UNIVERSITY OF OSLO
DEPARTMENT OF ECONOMICS

Exam: ECON4160 – Econometrics – Modelling and systems estimation

Date of exam: Tuesday, May 30, 2006 **Grades will be given: Wednesday, June 14**

Time for exam: 02:30 p.m. – 05:30 p.m.

The problem set covers 13 pages (incl. cover page)

Resources allowed:

- All written and printed resources, as well as calculator, are permitted.

The grades given: A-F, with A as the best and E as the weakest passing grade. F is fail.

ECON 4160: ECONOMETRICS –
MODELLING AND SYSTEMS ESTIMATION

EXAM, SPRING 2006

PROBLEM 1 (WEIGHT: 50 %)

We are interesting in analyzing the capital-labour substitution in two manufacturing industries (2-digit SIC industries) from aggregate input data from the USA for the years 1958-1996 ($T = 39$ observations). The input quantities are in millions of dollars at constant 1992 prices, the price indexes are normalized to 1992 = 1, and subscript t denotes year. At the end of the set of questions are a slightly edited printout from PcGive, and a comprehensive table of critical values for the Durbin-Watson test (DW). The variables which occur in the econometric models to be considered, are [ln = the natural logarithm]:

$$y_{1t} = \ln\left(\frac{K_{1t}}{L_{1t}}\right) = \text{log of (capital input quantity/labour input quantity) in Industry 1,}$$
$$y_{2t} = \ln\left(\frac{K_{2t}}{L_{2t}}\right) = \text{log of (capital input quantity/labour input quantity) in Industry 2,}$$
$$x_{1t} = \ln\left(\frac{P_{K1t}}{P_{L1t}}\right) = \text{log of (index for capital price/index for labour price) in Industry 1,}$$
$$x_{2t} = \ln\left(\frac{P_{K2t}}{P_{L2t}}\right) = \text{log of (index for capital price/index for labour price) in Industry 2,}$$

We assume that the typical firms in the two industries have a production technology of the CES (Constant Elasticity of Substitution) form and minimizes input costs for given output. It can then be shown from the optimizing conditions that

$$\ln\left(\frac{K_{1t}}{L_{1t}}\right) = \alpha_1 + \beta_1 \ln\left(\frac{P_{K1t}}{P_{L1t}}\right) + u_{1t},$$
$$\ln\left(\frac{K_{2t}}{L_{2t}}\right) = \alpha_2 + \beta_2 \ln\left(\frac{P_{K2t}}{P_{L2t}}\right) + u_{2t},$$

where $(-\beta_1)$ and $(-\beta_2)$ are the elasticity of substitution between capital and labour in the two industries, and u_{1t} and u_{2t} are disturbances. (Proof not required.)

Using the simplified notation, the system of factor input equations can be written as

$$y_{1t} = \alpha_1 + \beta_1 x_{1t} + u_{1t}, \tag{1}$$
$$y_{2t} = \alpha_2 + \beta_2 x_{2t} + u_{2t}, \qquad t = 1, \ldots, T. \tag{2}$$

(1a) Consider the two (logarithmic) price ratios x_{1t} and x_{2t} as exogenous and assume that u_{1t} and u_{2t} are correlated. OLS (Ordinary Least Squares) estimates of

Equations (1) and (2) are given in PART A of the printout. Corresponding results when the two equations are estimated as a system of regression equations by FGLS (Feasible Generalized Least Squares) are shown in PART B of the printout. Interpret the two sets of results and explain why the estimates differ.

(1b) The standard errors of the coefficient estimates in PART B are lower than those in PART A. Do you find this an expected result? There is not a similar improvement in the t-values. Do you find the latter finding surprising? Explain briefly.

(1c) Are there signs that the assumption of non-autocorrelated disturbances in Equations (1) and (2) is violated? Explain briefly.

(1d) The Cobb-Douglas production function is the special case of the CES function where the elasticity of substitution is one ($-\beta_1 = -\beta_2 = 1$). Would you reject the Cobb-Douglas hypothesis from the results in the printouts? Maybe you would need more detailed output to properly answer this question? State briefly the reason for your answer.

An extension of Equations (1)–(2), where both relative input prices are assumed to enter both input equations, is also considered. The model is then specified as

$$y_{1t} = \alpha_1 + \beta_{11}x_{1t} + \beta_{12}x_{2t} + v_{1t}, \tag{3}$$

$$y_{2t} = \alpha_2 + \beta_{21}x_{1t} + \beta_{22}x_{2t} + v_{2t}, \qquad t = 1, \ldots, T. \tag{4}$$

where v_{1t} and v_{2t} are disturbances.

(1e) OLS estimates of Equations (3) and (4) are reported in PART C of the printout. Corresponding results when the two equations are estimated jointly as a system of regression equations by FGLS are shown in PART D. Compare these two sets of results with those obtained in PART A and PART B and state your conclusion.

(1f) A colleague examining the printouts in PART A, . . . ,PART D claims that since Industry 1 and Industry 2 produce outputs which are strongly different, the restriction $\text{cov}(u_{1t}, u_{2t}) = 0$ should have been imposed on Equations (1)–(2) and $\text{cov}(v_{1t}, v_{2t}) = 0$ should have been imposed on Equations (3)–(4). Would your conclusions above then have been different? Do you agree with you colleague that a difference in the nature of the outputs from the two industries is a valid reason for imposing these zero covariance restrictions? Explain briefly your argument.

[Problem set continues on next page]

PROBLEM 2 (WEIGHT: 30 %)

Assume now that an assumed feedback from the rest of the economy, say from the way the labour market functions, gives reason to believe that the input price ratio in Industry 2 affects the input price ratio in Industry 1, but that there is no feedback the other way. To account for this we extend the equation system (1)–(2) by adding a third equation, making x_{1t} endogenous, so that the modified system becomes

$$\begin{aligned} y_{1t} &= \alpha_1 + \beta_1 x_{1t} + u_{1t}, \\ y_{2t} &= \alpha_2 + \beta_2 x_{2t} + u_{2t}, \\ x_{1t} &= \gamma + \delta x_{2t} + \varepsilon_t, \end{aligned}$$

where ε_t is a disturbance.

(2a) Give a complete specification of this model. PART E of the printout gives estimation results for the first [EQ(1)] and third equation [EQ(3)] of the latter model when, because of the assumed endogeneity of x_{1t}, we use x_{2t} as instrument for x_{1t} when estimating the first equation. Explain briefly why x_{2t} is a valid instrument and why we do not need to reestimate the second equation in the model?

(2b) Are there situations in which, when the three-equation model is the appropriate specification, you would prefer the methods used in PART A and PART B to those used in PART E? Explain briefly.

(2c) Consider the corresponding three-equation system obtained by making x_{1t} in Equations (3)–(4) endogenous:

$$\begin{aligned} y_{1t} &= \alpha_1 + \beta_{11} x_{1t} + \beta_{12} x_{2t} + v_{1t}, \\ y_{2t} &= \alpha_2 + \beta_{21} x_{1t} + \beta_{22} x_{2t} + v_{2t}, \\ x_{1t} &= \gamma + \delta x_{2t} + \varepsilon_t, \end{aligned}$$

where you assume that $\text{cov}(v_{1t}, v_{2t}) \neq 0$. Is it possible to estimate the coefficients in the two first equations consistently? Does you answer depend on whether $\text{cov}(v_{1t}, \varepsilon_t)$ and $\text{cov}(v_{2t}, \varepsilon_t)$ are zero or not?

[PROBLEM SET CONTINUES ON NEXT PAGE]

PROBLEM 3 (WEIGHT: 20 %)

(3a) To account for a possible delayed response of the factor input ratio to changes in the factor price ratio, the following extension of Equation (1) in Problem 1 has been proposed:

$$y_{1t} = \alpha_1 + \beta_1 x_{1t} + \lambda_1 y_{1,t-1} + u_{1t}, \qquad |\lambda_1| < 1,$$

PART F of the printout gives OLS estimates for this equation. Can you from this printout (i) estimate the short-run and long-run elasticity of substitution between labour and capital in Industry 1 consistently, and (ii) test whether the long-run elasticity significantly exceeds the short-run elasticity? Which of the two elasticity estimates is closest to the estimate obtained from the corresponding static equation in PART A? Could you explain your finding?

(3b) The five last pages of the printout show – for various combinations of the number of observations (T) and the number of coefficients in the equation (K) – the lower (dL) and the upper (dU) bounds of the 5 % critical values of the Durbin-Watson test ($K \leq T-4$). Give, supported by this table and what you know about the relationship between residuals and disturbances, a brief intuitive explanation of why the difference between the upper and lower bound ($dU-dL$) would have been smaller if you had had twice as long time series, i.e., $T = 78$ rather than $T = 39$, with the same value of K. What do you think will happen to ($dU-dL$) when T goes to infinity for a fixed K?

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PRINTOUT, PART A

EQ(1) Modelling ln(K1/L1)  by OLS. The estimation sample is: 1958 to 1996

                  Coefficient  Std.Error  t-value  t-prob Part.R^2
Constant             -1.64376    0.03979    -41.3   0.000   0.9788
ln(PK1/PL1)         -0.814122    0.05918    -13.8   0.000   0.8365

sigma                0.148029  RSS               0.810768809
R^2                  0.836457  F(1,37) =        189.2 [0.000]
log-likelihood        20.1914  DW                     0.535
no. of observations        39  no. of parameters          2


EQ(2) Modelling ln(K2/L2) by OLS. The estimation sample is: 1958 to 1996

                  Coefficient  Std.Error  t-value  t-prob Part.R^2
Constant            -0.720182    0.03993    -18.0   0.000 0.8980
ln(PK2/PL2)         -0.859562    0.07035    -12.2   0.000 0.8014

sigma                0.155971  RSS               0.900100587
R^2                  0.801366  F(1,37) =        149.3 [0.000]
log-likelihood        18.1532  DW                     0.312
no. of observations        39  no. of parameters          2
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PRINTOUT, PART B

System of regression equations, estimated by FGLS. Version 1.
The estimation sample is: 1958 to 1996

(1) Equation for: ln(K1/L1)
               Coefficient  Std.Error  t-value  t-prob
Constant         -1.654590    0.03975    -41.6   0.000
ln(PK1/PL1)      -0.794065    0.05904    -13.4   0.000

sigma = 0.148259

(2) Equation for: ln(K2/L2)
               Coefficient  Std.Error  t-value  t-prob
Constant         -0.734906    0.03991    -18.4   0.000
ln(PK2/PL2)      -0.826284    0.07029    -11.8   0.000

sigma = 0.156442

Correlation between residuals in equations for ln(K1/L1) and ln(K2/L2): 0.14657
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PRINTOUT, PART C

EQ(1) Modelling ln(K1/L1) by OLS. The estimation sample is: 1958 to 1996

                 Coefficient  Std.Error  t-value  t-prob Part.R^2
Constant            -1.61147    0.02380    -67.7   0.000   0.9922
ln(PK1/PL1)        -0.420474    0.05855    -7.18   0.000   0.5889
ln(PK2/PL2)        -0.553437    0.06606    -8.38   0.000   0.6610

sigma              0.0873797   RSS               0.274867547
R^2                 0.944555   F(2,36) =        306.6 [0.000]
log-likelihood       41.2844   DW                     0.662
no. of observations       39   no. of parameters          3


EQ(2) Modelling ln(K2/L2) by OLS. The estimation sample is: 1958 to 1996

                  Coefficient  Std.Error  t-value  t-prob Part.R^2
Constant            -0.672907    0.03643    -18.5   0.000   0.9046
ln(PK1/PL1)         -0.339129    0.08962    -3.78   0.001   0.2846
ln(PK2/PL2)         -0.552505    0.10110    -5.46   0.000   0.4534

sigma               0.133744   RSS                0.64395202
R^2                 0.857893   F(2,36) =        108.7 [0.000]
log-likelihood       24.6834   DW                     0.304
no. of observations       39   no. of parameters          3
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PRINTOUT, PART D

System of regression equations, estimated by FGLS. Version 2.
The estimation sample is: 1958 to 1996

(1) Equation for: ln(K1/L1)
             Coefficient  Std.Error  t-value  t-prob
Constant       -1.611470    0.02380    -67.7   0.000
ln(PK1/PL1)    -0.420474    0.05855    -7.18   0.000
ln(PK2/PL2)    -0.553437    0.06606    -8.38   0.000

sigma = 0.0873797

(2) Equation for: ln(K2/L2)
             Coefficient  Std.Error  t-value  t-prob
Constant       -0.672907    0.03643    -18.5   0.000
ln(PK1/PL1)    -0.339129    0.08962    -3.78   0.001
ln(PK2/PL2)    -0.552505    0.10110    -5.46   0.000

sigma = 0.133744

Correlation between residuals in equations for ln(K1/L1) and ln(K2/L2):  0.88602
Correlation between actual and fitted values of ln(K1/L1): 0.97188
Correlation between actual and fitted values of ln(K2/L2): 0.92623
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PRINTOUT, PART E

EQ(1) Modelling ln(K1/L1) by IVE. The estimation sample is: 1958 to 1996

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                  Coefficient  Std.Error  t-value  t-prob
Constant             -1.52626    0.05415    -28.2   0.000
ln(PK1/PL1)    Y     -1.03172    0.08617    -12.0   0.000

sigma                0.172971  RSS                1.10699539
no. of observations        39  no. of parameters           2
no. endogenous variables    2  no. of instruments          2
Additional instruments:
[0] = ln(PK2/PL2)
```

EQ(3) Modelling ln(PK1/PL1) by OLS. The estimation sample is: 1958 to 1996

```
                  Coefficient  Std.Error  t-value  t-prob Part.R^2
Constant             0.139400    0.06278     2.22   0.033   0.1176
ln(PK2/PL2)          0.905429     0.1107     8.18   0.000   0.6440

sigma                0.245347  RSS                 2.2272208
R^2                  0.644013  F(1,37) =     66.94    [0.000]
log-likelihood       0.486136  DW                      0.577
no. of observations        39  no. of parameters           2
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PRINTOUT, PART F

EQ(1) Modelling ln(K1/L1) by OLS. The estimation sample is: 1959 to 1996

```
                  Coefficient  Std.Error  t-value  t-prob Part.R^2
Constant            -0.374223    0.09354    -4.00   0.000   0.3138
ln(K1/L1)_1          0.755314    0.05488     13.8   0.000   0.8440
ln(PK1/PL1)         -0.217377    0.04849    -4.48   0.000   0.3647

sigma               0.0578778  RSS               0.117244368
R^2                  0.975197  F(2,35) =        688.1 [0.000]
log-likelihood        55.9209  DW                       1.78
no. of observations        38  no. of parameters           3
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DESCRIPTIVE STATISTICS. The sample is 1958 to 1996 (39 obs.)

Means

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      ln(K1/L1)    ln(K2/L2)   ln(PK1/PL1)  ln(PK2/PL2)
      -2.0834      -1.1005      0.54001      0.44245
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Standard deviations (using T-1)

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      ln(K1/L1)    ln(K2/L2)   ln(PK1/PL1)  ln(PK2/PL2)
       0.36119      0.34532      0.40576      0.35964
```

Correlation matrix:

```
                  ln(K1/L1)    ln(K2/L2)   ln(PK1/PL1)  ln(PK2/PL2)
ln(K1/L1)           1.0000      0.97829     -0.91458     -0.93012
ln(K2/L2)          0.97829       1.0000     -0.86025     -0.89519
ln(PK1/PL1)       -0.91458     -0.86025       1.0000      0.80250
ln(PK2/PL2)       -0.93012     -0.89519      0.80250       1.0000
*************************************************************************
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Durbin-Watson 5 % Critical Values (dL=lower, dU=upper):

T = NO. OF OBS. K = NO. OF COEF. (INCL. INTERCEPT)

T	K	dL	dU	T	K	dL	dU	T	K	dL	dU	T	K	dL	dU
6	2	0.61018	1.40015	18	2	1.15759	1.39133	23	2	1.25665	1.43747	27	2	1.31568	1.46878
7	2	0.69955	1.35635	18	3	1.04607	1.53525	23	3	1.16815	1.54346	27	3	1.23991	1.55620
7	3	0.46723	1.89636	18	4	0.93310	1.69614	23	4	1.07778	1.65974	27	4	1.16239	1.65101
8	2	0.76290	1.33238	18	5	0.82044	1.87189	23	5	0.98639	1.78546	27	5	1.08364	1.75274
8	3	0.55907	1.77711	18	6	0.70984	2.06000	23	6	0.89488	1.91958	27	6	1.00421	1.86079
8	4	0.36744	2.28664	18	7	0.60301	2.25750	23	7	0.80410	2.06093	27	7	0.92463	1.97449
9	2	0.82428	1.31988	18	8	0.50158	2.46122	23	8	0.71493	2.20816	27	8	0.84546	2.09313
9	3	0.62910	1.69926	18	9	0.40702	2.66753	23	9	0.62821	2.35988	27	9	0.76726	2.21588
9	4	0.45476	2.12816	18	10	0.32076	2.87268	23	10	0.54478	2.51449	27	10	0.69057	2.34190
9	5	0.29571	2.58810	18	11	0.24405	3.07345	23	11	0.46541	2.67038	27	11	0.61593	2.47026
10	2	0.87913	1.31971	18	12	0.17732	3.26497	23	12	0.39083	2.82585	27	12	0.54385	2.59997
10	3	0.69715	1.64134	18	13	0.12315	3.44141	23	13	0.32172	2.97919	27	13	0.47482	2.73007
10	4	0.52534	2.01632	18	14	0.07786	3.60315	23	14	0.25866	3.12852	27	14	0.40933	2.85950
10	5	0.37602	2.41365	19	2	1.18037	1.40118	23	15	0.20216	3.27216	27	15	0.34780	2.98721
10	6	0.24269	2.82165	19	3	1.07430	1.53553	23	16	0.15274	3.40865	27	16	0.29062	3.11215
11	2	0.92733	1.32409	19	4	0.96659	1.68509	23	17	0.11029	3.53549	27	17	0.23816	3.23327
11	3	0.75798	1.60439	19	5	0.85876	1.84815	23	18	0.07619	3.65007	27	18	0.19072	3.34944
11	4	0.59477	1.92802	19	6	0.75231	2.02262	23	19	0.04801	3.75327	27	19	0.14853	3.45967
11	5	0.44406	2.28327	19	7	0.64870	2.20614	24	2	1.27276	1.44575	27	20	0.11188	3.56318
11	6	0.31549	2.64456	19	8	0.54938	2.39602	24	3	1.18781	1.54639	27	21	0.08057	3.65833
11	7	0.20253	3.00447	19	9	0.45571	2.58939	24	4	1.10100	1.65649	28	2	1.32844	1.47589
12	2	0.97076	1.33137	19	10	0.36889	2.78312	24	5	1.01309	1.77526	28	3	1.25534	1.55964
12	3	0.81221	1.57935	19	11	0.29008	2.97399	24	6	0.92486	1.90184	28	4	1.18051	1.65025
12	4	0.65765	1.86397	19	12	0.22029	3.15930	24	7	0.83706	2.03522	28	5	1.10444	1.74728
12	5	0.51198	2.17662	19	13	0.15979	3.33481	24	8	0.75048	2.17427	28	6	1.02762	1.85022
12	6	0.37956	2.50609	19	14	0.11082	3.49566	24	9	0.66589	2.31774	28	7	0.95052	1.95851
12	7	0.26813	2.83196	19	15	0.07001	3.64241	24	10	0.58400	2.46431	28	8	0.87366	2.07148
12	8	0.17144	3.14940	20	2	1.20149	1.41073	24	11	0.50554	2.61260	28	9	0.79754	2.18844
13	2	1.00973	1.34040	20	3	1.10040	1.53668	24	12	0.43119	2.76111	28	10	0.72265	2.30862
13	3	0.86124	1.56212	20	4	0.99755	1.67634	24	13	0.36156	2.90835	28	11	0.64947	2.43122
13	4	0.71465	1.81593	20	5	0.89425	1.82828	24	14	0.29723	3.05282	28	12	0.57848	2.55540
13	5	0.57446	2.09428	20	6	0.79179	1.99079	24	15	0.23869	3.19285	28	13	0.51013	2.68025
13	6	0.44448	2.38967	20	7	0.69146	2.16189	24	16	0.18635	3.32700	28	14	0.44486	2.80489
13	7	0.32775	2.69204	20	8	0.59454	2.33937	24	17	0.14066	3.45402	28	15	0.38308	2.92838
13	8	0.23049	2.98506	20	9	0.50220	2.52082	24	18	0.10150	3.57167	28	16	0.32517	3.04976
13	9	0.14693	3.26577	20	10	0.41559	2.70374	24	19	0.07006	3.67769	28	17	0.27146	3.16812
14	2	1.04495	1.35027	20	11	0.33571	2.88535	24	20	0.04413	3.77297	28	18	0.22228	3.28249
14	3	0.90544	1.55066	20	12	0.26349	3.06292	25	2	1.28791	1.45371	28	19	0.17787	3.39189
14	4	0.76666	1.77882	20	13	0.19978	3.23417	25	3	1.20625	1.54954	28	20	0.13843	3.49546
14	5	0.63206	2.02955	20	14	0.14472	3.39540	25	4	1.12276	1.65403	28	21	0.10421	3.59248
14	6	0.50516	2.29593	20	15	0.10024	3.54250	25	5	1.03811	1.76655	29	2	1.34054	1.48275
14	7	0.38897	2.57158	20	16	0.06327	3.67619	25	6	0.95297	1.88634	29	3	1.26992	1.56312
14	8	0.28559	2.84769	21	2	1.22115	1.41997	25	7	0.86803	2.01252	29	4	1.19762	1.64987
14	9	0.20013	3.11121	21	3	1.12461	1.53849	25	8	0.78400	2.14412	29	5	1.12407	1.74260
14	10	0.12726	3.36038	21	4	1.02624	1.66942	25	9	0.70154	2.28007	29	6	1.04971	1.84088
15	2	1.07697	1.36054	21	5	0.92719	1.81157	25	10	0.62133	2.41924	29	7	0.97499	1.94420
15	3	0.94554	1.54318	21	6	0.82856	1.96350	25	11	0.54401	2.56041	29	8	0.90036	2.05196
15	4	0.81396	1.75014	21	7	0.73149	2.12355	25	12	0.47019	2.70229	29	9	0.82626	2.16358
15	5	0.68519	1.97735	21	8	0.63710	2.28988	25	13	0.40046	2.84360	29	10	0.75316	2.27837
15	6	0.56197	2.21981	21	9	0.54645	2.46051	25	14	0.33536	2.98300	29	11	0.68148	2.39562
15	7	0.44707	2.47148	21	10	0.46055	2.63324	25	15	0.27536	3.11913	29	12	0.61166	2.51459
15	8	0.34290	2.72698	21	11	0.38035	2.80588	25	16	0.22090	3.25058	29	13	0.54413	2.63447
15	9	0.25090	2.97866	21	12	0.30669	2.97600	25	17	0.17231	3.37604	29	14	0.47929	2.75449
15	10	0.17531	3.21604	21	13	0.24033	3.14129	25	18	0.12995	3.49447	29	15	0.41753	2.87381
15	11	0.11127	3.43819	21	14	0.18198	3.29979	25	19	0.09371	3.60384	29	16	0.35918	2.99160
16	2	1.10617	1.37092	21	15	0.13166	3.44827	25	20	0.06465	3.70220	29	17	0.30461	3.10700
16	3	0.98204	1.53860	21	16	0.09111	3.58322	25	21	0.04070	3.79041	29	18	0.25409	3.21917
16	4	0.85718	1.72773	21	17	0.05747	3.70544	26	2	1.30219	1.46139	29	19	0.20790	3.32728
16	5	0.73400	1.93506	22	2	1.23949	1.42888	26	3	1.22358	1.55281	29	20	0.16625	3.43042
16	6	0.61495	2.15672	22	3	1.14713	1.54079	26	4	1.14319	1.65225	29	21	0.12931	3.52786
16	7	0.50223	2.38813	22	4	1.05292	1.66398	26	5	1.06158	1.75911	30	2	1.35204	1.48936
16	8	0.39805	2.62409	22	5	0.95783	1.79744	26	6	0.97937	1.87274	30	3	1.28373	1.56661
16	9	0.30433	2.86009	22	6	0.86285	1.93996	26	7	0.89717	1.99240	30	4	1.21380	1.64981
16	10	0.22206	3.08954	22	7	0.76898	2.09015	26	8	0.81561	2.11722	30	5	1.14262	1.73860
16	11	0.15479	3.30391	22	8	0.67719	2.24646	26	9	0.73529	2.24629	30	6	1.07060	1.83259
16	12	0.09809	3.50287	22	9	0.58843	2.40718	26	10	0.65683	2.37862	30	7	0.99815	1.93133
17	2	1.13295	1.38122	22	10	0.50363	2.57051	26	11	0.58079	2.51315	30	8	0.92564	2.03432
17	3	1.01543	1.53614	22	11	0.42363	2.73452	26	12	0.50775	2.64877	30	9	0.85351	2.14102
17	4	0.89675	1.71009	22	12	0.34926	2.89726	26	13	0.43825	2.78436	30	10	0.78217	2.25080
17	5	0.77898	1.90047	22	13	0.28119	3.05662	26	14	0.37279	2.91872	30	11	0.71202	2.36307
17	6	0.66414	2.10414	22	14	0.22003	3.21061	26	15	0.31182	3.05067	30	12	0.64345	2.47714
17	7	0.55423	2.31755	22	15	0.16642	3.35756	26	16	0.25578	3.17904	30	13	0.57685	2.59233
17	8	0.45107	2.53660	22	16	0.12028	3.49463	26	17	0.20499	3.30253	30	14	0.51259	2.70793
17	9	0.35639	2.75688	22	17	0.08315	3.61880	26	18	0.15977	3.42006	30	15	0.45105	2.82319
17	10	0.27177	2.97455	22	18	0.05242	3.73092	26	19	0.12041	3.53067	30	16	0.39255	2.93738
17	11	0.19784	3.18400					26	20	0.08677	3.63257	30	17	0.33740	3.04971
17	12	0.13763	3.37817					26	21	0.05983	3.72404	30	18	0.28590	3.15946
17	13	0.08711	3.55716									30	19	0.23830	3.26584
												30	20	0.19485	3.36811
												30	21	0.15572	3.46549

T	K	dL	dU	T	K	dL	dU	T	K	dL	dU	T	K	dL	dU
31	2	1.36298	1.49574	35	2	1.40194	1.51914	39	2	1.43473	1.53963	43	2	1.46278	1.55773
31	3	1.29685	1.57011	35	3	1.34332	1.58382	39	3	1.38210	1.59686	43	3	1.41507	1.60905
31	4	1.22915	1.65002	35	4	1.28330	1.65282	39	4	1.32827	1.65754	43	4	1.36629	1.66319
31	5	1.16021	1.73518	35	5	1.22214	1.72593	39	5	1.27338	1.72152	43	5	1.31655	1.72002
31	6	1.09040	1.82522	35	6	1.16007	1.80292	39	6	1.21761	1.78863	43	6	1.26600	1.77944
31	7	1.02008	1.91976	35	7	1.09735	1.88351	39	7	1.16116	1.85870	43	7	1.21476	1.84132
31	8	0.94962	2.01834	35	8	1.03424	1.96743	39	8	1.10419	1.93153	43	8	1.16298	1.90552
31	9	0.87940	2.12046	35	9	0.97099	2.05436	39	9	1.04692	2.00692	43	9	1.11080	1.97189
31	10	0.80979	2.22562	35	10	0.90788	2.14395	39	10	0.98953	2.08460	43	10	1.05837	2.04027
31	11	0.74115	2.33323	35	11	0.84516	2.23585	39	11	0.93220	2.16437	43	11	1.00581	2.11047
31	12	0.67387	2.44273	35	12	0.78311	2.32966	39	12	0.87514	2.24594	43	12	0.95328	2.18231
31	13	0.60828	2.55347	35	13	0.72197	2.42501	39	13	0.81853	2.32904	43	13	0.90093	2.25562
31	14	0.54474	2.66484	35	14	0.66200	2.52146	39	14	0.76257	2.41340	43	14	0.84891	2.33017
31	15	0.48358	2.77618	35	15	0.60346	2.61858	39	15	0.70743	2.49872	43	15	0.79734	2.40577
31	16	0.42513	2.88680	35	16	0.54659	2.71593	39	16	0.65333	2.58469	43	16	0.74639	2.48220
31	17	0.36966	2.99604	35	17	0.49162	2.81306	39	17	0.60044	2.67100	43	17	0.69619	2.55922
31	18	0.31748	3.10322	35	18	0.43878	2.90951	39	18	0.54891	2.75733	43	18	0.64688	2.63664
31	19	0.26882	3.20762	35	19	0.38829	3.00481	39	19	0.49896	2.84336	43	19	0.59860	2.71419
31	20	0.22392	3.30859	35	20	0.34034	3.09851	39	20	0.45072	2.92876	43	20	0.55149	2.79164
31	21	0.18298	3.40545	35	21	0.29513	3.19013	39	21	0.40437	3.01320	43	21	0.50568	2.86878
32	2	1.37340	1.50190	36	2	1.41065	1.52451	40	2	1.44214	1.54436	44	2	1.46920	1.56193
32	3	1.30932	1.57358	36	3	1.35365	1.58716	40	3	1.39083	1.59999	44	3	1.42257	1.61196
32	4	1.24371	1.65046	36	4	1.29530	1.65387	40	4	1.33835	1.65889	44	4	1.37490	1.66467
32	5	1.17688	1.73226	36	5	1.23583	1.72447	40	5	1.28484	1.72092	44	5	1.32631	1.71996
32	6	1.10916	1.81867	36	6	1.17545	1.79873	40	6	1.23047	1.78594	44	6	1.27692	1.77772
32	7	1.04088	1.90931	36	7	1.11441	1.87643	40	7	1.17541	1.85378	44	7	1.22685	1.83784
32	8	0.97239	2.00381	36	8	1.05294	1.95730	40	8	1.11983	1.92426	44	8	1.17624	1.90017
32	9	0.90401	2.10171	36	9	0.99128	2.04104	40	9	1.06391	1.99717	44	9	1.12522	1.96460
32	10	0.83609	2.20255	36	10	0.92967	2.12737	40	10	1.00782	2.07233	44	10	1.07390	2.03095
32	11	0.76897	2.30583	36	11	0.86836	2.21594	40	11	0.95174	2.14950	44	11	1.02245	2.09907
32	12	0.70299	2.41102	36	12	0.80759	2.30642	40	12	0.89585	2.22843	44	12	0.97099	2.16881
32	13	0.63847	2.51758	36	13	0.74759	2.39844	40	13	0.84035	2.30888	44	13	0.91964	2.23997
32	14	0.57573	2.62493	36	14	0.68861	2.49162	40	14	0.78539	2.39060	44	14	0.86856	2.31237
32	15	0.51510	2.73248	36	15	0.63089	2.58557	40	15	0.73115	2.47330	44	15	0.81787	2.38581
32	16	0.45685	2.83963	36	16	0.57463	2.67990	40	16	0.67782	2.55672	44	16	0.76771	2.46011
32	17	0.40129	2.94576	36	17	0.52008	2.77418	40	17	0.62556	2.64056	44	17	0.71822	2.53505
32	18	0.34866	3.05028	36	18	0.46745	2.86800	40	18	0.57454	2.72455	44	18	0.66953	2.61043
32	19	0.29923	3.15253	36	19	0.41692	2.96095	40	19	0.52492	2.80836	44	19	0.62177	2.68601
32	20	0.25319	3.25193	36	20	0.36871	3.05259	40	20	0.47687	2.89172	44	20	0.57507	2.76161
32	21	0.21078	3.34784	36	21	0.32299	3.14249	40	21	0.43054	2.97431	44	21	0.52954	2.83698
33	2	1.38335	1.50784	37	2	1.41900	1.52971	41	2	1.44927	1.54895	45	2	1.47538	1.56602
33	3	1.32119	1.57703	37	3	1.36354	1.59044	41	3	1.39922	1.60307	45	3	1.42980	1.61482
33	4	1.25756	1.65110	37	4	1.30678	1.65501	41	4	1.34803	1.66028	45	4	1.38320	1.66618
33	5	1.19272	1.72978	37	5	1.24891	1.72327	41	5	1.29584	1.72048	45	5	1.33571	1.71999
33	6	1.12698	1.81282	37	6	1.19014	1.79499	41	6	1.24280	1.78353	45	6	1.28744	1.77618
33	7	1.06065	1.89986	37	7	1.13071	1.86998	41	7	1.18907	1.84926	45	7	1.23849	1.83462
33	8	0.99402	1.99057	37	8	1.07081	1.94799	41	8	1.13481	1.91753	45	8	1.18899	1.89520
33	9	0.92743	2.08455	37	9	1.01066	2.02876	41	9	1.08019	1.98813	45	9	1.13907	1.95778
33	10	0.86115	2.18137	37	10	0.95051	2.11203	41	10	1.02536	2.06089	45	10	1.08886	2.02222
33	11	0.79554	2.28061	37	11	0.89057	2.19749	41	11	0.97050	2.13561	45	11	1.03846	2.08839
33	12	0.73086	2.38177	37	12	0.83105	2.28481	41	12	0.91576	2.21204	45	12	0.98802	2.15611
33	13	0.66745	2.48437	37	13	0.77219	2.37369	41	13	0.86132	2.28998	45	13	0.93765	2.22524
33	14	0.60559	2.58789	37	14	0.71421	2.46378	41	14	0.80736	2.36919	45	14	0.88750	2.29558
33	15	0.54558	2.69181	37	15	0.65734	2.55471	41	15	0.75402	2.44941	45	15	0.83769	2.36698
33	16	0.48769	2.79558	37	16	0.60177	2.64613	41	16	0.70146	2.53039	45	16	0.78833	2.43924
33	17	0.43219	2.89865	37	17	0.54771	2.73765	41	17	0.64987	2.61187	45	17	0.73955	2.51218
33	18	0.37933	3.00046	37	18	0.49537	2.82891	41	18	0.59940	2.69358	45	18	0.69149	2.58559
33	19	0.32935	3.10046	37	19	0.44494	2.91951	41	19	0.55018	2.77525	45	19	0.64427	2.65929
33	20	0.28246	3.19808	37	20	0.39661	3.00907	41	20	0.50238	2.85660	45	20	0.59801	2.73306
33	21	0.23887	3.29275	37	21	0.35054	3.09719	41	21	0.45615	2.93734	45	21	0.55282	2.80672
34	2	1.39285	1.51358	38	2	1.42702	1.53475	42	2	1.45615	1.55340	46	2	1.48136	1.56999
34	3	1.33251	1.58045	38	3	1.37301	1.59368	42	3	1.40730	1.60608	46	3	1.43677	1.61763
34	4	1.27074	1.65189	38	4	1.31774	1.65625	42	4	1.35733	1.66172	46	4	1.39121	1.66769
34	5	1.20779	1.72770	38	5	1.26140	1.72229	42	5	1.30640	1.72019	46	5	1.34477	1.72012
34	6	1.14393	1.80758	38	6	1.20418	1.79164	42	6	1.25463	1.78137	46	6	1.29756	1.77482
34	7	1.07944	1.89129	38	7	1.14627	1.86409	42	7	1.20218	1.84512	46	7	1.24969	1.83167
34	8	1.01462	1.97849	38	8	1.08787	1.93942	42	8	1.14918	1.91130	46	8	1.20127	1.89058
34	9	0.94973	2.06882	38	9	1.02919	2.01742	42	9	1.09581	1.97972	46	9	1.15242	1.95141
34	10	0.88506	2.16190	38	10	0.97045	2.09782	42	10	1.04219	2.05023	46	10	1.10325	2.01404
34	11	0.82091	2.25735	38	11	0.91183	2.18033	42	11	0.98851	2.12262	46	11	1.05388	2.07834
34	12	0.75755	2.35473	38	12	0.85356	2.26470	42	12	0.93489	2.19670	46	12	1.00443	2.14416
34	13	0.69527	2.45359	38	13	0.79583	2.35061	42	13	0.88151	2.27227	46	13	0.95503	2.21134
34	14	0.63433	2.55348	38	14	0.73886	2.43775	42	14	0.82852	2.34909	46	14	0.90578	2.27974
34	15	0.57503	2.65392	38	15	0.68284	2.52581	42	15	0.77607	2.42694	46	15	0.85681	2.34918
34	16	0.51760	2.75442	38	16	0.62799	2.61444	42	16	0.72431	2.50558	46	16	0.80825	2.41950
34	17	0.46231	2.85449	38	17	0.57448	2.70332	42	17	0.67341	2.58480	46	17	0.76020	2.49051
34	18	0.40939	2.95361	38	18	0.52253	2.79207	42	18	0.62350	2.66432	46	18	0.71278	2.56205
34	19	0.35907	3.05127	38	19	0.47229	2.88036	42	19	0.57474	2.74389	46	19	0.66611	2.63391
34	20	0.31155	3.14697	38	20	0.42396	2.96784	42	20	0.52726	2.82328	46	20	0.62032	2.70593
34	21	0.26704	3.24020	38	21	0.37769	3.05412	42	21	0.48121	2.90220	46	21	0.57550	2.77790

T	K	dL	dU	T	K	dL	dU	T	K	dL	dU	T	K	dL	dU
47	2	1.48715	1.57386	51	2	1.50856	1.58835	55	2	1.52755	1.60144	59	2	1.54455	1.61336
47	3	1.44352	1.62038	51	3	1.46838	1.63088	55	3	1.49031	1.64062	59	3	1.50985	1.64967
47	4	1.39894	1.66923	51	4	1.42734	1.67538	55	4	1.45232	1.68149	59	4	1.47448	1.68745
47	5	1.35350	1.72033	51	5	1.38554	1.72179	55	5	1.41362	1.72399	59	5	1.43848	1.72663
47	6	1.30731	1.77361	51	6	1.34305	1.77005	55	6	1.37431	1.76807	59	6	1.40191	1.76720
47	7	1.26047	1.82895	51	7	1.29995	1.82007	55	7	1.33442	1.81368	59	7	1.36481	1.80908
47	8	1.21309	1.88627	51	8	1.25632	1.87178	55	8	1.29403	1.86074	59	8	1.32723	1.85226
47	9	1.16526	1.94545	51	9	1.21224	1.92510	55	9	1.25319	1.90921	59	9	1.28923	1.89665
47	10	1.11710	2.00636	51	10	1.16780	1.97994	55	10	1.21199	1.95902	59	10	1.25086	1.94223
47	11	1.06873	2.06889	51	11	1.12308	2.03620	55	11	1.17049	2.01008	59	11	1.21218	1.98893
47	12	1.02026	2.13290	51	12	1.07818	2.09378	55	12	1.12875	2.06233	59	12	1.17325	2.03668
47	13	0.97178	2.19824	51	13	1.03319	2.15258	55	13	1.08685	2.11568	59	13	1.13410	2.08543
47	14	0.92342	2.26478	51	14	0.98817	2.21249	55	14	1.04485	2.17003	59	14	1.09482	2.13510
47	15	0.87529	2.33235	51	15	0.94324	2.27338	55	15	1.00284	2.22532	59	15	1.05545	2.18564
47	16	0.82751	2.40080	51	16	0.89847	2.33515	55	16	0.96087	2.28146	59	16	1.01605	2.23698
47	17	0.78018	2.46998	51	17	0.85396	2.39767	55	17	0.91902	2.33833	59	17	0.97668	2.28902
47	18	0.73341	2.53970	51	18	0.80978	2.46083	55	18	0.87736	2.39585	59	18	0.93739	2.34171
47	19	0.68732	2.60980	51	19	0.76604	2.52448	55	19	0.83597	2.45392	59	19	0.89826	2.39495
47	20	0.64200	2.68011	51	20	0.72282	2.58848	55	20	0.79492	2.51244	59	20	0.85932	2.44869
47	21	0.59759	2.75044	51	21	0.68021	2.65272	55	21	0.75427	2.57131	59	21	0.82065	2.50283
48	2	1.49275	1.57762	52	2	1.51352	1.59174	56	2	1.53197	1.60452	60	2	1.54853	1.61617
48	3	1.45004	1.62308	52	3	1.47410	1.63339	56	3	1.49541	1.64295	60	3	1.51442	1.65184
48	4	1.40640	1.67076	52	4	1.43388	1.67692	56	4	1.45810	1.68300	60	4	1.47965	1.68891
48	5	1.36192	1.72061	52	5	1.39290	1.72228	56	5	1.42012	1.72461	60	5	1.44427	1.72735
48	6	1.31672	1.77253	52	6	1.35124	1.76942	56	6	1.38152	1.76776	60	6	1.40832	1.76711
48	7	1.27087	1.82645	52	7	1.30899	1.81827	56	7	1.34237	1.81238	60	7	1.37186	1.80817
48	8	1.22447	1.88226	52	8	1.26622	1.86874	56	8	1.30271	1.85841	60	8	1.33493	1.85045
48	9	1.17764	1.93987	52	9	1.22299	1.92076	56	9	1.26263	1.90579	60	9	1.29758	1.89393
48	10	1.13046	1.99915	52	10	1.17941	1.97426	56	10	1.22217	1.95448	60	10	1.25987	1.93856
48	11	1.08306	2.05999	52	11	1.13553	2.02913	56	11	1.18141	2.00438	60	11	1.22183	1.98427
48	12	1.03552	2.12227	52	12	1.09146	2.08528	56	12	1.14040	2.05542	60	12	1.18354	2.03101
48	13	0.98794	2.18586	52	13	1.04727	2.14263	56	13	1.09922	2.10755	60	13	1.14505	2.07873
48	14	0.94045	2.25062	52	14	1.00304	2.20106	56	14	1.05793	2.16067	60	14	1.10640	2.12734
48	15	0.89314	2.31641	52	15	0.95887	2.26046	56	15	1.01659	2.21470	60	15	1.06764	2.17681
48	16	0.84614	2.38309	52	16	0.91481	2.32074	56	16	0.97530	2.26956	60	16	1.02885	2.22705
48	17	0.79951	2.45049	52	17	0.87099	2.38176	56	17	0.93408	2.32515	60	17	0.99007	2.27800
48	18	0.75340	2.51847	52	18	0.82745	2.44341	56	18	0.89304	2.38140	60	18	0.95135	2.32958
48	19	0.70789	2.58687	52	19	0.78431	2.50559	56	19	0.85222	2.43820	60	19	0.91276	2.38173
48	20	0.66309	2.65552	52	20	0.74163	2.56816	56	20	0.81170	2.49546	60	20	0.87435	2.43437
48	21	0.61909	2.72427	52	21	0.69949	2.63099	56	21	0.77155	2.55309	60	21	0.83616	2.48742
49	2	1.49819	1.58129	53	2	1.51833	1.59505	57	2	1.53628	1.60754	61	2	1.55240	1.61892
49	3	1.45635	1.62573	53	3	1.47967	1.63585	57	3	1.50036	1.64524	61	3	1.51886	1.65396
49	4	1.41362	1.67230	53	4	1.44022	1.67845	57	4	1.46372	1.68449	61	4	1.48468	1.69035
49	5	1.37007	1.72095	53	5	1.40002	1.72282	57	5	1.42642	1.72526	61	5	1.44989	1.72808
49	6	1.32580	1.77159	53	6	1.35918	1.76890	57	6	1.38852	1.76751	61	6	1.41455	1.76708
49	7	1.28090	1.82415	53	7	1.31774	1.81661	57	7	1.35008	1.81119	61	7	1.37871	1.80732
49	8	1.23546	1.87852	53	8	1.27579	1.86590	57	8	1.31114	1.85622	61	8	1.34240	1.84876
49	9	1.18958	1.93463	53	9	1.23340	1.91668	57	9	1.27177	1.90257	61	9	1.30568	1.89137
49	10	1.14336	1.99236	53	10	1.19063	1.96889	57	10	1.23203	1.95018	61	10	1.26860	1.93507
49	11	1.09687	2.05160	53	11	1.14757	2.02244	57	11	1.19198	1.99896	61	11	1.23120	1.97984
49	12	1.05024	2.11224	53	12	1.10430	2.07723	57	12	1.15168	2.04887	61	12	1.19355	2.02560
49	13	1.00354	2.17415	53	13	1.06090	2.13318	57	13	1.11121	2.09982	61	13	1.15567	2.07232
49	14	0.95690	2.23723	53	14	1.01743	2.19019	57	14	1.07060	2.15175	61	14	1.11763	2.11992
49	15	0.91040	2.30131	53	15	0.97399	2.24817	57	15	1.02994	2.20456	61	15	1.07950	2.16835
49	16	0.86415	2.36628	53	16	0.93065	2.30700	57	16	0.98929	2.25820	61	16	1.04129	2.21755
49	17	0.81824	2.43199	53	17	0.88749	2.36659	57	17	0.94871	2.31257	61	17	1.00309	2.26744
49	18	0.77278	2.49829	53	18	0.84459	2.42682	57	18	0.90825	2.36758	61	18	0.96492	2.31796
49	19	0.72786	2.56505	53	19	0.80204	2.48757	57	19	0.86800	2.42316	61	19	0.92686	2.36904
49	20	0.68358	2.63211	53	20	0.75990	2.54874	57	20	0.82802	2.47920	61	20	0.88896	2.42062
49	21	0.64003	2.69930	53	21	0.71826	2.61021	57	21	0.78836	2.53563	61	21	0.85126	2.47262
50	2	1.50345	1.58486	54	2	1.52300	1.59829	58	2	1.54047	1.61048	62	2	1.55619	1.62161
50	3	1.46246	1.62833	54	3	1.48506	1.63825	58	3	1.50517	1.64747	62	3	1.52318	1.65605
50	4	1.42059	1.67385	54	4	1.44636	1.67998	58	4	1.46918	1.68598	62	4	1.48957	1.69180
50	5	1.37793	1.72135	54	5	1.40693	1.72339	58	5	1.43254	1.72594	62	5	1.45536	1.72881
50	6	1.33457	1.77077	54	6	1.36687	1.76844	58	6	1.39532	1.76733	62	6	1.42061	1.76708
50	7	1.29059	1.82203	54	7	1.32622	1.81508	58	7	1.35755	1.81009	62	7	1.38536	1.80655
50	8	1.24607	1.87504	54	8	1.28506	1.86324	58	8	1.31931	1.85418	62	8	1.34967	1.84718
50	9	1.20110	1.92972	54	9	1.24345	1.91283	58	9	1.28063	1.89954	62	9	1.31356	1.88893
50	10	1.15579	1.98597	54	10	1.20149	1.96381	58	10	1.24159	1.94610	62	10	1.27709	1.93176
50	11	1.11021	2.04368	54	11	1.15921	2.01609	58	11	1.20224	1.99382	62	11	1.24031	1.97561
50	12	1.06445	2.10276	54	12	1.11672	2.06959	58	12	1.16263	2.04262	62	12	1.20326	2.02044
50	13	1.01862	2.16307	54	13	1.07408	2.12420	58	13	1.12283	2.09245	62	13	1.16599	2.06620
50	14	0.97280	2.22452	54	14	1.03136	2.17987	58	14	1.08289	2.14323	62	14	1.12856	2.11282
50	15	0.92709	2.28698	54	15	0.98864	2.23647	58	15	1.04288	2.19489	62	15	1.09100	2.16026
50	16	0.88159	2.35032	54	16	0.94600	2.29392	58	16	1.00287	2.24735	62	16	1.05338	2.20844
50	17	0.83638	2.41440	54	17	0.90349	2.35213	58	17	0.96289	2.30054	62	17	1.01573	2.25732
50	18	0.79156	2.47910	54	18	0.86122	2.41097	58	18	0.92304	2.35436	62	18	0.97812	2.30681
50	19	0.74723	2.54428	54	19	0.81925	2.47036	58	19	0.88335	2.40875	62	19	0.94058	2.35687
50	20	0.70348	2.60978	54	20	0.77766	2.53019	58	20	0.84389	2.46362	62	20	0.90319	2.40742
50	21	0.66040	2.67548	54	21	0.73651	2.59033	58	21	0.80473	2.51889	62	21	0.86597	2.45840

T	K	dL	dU	T	K	dL	dU	T	K	dL	dU	T	K	dL	dU
63	2	1.55987	1.62425	67	2	1.57378	1.63427	71	2	1.58648	1.64352	75	2	1.59813	1.65209
63	3	1.52741	1.65810	67	3	1.54328	1.66596	71	3	1.55771	1.67331	75	3	1.57091	1.68020
63	4	1.49433	1.69321	67	4	1.51221	1.69877	71	4	1.52844	1.70409	75	4	1.54323	1.70920
63	5	1.46068	1.72957	67	5	1.48063	1.73267	71	5	1.49868	1.73584	75	5	1.51511	1.73904
63	6	1.42650	1.76712	67	6	1.44856	1.76762	71	6	1.46849	1.76854	75	6	1.48659	1.76975
63	7	1.39183	1.80584	67	7	1.41604	1.80360	71	7	1.43787	1.80214	75	7	1.45767	1.80127
63	8	1.35672	1.84569	67	8	1.38311	1.84060	71	8	1.40686	1.83664	75	8	1.42840	1.83360
63	9	1.32121	1.88663	67	9	1.34979	1.87856	71	9	1.37551	1.87202	75	9	1.39877	1.86670
63	10	1.28534	1.92860	67	10	1.31613	1.91744	71	10	1.34381	1.90823	75	10	1.36884	1.90057
63	11	1.24915	1.97159	67	11	1.28216	1.95723	71	11	1.31182	1.94524	75	11	1.33863	1.93516
63	12	1.21269	2.01552	67	12	1.24792	1.99787	71	12	1.27957	1.98304	75	12	1.30815	1.97046
63	13	1.17602	2.06035	67	13	1.21345	2.03934	71	13	1.24707	2.02157	75	13	1.27744	2.00643
63	14	1.13917	2.10603	67	14	1.17878	2.08158	71	14	1.21437	2.06081	75	14	1.24652	2.04304
63	15	1.10219	2.15250	67	15	1.14396	2.12453	71	15	1.18150	2.10073	75	15	1.21542	2.08028
63	16	1.06512	2.19971	67	16	1.10903	2.16819	71	16	1.14851	2.14128	75	16	1.18418	2.11811
63	17	1.02803	2.24761	67	17	1.07401	2.21248	71	17	1.11539	2.18242	75	17	1.15281	2.15649
63	18	0.99096	2.29612	67	18	1.03897	2.25735	71	18	1.08222	2.22412	75	18	1.12135	2.19540
63	19	0.95394	2.34518	67	19	1.00394	2.30277	71	19	1.04900	2.26634	75	19	1.08982	2.23480
63	20	0.91703	2.39474	67	20	0.96894	2.34868	71	20	1.01579	2.30903	75	20	1.05825	2.27465
63	21	0.88029	2.44473	67	21	0.93402	2.39503	71	21	0.98261	2.35215	75	21	1.02668	2.31492
64	2	1.56348	1.62683	68	2	1.57706	1.63665	72	2	1.58949	1.64571	76	2	1.60090	1.65413
64	3	1.53152	1.66011	68	3	1.54701	1.66784	72	3	1.56112	1.67507	76	3	1.57404	1.68185
64	4	1.49897	1.69463	68	4	1.51642	1.70011	72	4	1.53226	1.70539	76	4	1.54673	1.71043
64	5	1.46587	1.73033	68	5	1.48531	1.73345	72	5	1.50293	1.73664	76	5	1.51900	1.73985
64	6	1.43223	1.76720	68	6	1.45373	1.76781	72	6	1.47317	1.76881	76	6	1.49086	1.77009
64	7	1.39813	1.80520	68	7	1.42171	1.80318	72	7	1.44300	1.80187	76	7	1.46233	1.80113
64	8	1.36359	1.84429	68	8	1.38928	1.83952	72	8	1.41245	1.83581	76	8	1.43346	1.83295
64	9	1.32865	1.88444	68	9	1.35647	1.87679	72	9	1.38154	1.87059	76	9	1.40425	1.86553
64	10	1.29336	1.92561	68	10	1.32332	1.91497	72	10	1.35030	1.90618	76	10	1.37473	1.89886
64	11	1.25775	1.96775	68	11	1.28987	1.95403	72	11	1.31877	1.94256	76	11	1.34493	1.93288
64	12	1.22188	2.01081	68	12	1.25614	1.99393	72	12	1.28698	1.97970	76	12	1.31488	1.96761
64	13	1.18576	2.05475	68	13	1.22218	2.03462	72	13	1.25495	2.01756	76	13	1.28458	2.00299
64	14	1.14949	2.09952	68	14	1.18803	2.07606	72	14	1.22272	2.05611	76	14	1.25408	2.03900
64	15	1.11306	2.14507	68	15	1.15372	2.11823	72	15	1.19031	2.09532	76	15	1.22340	2.07563
64	16	1.07655	2.19134	68	16	1.11929	2.16106	72	16	1.15776	2.13516	76	16	1.19257	2.11283
64	17	1.04000	2.23829	68	17	1.08477	2.20453	72	17	1.12510	2.17558	76	17	1.16161	2.15057
64	18	1.00345	2.28584	68	18	1.05021	2.24857	72	18	1.09237	2.21655	76	18	1.13056	2.18883
64	19	0.96694	2.33395	68	19	1.01563	2.29315	72	19	1.05959	2.25803	76	19	1.09942	2.22757
64	20	0.93053	2.38255	68	20	0.98109	2.33822	72	20	1.02680	2.29997	76	20	1.06825	2.26676
64	21	0.89425	2.43159	68	21	0.94663	2.38371	72	21	0.99403	2.34236	76	21	1.03706	2.30638
65	2	1.56699	1.62936	69	2	1.58027	1.63898	73	2	1.59243	1.64788	77	2	1.60361	1.65614
65	3	1.53553	1.66210	69	3	1.55066	1.66970	73	3	1.56446	1.67681	77	3	1.57710	1.68348
65	4	1.50349	1.69602	69	4	1.52052	1.70146	73	4	1.53599	1.70667	77	4	1.55015	1.71166
65	5	1.47092	1.73110	69	5	1.48988	1.73425	73	5	1.50709	1.73745	77	5	1.52279	1.74065
65	6	1.43782	1.76731	69	6	1.45877	1.76803	73	6	1.47775	1.76911	77	6	1.49503	1.77044
65	7	1.40426	1.80462	69	7	1.42723	1.80279	73	7	1.44801	1.80164	77	7	1.46690	1.80102
65	8	1.37027	1.84298	69	8	1.39529	1.83849	73	8	1.41789	1.83502	77	8	1.43842	1.83235
65	9	1.33589	1.88238	69	9	1.36298	1.87512	73	9	1.38743	1.86923	77	9	1.40961	1.86443
65	10	1.30115	1.92276	69	10	1.33032	1.91262	73	10	1.35663	1.90422	77	10	1.38048	1.89722
65	11	1.26611	1.96408	69	11	1.29737	1.95098	73	11	1.32556	1.93999	77	11	1.35108	1.93071
65	12	1.23080	2.00631	69	12	1.26415	1.99014	73	12	1.29421	1.97649	77	12	1.32143	1.96487
65	13	1.19525	2.04939	69	13	1.23069	2.03009	73	13	1.26262	2.01370	77	13	1.29155	1.99969
65	14	1.15952	2.09329	69	14	1.19704	2.07078	73	14	1.23084	2.05159	77	14	1.26146	2.03511
65	15	1.12364	2.13795	69	15	1.16322	2.11216	73	15	1.19889	2.09013	77	15	1.23119	2.07113
65	16	1.08767	2.18331	69	16	1.12928	2.15421	73	16	1.16678	2.12927	77	16	1.20076	2.10772
65	17	1.05165	2.22934	69	17	1.09524	2.19688	73	17	1.13456	2.16899	77	17	1.17020	2.14485
65	18	1.01560	2.27597	69	18	1.06115	2.24012	73	18	1.10226	2.20925	77	18	1.13954	2.18248
65	19	0.97960	2.32315	69	19	1.02704	2.28388	73	19	1.06991	2.25001	77	19	1.10881	2.22059
65	20	0.94367	2.37083	69	20	0.99295	2.32813	73	20	1.03753	2.29124	77	20	1.07801	2.25914
65	21	0.90785	2.41894	69	21	0.95892	2.37281	73	21	1.00517	2.33290	77	21	1.04721	2.29811
66	2	1.57043	1.63184	70	2	1.58341	1.64127	74	2	1.59530	1.65001	78	2	1.60626	1.65812
66	3	1.53945	1.66404	70	3	1.55422	1.67152	74	3	1.56772	1.67852	78	3	1.58010	1.68509
66	4	1.50790	1.69740	70	4	1.52452	1.70278	74	4	1.53966	1.70793	78	4	1.55351	1.71287
66	5	1.47583	1.73188	70	5	1.49434	1.73505	74	5	1.51115	1.73825	78	5	1.52651	1.74145
66	6	1.44326	1.76745	70	6	1.46369	1.76827	74	6	1.48222	1.76943	78	6	1.49912	1.77081
66	7	1.41023	1.80409	70	7	1.43262	1.80245	74	7	1.45289	1.80144	78	7	1.47136	1.80093
66	8	1.37677	1.84175	70	8	1.40115	1.83754	74	8	1.42321	1.83429	78	8	1.44325	1.83178
66	9	1.34293	1.88041	70	9	1.36932	1.87353	74	9	1.39316	1.86793	78	9	1.41483	1.86337
66	10	1.30874	1.92004	70	10	1.33716	1.91037	74	10	1.36281	1.90235	78	10	1.38610	1.89565
66	11	1.27424	1.96058	70	11	1.30469	1.94805	74	11	1.33217	1.93752	78	11	1.35711	1.92862
66	12	1.23947	2.00200	70	12	1.27196	1.98652	74	12	1.30127	1.97341	78	12	1.32785	1.96224
66	13	1.20447	2.04426	70	13	1.23899	2.02574	74	13	1.27013	2.01000	78	13	1.29836	1.99650
66	14	1.16928	2.08731	70	14	1.20582	2.06569	74	14	1.23878	2.04724	78	14	1.26867	2.03136
66	15	1.13394	2.13110	70	15	1.17249	2.10634	74	15	1.20725	2.08511	78	15	1.23879	2.06680
66	16	1.09850	2.17559	70	16	1.13902	2.14762	74	16	1.17559	2.12359	78	16	1.20876	2.10279
66	17	1.06298	2.22074	70	17	1.10544	2.18951	74	17	1.14379	2.16263	78	17	1.17860	2.13932
66	18	1.02744	2.26648	70	18	1.07182	2.23197	74	18	1.11192	2.20220	78	18	1.14832	2.17634
66	19	0.99192	2.31277	70	19	1.03816	2.27495	74	19	1.07998	2.24227	78	19	1.11797	2.21384
66	20	0.95646	2.35954	70	20	1.00451	2.31840	74	20	1.04801	2.28280	78	20	1.08756	2.25177
66	21	0.92111	2.40676	70	21	0.97091	2.36230	74	21	1.01605	2.32375	78	21	1.05712	2.29011

T	K	dL	dU	T	K	dL	dU	T	K	dL	dU	T	K	dL	dU
79	2	1.60887	1.66006	83	2	1.61880	1.66751	87	2	1.62804	1.67448	91	2	1.63664	1.68102
79	3	1.58304	1.68667	83	3	1.59423	1.69276	87	3	1.60461	1.69851	91	3	1.61425	1.70395
79	4	1.55679	1.71407	83	4	1.56928	1.71874	87	4	1.58083	1.72320	91	4	1.59154	1.72747
79	5	1.53015	1.74225	83	5	1.54395	1.74541	87	5	1.55670	1.74852	91	5	1.56850	1.75157
79	6	1.50312	1.77118	83	6	1.51828	1.77278	87	6	1.53224	1.77448	91	6	1.54516	1.77625
79	7	1.47572	1.80086	83	7	1.49226	1.80080	87	7	1.50748	1.80103	91	7	1.52154	1.80147
79	8	1.44800	1.83126	83	8	1.46593	1.82950	87	8	1.48242	1.82819	91	8	1.49763	1.82725
79	9	1.41994	1.86237	83	9	1.43930	1.85882	87	9	1.45707	1.85592	91	9	1.47345	1.85356
79	10	1.39160	1.89416	83	10	1.41239	1.88877	87	10	1.43146	1.88423	91	10	1.44903	1.88040
79	11	1.36299	1.92661	83	11	1.38522	1.91933	87	11	1.40561	1.91310	91	11	1.42437	1.90774
79	12	1.33411	1.95970	83	12	1.35780	1.95048	87	12	1.37951	1.94250	91	12	1.39948	1.93557
79	13	1.30501	1.99342	83	13	1.33017	1.98219	87	13	1.35320	1.97243	91	13	1.37440	1.96389
79	14	1.27571	2.02773	83	14	1.30233	2.01444	87	14	1.32671	2.00285	91	14	1.34911	1.99268
79	15	1.24622	2.06261	83	15	1.27430	2.04723	87	15	1.30002	2.03377	91	15	1.32365	2.02192
79	16	1.21658	2.09804	83	16	1.24612	2.08052	87	16	1.27317	2.06515	91	16	1.29803	2.05159
79	17	1.18679	2.13398	83	17	1.21779	2.11429	87	17	1.24617	2.09699	91	17	1.27226	2.08168
79	18	1.15690	2.17041	83	18	1.18934	2.14853	87	18	1.21906	2.12925	91	18	1.24637	2.11217
79	19	1.12693	2.20730	83	19	1.16080	2.18320	87	19	1.19183	2.16192	91	19	1.22035	2.14305
79	20	1.09689	2.24464	83	20	1.13217	2.21827	87	20	1.16450	2.19498	91	20	1.19424	2.17430
79	21	1.06680	2.28237	83	21	1.10349	2.25373	87	21	1.13710	2.22841	91	21	1.16803	2.20590
80	2	1.61143	1.66197	84	2	1.62118	1.66929	88	2	1.63024	1.67615	92	2	1.63870	1.68259
80	3	1.58592	1.68823	84	3	1.59691	1.69424	88	3	1.60709	1.69990	92	3	1.61656	1.70526
80	4	1.56001	1.71526	84	4	1.57225	1.71987	88	4	1.58358	1.72429	92	4	1.59410	1.72851
80	5	1.53370	1.74304	84	5	1.54723	1.74619	88	5	1.55974	1.74929	92	5	1.57132	1.75232
80	6	1.50703	1.77156	84	6	1.52188	1.77318	88	6	1.53557	1.77491	92	6	1.54824	1.77670
80	7	1.47999	1.80081	84	7	1.49618	1.80084	88	7	1.51109	1.80112	92	7	1.52488	1.80161
80	8	1.45262	1.83077	84	8	1.47018	1.82912	88	8	1.48633	1.82792	92	8	1.50125	1.82707
80	9	1.42495	1.86142	84	9	1.44388	1.85804	88	9	1.46129	1.85529	92	9	1.47736	1.85304
80	10	1.39698	1.89272	84	10	1.41731	1.88756	88	10	1.43599	1.88321	92	10	1.45321	1.87953
80	11	1.36873	1.92469	84	11	1.39048	1.91768	88	11	1.41044	1.91168	92	11	1.42883	1.90652
80	12	1.34024	1.95727	84	12	1.36340	1.94837	88	12	1.38466	1.94068	92	12	1.40423	1.93399
80	13	1.31151	1.99046	84	13	1.33611	1.97962	88	13	1.35867	1.97019	92	13	1.37943	1.96194
80	14	1.28259	2.02423	84	14	1.30862	2.01140	88	14	1.33248	2.00018	92	14	1.35444	1.99033
80	15	1.25348	2.05857	84	15	1.28094	2.04370	88	15	1.30611	2.03067	92	15	1.32927	2.01918
80	16	1.22422	2.09343	84	16	1.25310	2.07649	88	16	1.27958	2.06160	92	16	1.30393	2.04845
80	17	1.19481	2.12881	84	17	1.22512	2.10976	88	17	1.25290	2.09298	92	17	1.27846	2.07813
80	18	1.16529	2.16467	84	18	1.19701	2.14348	88	18	1.22609	2.12478	92	18	1.25285	2.10821
80	19	1.13568	2.20099	84	19	1.16880	2.17762	88	19	1.19918	2.15699	92	19	1.22713	2.13867
80	20	1.10600	2.23772	84	20	1.14051	2.21218	88	20	1.17217	2.18959	92	20	1.20129	2.16949
80	21	1.07628	2.27487	84	21	1.11215	2.24712	88	21	1.14507	2.22254	92	21	1.17538	2.20066
81	2	1.61393	1.66385	85	2	1.62350	1.67105	89	2	1.63242	1.67780	93	2	1.64073	1.68414
81	3	1.58875	1.68976	85	3	1.59952	1.69568	89	3	1.60951	1.70127	93	3	1.61883	1.70656
81	4	1.56316	1.71643	85	4	1.57516	1.72100	89	4	1.58628	1.72536	93	4	1.59661	1.72954
81	5	1.53719	1.74384	85	5	1.55045	1.74697	89	5	1.56271	1.75006	93	5	1.57409	1.75308
81	6	1.51085	1.77196	85	6	1.52540	1.77361	89	6	1.53883	1.77535	93	6	1.55127	1.77716
81	7	1.48417	1.80079	85	7	1.50003	1.80089	89	7	1.51465	1.80123	93	7	1.52818	1.80176
81	8	1.45715	1.83031	85	8	1.47434	1.82879	89	8	1.49017	1.82768	93	8	1.50480	1.82690
81	9	1.42984	1.86051	85	9	1.44837	1.85730	89	9	1.46542	1.85469	93	9	1.48117	1.85255
81	10	1.40223	1.89135	85	10	1.42212	1.88641	89	10	1.44042	1.88223	93	10	1.45730	1.87870
81	11	1.37434	1.92282	85	11	1.39562	1.91610	89	11	1.41518	1.91032	93	11	1.43321	1.90534
81	12	1.34622	1.95492	85	12	1.36889	1.94635	89	12	1.38970	1.93892	93	12	1.40889	1.93246
81	13	1.31787	1.98760	85	13	1.34194	1.97714	89	13	1.36402	1.96802	93	13	1.38437	1.96004
81	14	1.28931	2.02085	85	14	1.31477	2.00845	89	14	1.33814	1.99760	93	14	1.35966	1.98806
81	15	1.26058	2.05466	85	15	1.28744	2.04028	89	15	1.31208	2.02766	93	15	1.33477	2.01652
81	16	1.23168	2.08898	85	16	1.25993	2.07259	89	16	1.28585	2.05816	93	16	1.30972	2.04540
81	17	1.20264	2.12381	85	17	1.23229	2.10536	89	17	1.25949	2.08910	93	17	1.28453	2.07469
81	18	1.17348	2.15911	85	18	1.20451	2.13858	89	18	1.23299	2.12046	93	18	1.25920	2.10436
81	19	1.14424	2.19486	85	19	1.17664	2.17223	89	19	1.20638	2.15221	93	19	1.23376	2.13441
81	20	1.11491	2.23103	85	20	1.14868	2.20627	89	20	1.17967	2.18434	93	20	1.20821	2.16482
81	21	1.08555	2.26760	85	21	1.12064	2.24070	89	21	1.15289	2.21683	93	21	1.18259	2.19556
82	2	1.61639	1.66569	86	2	1.62579	1.67277	90	2	1.63454	1.67942	94	2	1.64272	1.68567
82	3	1.59152	1.69128	86	3	1.60209	1.69711	90	3	1.61190	1.70262	94	3	1.62106	1.70784
82	4	1.56625	1.71759	86	4	1.57802	1.72210	90	4	1.58893	1.72642	94	4	1.59908	1.73055
82	5	1.54060	1.74462	86	5	1.55360	1.74775	90	5	1.56564	1.75082	94	5	1.57681	1.75382
82	6	1.51461	1.77237	86	6	1.52885	1.77404	90	6	1.54202	1.77580	94	6	1.55424	1.77761
82	7	1.48826	1.80079	86	7	1.50378	1.80095	90	7	1.51812	1.80135	94	7	1.53140	1.80192
82	8	1.46159	1.82989	86	8	1.47842	1.82848	90	8	1.49393	1.82745	94	8	1.50829	1.82675
82	9	1.43462	1.85964	86	9	1.45277	1.85659	90	9	1.46947	1.85411	94	9	1.48493	1.85209
82	10	1.40736	1.89003	86	10	1.42684	1.88530	90	10	1.44476	1.88129	94	10	1.46133	1.87791
82	11	1.37984	1.92105	86	11	1.40066	1.91457	90	11	1.41982	1.90900	94	11	1.43750	1.90421
82	12	1.35207	1.95265	86	12	1.37426	1.94439	90	12	1.39464	1.93721	94	12	1.41345	1.93097
82	13	1.32408	1.98485	86	13	1.34762	1.97474	90	13	1.36926	1.96592	94	13	1.38921	1.95820
82	14	1.29590	2.01760	86	14	1.32081	2.00561	90	14	1.34368	1.99510	94	14	1.36478	1.98586
82	15	1.26752	2.05088	86	15	1.29379	2.03697	90	15	1.31792	2.02474	94	15	1.34016	2.01394
82	16	1.23898	2.08469	86	16	1.26662	2.06881	90	16	1.29200	2.05483	94	16	1.31540	2.04244
82	17	1.21030	2.11897	86	17	1.23931	2.10111	90	17	1.26594	2.08533	94	17	1.29049	2.07134
82	18	1.18150	2.15373	86	18	1.21187	2.13384	90	18	1.23974	2.11626	94	18	1.26544	2.10062
82	19	1.15260	2.18894	86	19	1.18432	2.16700	90	19	1.21344	2.14756	94	19	1.24027	2.13027
82	20	1.12364	2.22455	86	20	1.15667	2.20054	90	20	1.18703	2.17925	94	20	1.21500	2.16027
82	21	1.09461	2.26056	86	21	1.12896	2.23446	90	21	1.16053	2.21129	94	21	1.18965	2.19061