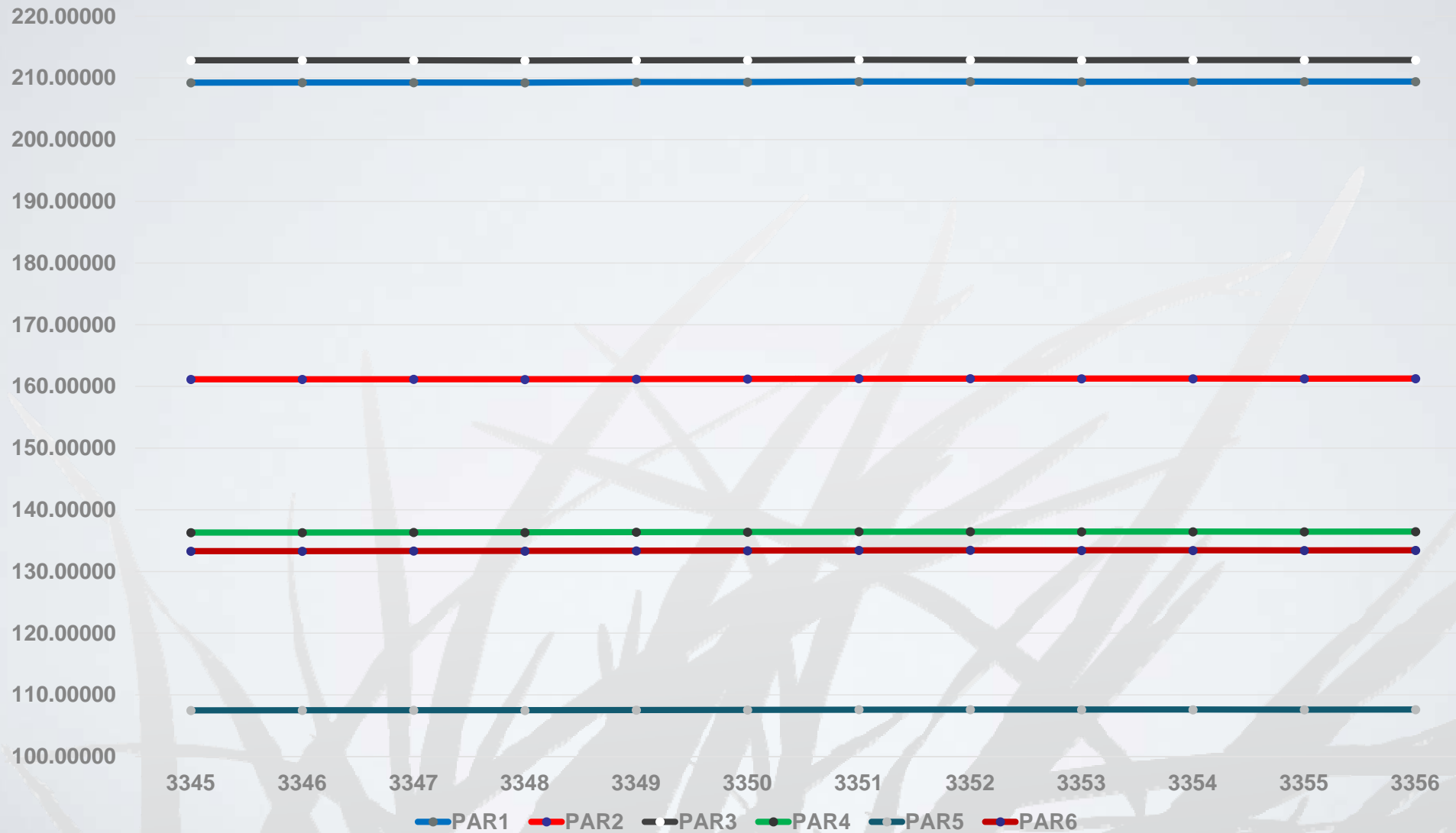


What is the problem? (2)

- Main symptom:
 - Program finishing before convergence is reached
 - Convergence criteria, typically 10^{-9} (or smaller)
 - What does it mean?



Change of parameters





Convergence criteria

REML ROUND	CC	PAR1	PAR2	PAR3	PAR4	PAR5	PAR6
3345	1.01E-09	209.23217	161.14964	212.86430	136.30986	107.49477	133.29270
3346	1.00E-09	209.25226	161.16294	212.86677	136.31924	107.50268	133.29522
3347	1.00E-09	209.26530	161.17201	212.86951	136.34476	107.52369	133.33172
3348	1.00E-09	209.24341	161.13408	212.81351	136.32659	107.49639	133.31692
3349	1.00E-09	209.32773	161.20179	212.86836	136.39034	107.54833	133.36723
3350	1.00E-09	209.34380	161.22032	212.88617	136.40154	107.56430	133.37614
3351	1.00E-09	209.41661	161.28261	212.93613	136.46616	107.62091	133.43467
3352	9.98E-10	209.41525	161.27499	212.91862	136.47603	107.62620	133.45017
3353	9.97E-10	209.38245	161.24486	212.88691	136.44478	107.60052	133.41611
3354	9.96E-10	209.39721	161.25834	212.89813	136.45700	107.61251	133.42752
3355	9.96E-10	209.40553	161.26331	212.89966	136.46019	107.61448	133.42688
3356	9.94E-10	209.41379	161.27153	212.90628	136.47074	107.62561	133.43936



Estimated parameters: How important are they?

- Estimated versus post-processed correlations

COU 1	COU 2	CB	EST rG	PP rG	Diff
1	2	6	0.46	0.82	0.36
1	3	1	0.39	0.61	0.22
1	4	27	0.74	0.85	0.12
1	5	12	0.62	0.70	0.09
2	3	15	0.23	0.69	0.46
2	3	76	0.80	0.85	0.05
2	5	27	0.45	0.74	0.28
3	4	31	0.55	0.65	0.10
3	5	32	0.93	0.76	-0.17
4	5	53	0.77	0.79	0.02

- The best worst example



Data

- 8 countries, CC 10^{-9} \rightarrow \approx 120,000 m
- 3 Countries, CC 10^{-9} \rightarrow \approx 3,300 m
- 3 Countries, CC 10^{-6} \rightarrow \approx 20 m

POP	N. of OBS
CZE	10,379
IRL	19,413
CHE	27,215
<i>TOT</i>	<i>57,007</i>



Program

MiX99

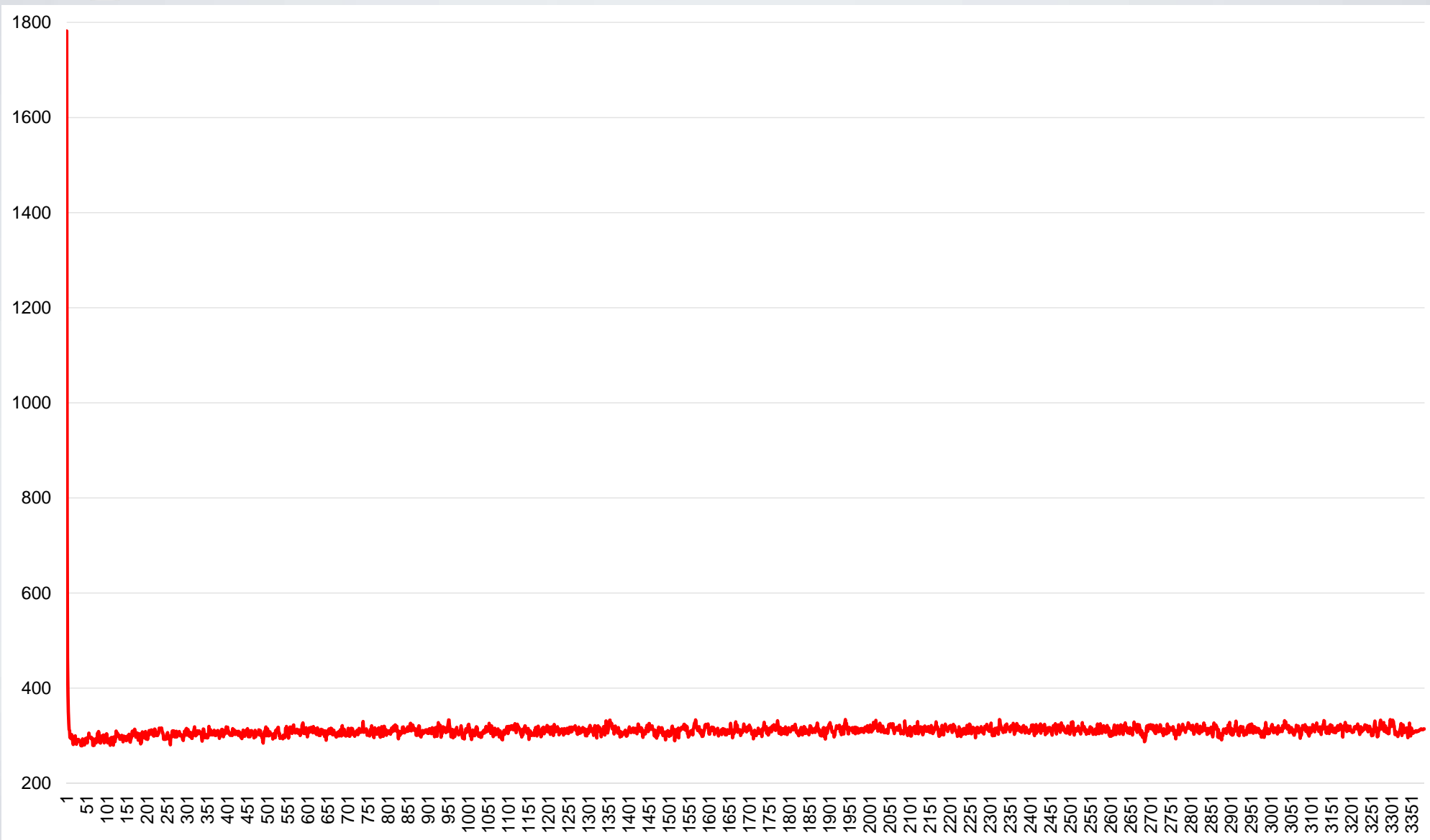
Solving Large Mixed Model Equations



The choice of Mix99 is intentional,
But incidental

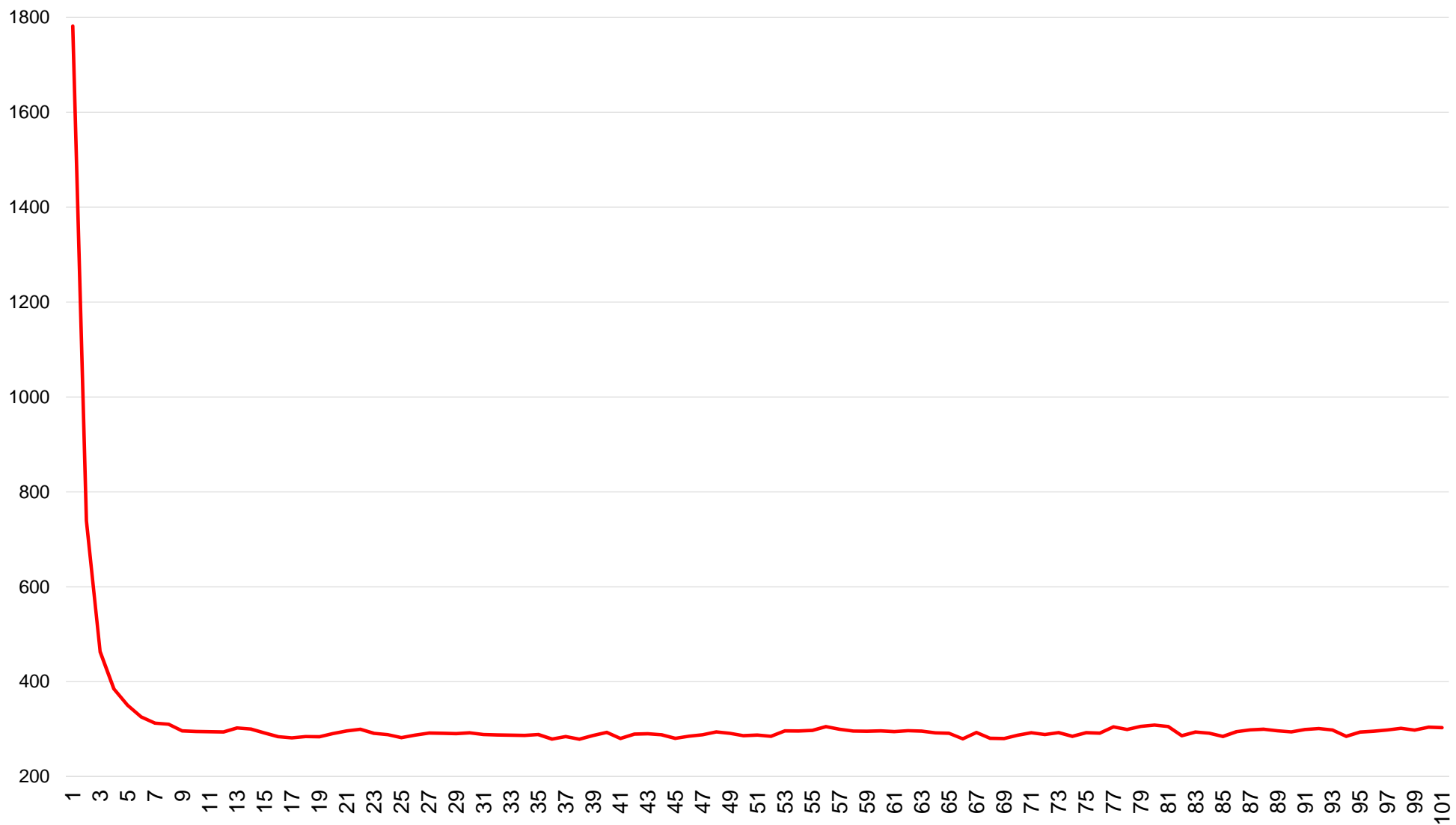


CC 10⁻⁹



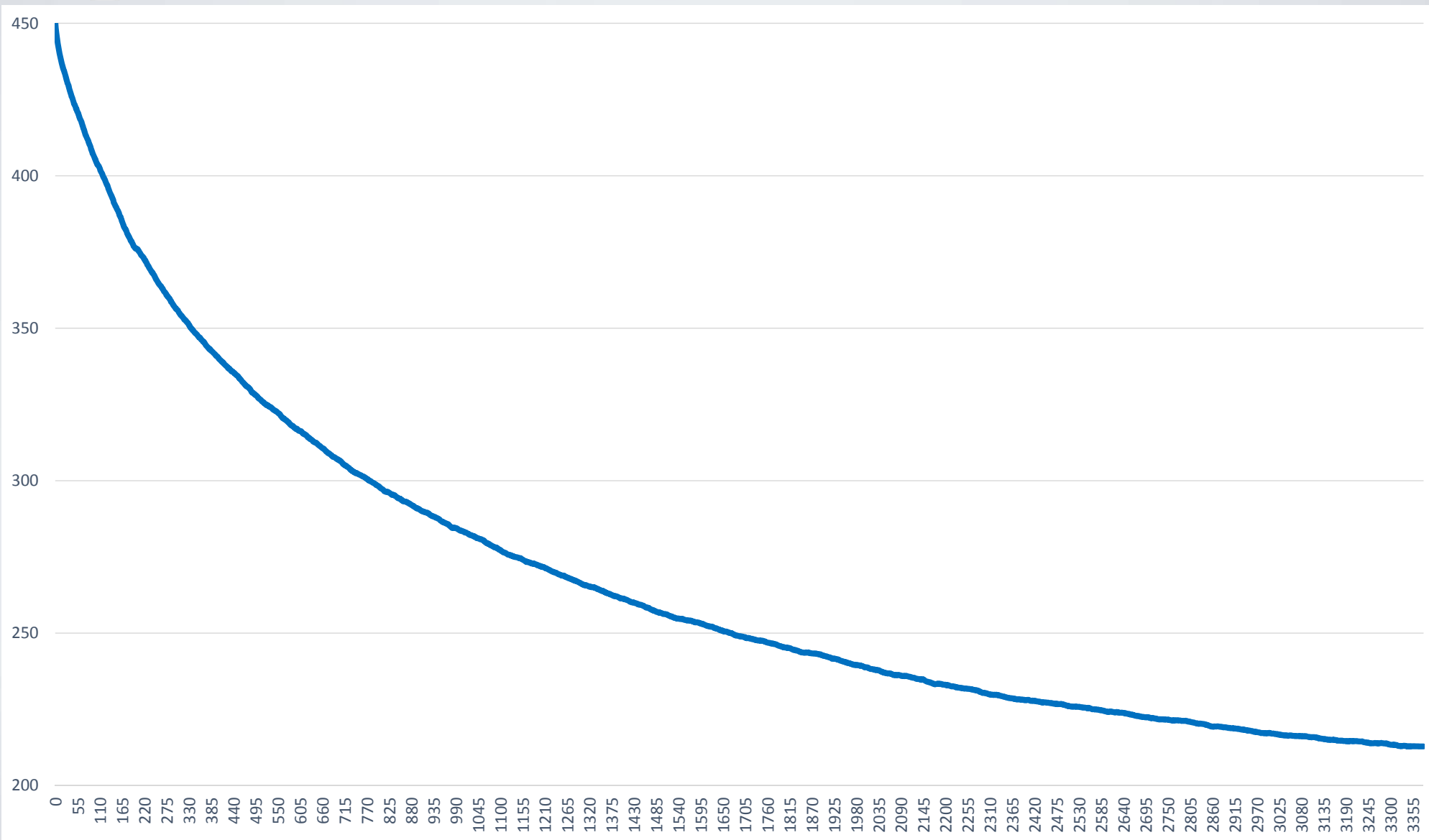


CC 10⁻⁹



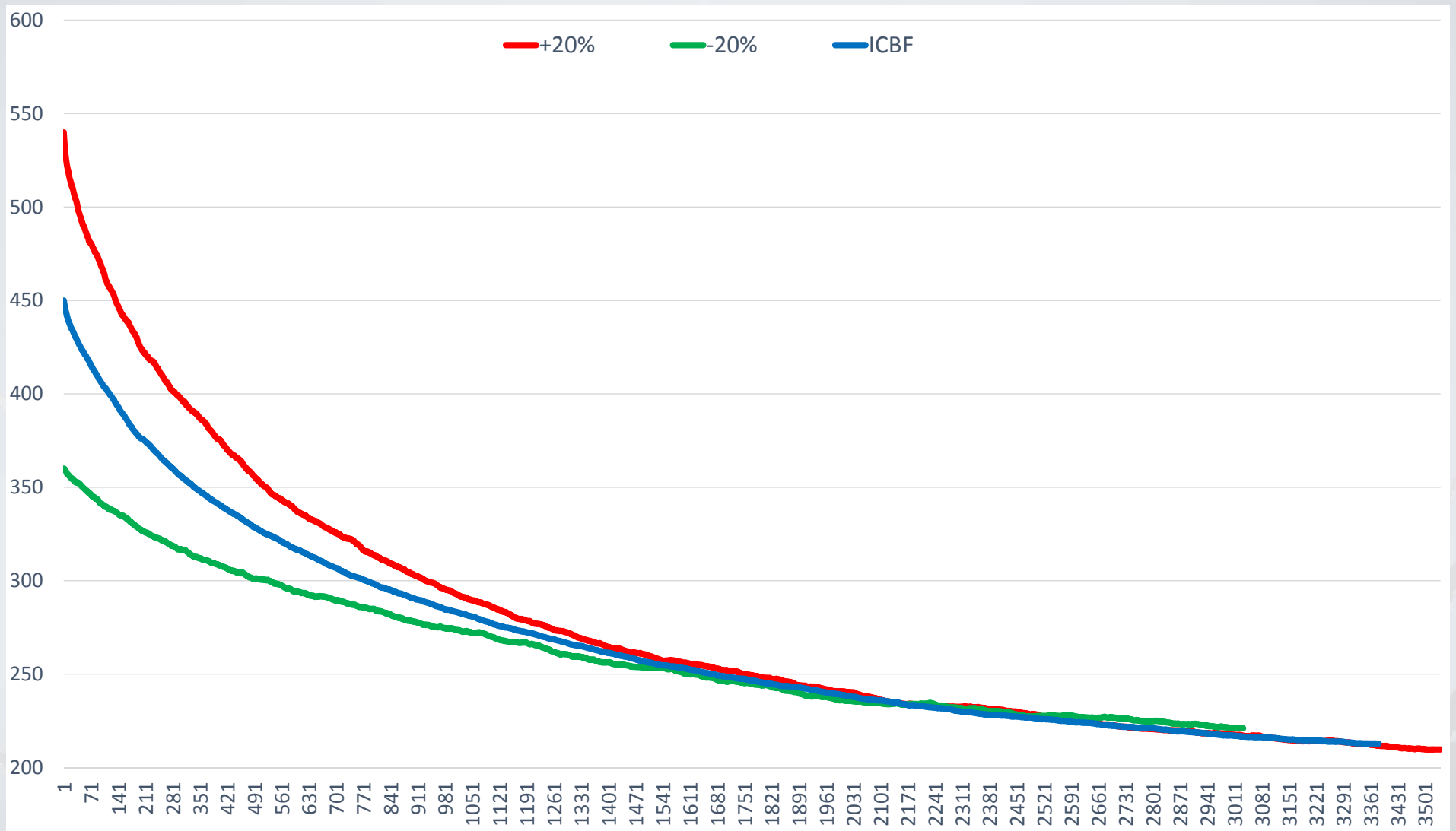


CC 10⁻⁹



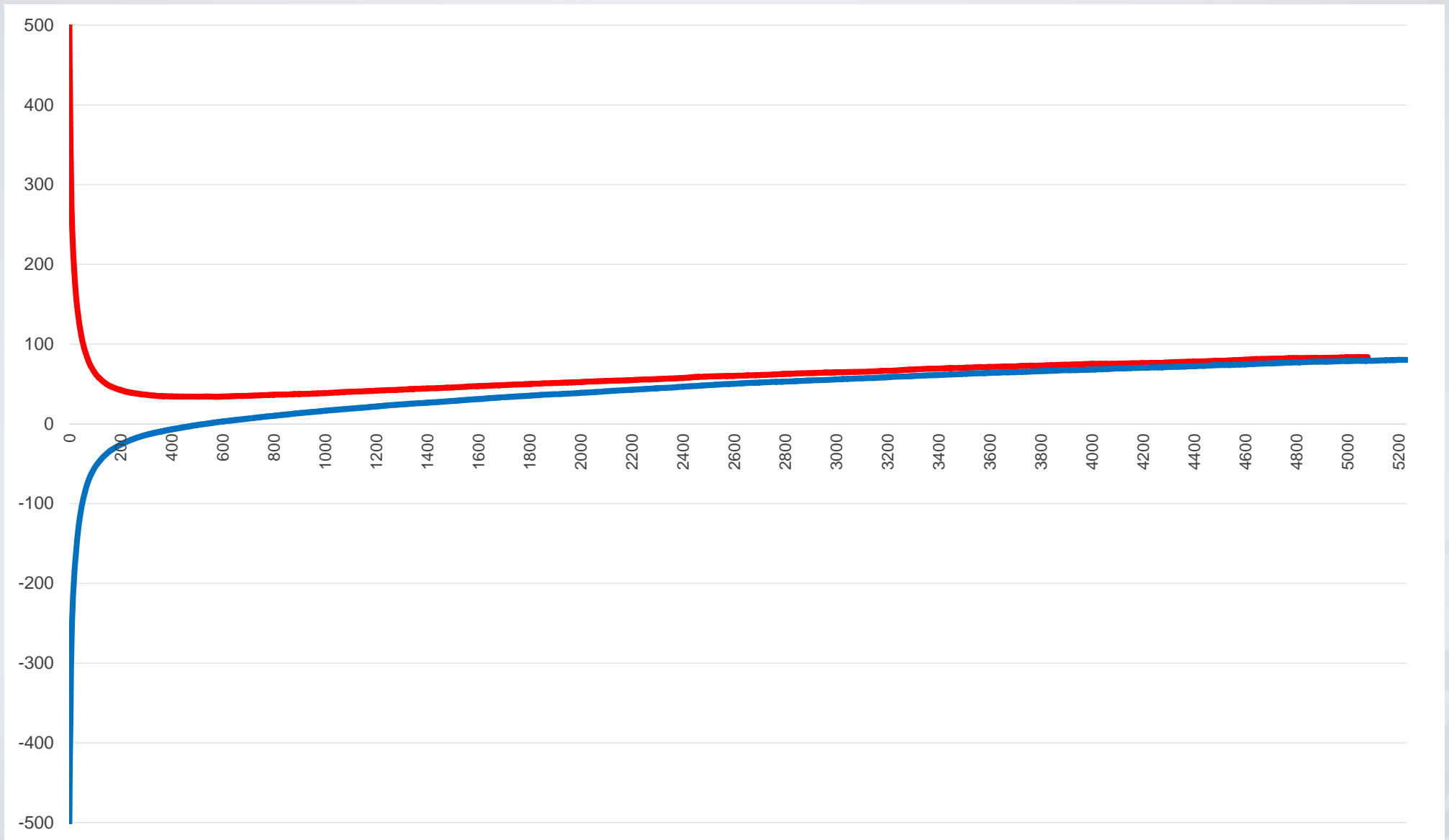


CC 10⁻⁹





CC 10⁻⁹





Thank you

