**Appendix IV**

**GARP violations and goodness-of-fit indices by subject**

| ID | # of GARP violations | CCEI | Varian 1991 | HM* | ID | # of GARP violations | CCEI | Varian 1991 | HM* |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 754 | 0.761 | 0.408 | 15 | 27 | 130 | 0.930 | 0.740 | 43 |
| 2 | 2 | 1.000 | 0.998 | 49 | 28 | 34 | 0.905 | 0.832 | 42 |
| 3 | 167 | 0.898 | 0.635 | 39 | 29 | 717 | 0.822 | 0.393 | 21 |
| 4 | 8 | 0.984 | 0.966 | 46 | 30 | 95 | 0.913 | 0.770 | 42 |
| 5 | 80 | 0.939 | 0.799 | 43 | 31 | 10 | 0.951 | 0.848 | 48 |
| 6 | 6 | 0.973 | 0.911 | 48 | 32 | 68 | 0.941 | 0.628 | 43 |
| 7 | 261 | 0.834 | 0.524 | 29 | 33 | 0 | 1.000 | 1.000 | 50 |
| 8 | 2 | 0.994 | 0.974 | 49 | 34 | 14 | 0.935 | 0.779 | 45 |
| 9 | 10 | 0.974 | 0.960 | 46 | 35 | 54 | 0.958 | 0.865 | 39 |
| 10 | 5 | 0.979 | 0.810 | 49 | 36 | 16 | 0.963 | 0.925 | 44 |
| 11 | 0 | 1.000 | 1.000 | 50 | 37 | 12 | 0.980 | 0.935 | 46 |
| 12 | 15 | 0.976 | 0.920 | 45 | 38 | 124 | 0.917 | 0.518 | 32 |
| 13 | 0 | 1.000 | 1.000 | 50 | 39 | 12 | 0.975 | 0.934 | 47 |
| 14 | 0 | 1.000 | 1.000 | 50 | 40 | 8 | 0.980 | 0.925 | 46 |
| 15 | 254 | 0.904 | 0.485 | 26 | 41 | 64 | 0.884 | 0.650 | 42 |
| 16 | 178 | 0.852 | 0.690 | 36 | 42 | 4 | 0.985 | 0.952 | 49 |
| 17 | 7 | 0.988 | 0.984 | 47 | 43 | 4 | 0.992 | 0.983 | 49 |
| 18 | 350 | 0.857 | 0.605 | 27 | 44 | 2 | 0.998 | 0.995 | 49 |
| 19 | 15 | 0.986 | 0.890 | 45 | 45 | 4 | 0.986 | 0.924 | 48 |
| 20 | 58 | 0.946 | 0.885 | 41 | 46 | 45 | 0.854 | 0.632 | 45 |
| 21 | 92 | 0.946 | 0.797 | 36 | 47 | 30 | 0.893 | 0.683 | 42 |
| 22 | 2 | 0.997 | 0.990 | 49 | 48 | 282 | 0.882 | 0.614 | 29 |
| 23 | 43 | 0.958 | 0.882 | 42 | 49 | 18 | 0.959 | 0.873 | 44 |
| 24 | 17 | 0.960 | 0.942 | 45 | 50 | 14 | 0.958 | 0.955 | 46 |
| 25 | 4 | 0.995 | 0.984 | 49 | 51 | 129 | 0.838 | 0.616 | 44 |
| 26 | 2 | 0.996 | 0.995 | 49 | 52 | 0 | 1.000 | 1.000 | 50 |

| ID | # of GARP violations | CCEI | Varian 1991 | HM* | ID | # of GARP violations | CCEI | Varian 1991 | HM* |
|---|---|---|---|---|---|---|---|---|---|
| 53 | 8 | 0.974 | 0.921 | 46 | 79 | 40 | 0.955 | 0.891 | 46 |
| 54 | 464 | 0.905 | 0.480 | 23 | 80 | 0 | 1.000 | 1.000 | 50 |
| 55 | 0 | 1.000 | 1.000 | 50 | 81 | 19 | 0.794 | 0.783 | 47 |
| 56 | 0 | 1.000 | 1.000 | 50 | 82 | 196 | 0.790 | 0.572 | 34 |
| 57 | 4 | 0.996 | 0.983 | 48 | 83 | 8 | 0.985 | 0.981 | 46 |
| 58 | 26 | 0.938 | 0.857 | 47 | 84 | 6 | 0.998 | 0.969 | 47 |
| 59 | 587 | 0.760 | 0.438 | 25 | 85 | 17 | 0.957 | 0.930 | 46 |
| 60 | 151 | 0.924 | 0.690 | 34 | 86 | 0 | 1.000 | 1.000 | 50 |
| 61 | 813 | 0.772 | 0.405 | 14 | 87 | 205 | 0.854 | 0.525 | 32 |
| 62 | 2 | 0.999 | 0.983 | 49 | 88 | 90 | 0.932 | 0.727 | 38 |
| 63 | 4 | 0.998 | 0.933 | 48 | 89 | 16 | 0.882 | 0.867 | 48 |
| 64 | 4 | 0.985 | 0.953 | 49 | 90 | 104 | 0.879 | 0.620 | 35 |
| 65 | 127 | 0.931 | 0.705 | 38 | 91 | 5 | 0.998 | 0.956 | 49 |
| 66 | 11 | 0.980 | 0.961 | 47 | 92 | 18 | 0.926 | 0.892 | 45 |
| 67 | 11 | 0.969 | 0.877 | 46 | 93 | 564 | 0.745 | 0.446 | 21 |
| 68 | 37 | 0.947 | 0.876 | 46 | 94 | 20 | 0.978 | 0.936 | 44 |
| 69 | 81 | 0.931 | 0.813 | 35 | 95 | 131 | 0.927 | 0.659 | 37 |
| 70 | 84 | 0.943 | 0.728 | 36 | 96 | 2 | 0.994 | 0.988 | 49 |
| 71 | 44 | 0.958 | 0.751 | 43 | 97 | 37 | 0.976 | 0.927 | 39 |
| 72 | 59 | 0.902 | 0.810 | 43 | 98 | 21 | 0.977 | 0.921 | 42 |
| 73 | 12 | 0.933 | 0.827 | 48 | 99 | 80 | 0.866 | 0.789 | 41 |
| 74 | 24 | 0.968 | 0.802 | 47 | 100 | 29 | 0.884 | 0.778 | 45 |
| 75 | 17 | 0.915 | 0.876 | 44 | 101 | 4 | 0.996 | 0.987 | 48 |
| 76 | 42 | 0.860 | 0.808 | 44 | 102 | 35 | 0.956 | 0.753 | 44 |
| 77 | 6 | 0.979 | 0.960 | 47 | 103 | 102 | 0.946 | 0.660 | 37 |
| 78 | 4 | 0.990 | 0.969 | 48 | 104 | 8 | 0.962 | 0.900 | 49 |

| ID | # of GARP violations | CCEI | Varian 1991 | HM* | ID | # of GARP violations | CCEI | Varian 1991 | HM* |
|---|---|---|---|---|---|---|---|---|---|
| 105 | 2 | 0.999 | 0.994 | 49 | 130 | 0 | 1.000 | 1.000 | 50 |
| 106 | 175 | 0.902 | 0.677 | 37 | 131 | 64 | 0.963 | 0.842 | 37 |
| 107 | 387 | 0.851 | 0.496 | 20 | 132 | 50 | 0.903 | 0.719 | 43 |
| 108 | 46 | 0.958 | 0.915 | 43 | 133 | 4 | 0.988 | 0.986 | 48 |
| 109 | 77 | 0.933 | 0.597 | 45 | 134 | 399 | 0.895 | 0.497 | 36 |
| 110 | 6 | 0.996 | 0.859 | 48 | 135 | 21 | 0.950 | 0.922 | 45 |
| 111 | 2 | 0.969 | 0.951 | 49 | 136 | 2 | 1.000 | 0.997 | 49 |
| 112 | 0 | 1.000 | 1.000 | 50 | 137 | 6 | 0.966 | 0.946 | 49 |
| 113 | 75 | 0.959 | 0.788 | 41 | 138 | 93 | 0.906 | 0.734 | 40 |
| 114 | 4 | 0.991 | 0.959 | 48 | 139 | 6 | 0.983 | 0.961 | 47 |
| 115 | 6 | 0.971 | 0.880 | 47 | 140 | 13 | 0.966 | 0.944 | 46 |
| 116 | 138 | 0.877 | 0.668 | 32 | 141 | 0 | 1.000 | 1.000 | 50 |
| 117 | 0 | 1.000 | 1.000 | 50 | 142 | 18 | 0.990 | 0.980 | 46 |
| 118 | 66 | 0.941 | 0.780 | 37 | 143 | 34 | 0.923 | 0.860 | 44 |
| 119 | 18 | 0.961 | 0.897 | 47 | 144 | 88 | 0.909 | 0.690 | 37 |
| 120 | 9 | 0.951 | 0.870 | 47 | 145 | 32 | 0.987 | 0.745 | 45 |
| 121 | 20 | 0.936 | 0.892 | 43 | 146 | 4 | 0.999 | 0.987 | 48 |
| 122 | 164 | 0.921 | 0.798 | 32 | 147 | 4 | 0.980 | 0.958 | 48 |
| 123 | 73 | 0.831 | 0.825 | 39 | 148 | 0 | 1.000 | 1.000 | 50 |
| 124 | 13 | 0.972 | 0.928 | 46 | 149 | 82 | 0.861 | 0.818 | 37 |
| 125 | 2 | 0.990 | 0.942 | 49 | 150 | 63 | 0.931 | 0.673 | 44 |
| 126 | 16 | 0.975 | 0.901 | 46 | 151 | 7 | 0.990 | 0.961 | 49 |
| 127 | 14 | 0.983 | 0.930 | 48 | 152 | 2 | 0.999 | 0.999 | 49 |
| 128 | 4 | 0.986 | 0.979 | 48 | 153 | 23 | 0.979 | 0.956 | 43 |
| 129 | 112 | 0.952 | 0.685 | 39 | 154 | 0 | 1.000 | 1.000 | 50 |

* The test proposed by Houtman and Maks (1985) (HM), finds the largest subset of choices that is consistent with GARP. This method is computationally very intensive. As a result, we were unable to calculate the HM indices for a small number of subjects who often violated GARP, and we therefore report only lower bounds. The Varian (1991) index is a lower bound on the CCEI. The reasons for this discrepancy are discussed in CFGKb.