```
insheet using "${par_path}\parameters_DE_model2.csv", clear
mkmat estimate, matrix(beta)

insheet using "${par_path}\vres_DE_model2.csv", clear
mkmat v, matrix(var)

use "${out_path}\temp_DE.dta", clear
sort sa0100 sa0010 im0100

gen x2 = 0 if _n == 1
gen x1 = 11*$seed if _n == 1

replace x1 = mod(x1[_n-1]*20077 + 12345,2^16) if _n>1
replace x2 = mod(int((x1[_n-1]*20077 + 12345 - x1)/2^16)+mod(16838*x1[_n-1]+20077*x2[_n-1],2^16),2^15) if _n>1

gen double z=2^16*x2+x1
format z %16.0g

gen u=z/2^31

gen cfood = (hi0100+hi0200)
gen rent = hb2300
replace rent = 0 if missing(hb2300) == 1
gen l_cfood = log(max(cfood,1))
gen l_rent = log(max(rent,1))
gen head_male = (ra0200 == 1)
gen owner_or_free = (inlist(hb0300,1,2,4))
gen hhsize_1 = (dh0001 == 1)
gen hhsize_2 = (dh0001 == 2)
gen hhsize_3 = (dh0001 >= 3)
gen agerp_1 = (ra0300 <= 20)
gen agerp_2 = (ra0300 <= 30 & ra0300 > 20)
gen agerp_3 = (ra0300 <= 40 & ra0300 > 30)
gen agerp_4 = (ra0300 <= 50 & ra0300 > 40)
gen agerp_5 = (ra0300 <= 60 & ra0300 > 50)
gen agerp_6 = (ra0300 <= 70 & ra0300 > 60)
gen agerp_7 = (ra0300 > 70)
gen number_children_1 = (number_children == 1)
gen number_children_2 = (number_children == 2)
gen number_children_3 = (number_children >= 3)
gen diploma_1 = (inlist(pa0200,1,2))
gen diploma_2 = (pa0200 == 3)
gen diploma_3 = (pa0200 == 5)

/* computing quintiles */
forvalues i = 1/5{
    _pctile di2000 if im0100 == `i' [weight=hw0010], nq(5)
    gen q1_`i' = r(r1)
    gen q2_`i' = r(r2)
    gen q3_`i' = r(r3)
    gen q4_`i' = r(r4)
}

gen q1 = (q1_1+q1_2+q1_3+q1_4+q1_5)/5
gen q2 = (q2_1+q2_2+q2_3+q2_4+q2_5)/5
gen q3 = (q3_1+q3_2+q3_3+q3_4+q3_5)/5
gen q4 = (q4_1+q4_2+q4_3+q4_4+q4_5)/5

gen income_quintile_1 = (di2000 <= q1)
gen income_quintile_2 = (di2000 > q1 & di2000 <= q2)
gen income_quintile_3 = (di2000 > q2 & di2000 <= q3)
gen income_quintile_4 = (di2000 > q3 & di2000 <= q4)
gen income_quintile_5 = (di2000 > q4)

gen lbound = cfood+rent
/*gen ubound = m[1,1]*/
gen a = log(lbound)
/*gen b = log(ubound)*/
#delimit ;
gen Xbeta = beta[1,1]+beta[2,1]*l_cfood+beta[3,1]*l_cfood^2+beta[4,1]*l_cfood^3
            +beta[5,1]*income_quintile_2+beta[6,1]*income_quintile_3+beta[7,1]*income_quintile_4+beta[8,1]*income_quintile_5
            +beta[6,1]*income_quintile_2*l_cfood+beta[7,1]*income_quintile_2*(l_cfood^2)+beta[8,1]*income_quintile_2*(l_cfood^3)
            +beta[9,1]*income_quintile_3*l_cfood+beta[10,1]*income_quintile_3*(l_cfood^2)+beta[11,1]*income_quintile_3*(l_cfood^3)
            +beta[12,1]*income_quintile_4*l_cfood+beta[13,1]*income_quintile_4*(l_cfood^2)+beta[14,1]*income_quintile_4*(l_cfood^3)
            +beta[15,1]*income_quintile_5*l_cfood+beta[16,1]*income_quintile_5*(l_cfood^2)+beta[17,1]*income_quintile_5*(l_cfood^3)
            +beta[21,1]*l_rent+beta[22,1]*l_rent^2+beta[23,1]*l_rent^3
            +beta[24,1]*agerp_2+beta[25,1]*agerp_3+beta[26,1]*agerp_4+beta[27,1]*agerp_5+beta[28,1]*agerp_6+beta[29,1]*agerp_7
            +beta[30,1]*head_male
            +beta[31,1]*owner_or_free
            +beta[32,1]*hhsize_2+beta[33,1]*hhsize_3
            +beta[34,1]*number_children_1+beta[35,1]*number_children_2+beta[36,1]*number_children_3
            +beta[37,1]*diploma_2+beta[38,1]*diploma_3 ;
#delimit cr

gen Phi_a = normal((a-Xbeta)/sqrt(var[1,1]))
/*gen Phi_b = normal((b-Xbeta)/sqrt(var[1,1]))*/

gen di3001 = round(exp(Xbeta + invnormal((Phi_a + (1 - Phi_a)*u))*sqrt(var[1,1])))
keep sa0100 sa0010 im0100 di3001
save "${out_path}\temp_DE.dta", replace

```