Supplementary File of "Small Population Size is Enough in Many Cases with External Archives"

Yang Nan, Hisao Ishibuchi, and Lie Meng Pang

Table S1: Comparison of NSGA-II under N=36, 66, 120, and 210 when the maximum function evaluation number is 1000.

Problem	m	NSGA-II-36	NSGA-II-66	NSGA-II-120	NSGA-II-210
DTLZ1	3	0.0000	0.0000 ($\approx$)	0.0000 ($\approx$)	0.0000 ($\approx$)
DTLZ2	3	0.6001	0.5378 (-)	0.3902 (-)	0.1999 (-)
DTLZ3	3	0.0000	0.0000 ($\approx$)	0.0000 ($\approx$)	0.0000 ($\approx$)
DTLZ4	3	0.3971	0.3951 ($\approx$)	0.1828 (-)	0.0314 (-)
DTLZ5	3	0.2051	0.1763 (-)	0.0860 (-)	0.0342 (-)
DTLZ6	3	0.0000	0.0000 ($\approx$)	0.0000 ($\approx$)	0.0000 ($\approx$)
DTLZ7	3	0.0034	0.0007 (-)	0.0000 (-)	0.0000 (-)
WFG1	3	0.3119	0.2089 (-)	0.0644 (-)	0.0028 (-)
WFG2	3	1.0188	1.0263 ($\approx$)	0.9723 (-)	0.8861 (-)
WFG3	3	0.3460	0.3142 (-)	0.2803 (-)	0.2455 (-)
WFG4	3	0.5890	0.5666 (-)	0.5317 (-)	0.4931 (-)
WFG5	3	0.5260	0.4713 (-)	0.4335 (-)	0.3753 (-)
WFG6	3	0.4682	0.4195 (-)	0.3729 (-)	0.3240 (-)
WFG7	3	0.5103	0.4981 ($\approx$)	0.4597 (-)	0.4183 (-)
WFG8	3	0.4523	0.4121 (-)	0.3802 (-)	0.3339 (-)
WFG9	3	0.4883	0.4700 (-)	0.4484 (-)	0.3795 (-)
RWA1	2	0.7995	0.7870 (-)	0.7545 (-)	0.6724 (-)
RWA2	3	0.9897	0.9743 (-)	0.9321 (-)	0.8325 (-)
RWA3	3	0.8274	0.8227 (-)	0.8135 (-)	0.8014 (-)
RWA4	3	1.2847	1.2811 ($\approx$)	1.2434 (-)	1.1104 (-)
RWA5	3	0.6063	0.6023 (-)	0.5888 (-)	0.5612 (-)
RWA6	3	0.4718	0.4648 (-)	0.4476 (-)	0.4027 (-)
RWA7	3	0.8331	0.8235 (-)	0.8082 (-)	0.7655 (-)
DDMOP2	3	0.9865	0.9805 ($\approx$)	0.9283 (-)	0.8301 (-)
DDMOP3	3	1.0843	1.0787 ($\approx$)	1.0731 (-)	1.0568 (-)
DDMOP5	3	0.9906	0.9801 ($\approx$)	0.9522 (-)	0.8444 (-)
DDMOP6	2	0.7147	0.7116 ($\approx$)	0.6792 (-)	0.6379 (-)
DDMOP7	2	0.0981	0.0975 ($\approx$)	0.0916 (-)	0.0853 (-)
RE2-4-1	2	0.8639	0.8595 ($\approx$)	0.8521 (-)	0.8304 (-)
RE2-3-2	2	0.7447	0.7447 ($\approx$)	0.7309 (-)	0.7065 (-)
RE2-4-3	2	1.1602	1.1565 (-)	1.1381 (-)	0.9926 (-)
RE2-2-4	2	1.1682	1.1677 ($\approx$)	1.1677 ($\approx$)	1.1645 (-)
RE2-3-5	2	1.0812	1.0803 (-)	1.0562 (-)	0.9311 (-)
RE3-3-1	3	1.3309	1.3303 (-)	1.3280 (-)	1.3084 (-)
RE3-4-2	3	1.3263	1.3272 ($\approx$)	1.3242 (-)	1.3202 (-)
RE3-4-3	3	1.2985	1.2844 (-)	1.2690 (-)	1.2518 (-)
RE3-5-4	3	0.9866	0.9771 (-)	0.9310 (-)	0.8343 (-)
RE3-7-5	3	1.2804	1.2752 (-)	1.2678 (-)	1.2456 (-)
RE3-4-6	3	0.9058	0.8882 (-)	0.8191 (-)	0.6757 (-)
RE3-4-7	3	0.8305	0.8225 ($\approx$)	0.8077 (-)	0.7655 (-)
(+/-/$\approx$)			(0/23/17)	(0/36/4)	(0/37/3)

Table S2: Comparison of NSGA-II under N=36, 66, 120, and 210 when the maximum function evaluation number is 10000.

Problem	m	NSGA-II-36	NSGA-II-66	NSGA-II-120	NSGA-II-210
DTLZ1	3	0.6832	0.6364 ($\approx$)	0.5779 ($\approx$)	0.2361 (-)
DTLZ2	3	0.7382	0.7342 (-)	0.7272 (-)	0.7195 (-)
DTLZ3	3	0.0000	0.0000 ($\approx$)	0.0000 ($\approx$)	0.0000 ($\approx$)
DTLZ4	3	0.6200	0.7097 (+)	0.7110 (+)	0.7100 (+)
DTLZ5	3	0.2654	0.2650 (-)	0.2643 (-)	0.2627 (-)
DTLZ6	3	0.2535	0.2573 ($\approx$)	0.2662 (+)	0.2608 (+)
DTLZ7	3	0.5147	0.5167 ($\approx$)	0.4861 (-)	0.4456 (-)
WFG1	3	1.1451	1.0181 (-)	0.9125 (-)	0.7467 (-)
WFG2	3	1.2064	1.2185 (+)	1.2144 (+)	1.2046 (-)
WFG3	3	0.4934	0.4881 (-)	0.4838 (-)	0.4696 (-)
WFG4	3	0.7195	0.7042 (-)	0.6891 (-)	0.6756 (-)
WFG5	3	0.6813	0.6710 (-)	0.6575 (-)	0.6414 (-)
WFG6	3	0.6533	0.6369 (-)	0.6129 (-)	0.5946 (-)
WFG7	3	0.7205	0.7150 (-)	0.7018 (-)	0.6897 (-)
WFG8	3	0.5952	0.5908 (-)	0.5785 (-)	0.5602 (-)
WFG9	3	0.6373	0.6578 ($\approx$)	0.6696 ($\approx$)	0.6682 ($\approx$)
RWA1	2	0.8271	0.8271 ($\approx$)	0.8271 ($\approx$)	0.8270 (-)
RWA2	3	1.0268	1.0291 ($\approx$)	1.0311 ($\approx$)	1.0311 ($\approx$)
RWA3	3	0.8443	0.8446 ($\approx$)	0.8445 ($\approx$)	0.8447 ($\approx$)
RWA4	3	1.3110	1.3099 (-)	1.3093 (-)	1.3073 (-)
RWA5	3	0.6370	0.6367 ($\approx$)	0.6355 (-)	0.6346 (-)
RWA6	3	0.4853	0.4863 ($\approx$)	0.4862 ($\approx$)	0.4862 ($\approx$)
RWA7	3	0.8694	0.8716 (+)	0.8725 (+)	0.8724 (+)
DDMOP2	3	1.0273	1.0317 ($\approx$)	1.0287 ($\approx$)	1.0305 (+)
DDMOP3	3	1.1009	1.1015 (+)	1.1020 (+)	1.1023 (+)
DDMOP5	3	1.0747	1.0780 (+)	1.0768 ($\approx$)	1.0707 (-)
DDMOP6	2	0.9596	0.9159 (-)	0.8601 (-)	0.8250 (-)
DDMOP7	2	0.1022	0.1049 (+)	0.1063 (+)	0.1067 (+)
RE2-4-1	2	0.8826	0.8831 (+)	0.8832 (+)	0.8831 (+)
RE2-3-2	2	0.7571	0.7575 (+)	0.7576 (+)	0.7576 (+)
RE2-4-3	2	1.1629	1.1628 ($\approx$)	1.1629 (+)	1.1629 (+)
RE2-2-4	2	1.1697	1.1698 (+)	1.1698 (+)	1.1698 (+)
RE2-3-5	2	1.0812	1.0812 ($\approx$)	1.0812 ($\approx$)	1.0812 ($\approx$)
RE3-3-1	3	1.3310	1.3310 ($\approx$)	1.3310 ($\approx$)	1.3310 ($\approx$)
RE3-4-2	3	1.3304	1.3304 ($\approx$)	1.3304 ($\approx$)	1.3304 (+)
RE3-4-3	3	1.3117	1.3112 (-)	1.3114 ($\approx$)	1.3113 (-)
RE3-5-4	3	1.0265	1.0301 ($\approx$)	1.0309 ($\approx$)	1.0299 ($\approx$)
RE3-7-5	3	1.3039	1.3038 ($\approx$)	1.3032 (-)	1.3012 (-)
RE3-4-6	3	0.9435	0.9437 ($\approx$)	0.9433 ($\approx$)	0.9435 ($\approx$)
RE3-4-7	3	0.8723	0.8734 (+)	0.8741 (+)	0.8723 ($\approx$)
(+/-/$\approx$)			(10/12/18)	(11/14/15)	(11/19/10)

Table S3: Comparison of NSGA-II under N=36, 66, 120, and 210 when the maximum function evaluation number is 100000.

Problem	m	NSGA-II-36	NSGA-II-66	NSGA-II-120	NSGA-II-210
DTLZ1	3	1.1213	1.1210 (-)	1.1208 (-)	1.1206 (-)
DTLZ2	3	0.7413	0.7402 (-)	0.7392 (-)	0.7385 (-)
DTLZ3	3	0.7441	0.7407 (-)	0.7367 (-)	0.7348 (-)
DTLZ4	3	0.6209	0.7198 (≈)	0.7391 (+)	0.7393 (+)
DTLZ5	3	0.2658	0.2659 (+)	0.2659 (+)	0.2660 (+)
DTLZ6	3	0.2652	0.2661 (≈)	0.2661 (≈)	0.2661 (≈)
DTLZ7	3	0.5335	0.5548 (+)	0.5607 (+)	0.5644 (+)
WFG1	3	1.2492	1.2560 (+)	1.2585 (+)	1.2574 (+)
WFG2	3	1.2422	1.2428 (≈)	1.2430 (+)	1.2430 (+)
WFG3	3	0.5173	0.5169 (≈)	0.5172 (≈)	0.5167 (≈)
WFG4	3	0.7356	0.7315 (-)	0.7279 (-)	0.7237 (-)
WFG5	3	0.6890	0.6876 (-)	0.6862 (-)	0.6820 (-)
WFG6	3	0.6646	0.6662 (≈)	0.6595 (≈)	0.6662 (≈)
WFG7	3	0.7333	0.7312 (-)	0.7291 (-)	0.7288 (-)
WFG8	3	0.6095	0.6111 (≈)	0.6124 (+)	0.6123 (+)
WFG9	3	0.6796	0.6986 (≈)	0.7005 (+)	0.7000 (+)
RWA1	2	0.8273	0.8273 (+)	0.8274 (+)	0.8275 (+)
RWA2	3	1.0277	1.0303 (≈)	1.0327 (≈)	1.0344 (≈)
RWA3	3	0.8457	0.8460 (≈)	0.8461 (+)	0.8466 (+)
RWA4	3	1.3102	1.3102 (≈)	1.3104 (+)	1.3109 (+)
RWA5	3	0.6381	0.6383 (≈)	0.6384 (+)	0.6387 (+)
RWA6	3	0.4855	0.4866 (+)	0.4867 (+)	0.4869 (+)
RWA7	3	0.8701	0.8723 (+)	0.8732 (+)	0.8741 (+)
DDMOP2	3	1.0278	1.0327 (≈)	1.0305 (≈)	1.0329 (≈)
DDMOP3	3	1.1007	1.1013 (+)	1.1017 (+)	1.1020 (+)
DDMOP5	3	1.0712	1.0808 (+)	1.0849 (+)	1.0876 (+)
DDMOP6	2	1.0050	0.9984 (-)	0.9977 (-)	0.9952 (-)
DDMOP7	2	0.1033	0.1052 (+)	0.1066 (+)	0.1080 (+)
RE2-4-1	2	0.8826	0.8832 (+)	0.8834 (+)	0.8836 (+)
RE2-3-2	2	0.7571	0.7576 (+)	0.7579 (+)	0.7581 (+)
RE2-4-3	2	1.1629	1.1629 (≈)	1.1628 (-)	1.1628 (-)
RE2-2-4	2	1.1696	1.1697 (+)	1.1698 (-)	1.1698 (+)
RE2-3-5	2	1.0812	1.0812 (+)	1.0812 (+)	1.0812 (+)
RE3-3-1	3	1.3310	1.3310 (≈)	1.3310 (-)	1.3310 (≈)
RE3-4-2	3	1.3304	1.3304 (≈)	1.3304 (-)	1.3304 (≈)
RE3-4-3	3	1.3118	1.3090 (-)	1.3110 (≈)	1.3118 (≈)
RE3-5-4	3	1.0272	1.0312 (≈)	1.0330 (≈)	1.0332 (≈)
RE3-7-5	3	1.3042	1.3042 (≈)	1.3042 (≈)	1.3042 (≈)
RE3-4-6	3	0.9440	0.9442 (+)	0.9442 (+)	0.9442 (+)
RE3-4-7	3	0.8721	0.8734 (+)	0.8744 (+)	0.8759 (+)
(+/-/≈)			(15/8/17)	(21/10/9)	(22/8/10)

Table S4: Comparison of NSGA-III under N=36, 66, 120, and 210 when the maximum function evaluation number is 1000.

Problem	m	NSGA-III-36	NSGA-III-66	NSGA-III-120	NSGA-III-210
DTLZ1	3	0.0000	0.0000 (≈)	0.0000 (≈)	0.0000 (≈)
DTLZ2	3	0.5927	0.4867 (-)	0.2962 (-)	0.1437 (-)
DTLZ3	3	0.0000	0.0000 (≈)	0.0000 (≈)	0.0000 (≈)
DTLZ4	3	0.3531	0.2844 (≈)	0.0695 (-)	0.0134 (-)
DTLZ5	3	0.1956	0.1403 (-)	0.0559 (-)	0.0200 (-)
DTLZ6	3	0.0000	0.0000 (≈)	0.0000 (≈)	0.0000 (≈)
DTLZ7	3	0.0024	0.0000 (-)	0.0000 (-)	0.0000 (-)
WFG1	3	0.1944	0.0821 (-)	0.0176 (-)	0.0009 (-)
WFG2	3	1.0356	0.9931 (-)	0.9243 (-)	0.8397 (-)
WFG3	3	0.3207	0.2873 (-)	0.2561 (-)	0.2288 (-)
WFG4	3	0.5949	0.5571 (-)	0.5236 (-)	0.4740 (-)
WFG5	3	0.5188	0.4668 (-)	0.4102 (-)	0.3606 (-)
WFG6	3	0.4553	0.4089 (-)	0.3584 (-)	0.3070 (-)
WFG7	3	0.5118	0.4931 (-)	0.4510 (-)	0.3973 (-)
WFG8	3	0.4397	0.4016 (-)	0.3614 (-)	0.3160 (-)
WFG9	3	0.4727	0.4761 (≈)	0.4203 (-)	0.3502 (-)
RWA1	2	0.7837	0.7687 (-)	0.7149 (-)	0.6320 (-)
RWA2	3	0.9774	0.9572 (-)	0.8852 (-)	0.7673 (-)
RWA3	3	0.8295	0.8245 (-)	0.8137 (-)	0.7969 (-)
RWA4	3	1.2814	1.2649 (-)	1.1809 (-)	1.0116 (-)
RWA5	3	0.5947	0.5954 (≈)	0.5764 (-)	0.5449 (-)
RWA6	3	0.4656	0.4567 (-)	0.4326 (-)	0.3748 (-)
RWA7	3	0.8264	0.8164 (-)	0.7929 (-)	0.7400 (-)
DDMOP2	3	0.9813	0.9502 (-)	0.8868 (-)	0.7624 (-)
DDMOP3	3	1.0616	1.0664 (≈)	1.0673 (≈)	1.0523 (-)
DDMOP5	3	0.9714	0.9602 (≈)	0.9039 (-)	0.7948 (-)
DDMOP6	2	0.7080	0.6950 (≈)	0.6581 (-)	0.6097 (-)
DDMOP7	2	0.0978	0.0939 (-)	0.0872 (-)	0.0830 (-)
RE2-4-1	2	0.8469	0.8493 (≈)	0.8398 (-)	0.8117 (-)
RE2-3-2	2	0.7445	0.7385 (-)	0.7178 (-)	0.6778 (-)
RE2-4-3	2	1.1585	1.1418 (-)	1.0636 (-)	0.8075 (-)
RE2-2-4	2	1.1670	1.1674 (≈)	1.1664 (≈)	1.1573 (-)
RE2-3-5	2	1.0803	1.0765 (-)	1.0213 (-)	0.7598 (-)
RE3-3-1	3	1.3309	1.3282 (-)	1.3193 (-)	1.2971 (-)
RE3-4-2	3	1.3158	1.3215 (+)	1.3220 (+)	1.3136 (≈)
RE3-4-3	3	1.2753	1.2651 (-)	1.2524 (-)	1.2328 (-)
RE3-5-4	3	0.9828	0.9542 (-)	0.8971 (-)	0.7703 (-)
RE3-7-5	3	1.2685	1.2686 (≈)	1.2524 (-)	1.2288 (-)
RE3-4-6	3	0.8920	0.8583 (-)	0.7536 (-)	0.5990 (-)
RE3-4-7	3	0.8259	0.8189 (≈)	0.7903 (-)	0.7501 (-)
(+/-/≈)			(1/26/13)	(1/34/5)	(0/36/4)

Table S5: Comparison of NSGA-III under N=36, 66, 120, and 210 when the maximum function evaluation number is 10000.

Problem	m	NSGA-III-36	NSGA-III-66	NSGA-III-120	NSGA-III-210
DTLZ1	3	0.8570	0.7291 (-)	0.5154 (-)	0.0175 (-)
DTLZ2	3	0.7425	0.7389 (-)	0.7327 (-)	0.7225 (-)
DTLZ3	3	0.0000	0.0000 (≈)	0.0000 (≈)	0.0000 (≈)
DTLZ4	3	0.4442	0.6091 (≈)	0.6970 (+)	0.6960 (+)
DTLZ5	3	0.2649	0.2644 (-)	0.2634 (-)	0.2610 (-)
DTLZ6	3	0.2568	0.2573 (≈)	0.2650 (≈)	0.2231 (-)
DTLZ7	3	0.5110	0.5109 (-)	0.4916 (-)	0.3981 (-)
WFG1	3	1.0711	0.9401 (-)	0.7662 (-)	0.5979 (-)
WFG2	3	1.2260	1.2205 (-)	1.2063 (-)	1.1930 (-)
WFG3	3	0.4919	0.4715 (-)	0.4575 (-)	0.4374 (-)
WFG4	3	0.7235	0.7102 (-)	0.6947 (-)	0.6786 (-)
WFG5	3	0.6844	0.6751 (-)	0.6626 (-)	0.6454 (-)
WFG6	3	0.6446	0.6355 (-)	0.6145 (-)	0.5953 (-)
WFG7	3	0.7263	0.7158 (-)	0.7051 (-)	0.6896 (-)
WFG8	3	0.6028	0.5921 (-)	0.5784 (-)	0.5626 (-)
WFG9	3	0.6328	0.6682 (+)	0.6695 (≈)	0.6676 (≈)
RWA1	2	0.8272	0.8272 (≈)	0.8271 (-)	0.8268 (-)
RWA2	3	1.0188	1.0302 (+)	1.0291 (+)	1.0290 (+)
RWA3	3	0.8480	0.8487 (+)	0.8489 (+)	0.8473 (-)
RWA4	3	1.2998	1.3016 (≈)	1.3054 (≈)	1.3054 (≈)
RWA5	3	0.6337	0.6336 (≈)	0.6343 (≈)	0.6335 (≈)
RWA6	3	0.4848	0.4857 (+)	0.4854 (+)	0.4856 (+)
RWA7	3	0.8694	0.8722 (+)	0.8730 (+)	0.8721 (+)
DDMOP2	3	1.0176	1.0260 (≈)	1.0293 (≈)	1.0283 (≈)
DDMOP3	3	1.0989	1.1019 (+)	1.1021 (+)	1.1017 (+)
DDMOP5	3	1.0689	1.0591 (-)	1.0573 (-)	1.0548 (-)
DDMOP6	2	0.8642	0.8297 (-)	0.8050 (-)	0.7934 (-)
DDMOP7	2	0.1032	0.1054 (+)	0.1062 (+)	0.1054 (+)
RE2-4-1	2	0.8829	0.8823 (-)	0.8817 (-)	0.8811 (-)
RE2-3-2	2	0.7572	0.7574 (+)	0.7575 (+)	0.7575 (+)
RE2-4-3	2	1.1629	1.1629 (≈)	1.1629 (≈)	1.1629 (≈)
RE2-2-4	2	1.1699	1.1699 (≈)	1.1698 (≈)	1.1698 (≈)
RE2-3-5	2	1.0812	1.0812 (≈)	1.0812 (+)	1.0812 (+)
RE3-3-1	3	1.3310	1.3310 (≈)	1.3310 (≈)	1.3310 (≈)
RE3-4-2	3	1.3163	1.3220 (+)	1.3265 (+)	1.3279 (+)
RE3-4-3	3	1.3115	1.3113 (≈)	1.3096 (-)	1.3070 (-)
RE3-5-4	3	1.0205	1.0264 (≈)	1.0295 (+)	1.0284 (≈)
RE3-7-5	3	1.2999	1.2991 (≈)	1.2982 (-)	1.2968 (-)
RE3-4-6	3	0.9410	0.9416 (≈)	0.9437 (≈)	0.9440 (≈)
RE3-4-7	3	0.8715	0.8738 (+)	0.8743 (+)	0.8731 (+)
(+/-/≈)			(10/15/15)	(12/18/10)	(10/20/10)

Table S6: Comparison of NSGA-III under N=36, 66, 120, and 210 when the maximum function evaluation number is 100000.

Problem	m	NSGA-III-36	NSGA-III-66	NSGA-III-120	NSGA-III-210
DTLZ1	3	1.1209	1.1211 (+)	1.1214 (+)	1.1211 (≈)
DTLZ2	3	0.7464	0.7467 (≈)	0.7462 (≈)	0.7462 (≈)
DTLZ3	3	0.7431	0.7430 (≈)	0.7415 (≈)	0.7407 (-)
DTLZ4	3	0.4454	0.6415 (+)	0.7093 (+)	0.7183 (+)
DTLZ5	3	0.2658	0.2657 (-)	0.2658 (≈)	0.2659 (+)
DTLZ6	3	0.2657	0.2661 (≈)	0.2660 (≈)	0.2661 (≈)
DTLZ7	3	0.5377	0.5539 (≈)	0.5636 (+)	0.5638 (+)
WFG1	3	1.2565	1.2575 (+)	1.2580 (+)	1.2556 (≈)
WFG2	3	1.2448	1.2460 (+)	1.2457 (+)	1.2442 (-)
WFG3	3	0.5359	0.5100 (-)	0.5066 (-)	0.5022 (-)
WFG4	3	0.7457	0.7454 (≈)	0.7435 (-)	0.7392 (-)
WFG5	3	0.6918	0.6921 (≈)	0.6913 (-)	0.6902 (-)
WFG6	3	0.6643	0.6697 (≈)	0.6723 (≈)	0.6712 (≈)
WFG7	3	0.7445	0.7443 (≈)	0.7433 (-)	0.7414 (-)
WFG8	3	0.6245	0.6251 (≈)	0.6241 (≈)	0.6241 (≈)
WFG9	3	0.6795	0.7096 (≈)	0.7125 (≈)	0.7125 (≈)
RWA1	2	0.8275	0.8275 (≈)	0.8275 (+)	0.8275 (+)
RWA2	3	1.0223	1.0305 (≈)	1.0311 (+)	1.0319 (+)
RWA3	3	0.8485	0.8489 (≈)	0.8504 (+)	0.8496 (+)
RWA4	3	1.2975	1.2971 (≈)	1.2991 (≈)	1.3035 (+)
RWA5	3	0.6333	0.6336 (≈)	0.6358 (+)	0.6363 (+)
RWA6	3	0.4771	0.4856 (+)	0.4861 (+)	0.4863 (+)
RWA7	3	0.8702	0.8730 (+)	0.8742 (+)	0.8745 (+)
DDMOP2	3	1.0182	1.0266 (+)	1.0301 (+)	1.0323 (+)
DDMOP3	3	1.1016	1.1026 (+)	1.1029 (+)	1.1026 (+)
DDMOP5	3	1.0835	1.0872 (+)	1.0849 (≈)	1.0848 (≈)
DDMOP6	2	0.9960	0.9956 (-)	0.9941 (≈)	0.9809 (-)
DDMOP7	2	0.1040	0.1057 (+)	0.1070 (+)	0.1082 (+)
RE2-4-1	2	0.8836	0.8837 (+)	0.8838 (+)	0.8839 (+)
RE2-3-2	2	0.7577	0.7579 (+)	0.7580 (+)	0.7582 (+)
RE2-4-3	2	1.1628	1.1627 (≈)	1.1628 (≈)	1.1628 (≈)
RE2-2-4	2	1.1699	1.1699 (+)	1.1700 (+)	1.1700 (+)
RE2-3-5	2	1.0812	1.0812 (-)	1.0812 (-)	1.0812 (-)
RE3-3-1	3	1.3310	1.3310 (≈)	1.3310 (+)	1.3310 (+)
RE3-4-2	3	1.3039	1.3037 (≈)	1.3041 (≈)	1.3068 (+)
RE3-4-3	3	1.3119	1.3119 (≈)	1.3109 (-)	1.3106 (-)
RE3-5-4	3	1.0208	1.0278 (≈)	1.0302 (≈)	1.0311 (+)
RE3-7-5	3	1.2956	1.3000 (+)	1.3010 (+)	1.3009 (+)
RE3-4-6	3	0.9437	0.9439 (≈)	0.9439 (+)	0.9439 (+)
RE3-4-7	3	0.8712	0.8748 (+)	0.8751 (+)	0.8759 (+)
(+/-/≈)			(15/4/21)	(21/6/13)	(22/9/9)

Table S7: Comparison of MOEA/D under N=36, 66, 120, and 210 when the maximum function evaluation number is 1000.

Problem	m	MOEA/D-36	MOEA/D-66	MOEA/D-120	MOEA/D-210
DTLZ1	3	0.0000	0.0000 (≈)	0.0000 (≈)	0.0000 (≈)
DTLZ2	3	0.5375	0.5416 (≈)	0.4956 (-)	0.4100 (-)
DTLZ3	3	0.0000	0.0000 (≈)	0.0000 (≈)	0.0000 (≈)
DTLZ4	3	0.2898	0.3219 (≈)	0.3883 (+)	0.3232 (≈)
DTLZ5	3	0.1989	0.1988 (≈)	0.1817 (-)	0.1558 (-)
DTLZ6	3	0.0000	0.0000 (≈)	0.0000 (≈)	0.0000 (≈)
DTLZ7	3	0.0014	0.0008 (≈)	0.0018 (≈)	0.0003 (-)
WFG1	3	0.2785	0.2878 (≈)	0.2670 (≈)	0.1657 (-)
WFG2	3	0.9690	0.9562 (≈)	0.9850 (≈)	0.9381 (-)
WFG3	3	0.3239	0.3072 (≈)	0.2874 (-)	0.2627 (-)
WFG4	3	0.5930	0.5852 (≈)	0.5717 (-)	0.5365 (-)
WFG5	3	0.5225	0.5077 (≈)	0.4880 (-)	0.4370 (-)
WFG6	3	0.4371	0.4339 (≈)	0.4169 (-)	0.3680 (-)
WFG7	3	0.4936	0.5147 (≈)	0.4887 (≈)	0.4591 (-)
WFG8	3	0.3826	0.3768 (≈)	0.3857 (≈)	0.3423 (-)
WFG9	3	0.4088	0.4299 (≈)	0.4409 (+)	0.3934 (≈)
RWA1	2	0.7192	0.7235 (≈)	0.7104 (≈)	0.6989 (-)
RWA2	3	0.9699	0.9559 (-)	0.9359 (-)	0.9339 (-)
RWA3	3	0.7758	0.7840 (≈)	0.7847 (≈)	0.7833 (≈)
RWA4	3	1.2840	1.2800 (-)	1.2758 (-)	1.2658 (-)
RWA5	3	0.5277	0.5325 (≈)	0.5324 (≈)	0.5373 (+)
RWA6	3	0.4533	0.4523 (≈)	0.4431 (-)	0.4230 (-)
RWA7	3	0.8289	0.8279 (≈)	0.8266 (≈)	0.8066 (-)
DDMOP2	3	0.9755	0.9537 (-)	0.9545 (-)	0.9232 (-)
DDMOP3	3	1.0036	1.0139 (≈)	1.0275 (+)	1.0391 (+)
DDMOP5	3	0.9795	0.9676 (≈)	0.9675 (≈)	0.9497 (-)
DDMOP6	2	0.8448	0.8497 (≈)	0.8343 (≈)	0.8186 (-)
DDMOP7	2	0.0969	0.0976 (≈)	0.0968 (≈)	0.0945 (-)
RE2-4-1	2	0.7650	0.7720 (≈)	0.7799 (+)	0.7972 (+)
RE2-3-2	2	0.7304	0.7319 (≈)	0.7287 (≈)	0.7167 (-)
RE2-4-3	2	1.1582	1.1579 (≈)	1.1576 (-)	1.1561 (-)
RE2-2-4	2	1.1688	1.1686 (≈)	1.1688 (≈)	1.1681 (-)
RE2-3-5	2	0.8817	0.8548 (≈)	0.8411 (≈)	0.8414 (≈)
RE3-3-1	3	1.3310	1.3310 (-)	1.3309 (-)	1.3308 (-)
RE3-4-2	3	1.3153	1.3105 (-)	1.3077 (-)	1.3072 (-)
RE3-4-3	3	1.2845	1.2538 (-)	1.2485 (-)	1.2294 (-)
RE3-5-4	3	0.9718	0.9509 (-)	0.9396 (-)	0.9175 (-)
RE3-7-5	3	1.2917	1.2920 (≈)	1.2898 (≈)	1.2780 (-)
RE3-4-6	3	0.8874	0.8939 (≈)	0.8777 (≈)	0.8678 (≈)
RE3-4-7	3	0.8324	0.8354 (≈)	0.8344 (≈)	0.8093 (-)
(+/-/≈)			(0/7/33)	(4/15/21)	(3/29/8)

Table S8: Comparison of MOEA/D under N=36, 66, 120, and 210 when the maximum function evaluation number is 10000.

Problem	m	MOEA/D-36	MOEA/D-66	MOEA/D-120	MOEA/D-210
DTLZ1	3	0.7671	0.8076 (≈)	0.8133 (≈)	0.5259 (-)
DTLZ2	3	0.7432	0.7429 (≈)	0.7413 (-)	0.7405 (-)
DTLZ3	3	0.0000	0.0149 (≈)	0.0000 (≈)	0.0000 (≈)
DTLZ4	3	0.4643	0.4579 (≈)	0.5431 (≈)	0.5395 (≈)
DTLZ5	3	0.2656	0.2656 (≈)	0.2655 (-)	0.2652 (-)
DTLZ6	3	0.2658	0.2659 (+)	0.2661 (+)	0.2659 (+)
DTLZ7	3	0.5268	0.5275 (+)	0.5297 (≈)	0.5256 (-)
WFG1	3	1.1477	1.1086 (-)	1.0646 (-)	1.0169 (-)
WFG2	3	1.2022	1.1864 (≈)	1.2057 (≈)	1.2084 (≈)
WFG3	3	0.5031	0.4906 (-)	0.4896 (-)	0.4731 (-)
WFG4	3	0.7327	0.7257 (-)	0.7214 (-)	0.7194 (-)
WFG5	3	0.6817	0.6785 (-)	0.6775 (-)	0.6740 (-)
WFG6	3	0.6469	0.6472 (≈)	0.6469 (≈)	0.6427 (≈)
WFG7	3	0.7178	0.7196 (≈)	0.7250 (≈)	0.7273 (≈)
WFG8	3	0.5888	0.5999 (+)	0.6023 (+)	0.5984 (+)
WFG9	3	0.6247	0.6575 (≈)	0.6473 (≈)	0.6655 (+)
RWA1	2	0.8148	0.8086 (-)	0.8007 (-)	0.7980 (-)
RWA2	3	1.0149	1.0166 (≈)	1.0109 (≈)	1.0106 (-)
RWA3	3	0.8121	0.8206 (+)	0.8240 (+)	0.8252 (+)
RWA4	3	1.3107	1.3107 (≈)	1.3110 (+)	1.3107 (≈)
RWA5	3	0.5701	0.5669 (≈)	0.5720 (≈)	0.5760 (+)
RWA6	3	0.4835	0.4854 (+)	0.4851 (+)	0.4859 (+)
RWA7	3	0.8721	0.8746 (+)	0.8751 (+)	0.8750 (+)
DDMOP2	3	1.0194	1.0084 (-)	1.0089 (-)	1.0090 (-)
DDMOP3	3	1.0210	1.0363 (+)	1.0466 (+)	1.0556 (+)
DDMOP5	3	1.0838	1.0867 (+)	1.0869 (+)	1.0892 (+)
DDMOP6	2	0.9656	0.9602 (≈)	0.9545 (-)	0.9557 (-)
DDMOP7	2	0.1037	0.1029 (≈)	0.1033 (≈)	0.1034 (≈)
RE2-4-1	2	0.8056	0.7978 (-)	0.7987 (-)	0.8094 (≈)
RE2-3-2	2	0.7570	0.7570 (≈)	0.7572 (+)	0.7573 (+)
RE2-4-3	2	1.1624	1.1620 (≈)	1.1620 (-)	1.1619 (-)
RE2-2-4	2	1.1699	1.1699 (+)	1.1699 (+)	1.1699 (+)
RE2-3-5	2	1.0356	1.0350 (≈)	1.0313 (≈)	1.0294 (≈)
RE3-3-1	3	1.3310	1.3310 (≈)	1.3310 (≈)	1.3310 (≈)
RE3-4-2	3	1.3184	1.3172 (≈)	1.3164 (≈)	1.3145 (-)
RE3-4-3	3	1.3120	1.3112 (-)	1.3113 (-)	1.3115 (-)
RE3-5-4	3	1.0183	1.0125 (-)	1.0092 (-)	1.0112 (-)
RE3-7-5	3	1.3044	1.3044 (≈)	1.3044 (≈)	1.3043 (≈)
RE3-4-6	3	0.9273	0.9353 (+)	0.9378 (+)	0.9402 (+)
RE3-4-7	3	0.8742	0.8769 (+)	0.8761 (+)	0.8760 (+)
(+/-/≈)			(11/9/20)	(12/13/15)	(13/16/11)

Table S9: Comparison of MOEA/D under N=36, 66, 120, and 210 when the maximum function evaluation number is 100000.

Problem	m	MOEA/D-36	MOEA/D-66	MOEA/D-120	MOEA/D-210
DTLZ1	3	1.1208	1.1209 ($\approx$)	1.1213 (+)	1.1211 (+)
DTLZ2	3	0.7460	0.7466 (+)	0.7467 (+)	0.7464 ($\approx$)
DTLZ3	3	0.7432	0.7449 (+)	0.7436 ($\approx$)	0.7426 ($\approx$)
DTLZ4	3	0.5788	0.5918 ($\approx$)	0.6813 (+)	0.6026 ($\approx$)
DTLZ5	3	0.2659	0.2660 (+)	0.2660 (+)	0.2660 (+)
DTLZ6	3	0.2662	0.2662 ($\approx$)	0.2661 ($\approx$)	0.2661 (-)
DTLZ7	3	0.5341	0.5411 ($\approx$)	0.5447 (+)	0.5453 (+)
WFG1	3	1.2527	1.2565 (+)	1.2578 (+)	1.2596 (+)
WFG2	3	1.2431	1.2409 ($\approx$)	1.2423 ($\approx$)	1.2409 ($\approx$)
WFG3	3	0.5183	0.5182 ($\approx$)	0.5180 ($\approx$)	0.5191 ($\approx$)
WFG4	3	0.7458	0.7447 ($\approx$)	0.7437 (-)	0.7439 (-)
WFG5	3	0.6889	0.6872 ($\approx$)	0.6869 ($\approx$)	0.6852 (-)
WFG6	3	0.6733	0.6711 ($\approx$)	0.6683 ($\approx$)	0.6683 ($\approx$)
WFG7	3	0.7439	0.7441 ($\approx$)	0.7444 ($\approx$)	0.7440 ($\approx$)
WFG8	3	0.5968	0.6092 (+)	0.6220 (+)	0.6263 (+)
WFG9	3	0.6694	0.6986 ($\approx$)	0.6742 ($\approx$)	0.7062 ($\approx$)
RWA1	2	0.8201	0.8232 (+)	0.8234 (+)	0.8236 (+)
RWA2	3	1.0144	1.0156 ($\approx$)	1.0100 (-)	1.0139 ($\approx$)
RWA3	3	0.7785	0.7778 ($\approx$)	0.7768 ($\approx$)	0.7704 (-)
RWA4	3	1.3083	1.3081 ($\approx$)	1.3079 (-)	1.3082 ($\approx$)
RWA5	3	0.5177	0.4984 (-)	0.4980 (-)	0.4970 (-)
RWA6	3	0.4857	0.4867 (+)	0.4863 (+)	0.4872 (+)
RWA7	3	0.8757	0.8759 ($\approx$)	0.8758 ($\approx$)	0.8758 ($\approx$)
DDMOP2	3	1.0185	1.0089 (-)	1.0077 (-)	1.0098 ($\approx$)
DDMOP3	3	1.0202	1.0182 ($\approx$)	1.0284 (+)	1.0343 (+)
DDMOP5	3	1.0864	1.0886 (+)	1.0897 (+)	1.0910 (+)
DDMOP6	2	0.9567	0.9555 ($\approx$)	0.9423 (-)	0.9304 (-)
DDMOP7	2	0.1050	0.1044 ($\approx$)	0.1043 (-)	0.1052 ($\approx$)
RE2-4-1	2	0.8055	0.7931 (-)	0.7824 (-)	0.7630 (-)
RE2-3-2	2	0.7577	0.7578 ($\approx$)	0.7579 (+)	0.7580 (+)
RE2-4-3	2	1.1626	1.1625 ($\approx$)	1.1625 (-)	1.1625 (-)
RE2-2-4	2	1.1699	1.1699 ($\approx$)	1.1699 (-)	1.1699 (+)
RE2-3-5	2	1.0480	1.0338 (-)	1.0291 (-)	1.0272 (-)
RE3-3-1	3	1.3310	1.3310 ($\approx$)	1.3310 ($\approx$)	1.3310 ($\approx$)
RE3-4-2	3	1.3208	1.3188 (-)	1.3189 (-)	1.3173 (-)
RE3-4-3	3	1.3120	1.3113 (-)	1.3114 (-)	1.3115 (-)
RE3-5-4	3	1.0182	1.0127 (-)	1.0084 (-)	1.0128 ($\approx$)
RE3-7-5	3	1.3045	1.3046 (+)	1.3047 (+)	1.3047 (+)
RE3-4-6	3	0.9173	0.9302 (+)	0.9363 (+)	0.9398 (+)
RE3-4-7	3	0.8771	0.8777 ($\approx$)	0.8770 ($\approx$)	0.8774 ($\approx$)
(+/-/$\approx$)			(10/7/23)	(14/12/14)	(13/11/16)

Table S10: Comparison of SMS-EMOA under N=36, 66, 120, and 210 when the maximum function evaluation number is 1000.

Problem	m	SMS-EMOA-36	SMS-EMOA-66	SMS-EMOA-120	SMS-EMOA-210
DTLZ1	3	0.0000	0.0000 (≈)	0.0000 (≈)	0.0000 (≈)
DTLZ2	3	0.6670	0.6065 (-)	0.4517 (-)	0.2507 (-)
DTLZ3	3	0.0000	0.0000 (≈)	0.0000 (≈)	0.0000 (≈)
DTLZ4	3	0.3247	0.3830 (≈)	0.1904 (-)	0.0228 (-)
DTLZ5	3	0.2276	0.1877 (-)	0.1105 (-)	0.0423 (-)
DTLZ6	3	0.0000	0.0000 (≈)	0.0000 (≈)	0.0000 (≈)
DTLZ7	3	0.0043	0.0014 (≈)	0.0000 (-)	0.0000 (-)
WFG1	3	0.3024	0.1700 (-)	0.0720 (-)	0.0042 (-)
WFG2	3	1.0604	1.0451 (-)	0.9857 (-)	0.8830 (-)
WFG3	3	0.3873	0.3283 (-)	0.2783 (-)	0.2481 (-)
WFG4	3	0.6533	0.6238 (-)	0.5715 (-)	0.5046 (-)
WFG5	3	0.6113	0.5579 (-)	0.4723 (-)	0.3948 (-)
WFG6	3	0.5347	0.4737 (-)	0.4029 (-)	0.3415 (-)
WFG7	3	0.6438	0.5922 (-)	0.5159 (-)	0.4308 (-)
WFG8	3	0.4908	0.4561 (-)	0.4001 (-)	0.3495 (-)
WFG9	3	0.5859	0.5417 (-)	0.4714 (-)	0.3846 (-)
RWA1	2	0.8012	0.7908 (-)	0.7622 (-)	0.6699 (-)
RWA2	3	0.9816	0.9831 (≈)	0.9442 (-)	0.8346 (-)
RWA3	3	0.8066	0.8302 (+)	0.8282 (+)	0.8088 (≈)
RWA4	3	1.2745	1.2792 (≈)	1.2531 (-)	1.1133 (-)
RWA5	3	0.5556	0.5862 (+)	0.5930 (+)	0.5646 (+)
RWA6	3	0.4443	0.4647 (+)	0.4512 (≈)	0.4079 (-)
RWA7	3	0.8500	0.8426 (-)	0.8107 (-)	0.7770 (-)
DDMOP2	3	0.9882	0.9878 (≈)	0.9483 (-)	0.8408 (-)
DDMOP3	3	1.0289	1.0513 (+)	1.0611 (+)	1.0583 (+)
DDMOP5	3	0.9939	0.9692 (-)	0.9445 (-)	0.8466 (-)
DDMOP6	2	0.7103	0.7062 (≈)	0.6819 (-)	0.6325 (-)
DDMOP7	2	0.0986	0.0973 (-)	0.0919 (-)	0.0845 (-)
RE2-4-1	2	0.8534	0.8562 (≈)	0.8492 (≈)	0.8248 (-)
RE2-3-2	2	0.7492	0.7408 (-)	0.7317 (-)	0.6975 (-)
RE2-4-3	2	1.1616	1.1586 (-)	1.1160 (-)	0.9477 (-)
RE2-2-4	2	1.1677	1.1681 (≈)	1.1673 (≈)	1.1648 (-)
RE2-3-5	2	1.0739	1.0791 (≈)	1.0651 (-)	0.9337 (-)
RE3-3-1	3	1.3309	1.3304 (-)	1.3253 (-)	1.3107 (-)
RE3-4-2	3	1.3064	1.3114 (≈)	1.3196 (+)	1.3207 (+)
RE3-4-3	3	1.2839	1.2814 (≈)	1.2705 (-)	1.2517 (-)
RE3-5-4	3	0.9974	0.9842 (-)	0.9469 (-)	0.8304 (-)
RE3-7-5	3	1.2753	1.2740 (≈)	1.2670 (-)	1.2466 (-)
RE3-4-6	3	0.9123	0.9023 (-)	0.8255 (-)	0.6896 (-)
RE3-4-7	3	0.8567	0.8381 (-)	0.8164 (-)	0.7703 (-)
	(+/-/≈)		(4/21/15)	(4/30/6)	(3/33/4)

Table S11: Comparison of SMS-EMOA under N=36, 66, 120, and 210 when the maximum function evaluation number is 10000.

Problem	m	SMS-EMOA-36	SMS-EMOA-66	SMS-EMOA-120	SMS-EMOA-210
DTLZ1	3	0.9781	0.9433 (≈)	0.6866 (-)	0.1300 (-)
DTLZ2	3	0.7460	0.7452 (-)	0.7433 (-)	0.7397 (-)
DTLZ3	3	0.0000	0.0009 (≈)	0.0000 (≈)	0.0000 (≈)
DTLZ4	3	0.3681	0.5577 (+)	0.6282 (+)	0.7279 (+)
DTLZ5	3	0.2660	0.2658 (-)	0.2653 (-)	0.2645 (-)
DTLZ6	3	0.2662	0.2662 (-)	0.2659 (-)	0.2587 (-)
DTLZ7	3	0.5183	0.5462 (≈)	0.5464 (≈)	0.5093 (≈)
WFG1	3	1.1997	1.1235 (-)	0.9280 (-)	0.7298 (-)
WFG2	3	1.2420	1.2389 (-)	1.2345 (-)	1.2192 (-)
WFG3	3	0.5081	0.5002 (-)	0.4855 (-)	0.4592 (-)
WFG4	3	0.7372	0.7345 (-)	0.7284 (-)	0.7178 (-)
WFG5	3	0.6905	0.6877 (-)	0.6834 (-)	0.6722 (-)
WFG6	3	0.6645	0.6554 (≈)	0.6532 (≈)	0.6292 (-)
WFG7	3	0.7423	0.7410 (-)	0.7374 (-)	0.7297 (-)
WFG8	3	0.6162	0.6129 (-)	0.6033 (-)	0.5909 (-)
WFG9	3	0.7141	0.7084 (-)	0.7039 (-)	0.6993 (-)
RWA1	2	0.8275	0.8275 (≈)	0.8275 (-)	0.8274 (-)
RWA2	3	1.0121	1.0250 (+)	1.0288 (+)	1.0314 (+)
RWA3	3	0.8144	0.8380 (+)	0.8487 (+)	0.8525 (+)
RWA4	3	1.2929	1.2976 (+)	1.3033 (+)	1.3045 (+)
RWA5	3	0.5677	0.5941 (+)	0.6117 (+)	0.6218 (+)
RWA6	3	0.4473	0.4722 (+)	0.4821 (+)	0.4849 (+)
RWA7	3	0.8767	0.8768 (≈)	0.8767 (≈)	0.8764 (≈)
DDMOP2	3	1.0139	1.0295 (+)	1.0290 (+)	1.0329 (+)
DDMOP3	3	1.0311	1.0570 (+)	1.0715 (+)	1.0882 (+)
DDMOP5	3	1.0738	1.0631 (-)	1.0614 (-)	1.0598 (-)
DDMOP6	2	0.8626	0.8362 (-)	0.8098 (-)	0.7937 (-)
DDMOP7	2	0.1025	0.1048 (+)	0.1066 (+)	0.1066 (+)
RE2-4-1	2	0.8837	0.8835 (≈)	0.8832 (-)	0.8823 (-)
RE2-3-2	2	0.7578	0.7579 (+)	0.7579 (+)	0.7578 (≈)
RE2-4-3	2	1.1629	1.1630 (≈)	1.1630 (≈)	1.1630 (≈)
RE2-2-4	2	1.1700	1.1700 (≈)	1.1700 (≈)	1.1700 (≈)
RE2-3-5	2	1.0812	1.0812 (≈)	1.0812 (≈)	1.0812 (-)
RE3-3-1	3	1.3310	1.3310 (≈)	1.3310 (≈)	1.3310 (≈)
RE3-4-2	3	1.3082	1.3121 (+)	1.3196 (+)	1.3246 (+)
RE3-4-3	3	1.3117	1.3117 (≈)	1.3112 (-)	1.3116 (≈)
RE3-5-4	3	1.0189	1.0275 (≈)	1.0297 (+)	1.0310 (+)
RE3-7-5	3	1.2953	1.2962 (≈)	1.2972 (+)	1.2964 (≈)
RE3-4-6	3	0.9439	0.9437 (≈)	0.9440 (≈)	0.9441 (≈)
RE3-4-7	3	0.8786	0.8784 (≈)	0.8781 (≈)	0.8780 (≈)
(+/-/≈)			(11/13/16)	(13/17/10)	(11/18/11)

Table S12: Comparison of SMS-EMOA under N=36, 66, 120, and 210 when the maximum function evaluation number is 100000.

Problem	m	SMS-EMOA-36	SMS-EMOA-66	SMS-EMOA-120	SMS-EMOA-210
DTLZ1	3	1.1213	1.1214 (≈)	1.1214 (≈)	1.1213 (≈)
DTLZ2	3	0.7476	0.7473 (≈)	0.7472 (≈)	0.7472 (≈)
DTLZ3	3	0.7470	0.7466 (≈)	0.7471 (≈)	0.7464 (≈)
DTLZ4	3	0.3779	0.5596 (+)	0.6331 (+)	0.7467 (+)
DTLZ5	3	0.2662	0.2661 (-)	0.2661 (-)	0.2661 (-)
DTLZ6	3	0.2662	0.2661 (-)	0.2661 (-)	0.2661 (-)
DTLZ7	3	0.5208	0.5558 (≈)	0.5633 (≈)	0.5691 (≈)
WFG1	3	1.2632	1.2632 (≈)	1.2617 (-)	1.2590 (-)
WFG2	3	1.2486	1.2489 (≈)	1.2492 (+)	1.2488 (≈)
WFG3	3	0.5195	0.5200 (≈)	0.5193 (≈)	0.5188 (-)
WFG4	3	0.7463	0.7464 (≈)	0.7466 (≈)	0.7451 (-)
WFG5	3	0.6926	0.6925 (≈)	0.6919 (-)	0.6916 (-)
WFG6	3	0.6715	0.6687 (≈)	0.6781 (≈)	0.6715 (≈)
WFG7	3	0.7458	0.7462 (≈)	0.7463 (≈)	0.7463 (≈)
WFG8	3	0.6327	0.6364 (+)	0.6369 (+)	0.6373 (+)
WFG9	3	0.7359	0.7347 (≈)	0.7325 (-)	0.7297 (-)
RWA1	2	0.8275	0.8275 (≈)	0.8275 (≈)	0.8275 (≈)
RWA2	3	1.0043	1.0257 (+)	1.0294 (+)	1.0348 (+)
RWA3	3	0.7507	0.7955 (+)	0.8402 (+)	0.8514 (+)
RWA4	3	1.2877	1.2891 (+)	1.2969 (+)	1.3058 (+)
RWA5	3	0.4550	0.4552 (≈)	0.4525 (≈)	0.4541 (≈)
RWA6	3	0.1658	0.3340 (+)	0.4504 (+)	0.4693 (+)
RWA7	3	0.8768	0.8763 (≈)	0.8768 (≈)	0.8770 (≈)
DDMOP2	3	1.0071	1.0299 (+)	1.0296 (+)	1.0354 (+)
DDMOP3	3	0.5525	0.6638 (+)	0.7803 (+)	0.8890 (+)
DDMOP5	3	1.0918	1.0916 (≈)	1.0926 (+)	1.0920 (+)
DDMOP6	2	0.9983	0.9974 (≈)	0.9979 (≈)	0.9858 (-)
DDMOP7	2	0.1027	0.1050 (+)	0.1071 (+)	0.1086 (+)
RE2-4-1	2	0.8839	0.8839 (+)	0.8839 (+)	0.8839 (+)
RE2-3-2	2	0.7580	0.7582 (+)	0.7583 (+)	0.7584 (+)
RE2-4-3	2	1.1629	1.1628 (≈)	1.1628 (≈)	1.1628 (≈)
RE2-2-4	2	1.1700	1.1699 (≈)	1.1700 (≈)	1.1700 (≈)
RE2-3-5	2	1.0812	1.0812 (≈)	1.0812 (-)	1.0812 (-)
RE3-3-1	3	1.3310	1.3310 (≈)	1.3310 (+)	1.3310 (+)
RE3-4-2	3	1.3016	1.3035 (+)	1.3035 (+)	1.3043 (+)
RE3-4-3	3	1.3118	1.3118 (≈)	1.3117 (≈)	1.3120 (≈)
RE3-5-4	3	1.0148	1.0280 (+)	1.0307 (+)	1.0341 (+)
RE3-7-5	3	1.2919	1.2938 (+)	1.2959 (+)	1.2963 (+)
RE3-4-6	3	0.9442	0.9442 (≈)	0.9442 (≈)	0.9443 (+)
RE3-4-7	3	0.8781	0.8778 (≈)	0.8785 (≈)	0.8789 (+)
	(+/-/≈)		(14/2/24)	(17/6/17)	(18/9/13)