Submodel 3 with missing data

7/25/2017

```
##run n_iter=10000 iterations
time
```

```
##    user  system elapsed
## 585.844  99.849 687.098
```

```
burnin=5000
##posterior mean
(posterior.mean.v=apply(v_keep[-(1:burnin),],2, mean))
```

```
## [1]  0.5140177 -0.3118961
```

```
(posterior.mean.E=mean(E_keep[-(1:burnin)]))
```

```
## [1] 1.743147
```

```
##mean of imputed X
MI.mean.X=apply(X_keep[-(1:burnin),], 2, mean)
##difference with the true X
(diff=MI.mean.X-(SVXYR$X)[R_sim==0])
```

```
##   [1]  1.71371331 -2.09092848 -0.37156648  0.42324949 -0.37782057
##   [6]  0.42321943  0.36494321  1.53599573 -1.49359322  1.14903463
##  [11]  1.68735435  1.41657971 -0.31999414 -1.07656669  1.27756380
##  [16] -1.45097323  0.21774900  1.27005036 -0.90220029  0.49260695
##  [21] -0.21476863 -0.49412475 -0.77046736 -1.25247538  1.46271598
##  [26]  0.65220465 -0.26461131  0.19238055 -1.59146330 -2.11619162
##  [31]  2.07902819 -1.57659677  1.26222003  0.36415718  1.17912614
##  [36] -0.79648327  0.47055234 -1.47402326  0.38004011  1.36494860
##  [41]  0.48734546 -1.08134028 -2.36050381  0.67070830 -0.03558702
##  [46] -1.90305861 -0.32513227  0.10854694 -1.76873319  0.15136537
##  [51] -0.87346767  0.66044675 -1.73435506 -0.87048031  0.12672790
##  [56] -1.70501351  0.06524804 -0.97292097  1.24089920 -1.09305031
##  [61] -2.92857320  0.49767553  1.00029315  0.26364831 -0.26382629
##  [66]  1.03956717 -0.93789658 -0.26231443  0.12066243  0.51529414
##  [71]  0.75902123  0.77487238  0.49442146  0.21390964  0.43597697
##  [76]  1.57548325 -0.60020111  0.13290461  0.07577329  1.10366566
##  [81] -0.26418431  0.44419497  0.12657652  1.90647822 -1.82436185
##  [86] -0.34527492 -1.43993050 -0.70867688  0.13642114  0.46727452
##  [91] -0.97282201  1.09777941  1.70678087  0.33641926 -0.69618307
##  [96] -0.54179467 -0.90258883  1.24827286 -1.34211694  0.05431022
## [101]  0.09581299 -0.84827405 -1.48273868  1.64350214  0.17313073
## [106]  0.68498926  0.34035812 -1.29220131 -0.26791554  0.35014787
## [111]  0.38304002 -0.01319069  0.36712393 -0.23885862  0.33165128
## [116] -0.22882029 -0.63604115 -0.52409601  0.57775137 -1.16117791
## [121] -0.35759622 -0.33094551 -0.61308926  1.10477078 -0.81024948
## [126] -0.73599523  0.59678703 -0.74132766 -0.27503694  1.14323461
## [131] -0.94007380  0.11054315 -0.66455202  0.18655341 -1.55300184
## [136] -2.25154498  0.54013812  0.05984804 -0.38679962 -0.13524767
## [141] -1.71144052 -0.68716047 -0.42304427  1.73189704 -0.15989094
## [146]  0.23044488 -0.11457636 -1.53472155 -0.31762051 -1.06993839
```

```
## [151] -1.05133254 -0.09963950  0.57905510  0.51256982 -0.57976087
## [156] -1.08689291  1.84370494  0.75676095 -0.36986736  0.75576362
## [161] -0.43439038 -0.39135732  0.10414881 -1.24648091 -0.39828796
## [166]  0.77975397  0.56143050  0.93249378  0.44055320  0.51002984
## [171] -0.54220021 -0.58663538 -0.91958170 -0.69411294 -0.19690864
## [176] -0.54947605 -1.52008700  1.26308291  1.12722605 -1.38492224
## [181]  0.37811882 -0.14214216 -0.59545678 -0.33484357  0.80885487
## [186]  1.22862747 -0.16811820 -0.22726011  0.38771133  0.39799035
## [191] -0.10051393 -0.18495968  0.27883591  0.99878905  0.48689055
## [196]  0.94172889  1.21297784  0.42960993 -1.02324757  2.29177743
## [201]  0.80298011  1.39532738 -0.83167211 -1.10366386  0.50680676
## [206] -0.59422546  1.74688745  1.57704396 -0.84172552 -0.50014308
## [211] -0.82578106  0.82816250  0.42004337  0.46638149 -0.29726698
## [216]  0.21329244 -1.43977560  0.82946382 -1.24997360 -0.72722436
## [221]  0.72790372 -0.53598299 -2.32920377 -2.13843671  0.04156542
## [226] -0.39443729 -0.16374385 -0.45773112  1.35393688  0.81265580
## [231]  1.39915881  0.67439147 -1.04617706  2.37687912  0.54082212
## [236] -2.31268921  0.32592398 -0.40363349  0.42781547  1.77719986
## [241] -0.39831540  0.94439828  0.88531918  1.62292378  0.82557771
## [246] -0.63748333 -0.62041446 -0.49853507  0.43538499  0.44488488
## [251]  0.94101205  1.05982498  0.74462549  0.32586116  0.59748818
## [256] -0.57837861  0.65750565  0.18141684 -0.12898125  1.01844258
## [261] -0.21663085  1.90461909  0.77149628  1.17766109  0.62236664
## [266]  0.03695073  1.57672603  1.02421509  0.37040151  1.05478225
## [271] -1.89850300  0.07576217 -0.18908817  0.28837174  0.71380415
## [276] -1.26592591 -0.03932630  0.92585444 -0.49577782 -1.16817083
## [281]  0.94836631 -2.06956362 -0.05578270 -0.89521741 -0.28959350
## [286] -0.85106961  0.58084104  1.01418749 -0.97017087 -0.72005712
## [291]  1.10340011 -0.21357659 -1.64609502 -0.11121876  0.67082137
## [296] -0.03379724 -0.14247468 -0.29734576 -0.81196091 -0.03326713
## [301] -0.40174516 -0.14859075 -0.02621940  0.29578742  0.46739021
## [306] -2.02297453 -0.16165466  0.36846395 -0.98868156 -0.54689167
## [311]  0.37164262 -0.13491487 -0.96128591 -1.41906422  1.67705017
## [316] -1.03085841 -0.04453042  0.86009905  0.08358321 -0.96261957
## [321] -0.41618425  0.47694014 -0.90273376  0.17376080  2.00576139
## [326] -0.02683673  0.00123246  1.67277499  1.67925444  1.50485173
## [331] -0.66253199  0.60830117 -0.30141918 -1.41119710 -0.37846245
## [336]  0.13353969  1.64043866  0.79801565  0.34416093  0.84442269
## [341]  1.11922314 -0.10196242 -1.23023007  0.53245084 -1.40099527
## [346]  0.81891784  1.29963763 -1.18759760 -1.66781471  1.13270459
## [351]  0.27612353 -1.62498000  0.69920246  1.52989694 -1.41311560
## [356] -1.00280792 -0.38002443  1.57035170  0.05947333 -1.26456223
## [361]  0.24088511  1.38311088 -0.57590078 -0.57225652 -0.82810037
## [366]  0.28736489  0.42201432 -0.31128214  2.34744943 -0.02561442
## [371] -0.52349824 -0.81486073 -0.69411482 -1.20472521 -1.52490179
## [376] -1.83488885  1.26569564 -2.18158664 -0.39718530  0.93703806
## [381]  0.41506587  0.84009268  0.44845080  0.30935513 -1.82641387
## [386] -0.43169829 -0.81720987  0.66486005 -0.14951392  0.94459722
## [391]  1.92864280 -0.71663112  0.33531201 -0.15464117  0.26813377
## [396]  0.40482029  0.27587774  0.05385683  0.27385612  0.88547367
## [401]  0.74300476  1.06304752  0.78133750 -0.07122358 -0.55339128
## [406]  1.90058242  0.47403945 -1.37913791 -0.48018570  0.83273529
## [411] -0.43869176  1.56504275  1.27206929 -0.32080593 -0.21466991
## [416]  0.26697634  0.44274923 -0.99135048  1.06993689 -1.71729352
```

```
## [421]  0.39613202 -0.12514521  0.19306291  0.06201952  0.09795599
## [426]  0.71982395 -0.91437963  0.17420563  0.66862490  1.65655484
## [431] -2.46323411  1.00471889  0.03792279 -1.43676952 -1.55728451
## [436]  0.51683703  1.44182928 -0.53137935 -0.30518927 -0.09092179
## [441] -0.93608633  1.14262115 -0.05010853 -0.22474242  0.85444165
## [446]  0.97954095  1.05683123  0.72998221 -1.06218019  1.63781668
## [451] -1.65838774 -1.55615809  1.22373606 -0.16250846  0.17937665
## [456]  0.52561236  0.71310506  1.93795181 -0.30133119  1.16069189
## [461]  0.11848671 -0.07727533 -0.91906354 -1.21431389
```

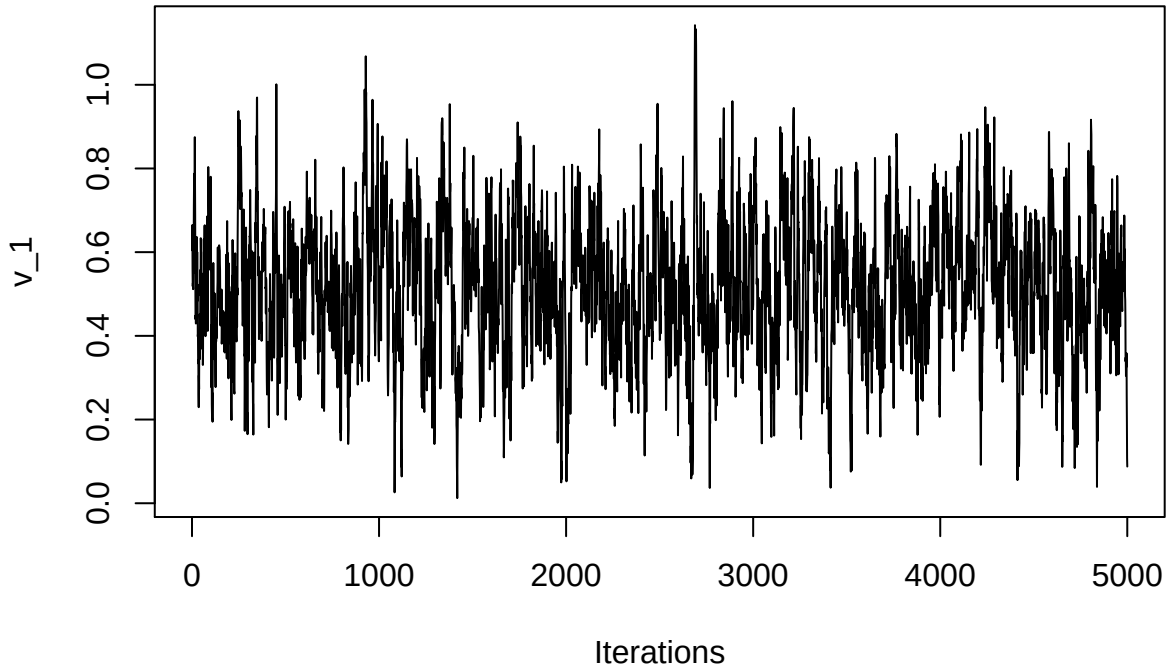
```
max(diff)
```

```
## [1] 2.376879
```

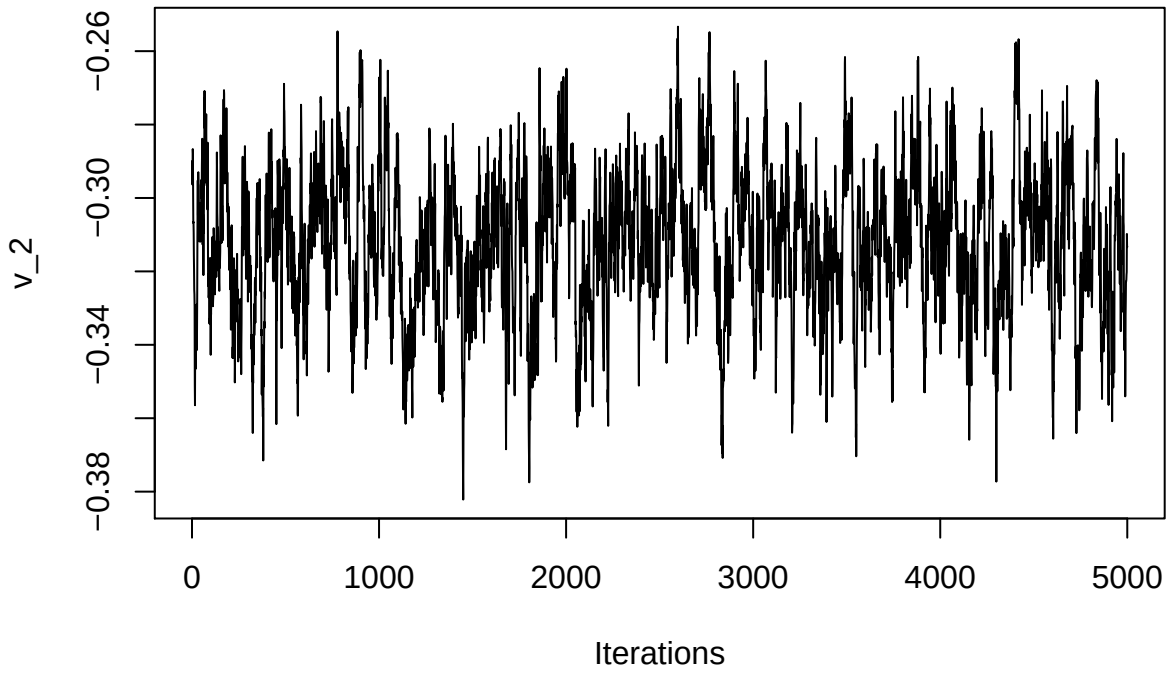
```
min(diff)
```

```
## [1] -2.928573
```

```
##traceplots after burn-in
traceplot(x=as.mcmc(v_keep[-(1:burnin),1]), ylab="v_1")
```




```
traceplot(x=as.mcmc(v_keep[-(1:burnin),2]), ylab="v_2")
```




```
traceplot(x=as.mcmc(E_keep[-(1:burnin)]), ylab="E")
```