I. Introduction

Cross-cultural researchers often produce “scales” in which the values of several variables are combined into a composite index. In the Standard Cross-Cultural Sample (SCCS), a scale is most often simply the sum of the component variables as, for example, the cultural complexity scale formed by summing variables 149 through 158 (Murdock and Provost 1971); the pathogen stress scale (variable 1260) formed by adding variables 1253 through 1259 (Low 1988); and the modernization scale (variable 1849) created by summing variables 1806 through 1838 (Divale and Seda 2000). Other scales are produced using factor analysis, such as the factors produced on the gossip-related variables 1781-1805 (Divale and Seda 1999).

Scales created by summing component variables, by principal components analysis, or by factor analysis are all examples of composite indices, in which the values of component variables are combined into a single ordinal scale. A composite index, in its most general form, is the weighted sum of the component variables:

$$\theta_i = \sum_{r=1}^{p} y_{ri} \mu_r \quad , \ \forall i \tag{1}$$

where the value of the index for society i (θ_i) is the sum of the component variable values (y_{ri}) for p components, each component value weighted by a weight (μ_r). The component variables are almost always first scaled similarly, typically by standardizing or converting to ranks. A wide variety of methods exist for specifying the weights μ_r, and in most cases, there is no *a priori* reason to choose one weighting scheme over another. The choice of weights can therefore often be criticized as arbitrary.

<Figure 1 about here>

Figure 1a presents a scatter plot of two component variables for 20 societies. Note that society *A* has a low value for component 1 but a very high value for component 2. Society *T* is in the opposite situation: a very high value for component 1 but a low value for component 2. *A* would rank highest with high weights on component 2, and *T* would rank highest with high weights on component 1. Both of these societies would rank relatively low when using equal weights on each component, a scheme which would cause societies *O* and *Q* to rank quite high. One can see, then, that changes in weights can lead to large changes in the overall index.

II. Proposed method

Ideally, one would wish for a method that diminishes the effect of weight choice in ranking societies. The method we describe here does just that: it separates societies into groups, such that the between-group differences in index rank are based solely on data values (y_r), not on weights (μ_r). The method employs linear programming, solving for weights on the individual components (μ_r) in order to calculate the highest possible index for the k^{th} society:

$$\text{Maximize} \qquad \theta_k = \sum_{r=1}^{p} y_{rk}\mu_r \tag{2.a}$$

$$\text{Subject to} \qquad \sum_{r=1}^{p} y_{ri}\mu_r \leq 1, \ \forall i \tag{2.b}$$

$$\mu_r \geq 0, \ \forall r \tag{2.c}$$

The constrained maximization problem in equations (2.a)-(2.c) is solved *n* times—once for each of the *n* societies. The objective function (2.a) selects weights in order to maximize the index score of the k^{th} society. Constraint (2.b), however, restricts the weights so that—applied to every one of the *n* societies—no society has a score higher than one. Thus, the highest value that the objective function may take is one—in such a case, the society will lie on the frontier shown in Figure 1a. In all other cases, the value of the objective function will be less than one, since the weights that maximize its own score give another society a score of one. Society *S*'s index score, for example, would equal the solid portion of the ray on which it lies, divided by the total length of the ray below the frontier.

The difference between the frontier and the below-frontier societies is not caused by weights, since there exists no set of weights which can make the below-frontier societies the peers of the frontier societies.

Thus, finding a frontier to which each society belongs (as in Figure 1b) would be a way of grouping societies into subsets *within which* differences in index values can be removed by weight adjustment, and *between which* differences in index values cannot be removed by adjusting weights. This property is attractive, since it allows us to construct an index, consisting of the order of a society's frontier (as in Figure 1b), whose values are not determined by an arbitrary choice of weights.

In practice, one would usually choose to replace the zero in constraint (2.c) with a very small positive number, so that *all* component variables are considered when computing the optimum. The larger the constraint level, the greater the number of frontiers that will be generated. One might also add a constraint so that the *shares* of all component variables in the optimum exceed a certain threshold (Pedraja, et al 1997).

This method of creating composite indices is closely related to the operations research procedure called *Tiered Data Envelopment Analysis* (TDEA) (Barr, et al 2000), based on the widely used efficiency analysis technique Data Envelopment Analysis (Charnes, et al 1978). Whereas TDEA is used to maximize an efficiency *ratio* of outputs over inputs, the present method in effect maximizes only the *numerator* of the efficiency ratio (the outputs). This numerator-only method has previously been used for ranking entities such as elementary schools (Eff 2004), universities (Bougnol and Dulá 2006), and U.S. states (Eff and Eff 2007).

III. A scale for markets and property

As an example of this method, a scale is created for the prevalence of markets and property rights for the 186 societies in the SCCS. Descriptive statistics for the seven component variables selected are given in Table 1; the Pearson correlation coefficients in Table 2; and the SCCS codebook entries for each of these in Appendix 1.

<Table 1 and Table 2 about here>

The large number of missing values in the SCCS makes it prudent to use multiple imputation (Dow and Eff 2009a, 2009b). Accordingly 10 imputed data sets are created, each data set containing the seven component variables, with missing values replaced by imputed values. A scale is computed separately for each of the 10 imputed data sets.

The seven component variables are selected from a larger number which plausibly provide some measure of the prevalence of markets and property rights. Unlike scales based on shared variation, candidate variables for the TDEA scale need not be strongly correlated with each other—the suitability of a candidate variable is determined *conceptually* ("does this variable measure some dimension of what this scale tries to capture?") rather than *empirically* ("does this variable correlate strongly with the other variables?"). Thus, for example, TDEA rankings of secondary schools might include component variables that are nearly orthogonal with each other, such as academic scores and the performance of sports teams. Despite the lack of shared variation, these nearly orthogonal variables measure valid dimensions of what one would consider a high school's performance, and so are conceptually sound choices for component variables.

Nevertheless, most scales used in cross-cultural research would in fact contain component variables that correlate *consistently* with each other—that is, the correlations of a component with other components would all be of the same sign and usually significant. From Table 2, one can see that the seven selected variables all have consistently signed correlations, though the Cronbach's alpha (0.653) would be considered a little low for scales based on shared variation, such as principal components or factor analysis. In fact, one can imagine that factor analysis might produce two latent variables from these seven component variables: one for markets, another for property. A virtue of the TDEA approach is that separate, but related, dimensions can be combined into a composite index.

A GAMS program

The variable v1726 correlates negatively with the remaining six. It is therefore multiplied by negative one, to ensure that it varies directly with the others. All seven component variables are then standardized, with a mean of 100 and a standard deviation of 15, so that no values are negative. The standardizations are performed separately within each of 10 imputed data sets.

A variety of software packages will perform linear programming; the program used here was executed in GAMS.[1] Appendix 2 contains the entire program. The input data are contained in a file called “tkap.dat”, which is formatted as follows:

```
/
1 .1  .V17  =   84.2500
1 .1  .V1726=   87.2813
1 .1  .V1732=  111.6094
1 .1  .V1733=   83.3281
1 .1  .V1734=  108.6406
1 .1  .V278 =   80.9531
1 .1  .V279 =  106.9375
1 .2  .V17  =   84.2500
1 .2  .V1726=   87.2813
.
.
.
10.185.V278 =   81.7969
10.185.V279 =   69.9688
10.186.V17  =   84.5469
10.186.V1726=   88.6406
10.186.V1732=   80.7344
10.186.V1733=  102.7031
10.186.V1734=   95.5156
10.186.V278 =   81.7969
10.186.V279 =   69.9688
/;
```

Each row in the input file takes the form $t.j.k = x$, where t is the imputation number (1,…,10), j is the society number (1,…,186), k is the component variable name, and x is the value of the k^{th} variable, for the j^{th} society, in the t^{th} imputed data set. The input file “tkap.dat” contains 13,022 lines—the initial “/” and terminal “/;” symbols, and 10*186*7=13,020 lines containing data values.

The program executes a series of nested loops, finding the optimal weights for each society, one imputed data set at a time. Within each imputed data set, any society reaching the frontier is removed from the set of comparison societies, using the parameter *d(j)*. Two output data sets are produced: *capi.ud0* records the weights used; *capi.ud1* records the iteration at which a society reaches the frontier. The iteration number must later be converted to the desired scale: *scale=max(iteration)-iteration+1*.

[1] For the open source options, a good starting place is http://cran.r-project.org/web/views/Optimization.html. GAMS is described in Wikipedia: http://en.wikipedia.org/wiki/General_Algebraic_Modeling_System

The GAMS program sets the minimum weight size in constraint (2.c) to one-millionth, using the command *mu.lo(k)=.000001*. Were one to set this level to an even smaller number, fewer discrete values would appear in the final scale.

Appendix 3 shows the values for the scale for each of the 10 imputations, sorted in ascending order for the society mean. The table is presented simply to show that the resulting scale seems reasonable, given the societies that rank low and high. The mean scale should not be used in a regression analysis, since it contains imputed values; a regression analysis should be conducted on each of the imputed data sets, and the results combined, as shown in Dow and Eff (2009a, 2009b).

When the component variables are highly correlated with each other, the TDEA scale will be quite similar to the first principal component of the variables. Since the first principal component in such cases will have nearly equal weights on each of the variables, the mean or sum of the variables would also correlate quite highly with the first principal component (since these are also equal-weight indices). For our market and property index, with moderate correlation among the seven variables, the first principal component and the mean are practically identical, with a correlation of 0.992. The correlation between the TDEA scale and these two measures is about 0.793—quite high, but still different. This shows that allowing weights to vary, so as to group societies for which weight adjustments suffice to produce identical outcomes, leads to non-trivial differences in the ordinal ranking of societies.

IV. Summary

The scales often used by cross-cultural researchers are weighted sums of component variables. Different choices of weights will produce different rank orderings of societies. The method presented here reduces the sensitivity of the scale to the weights chosen, by classifying together societies for whom adjustments in weights give an equally high rank.

The method is particularly suitable for cases where weakly correlated or orthogonal variables are combined into a scale. For example, variables for internal war and external war (Ember and Ember 1992) could be combined into a scale for the prevalence of war.

The GAMS program given in Appendix 2 creates a scale for the prevalence of markets and property rights in the 186 societies of the SCCS, using the seven component variables shown in Appendix 1. Since multiple imputation offers the best approach for using the SCCS (Dow and Eff 2009a, 2009b), the program creates the scale for each of 10 imputed data sets. With suitable modifications, the program can be used to produce any scale for SCCS data.

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Table 1: Descriptive statistics for component variables

Variable	Label	N	Max	Mean	Min	invert	Alpha
v17	Money Media Of Exchange And Credit	183	5	2.617	1	0	0.570
v1726	Communality Of Land	98	1	2.240	3	1	0.624
v1732	Presence Of Wage Labor	89	2	1.603	1	0	0.637
v1733	Market Exchange Within Local Community	96	4	2.792	1	0	0.648
v1734	Market Exchange Outside Of Local Community	99	4	3.426	1	0	0.640
v278	Inheritance Of Real Property (Land)	155	2	1.596	1	0	0.595
v279	Inheritance Of Movable Property	152	2	1.821	1	0	0.601
TDEAscale	Scale produced from GAMS program	186	12	7.11	1		

Notes: All variables are from the SCCS. Cronbach's alpha=0.653. "Alpha" is the Cronbach's alpha when the row variable is *excluded*. "invert"=1 when the variable is negatively correlated with the meaning of the scale. The descriptive statistics and the alphas are all produced from multiply imputed data (*m*=10).

Table 2: Pearson correlation coefficients among component variables

Variable	v17	v1726	v1732	v1733	v1734	v278	v279	mnAbs
v17	1.00	-0.35	0.25	0.21	0.21	0.42	0.29	0.39
v1726	-0.35	1.00	-0.17	-0.11	-0.14	-0.31	-0.13	0.31
v1732	0.25	-0.17	1.00	0.12	0.14	0.14	0.24	0.29
v1733	0.21	-0.11	0.12	1.00	0.22	0.11	0.17	0.28
v1734	0.21	-0.14	0.14	0.22	1.00	0.11	0.20	0.29
v278	0.42	-0.31	0.14	0.11	0.11	1.00	0.42	0.36
v279	0.29	-0.13	0.24	0.17	0.20	0.42	1.00	0.35

Notes: Variable labels given in Table 1. "mnAbs" is the mean of the absolute values of the row correlation coefficients.

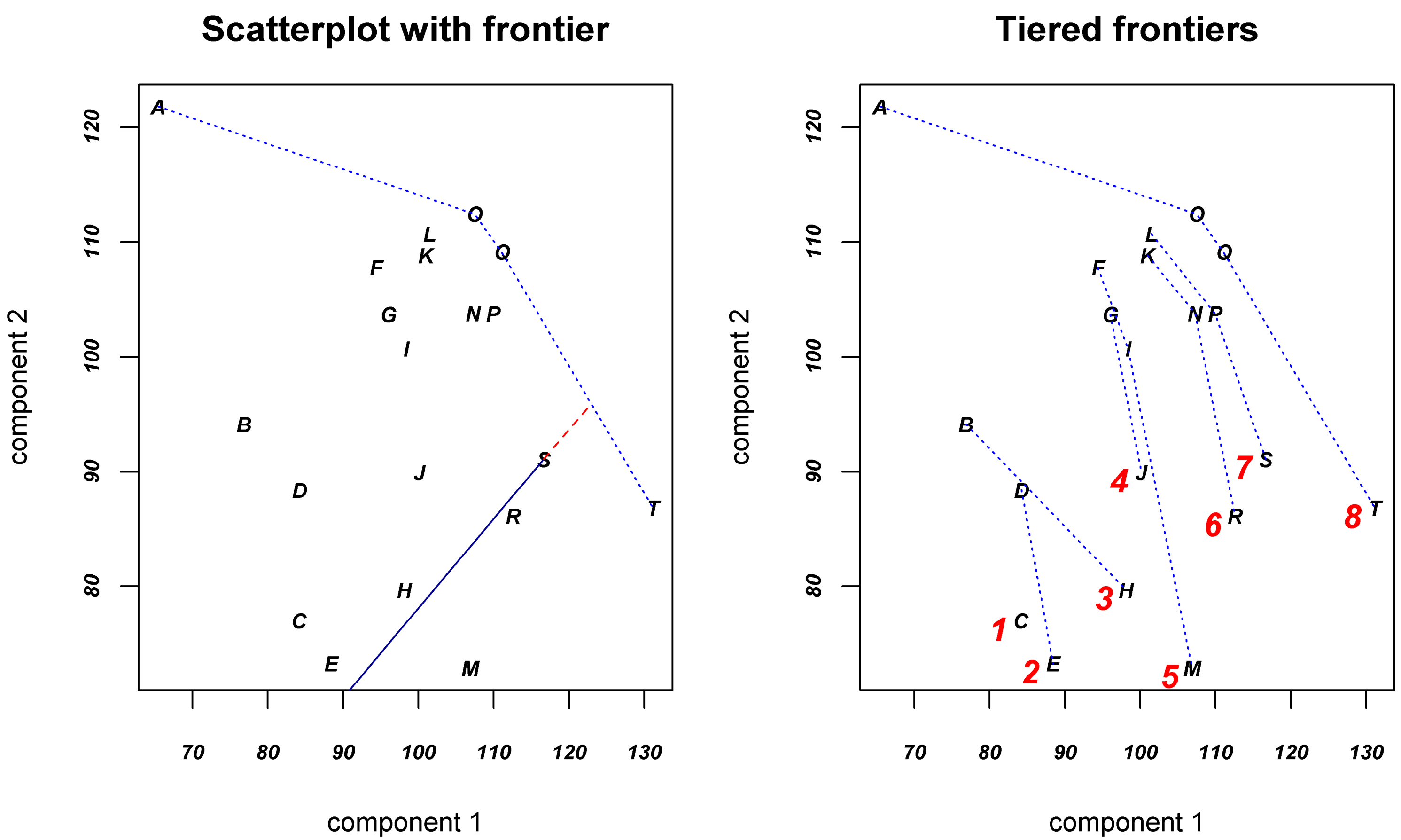

Figure 1: The values of two component variables are plotted for twenty societies. Linear programming is used to wrap a convex frontier around the cloud of points; societies on the frontier are tied for the highest composite score, while societies below the frontier have a score given by their location as the proportion of the distance from the origin to the frontier. The tiered frontiers method draws a series of successive convex frontiers, classifying each society into a peer group, based on the values of the component variables. The order of the frontier is then used as an index.

Appendix 1: Variable descriptions from the SCCS (Divale 2004)

```
17.  Money (media of exchange) and credit
      3    . = Missing Data
     77    1 = No media of exchange or money
     12    2 = Domestically usable articles as media of exchange
     26    3 = Tokens of conventional value as media of exchange
     42    4 = Foreign coinage or paper currency
     26    5 = Indigenous coinage or paper currency

278.  Inheritance of real property (land)
279.  Inheritance of movable property
       *   Note change in order from 278 280              278   279
                                                          Land  Movables
       . = Missing data                                    31    34
       1 = Absence of individual property rights or rules  59    22
       2 = Matrilineal (sister's sons)                      4     5
       3 = Other matrilineal heirs (e.g., younger brothers) 9     9
       4 = Children, with daughters receiving less         12    14
       5 = Children, equally for both sexes                 9    22
       6 = Other patrilineal heirs (e.g., younger brothers) 8     9
       7 = Patrilineal (sons)                              54    71

1726. Communality of land
     88    . = missing data
     22    1 = land predominantly private property
     24    2 = land partially communally used
     52    3 = communal land use rights only

1732.  Presence of wage labor
     97    . = missing data
     36    1 = no wage labor
     22    2 = wage labor present, migratory labor unimportant
     31    3 = wage labor, mainly in the form of migratory labor

1733.  Market exchange within local community
     90    . = missing data
     23    1 = no market exchange (original code 10)
     10    2 = market exchange within local community present, no
           *   further information (original code 20)
     27    3 = market exchange within local community present, involving
           *   local and regional products (original code 21)
     36    4 = market exchange within local community present, involving
           *   local, regional, and supra-regional products (original
           *   code 22)

1734.  Market exchange outside of local community
     87    . = missing data
     10    1 = no market exchange outside of local community
           *   (original code 10)
      5    2 = market exchange outside of local community (at trading
           *   posts, market places), no further information (original
           *   code 20)
     26    3 = market exchange outside of local community, involving
           *   local and regional products (original code 21)
     58    4 = market exchange outside of local community, involving
           *   local, regional, and supra-regional products (original
           *   code 22)
```

Appendix 2: GAMS program for producing LP scales

```
$offsymxref offsymlist;
$offlisting;
options  solprint=off, limcol=0, limrow=0;


* DEA for scale construction from SCCS variables
* DMU=societies
* Sequential Frontier Model
* Primal Form with output weight constraints
* Effectiveness-No inputs considered

file ud0 /capi.ud0/;
ud0.ap=1;
file ud1 /capi.ud1/;
ud1.ap=1;

SETS

  J   societies /
       1    NamaHottentot
       2    KungBushmen
       3    Thonga
       4    Lozi
       5    Mbundu
       6    Suku
       7    Bemba
       8    Nyakyusa
       9    Hadza
      10    Luguru
      11    Kikuyu
      12    Ganda
      13    Mbuti
      14    NkundoMongo
      15    Banen
      16    Tiv
      17    Ibo
      18    Fon
      19    Ashanti
      20    Mende
      21    Wolof
      22    Bambara
      23    Tallensi
      24    Songhai
      25    PastoralFulani
      26    Hausa
      27    MassaMasa
      28    Azande
      29    FurDarfur
      30    OtoroNuba
      31    Shilluk
      32    Mao
      33    KaffaKafa
      34    Masai
      35    Konso
      36    Somali
      37    Amhara
      38    Bogo
      39    KenuziNubians
      40    Teda
      41    Tuareg
      42    Riffians
      43    Egyptians
      44    Hebrews
      45    Babylonians
      46    RwalaBedouin
      47    Turks
      48    GhegAlbanians
      49    Romans
      50    Basques
```

51	Irish
52	Lapps
53	YurakSamoyed
54	Russians
55	Abkhaz
56	Armenians
57	Kurd
58	Basseri
59	PunjabiWest
60	Gond
61	Toda
62	Santal
63	UttarPradesh
64	Burusho
65	Kazak
66	KhalkaMongols
67	Lolo
68	Lepcha
69	Garo
70	Lakher
71	Burmese
72	Lamet
73	Vietnamese
74	Rhade
75	Khmer
76	Siamese
77	Semang
78	Nicobarese
79	Andamanese
80	Vedda
81	Tanala
82	NegriSembilan
83	Javanese
84	Balinese
85	Iban
86	Badjau
87	Toradja
88	Tobelorese
89	Alorese
90	Tiwi
91	Aranda
92	Orokaiva
93	Kimam
94	Kapauku
95	Kwoma
96	Manus
97	NewIreland
98	Trobrianders
99	Siuai
100	Tikopia
101	Pentecost
102	MbauFijians
103	Ajie
104	Maori
105	Marquesans
106	WesternSamoans
107	Gilbertese
108	Marshallese
109	Trukese
110	Yapese
111	Palauans
112	Ifugao
113	Atayal
114	Chinese
115	Manchu
116	Koreans
117	Japanese
118	Ainu
119	Gilyak
120	Yukaghir
121	Chukchee

```
     122    Ingalik
     123    Aleut
     124    CopperEskimo
     125    Montagnais
     126    Micmac
     127    Saulteaux
     128    Slave
     129    Kaska
     130    Eyak
     131    Haida
     132    Bellacoola
     133    Twana
     134    Yurok
     135    PomoEastern
     136    YokutsLake
     137    PaiuteNorth.
     138    Klamath
     139    Kutenai
     140    GrosVentre
     141    Hidatsa
     142    Pawnee
     143    Omaha
     144    Huron
     145    Creek
     146    Natchez
     147    Comanche
     148    Chiricahua
     149    Zuni
     150    Havasupai
     151    Papago
     152    Huichol
     153    Aztec
     154    Popoluca
     155    Quiche
     156    Miskito
     157    Bribri
     158    CunaTule
     159    Goajiro
     160    Haitians
     161    Callinago
     162    Warrau
     163    Yanomamo
     164    CaribBarama
     165    Saramacca
     166    Mundurucu
     167    CubeoTucano
     168    Cayapa
     169    Jivaro
     170    Amahuaca
     171    Inca
     172    Aymara
     173    Siriono
     174    Nambicuara
     175    Trumai
     176    Timbira
     177    Tupinamba
     178    Botocudo
     179    Shavante
     180    Aweikoma
     181    Cayua
     182    Lengua
     183    Abipon
     184    Mapuche
     185    Tehuelche
     186    Yahgan
       /

  KK   outputs/
V17       Money Media Of Exchange And Cred
V1726     Communality Of Land
V1732     Presence Of Wage Labor
```

```
V1733     Market Exchange Within Local Com
V1734     Market Exchange Outside Of Local
V278      Inheritance Of Real Property
V279      Inheritance Of Movable Prope  /

tt   imputations /1*10/;

;
* jp(j) /1*40/;


 alias(jp,j);
 alias(k,kk);
 alias(t,tt);

parameter Y(tt,J,kk) components for DEA index
$include 'tkap.dat';

parameter d(J) weights for output;
parameter ww(J) duplicate weights for output;
parameter f(j,kk) components for particular imputation;

scalar     gv   generic value;
scalar     gv1   generic value;
scalar     gv2   generic value;
scalar itr iteration;

VARIABLES
  EFFICIENCY  efficiency measure
  outdum(k)   output dummy

POSITIVE VARIABLES
  mu(k)       output weights

EQUATIONS
  OBJECTIVE       Efficiency level of DMU0
  Allheld(j)      Holding all efficiency ratios less than or equal one;

mu.lo(k)=.000001;
OBJECTIVE..       EFFICIENCY =E=sum(k,mu(k)*outdum(k));
Allheld(j)..      sum(k,mu(k)*d(j)*f(j,k))=L=1;

MODEL manuf /ALL/;

loop(t,

f(j,k)=y(t,j,k);
d(j) =1;
ww(j) =1;
itr =0;
gv1=sum(j,ww(j));

while (gv1>0,

itr=itr+1;
d(j)=ww(j);

loop(jp,
if(d(jp)=1,

loop(k,
outdum.fx(k)=d(jp)*y(t,jp,k);
);

SOLVE manuf USING nLP MaxIMIZING efficiency;

gv=round(efficiency.L,5);
if (gv=1,ww(jp)=0)

put ud0;
if (itr=1,
```

```
loop(k,
put t.TL:<10;
put jp.TL:<10;
put itr:<10:0;
put mu.L(k):<10:5;
put y(t,jp,k):<10:5;
gv2=mu.L(k)*y(t,jp,k);
put gv2:<16:5;
put k.TL:<10;
put @80 k.te(k);
put / );
);

put ud1;
gv=round(efficiency.L,5);
if (gv=1,
put t.TL:<10;
put jp.TL:<10;
put itr:<10:0;
put efficiency.L:<10:5;
put gv1:<10:0;
put @70 j.te(jp) /);

);
);
gv1=sum(j,ww(j));

);
);
```

Appendix 3: Markets and Property scale for the 10 imputed data sets

SCCSno	Society	imp1	imp2	imp3	imp4	imp5	imp6	imp7	imp8	imp9	imp10	mean
173	Siriono	2	1	1	1	1	1	1	1	1	2	1.2
180	Aweikoma	2	1	1	1	1	1	1	1	1	2	1.2
79	Andamanese	2	1	1	1	2	1	2	2	2	2	1.6
179	Shavante	4	1	2	1	1	3	4	1	2	2	2.1
183	Abipon	1	3	1	1	2	5	3	3	3	1	2.3
92	Orokaiva	5	2	2	2	2	2	2	2	3	3	2.5
2	KungBushmen	3	2	2	2	4	3	3	3	3	3	2.8
178	Botocudo	4	2	5	1	2	3	4	4	2	2	2.9
182	Lengua	2	1	1	2	1	4	3	7	4	4	2.9
186	Yahgan	5	3	3	2	2	3	3	3	3	3	3
163	Yanomamo	4	3	4	2	4	4	3	3	3	3	3.3
104	Maori	5	3	4	3	3	4	3	3	3	4	3.5
176	Timbira	4	2	2	5	2	3	4	5	4	4	3.5
13	Mbuti	4	3	4	2	4	4	5	4	4	4	3.8
25	PastoralFulani	4	3	4	2	4	4	5	4	4	4	3.8
98	Trobrianders	5	3	4	3	4	4	4	4	3	4	3.8
31	Shilluk	6	4	3	3	2	4	4	4	5	4	3.9
9	Hadza	4	5	6	2	2	3	5	5	4	4	4
181	Cayua	4	3	7	1	4	3	4	4	6	4	4
185	Tehuelche	5	1	4	5	2	6	5	5	6	2	4.1
91	Aranda	6	4	4	3	5	5	4	4	4	4	4.3
129	Kaska	6	4	4	3	5	5	4	4	4	4	4.3
138	Klamath	7	4	3	4	3	6	2	7	4	3	4.3
174	Nambicuara	6	4	2	3	4	6	3	3	5	7	4.3
70	Lakher	6	3	4	3	5	4	5	4	5	5	4.4
140	GrosVentre	5	5	5	2	3	5	5	7	4	3	4.4
162	Warrau	4	6	4	3	5	4	5	2	6	6	4.5
1	NamaHottentot	5	6	4	3	6	5	4	7	3	3	4.6
133	Twana	5	4	5	3	5	4	5	5	5	5	4.6
137	PaiuteNorth.	4	4	3	6	6	5	4	6	7	2	4.7
164	CaribBarama	9	5	3	4	2	5	3	3	5	8	4.7
4	Lozi	6	4	5	4	3	5	6	4	5	6	4.8
120	Yukaghir	6	4	4	6	4	4	4	9	4	3	4.8
161	Callinago	6	3	9	3	5	5	4	4	4	6	4.9
103	Ajie	6	5	5	4	5	5	5	5	5	5	5
166	Mundurucu	7	4	4	4	5	5	5	6	5	5	5
90	Tiwi	5	4	5	3	6	5	5	6	6	6	5.1
124	CopperEskimo	4	4	4	6	5	4	7	6	5	6	5.1
24	Songhai	7	4	5	6	4	6	6	5	3	6	5.2
175	Trumai	7	5	5	4	5	5	5	6	5	5	5.2
139	Kutenai	6	5	5	5	5	5	5	6	6	5	5.3
148	Chiricahua	6	3	7	6	4	7	8	7	3	2	5.3
34	Masai	8	4	5	4	4	5	7	6	6	6	5.5
165	Saramacca	7	5	5	4	6	5	6	5	6	6	5.5
170	Amahuaca	6	7	6	4	6	7	7	5	3	4	5.5
8	Nyakyusa	7	6	6	4	5	6	5	6	6	5	5.6
177	Tupinamba	8	5	7	3	4	4	5	8	4	8	5.6
29	FurDarfur	7	5	5	5	6	6	6	5	6	6	5.7
134	Yurok	7	5	5	5	7	6	6	6	5	5	5.7
128	Slave	7	5	6	4	5	6	6	9	5	5	5.8
141	Hidatsa	8	5	6	5	6	6	5	7	5	5	5.8
147	Comanche	7	7	6	3	5	6	7	7	5	5	5.8
121	Chukchee	5	5	8	5	5	6	6	7	6	6	5.9
30	OtoroNuba	7	5	6	4	5	9	5	7	6	6	6
41	Tuareg	9	5	6	6	5	7	5	6	6	6	6.1
72	Lamet	7	6	6	5	6	6	7	6	6	6	6.1
77	Semang	8	5	5	5	7	6	6	7	6	6	6.1
126	Micmac	5	7	7	3	5	8	6	9	5	6	6.1
157	Bribri	7	6	3	7	7	8	6	7	5	5	6.1
100	Tikopia	8	6	6	5	6	6	6	7	6	6	6.2

SCCSno	Society	imp1	imp2	imp3	imp4	imp5	imp6	imp7	imp8	imp9	imp10	mean
101	Pentecost	7	5	6	5	5	10	6	8	6	4	6.2
130	Eyak	6	5	7	4	7	5	7	7	7	7	6.2
27	MassaMasa	8	6	8	6	6	7	5	6	4	7	6.3
125	Montagnais	7	6	5	6	7	5	7	7	6	7	6.3
132	Bellacoola	7	6	6	6	6	6	6	7	7	6	6.3
150	Havasupai	7	6	7	4	6	6	6	8	7	6	6.3
60	Gond	6	6	6	6	6	7	7	7	6	7	6.4
143	Omaha	6	5	4	6	9	9	6	6	9	4	6.4
6	Suku	8	6	6	6	6	7	6	7	7	6	6.5
52	Lapps	7	6	9	7	5	7	5	7	5	7	6.5
168	Cayapa	6	7	6	7	6	4	7	11	5	6	6.5
12	Ganda	8	6	7	5	6	7	7	7	6	7	6.6
19	Ashanti	7	6	7	6	6	7	7	7	7	6	6.6
93	Kimam	8	7	4	4	7	7	6	11	5	7	6.6
102	MbauFijians	8	7	6	9	7	7	7	6	5	4	6.6
146	Natchez	8	6	6	6	7	7	11	5	3	7	6.6
96	Manus	9	5	7	5	7	6	8	8	5	7	6.7
123	Aleut	8	6	7	6	6	7	6	8	7	6	6.7
33	KaffaKafa	10	8	7	7	5	5	6	8	7	5	6.8
97	NewIreland	7	6	6	8	6	7	5	9	9	5	6.8
127	Saulteaux	7	8	5	5	8	7	6	7	8	7	6.8
171	Inca	9	7	8	4	7	9	6	8	5	5	6.8
16	Tiv	8	7	7	6	6	7	6	8	7	7	6.9
58	Basseri	8	7	6	6	7	7	7	8	7	6	6.9
135	PomoEastern	9	7	7	5	7	7	7	7	6	7	6.9
10	Luguru	8	6	6	9	9	8	4	9	4	7	7
81	Tanala	9	7	7	5	7	7	7	7	7	7	7
89	Alorese	7	7	5	6	6	7	10	8	8	6	7
136	YokutsLake	10	6	7	5	8	7	6	8	6	7	7
11	Kikuyu	9	7	7	6	7	7	7	8	7	7	7.2
22	Bambara	8	7	7	7	7	7	7	8	7	7	7.2
67	Lolo	7	9	6	9	6	7	8	6	7	7	7.2
69	Garo	9	7	7	6	7	7	7	8	7	7	7.2
86	Badjau	9	7	7	6	7	7	8	7	7	7	7.2
111	Palauans	8	7	6	6	7	7	8	7	9	7	7.2
131	Haida	10	5	7	8	8	6	5	8	9	6	7.2
142	Pawnee	9	7	7	6	7	7	8	7	7	7	7.2
167	CubeoTucano	9	7	7	6	7	7	8	7	7	7	7.2
169	Jivaro	9	7	7	6	7	7	8	7	7	7	7.2
80	Vedda	8	8	7	7	7	7	7	8	8	7	7.4
106	WesternSamoans	11	3	8	8	9	5	7	10	8	5	7.4
36	Somali	8	7	7	7	8	7	7	8	8	8	7.5
53	YurakSamoyed	9	7	10	6	6	8	8	9	7	6	7.6
118	Ainu	11	9	7	6	7	7	8	7	7	7	7.6
17	Ibo	11	6	7	8	9	6	6	9	7	8	7.7
109	Trukese	9	8	7	7	7	8	8	8	8	7	7.7
113	Atayal	9	11	9	8	5	5	7	9	7	7	7.7
159	Goajiro	8	7	8	8	7	6	8	9	8	8	7.7
7	Bemba	9	7	9	8	6	11	7	7	6	8	7.8
107	Gilbertese	10	8	8	7	8	6	8	8	9	6	7.8
112	Ifugao	10	7	8	7	7	8	6	9	11	5	7.8
144	Huron	9	7	9	6	8	7	8	9	8	7	7.8
99	Siuai	10	6	5	8	6	10	7	12	9	6	7.9
15	Banen	12	9	8	6	6	5	8	8	10	8	8
20	Mende	8	8	6	7	7	9	10	9	8	8	8
61	Toda	9	8	7	7	8	8	8	9	8	8	8
145	Creek	10	7	9	6	9	7	8	10	7	7	8
156	Miskito	8	9	7	6	9	9	6	8	11	7	8
184	Mapuche	9	8	8	7	8	8	7	9	8	8	8
32	Mao	9	8	7	8	8	8	10	7	8	8	8.1
37	Amhara	9	8	8	7	8	8	8	9	8	8	8.1
64	Burusho	10	7	9	10	7	11	8	8	5	6	8.1

SCCSno	Society	imp1	imp2	imp3	imp4	imp5	imp6	imp7	imp8	imp9	imp10	mean
65	Kazak	8	10	7	7	7	8	7	9	9	9	8.1
87	Toradja	12	8	10	5	11	7	7	6	10	5	8.1
40	Teda	7	8	8	8	10	8	9	8	8	8	8.2
152	Huichol	7	8	7	8	8	7	8	11	9	9	8.2
5	Mbundu	7	8	9	5	10	7	10	9	9	9	8.3
74	Rhade	8	6	8	9	11	9	8	9	7	8	8.3
122	Ingalik	10	8	8	7	8	8	8	10	8	8	8.3
35	Konso	9	7	9	6	8	8	7	11	10	9	8.4
95	Kwoma	9	9	7	8	9	9	7	9	8	9	8.4
105	Marquesans	10	8	9	8	8	5	11	11	8	7	8.5
153	Aztec	10	8	9	7	8	8	10	9	8	8	8.5
39	KenuziNubians	11	10	6	8	10	7	9	9	7	9	8.6
62	Santal	9	9	9	8	8	8	9	9	9	8	8.6
151	Papago	10	9	9	7	9	8	7	11	8	8	8.6
155	Quiche	8	7	9	9	8	11	8	9	9	8	8.6
23	Tallensi	10	8	9	8	7	8	9	10	9	9	8.7
18	Fon	10	10	8	9	10	8	8	8	8	10	8.9
46	RwalaBedouin	10	9	8	8	9	9	8	10	9	9	8.9
73	Vietnamese	10	7	8	8	9	9	9	9	10	10	8.9
115	Manchu	11	9	8	7	9	9	8	10	9	9	8.9
38	Bogo	7	10	8	8	9	10	9	10	10	9	9
57	Kurd	10	9	10	8	9	8	8	10	9	9	9
94	Kapauku	10	9	9	8	9	9	8	11	9	8	9
119	Gilyak	10	9	8	8	9	9	9	10	9	9	9
154	Popoluca	9	8	10	7	8	9	10	10	10	9	9
3	Thonga	10	9	9	8	9	9	9	10	9	9	9.1
26	Hausa	10	8	10	8	8	8	10	10	10	9	9.1
158	CunaTule	11	7	11	9	8	8	7	11	9	10	9.1
55	Abkhaz	11	6	11	10	8	11	10	11	7	7	9.2
149	Zuni	11	9	9	8	9	9	9	10	9	9	9.2
56	Armenians	12	10	10	8	10	9	8	10	9	7	9.3
66	KhalkaMongols	11	9	9	8	9	9	10	10	9	9	9.3
28	Azande	10	8	9	7	10	10	9	12	11	8	9.4
78	Nicobarese	11	9	9	8	9	9	10	11	9	9	9.4
85	Iban	10	9	10	8	9	10	10	11	10	9	9.6
14	NkundoMongo	11	8	9	9	8	11	10	10	10	11	9.7
42	Riffians	10	10	10	9	9	9	10	11	10	9	9.7
54	Russians	10	10	10	8	10	10	9	10	10	10	9.7
59	PunjabiWest	10	10	10	9	9	9	10	11	10	9	9.7
88	Tobelorese	9	10	10	9	9	11	9	9	11	10	9.7
110	Yapese	11	10	10	9	10	7	9	12	10	10	9.8
21	Wolof	11	9	10	9	10	10	10	11	10	9	9.9
76	Siamese	10	9	11	9	11	9	8	11	10	11	9.9
83	Javanese	12	9	11	9	11	9	8	11	10	9	9.9
48	GhegAlbanians	11	11	10	10	9	9	10	12	10	9	10.1
116	Koreans	11	10	10	9	10	10	10	11	10	10	10.1
84	Balinese	10	11	10	10	11	8	11	10	11	11	10.3
45	Babylonians	12	9	11	8	11	11	10	11	10	11	10.4
49	Romans	12	10	11	9	11	10	10	12	10	10	10.5
71	Burmese	10	10	11	10	10	10	11	11	11	11	10.5
82	NegriSembilan	9	11	11	10	11	10	10	11	11	11	10.5
108	Marshallese	11	10	11	8	11	11	10	12	10	11	10.5
172	Aymara	11	11	10	10	11	10	11	9	11	11	10.5
47	Turks	12	10	11	10	11	10	10	11	11	10	10.6
50	Basques	12	10	11	9	11	11	10	11	11	10	10.6
75	Khmer	11	10	11	10	10	10	11	12	11	10	10.6
114	Chinese	12	10	11	10	11	11	10	11	10	10	10.6
68	Lepcha	12	11	11	10	11	11	9	11	11	10	10.7
44	Hebrews	11	11	11	9	11	10	11	12	11	11	10.8
63	UttarPradesh	12	11	11	10	11	11	11	11	11	10	10.9
43	Egyptians	12	11	11	10	11	11	11	12	11	11	11.1
51	Irish	12	11	11	10	11	11	11	12	11	11	11.1

SCCSno	Society	imp1	imp2	imp3	imp4	imp5	imp6	imp7	imp8	imp9	imp10	mean
117	Japanese	12	11	11	10	11	11	11	12	11	11	11.1
160	Haitians	12	11	11	10	11	11	11	12	11	11	11.1