

附 录

正文未报告部分

```
#####  
Code for Lin, Chen, Chen, and Chen (2020)  
#####
```

```
# parameter definition
```

```
deltaK1=0.12
```

```
deltaH=0.05
```

```
deltaR=0.09
```

```
beta=0.97
```

```
epsilon=0.88
```

```
sigmaC=1.1
```

```
sigmaH=1.15
```

```
rho=-0.015
```

```
tao1=0.05
```

```
alpha1=0.51
```

```
phi1=0.5
```

```
phiB=0.5
```

```
kappa=1
```

```
kappaH=1
```

```
xi=0.5
```

```
A1=1
```

```
L1=1
```

```
Treport=20
```

```
# AI related parameters
```

```
alphahigh<-0.78
```

```
alphalow<-0.51
```

```
ghigh<-0.08
```

```
zeta=0.04
```

```
eta<-0.1
```

```
gamma<- 76
```

```
mu<-48
```

```
# cycle number of intial value
```

```
ncount=1
```

```
IHBGP=1.428958*23/133.0538
```

```
CBGP=3.197509*23/133.0538
```

```
#####  
## noAI
```

```
# dynamic
source("DGEF.R")

gy=0.04
x=1
term=5
while(term!=1&&term!=2&&term!=4&& x<=ncount){
y=1
while(term!=1 && term!=2&&term!=4&& y<=ncount){
lowerK <- K1*(1+gy)
upperK <- K1*x
lowerH <- H1*(1+xi*gy)
upperH <- H1*y
lowerIH<-IHBGP*(2/xi)
upperIH<-IHBGP*y
lowerC<-CBGP
upperC<-CBGP*y

init <- c(seq(lowerK, upperK, length.out = T), seq(lowerH, upperH, length.out = T))
for (t in 2:T) {
init[t]=init[t-1]*(1+gy)
init[T+t]=init[T+t-1]*(1+xi*gy)
#init[2*T+t]=init[2*T+t-1]*(1+2/xi*gy)
#init[3*T+t]=init[2*T+t-1]*(1+gy)
}

results <- nleqslv(init, DGEF, method="Newton", global="gline")$x
term<- nleqslv(init, DGEF)$termcd
value<- nleqslv(init, DGEF)$fvec
y=y+1
}
x=x+1
}

K=c(K1, results[1:(length(results)/2)])
H=c(H1, results[(1*length(results)/2+1):(2*length(results)/2)])

C=numeric(length = Treport )
R=numeric(length = Treport )
Y=numeric(length = Treport )
IK=numeric(length = Treport )
IH=numeric(length = Treport )
```

```

interY=numeric(length = Treport )
r=numeric(length = Treport )
rK=numeric(length = Treport )
mH=numeric(length = Treport )
IR=numeric(length = Treport )
e=numeric(length = Treport )
b=numeric(length = Treport )
R[1]=R1

for (t in 1:(Treport)) {
interY[t]=alpha[t]^(1-rho)*K[t]^rho+(1-alpha[t])^(1-rho)*(A[t]*L[t])^rho;
Y[t]=(interY[t])^(epsilon/rho)*R[t]^(1-epsilon)
IK[t]=K[t+1]-(1-deltaK[t])*K[t]
IH[t]=(H[t+1]-(1-deltaH)*H[t])^(1/xi)
C[t]=epsilon*(1- $\tau$ [t])*Y[t]-IK[t]-IH[t]
R[t+1]=(1-deltaR)*R[t]+( $\tau$ [t]*epsilon+1-epsilon)*Y[t]
r[t]=alpha[t]^(1-rho)*epsilon*interY[t]^(epsilon/rho-1)*K[t]^(rho-1)*R[t]^(1-epsilon)-deltaK[t]
e[t]=phi[t]*(C[t]^sigmaC)/(H[t]^sigmaH)-deltaH
b[t]=(1-epsilon)*(interY[t])^(epsilon/rho)*R[t]^(-epsilon)-deltaR
rK[t]=epsilon*interY[t]^(epsilon/rho-1)*K[t]^(rho-1)*R[t]^(1-epsilon)
mH[t]=phi[t]*H[t]^(-sigmaH)
IR[t]= $\tau$ [t]*Y[t]
}
K=K[1:Treport]
H=H[1:Treport]

CnoAI=C

#####
## AI

# dynamic
source("AIDGEF.R")

x=1
term=5
while(term!=1&&term!=2&&term!=4&& x<=ncount){
y=1
while(term!=1 && term!=2&&term!=4&& y<=ncount){
lowerK <- K1*(1+gy)
upperK <- K1*x
lowerH <- H1*(1+xi*gy)
upperH <- H1*y

```

```

lowerIH<-IHBGP*(2/xi)
upperIH<-IHBGP*y
lowerC<-CBGP
upperC<-CBGP*y

gy20=0.05
init <- c(seq(lowerK, upperK, length.out = T), seq(lowerH, upperH, length.out = T))
for (t in 2:T) {
  init[t]=init[t-1]*(1+gy20)
  init[T+t]=init[T+t-1]*(1+xi*gy20)
  #init[2*T+t]=init[2*T+t-1]*(1+2/xi*gy)
  #init[3*T+t]=init[2*T+t-1]*(1+gy)
}

results <- nleqslv(init, AIDGEF, method="Newton", global="gline")$x
term<- nleqslv(init, AIDGEF)$termcd
value<- nleqslv(init, AIDGEF)$fvec
y=y+1
}
x=x+1
}

K=c(K1, results[1:(length(results)/2)])
H=c(H1, results[(1*length(results)/2+1):(2*length(results)/2)])

```

```

C=numeric(length = Treport )
R=numeric(length = Treport )
Y=numeric(length = Treport )
IK=numeric(length = Treport )
IH=numeric(length = Treport )
interY=numeric(length = Treport )
r=numeric(length = Treport )
rK=numeric(length = Treport )
mH=numeric(length = Treport )
IR=numeric(length = Treport )
e=numeric(length = Treport )
b=numeric(length = Treport )
R[1]=R1

for (t in 1:(Treport)) {
  interY[t]=alpha[t]^(1-rho)*K[t]^rho+(1-alpha[t])^(1-rho)*(A[t]*L[t])^rho;

```

$$\begin{aligned}
Y[t] &= (\text{inter}Y[t])^{(\epsilon/\rho)} * R[t]^{(1-\epsilon)} \\
IK[t] &= K[t+1] - (1-\delta K) * K[t] \\
IH[t] &= (H[t+1] - (1-\delta H) * H[t])^{(1/\xi)} \\
C[t] &= \epsilon * (1-\tau) * Y[t] - IK[t] - IH[t] \\
R[t+1] &= (1-\delta R) * R[t] + (\tau * \epsilon + 1 - \epsilon) * Y[t] \\
r[t] &= \alpha[t]^{(1-\rho)} * \epsilon * (\text{inter}Y[t])^{(\epsilon/\rho-1)} * K[t]^{(\rho-1)} * R[t]^{(1-\epsilon)} - \delta K[t] \\
e[t] &= \phi[t] * (C[t]^{\sigma C}) / (H[t]^{\sigma H}) - \delta H \\
b[t] &= (1-\epsilon) * (\text{inter}Y[t])^{(\epsilon/\rho)} * R[t]^{(-\epsilon)} - \delta R \\
rK[t] &= \epsilon * (\text{inter}Y[t])^{(\epsilon/\rho-1)} * K[t]^{(\rho-1)} * R[t]^{(1-\epsilon)} \\
mH[t] &= \phi[t] * H[t]^{(-\sigma H)} \\
IR[t] &= \tau * Y[t] \\
&\quad \} \\
K &= K[1:\text{Treport}] \\
H &= H[1:\text{Treport}] \\
CAI &= C
\end{aligned}$$

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引用示例:

参考文献引用范例:

[1] 朱军. 技术吸收、政府推动与中国全要素生产率提升[J]. 中国工业经济. 2017, (1): 5-24.

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