if (ptrZFD->optFit==tcsam::FIT\_BY\_X){

if (debug>=dbgNLLs) cout<<"FIT\_BY\_X"<<endl;

effWgtComps\_xmsyn.allocate(1,nSXs,

tcsam::ALL\_MSs,tcsam::ALL\_MSs,

tcsam::ALL\_SCs,tcsam::ALL\_SCs,

mny,mxy,1,3);

oP\_z.allocate(1,nZBDs);

mP\_z.allocate(1,nZBDs);

for (int iy=1;iy<=yrs.size();iy++) {

y = yrs[iy];

if (debug>=dbgNLLs) cout<<"y = "<<y<<endl;

if ((mny<=y)&&(y<=mxy)) {

for (int X=1;X<=nSXs;X++) {

int M = ALL\_MSs; int S = ALL\_SCs;

nT = sum(mA\_yxmsz(y,X));//=0 if not calculated

cout<<"nT, uf("<<tcsam::getSexType(X)<<", "<<tcsam::getMaturityType(M)<<", "<<tcsam::getShellType(S)<<") = "<<endl<<

nT<<" "<<ptrZFD->uf\_xmsy(X,M,S,iy)<<endl;

int cnt = 0;//--counter for number of aggregations

if ((value(nT)>0)&&(ptrZFD->uf\_xmsy(X,M,S,iy)>0)){

//get observed size comp (aggregated and tail compressed) and normalize it

ss = ptrZFD->ss\_xmsy(X,M,S,iy); //sample size

oP\_z = ptrZFD->tcdNatZ\_xmsyz(X,M,S,iy);//--tail-compressed already

if (sum(oP\_z)>0) oP\_z /= sum(oP\_z); //--normalize to sum to 1

//calculate model size comp

//--aggregate model size comp to x,ALL\_MSs,ALL\_SC across categories included in data aggregation

mP\_zp.initialize();

int x = X;

for (int m=1;m<=ALL\_MSs;m++) {

for (int s=1;s<=ALL\_SCs;s++) {

cout<<" inpUF\_xmsy("<<tcsam::getSexType(x)<<", "<<tcsam::getMaturityType(m)<<", "<<tcsam::getShellType(s)<<", iy) = "<<ptrZFD->inpUF\_xmsy(X,m,s,iy)<<endl;

if ((ptrZFD->inpUF\_xmsy(x,m,s,iy)>0)){

//--X,m,s input data included in aggregation, so determine model categories included

for (int xp=1;xp<=nSXs;xp++){

for (int mp=1;mp<=nMSs;mp++){

for (int sp=1;sp<=nSCs;sp++){

cout<<" mAggMap("<<tcsam::getSexType(x)<<", "<<tcsam::getMaturityType(m)<<", "<<tcsam::getShellType(s)<< ","

<<tcsam::getSexType(xp)<<", "<<tcsam::getMaturityType(mp)<<", "<<tcsam::getShellType(sp)<<") = "<<

ptrZFD->mAggMap\_XMSxms(x,m,s,xp,mp,sp)<<endl;

if ((ptrZFD->mAggMap\_XMSxms(x,m,s,xp,mp,sp)>0)){

cnt++;

mP\_zp += mZBtoZBDs\*mA\_yxmsz(y,xp,mp,sp);//collapse model size bins to data size bins

cout<<" agg = "<<cnt<<" adding: "<<mZBtoZBDs\*mA\_yxmsz(y,xp,mp,sp)<<endl;

}

}//--sp

}//--mp

}//--xp

} else {

//--(ptrZFD->inpUF\_xmsy(x,m,s,iy)<0)

cout<<" --skipping this one"<<endl;

}

}//--s

}//--m

cout<<"#--number of aggregations = "<<cnt<<endl;

//--do tail compression on model size comp

int imn = ptrZFD->tc\_xmsyc(X,M,S,iy)(1);

int imx = ptrZFD->tc\_xmsyc(X,M,S,iy)(2);

if (debug>=dbgNLLs) {

cout<<"#--Final aggregated values:"<<endl;

cout<<"x,m,s,y = "<<tcsam::getSexType(X)<<cc<<tcsam::getMaturityType(M)<<cc<<tcsam::getShellType(S)<<cc<<y<<endl;

cout<<"imn,imx = "<<imn<<cc<<imx<<endl;

}

mP\_z.initialize();

mP\_z(imn) += sum(mP\_zp(1,imn));

mP\_z(imn+1,imx-1) += mP\_zp(imn+1,imx-1);

mP\_z(imx) += sum(mP\_zp(imx,nZBDs));

//--normalize model size comp

mP\_z /= nT;

if (debug>=dbgNLLs){

cout<<"ss = "<<ss<<endl;

cout<<"oP\_Z = "<<oP\_z<<endl;

cout<<"mP\_z = "<<mP\_z<<endl;

cout<<"#----"<<endl;

}

if (debug<0) {

cout<<"'"<<y<<"'=list(";

cout<<"fit.type='"<<tcsam::getFitType(ptrZFD->optFit)<<"'"<<cc;

cout<<"y="<<y<<cc;

cout<<"x='"<<tcsam::getSexType(X)<<"'"<<cc;

cout<<"m='"<<tcsam::getMaturityType(M)<<"'"<<cc;

cout<<"s='"<<tcsam::getShellType(S)<<"'"<<cc<<endl;

cout<<"zBs="; wts::writeToR(cout,ptrZFD->zBs); cout<<cc<<endl;

cout<<"fit=";

}

idm = (int) ptrZFD->dm\_xmsy(X,M,S,iy);

calcNLL\_ZC(ptrZFD,mP\_z,oP\_z,idm,ss,y,debug,cout);

effWgtComps\_xmsyn(X,M,S,y) = calcEffWgtComponents(ss, oP\_z, mP\_z, debug, cout);

if (debug<0) cout<<")"<<cc<<endl;

} else {

//--((value(nT)>0)&&(ptrZFD->uf\_xmsy(X,M,S,iy)>0)) is FALSE

cout<<"--skipping this one"<<endl;

}

}//x

} //if ((mny<=y)&&(y<=mxy))

} //loop over iy

//FIT\_BY\_X