```
%let seed_fi = %eval(&seed*9) ;


data par_fi ;
infile "&par_path/parameters_FI_model2.csv" DSD MISSOVER delimiter =
"," termstr = CRLF lrecl = 32767 firstobs = 2 ;
informat variable $15. ;
informat estimate BEST12. ;
format variable $15. ;
format estimate BEST12. ;
input variable $
      estimate
;
run ;


data v_fi ;
infile "&par_path/vres_FI_model2.csv" DSD MISSOVER delimiter = ","
termstr = CRLF lrecl = 32767 firstobs = 2 ;
informat v BEST12. ;
format v BEST12. ;
input v ;
run ;


data _null_ ;
set v_fi ;
call symput("sd",sqrt(v)) ;
run ;

/* generate u following a uniform law */

proc sort data = h_fi ;
by sa0100 sa0010 im0100 ;
run ;

data h_fi ;
set h_fi ;
retain x1 &seed_fi x2 0 ;
if _n_ = 1 then do ;
    x1 = &seed_fi ;
    x2 = 0 ;
end ;
else do ;
    y = mod(x1*20077+12345,65536) ;
    x2 = mod(int((x1*20077+12345-y)/65536)+mod(16838*x1+20077
*x2,65536),32768) ;
    x1 = y ;
end ;
z = 65536*x2+x1 ;
u = z/2147483648 ;
drop y z x1 x2 ;
run ;


/* compute the consumption */
```

```
data par_fi ;
set par_fi ;
call symput(compress("par"!!_n_),estimate) ;
run ;



data h_fi ;
set h_fi ;
/* reshape covariates */
rent = max(hb2300*12,0) ;
l_rent = log(max(rent,1)) ;
head_male = (ra0200 = 1) ;
owner = (hb0300 in (1,2)) ;
free_use = (hb0300 = 4) ;
hhsize_1 = (dh0001 = 1) ;
hhsize_3 = (dh0001 >= 3) ;
agerp_1 = (ra0300 < 30) ;
agerp_2 = (30 <= ra0300 < 40) ;
agerp_3 = (40 <= ra0300 < 50) ;
agerp_4 = (50 <= ra0300 < 60) ;
agerp_5 = (60 <= ra0300 < 70) ;
agerp_6 = (ra0300 >= 70) ;
number_children_1 = (number_children = 1) ;
number_children_2 = (number_children = 2) ;
number_children_3 = (number_children = 3) ;
labour_status_1 = (pe0100a in (1,2)) ;
labour_status_2 = (pe0100a in (3,4,6,7,8,9)) ;
labour_status_3 = (pe0100a = 5) ;
/*diploma_1 = (pa0200 = 1) ;*/
diploma_2 = (pa0200 = 2) ;
diploma_5 = (pa0200 = 5) ;
run ;

proc sort data = h_fi ;
by im0100 ;
run ;


proc univariate data = h_fi ;
by im0100 ;
var di2000 ;
weight hw0010 ;
output out = perc_implicates pctlpts = 20 40 60 80 pctlpre=p ;
run ;

proc univariate data = perc_implicates ;
var p20 p40 p60 p80 ;
output out = perc mean = p20 p40 p60 p80 ;
run ;

data perc;
set perc ;
call symput("quint1",p20) ;
call symput("quint2",p40) ;
call symput("quint3",p60) ;
```

```
call symput("quint4",p80) ;
run ;


data h_fi ;
set h_fi ;
income_quintile_1 = (di2000 <= &quint1) ;
income_quintile_2 = (&quint1 < di2000 <= &quint2) ;
income_quintile_3 = (&quint2 < di2000 <= &quint3) ;
income_quintile_4 = (&quint3 < di2000 <= &quint4) ;
income_quintile_5 = (di2000 > &quint4) ;
run ;


/* set up bounds */

data bound_fi ;
infile "&par_path/bound_FI.csv" DSD MISSOVER delimiter = "," termstr
= CRLF lrecl = 32767 firstobs = 2 ;
informat m BEST12. ;
format m BEST12. ;
input m ;
run ;


data _null_ ;
set bound_fi ;
call symput("m",m) ;
run ;


/* compute consumption */

data h_fi ;
set h_fi ;
/* bounds */
lbound = rent ;
ubound = &m ;
a = log(max(1,lbound)) ;
b = log(ubound) ;
Xbeta = &par1+&par2*l_rent+&par3*(l_rent**2)+&par4*(l_rent**3)
    +&par5*agerp_1+&par6*agerp_2+&par7*agerp_4+&par8*agerp_5+&par9
*agerp_6
    +&par10*head_male
    +&par11*hhsize_1+&par12*hhsize_3
    +&par13*number_children_1+&par14*number_children_2+&par15
*number_children_3
    +&par16*owner+&par17*free_use
    +&par18*diploma_2+&par19*diploma_5
    +&par20*labour_status_2+&par21*labour_status_3
    +&par22*income_quintile_2+&par23*income_quintile_3+&par24
*income_quintile_4+&par25*income_quintile_5
    +&par26*l_rent*income_quintile_2+&par27*(l_rent**2)
*income_quintile_2+&par28*(l_rent**3)*income_quintile_2
    +&par29*agerp_1*income_quintile_2+&par30*agerp_2
*income_quintile_2+&par31*agerp_4*income_quintile_2+&par32*agerp_5
*income_quintile_2+&par33*agerp_6*income_quintile_2
```

```
    +&par34*head_male*income_quintile_2
    +&par35*hhsize_1*income_quintile_2+&par36*hhsize_3
*income_quintile_2
    +&par37*number_children_1*income_quintile_2+&par38
*number_children_2*income_quintile_2+&par39*number_children_3
*income_quintile_2
    +&par40*owner*income_quintile_2+&par41*free_use*income_quintile_
2
    +&par42*diploma_2*income_quintile_2+&par43*diploma_5
*income_quintile_2
    +&par44*labour_status_2*income_quintile_2+&par45*labour_status_3
*income_quintile_2
    +&par46*l_rent*income_quintile_3+&par47*(l_rent**2)
*income_quintile_3+&par48*(l_rent**3)*income_quintile_3
    +&par49*agerp_1*income_quintile_3+&par50*agerp_2
*income_quintile_3+&par51*agerp_4*income_quintile_3+&par52*agerp_5
*income_quintile_3+&par53*agerp_6*income_quintile_3
    +&par54*head_male*income_quintile_3
    +&par55*hhsize_1*income_quintile_3+&par56*hhsize_3
*income_quintile_3
    +&par57*number_children_1*income_quintile_3+&par58
*number_children_2*income_quintile_3+&par59*number_children_3
*income_quintile_3
    +&par60*owner*income_quintile_3+&par61*free_use*income_quintile_
3
    +&par62*diploma_2*income_quintile_3+&par63*diploma_5
*income_quintile_3
    +&par64*labour_status_2*income_quintile_3+&par65*labour_status_3
*income_quintile_3
    +&par66*l_rent*income_quintile_4+&par67*(l_rent**2)
*income_quintile_4+&par68*(l_rent**3)*income_quintile_4
    +&par69*agerp_1*income_quintile_4+&par70*agerp_2
*income_quintile_4+&par71*agerp_4*income_quintile_4+&par72*agerp_5
*income_quintile_4+&par73*agerp_6*income_quintile_4
    +&par74*head_male*income_quintile_4
    +&par75*hhsize_1*income_quintile_4+&par76*hhsize_3
*income_quintile_4
    +&par77*number_children_1*income_quintile_4+&par78
*number_children_2*income_quintile_4+&par79*number_children_3
*income_quintile_4
    +&par80*owner*income_quintile_4+&par81*free_use*income_quintile_
4
    +&par82*diploma_2*income_quintile_4+&par83*diploma_5
*income_quintile_4
    +&par84*labour_status_2*income_quintile_4+&par85*labour_status_3
*income_quintile_4
    +&par86*l_rent*income_quintile_5+&par87*(l_rent**2)
*income_quintile_5+&par88*(l_rent**3)*income_quintile_5
    +&par89*agerp_1*income_quintile_5+&par90*agerp_2
*income_quintile_5+&par91*agerp_4*income_quintile_5+&par92*agerp_5
*income_quintile_5+&par93*agerp_6*income_quintile_5
    +&par94*head_male*income_quintile_5
    +&par95*hhsize_1*income_quintile_5+&par96*hhsize_3
*income_quintile_5
    +&par97*number_children_1*income_quintile_5+&par98
*number_children_2*income_quintile_5+&par99*number_children_3
*income_quintile_5
    +&par100*owner*income_quintile_5+&par101
```

```
*free_use*income_quintile_5
    +&par102*diploma_2*income_quintile_5+&par103*diploma_5
*income_quintile_5
    +&par104*labour_status_2*income_quintile_5+&par105
*labour_status_3*income_quintile_5 ;
Phi_a = cdf('NORMAL',a-Xbeta,0,&sd) ;
Phi_b = cdf('NORMAL',b-Xbeta,0,&sd) ;
/* estimation of consumption */
DI3001 = round(exp(Xbeta+quantile('NORMAL',Phi_a + (Phi_b-Phi_a)
*u,0,&sd))) ;
run ;
```