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1 clear
2 clc
3 close all
4
5 grprlim1=0;
6 grprlim2=(0.889/0.675)^(1/(0.058-0.088));
7 grprlim3=(1.02/0.889)^(1/(0.088-0.148));
8 grprlim4=(0.85/1.02)^(1/(0.148-0.188));
9 grprlim5=(0.48/0.85)^(1/(0.188-0.25));
10 grprlim6=(0.125/0.48)^(1/(0.25-0.333));
11 grprlim7=1e12;
12 grprx1=(grprlim1:(grprlim2-grprlim1)/10:grprlim2);
13 grprx1=grprx1(2:end);
14 weight1=((grprlim2-grprlim1)/10).*ones(size(grprx1,2),1);
15 grprx2=(grprlim2:(grprlim3-grprlim2)/100:grprlim3);
16 weight2=((grprlim3-grprlim2)/100).*ones(size(grprx2,2),1);
17 grprx3=(grprlim3:(grprlim4-grprlim3)/1000:grprlim4);
18 weight3=((grprlim4-grprlim3)/1000).*ones(size(grprx3,2),1);
19 grprx4=(grprlim4:(grprlim5-grprlim4)/10000:grprlim5);
20 weight4=((grprlim5-grprlim4)/10000).*ones(size(grprx4,2),1);
21 grprx5=(grprlim5:(grprlim6-grprlim5)/10000:grprlim6);
22 weight5=((grprlim6-grprlim5)/10000).*ones(size(grprx5,2),1);
23 grprx6=(grprlim6:(grprlim7-grprlim6)/10000000:grprlim7);
24 weight6=((grprlim7-grprlim6)/100000000).*ones(size(grprx6,2),1);
25
26 fgrpr1=0.675.*grprx1.^0.058;
27 fgrpr2=0.889.*grprx2.^0.088;
28 fgrpr3=1.02.*grprx3.^0.148;
29 fgrpr4=0.85.*grprx4.^0.188;
30 fgrpr5=0.48.*grprx5.^0.25;
31 fgrpr6=0.125.*grprx6.^0.333;
32
33 grprx=[grprx1 grprx2 grprx3 grprx4 grprx5 grprx6];
34 fgrpr=[fgrpr1 fgrpr2 fgrpr3 fgrpr4 fgrpr5 fgrpr6];
35
36 [f,~,~] = fit(grprx',fgrpr','a*x^b','startpoint',[1/4,1/3])
37 weights=[weight1;weight2;weight3;weight4;weight5;weight6];
38 MAPE1=100*mean(abs(weights.*(fgrpr'-f(grprx'))./(fgrpr')))/sum(weights)
39
40 lim1=0;
41 lim2=(0.565/0.437)^(1/(0.0895-0.136));
42 lim3=(0.8/0.565)^(1/(0.136-0.280));
43 lim4=(0.795/0.8)^(1/(0.280-0.384));
44 lim5=(0.583/0.795)^(1/(0.384-0.471));
45 lim6=(0.148/0.583)^(1/(0.471-0.633));
46 lim7=(0.0208/0.148)^(1/(0.633-0.814));
47 lim8=2e5;
48
49 x1=(lim1:(lim2-lim1)/10:lim2);
50 x1=x1(2:end);
51 weight1=(lim2-lim1)/10.*ones(size(x1,2),1);
52 x2=(lim2:(lim3-lim2)/100:lim3);
53 weight2=(lim3-lim2)/100.*ones(size(x2,2),1);
54 x3=(lim3:(lim4-lim3)/1000:lim4);
55 weight3=(lim4-lim3)/1000.*ones(size(x3,2),1);
56 x4=(lim4:(lim5-lim4)/1000:lim5);

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57 weight4=(lim5-lim4)/1000.*ones(size(x4,2),1);
58 x5=(lim5:(lim6-lim5)/10000:lim6);
59 weight5=(lim6-lim5)/10000.*ones(size(x5,2),1);
60 x6=(lim6:(lim7-lim6)/100000:lim7);
61 weight6=(lim7-lim6)/100000.*ones(size(x6,2),1);
62 x7=(lim7:(lim8-lim7)/100000:lim8);
63 weight7=(lim8-lim7)/100000.*ones(size(x7,2),1);
64
65 f1=0.437.*x1.^0.0895;
66 f2=0.565.*x2.^0.136;
67 f3=0.800.*x3.^0.280;
68 f4=0.795.*x4.^0.384;
69 f5=0.583.*x5.^0.471;
70 f6=0.148.*x6.^0.633;
71 f7=0.0208.*x7.^0.814;
72
73 weights=[weight1;weight2;weight3;weight4;weight5;weight6;weight7];
74 x=[x1 x2 x3 x4 x5 x6 x7];
75 f=[f1 f2 f3 f4 f5 f6 f7];
76
77 [ff,~,~] = fit(x',f','a*x^b','startpoint',[1/4,1/3])
78 MAPE2=100*mean(weights.*abs((f'-ff(x'))./(f')))/sum(weights)
79 [ffinv,gof,out] = fit(f',x','a*x^b','startpoint',[1/4,1/3]);

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