BOOTSTRAP RESULTS

CLMENT CARRIER

Bootstrap

```
library(knitr)
library(glmnet)
library(MASS)
library(xtable)
require(ggplot2)
```

```
source('../../laurent/lasso.R')
source('../../Functions/RW.R')
source('../../Functions/fun.R')
source('../../Functions/lahiri.R')
source('../../Functions/lahiriboot.R')
source('../../Functions/lahiriboot2.R')
source('../../Functions/AR1.R')
source('../../Functions/edfAR1.R')
source('../../Functions/edfiid4.R')
source('../../Functions/edfiid1.R')
source('../../Functions/iid1.R')
source('../../Functions/iid5.R')
source('../../Functions/iid10.R')
```

We simulate the data by choosing, the sparsity of the true parameters (number of non zero coefficient), the number of covariates, the number of observations and the nature of the noise (here we choose iid N(0,1)).

```
## Error in ystar[, i] <- prediction + estar[, i]:  l'argument de remplacement
est de longueur nulle
## Error in matrix(c(b1[1], b2[1], b3[1], b4[1])):  objet 'b3' introuvable
## Error in matrix(c(b1[2], b2[2], b3[2], b4[2])):  objet 'b3' introuvable
## Error in matrix(c(b1[3], b2[3], b3[3], b4[3])):  objet 'b3' introuvable
## Error in matrix(c(b1[4], b2[4], b3[4], b4[4])):  objet 'b3' introuvable
## Error in matrix(c(b1[5], b2[5], b3[5], b4[5])):  objet 'b3' introuvable
## Error in matrix(c(b1[6], b2[6], b3[6], b4[6])):  objet 'b3' introuvable
## Error in matrix(c(b1[7], b2[7], b3[7], b4[7])):  objet 'b3' introuvable
## Error in matrix(c(b1[8], b2[8], b3[8], b4[8])):  objet 'b3' introuvable
```

```
## Error in data.frame(Model = 1:4, `(p,n)` = c("(10,100)", "(50,100)", "(120,100)",
:  objet 'sizear' introuvable
## Error in xtable(dataframe, digits = 3, caption = "Simulation Result", :  objet
'dataframe' introuvable
```

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```
## Error in UseMethod("align<-"):  pas de mthode pour 'align<-' applicable pour
un objet de classe "function"
## Error in nrow(dataframe):  objet 'dataframe' introuvable
```

In the following one, we increase the number of nonzero parameter.

TABLE 1. Simulation Result

		iid 5								iid 10							
Model	X.p.n.	lenght	cov1	cov2	cov3	cov4	fn	biais1	biais2	lenght2	cov1.1	cov2.1	cov3.1	cov4.1	fn2	biais1.1	biais2.1
1	(10,100)	0.394	0.940	0.908	1.000	1.000	0.000	0.014	-0.030	0.349	0.970	0.881	1.000	1.000	0.000	0.046	-0.000
2	(50,100)	0.457	0.894	0.444	1.000	0.400	0.000	0.238	-0.023	1.040	0.135	0.060	1.000	0.100	3343.000	0.292	0.609
3	(120,100)	0.937	0.775	0.189	1.000	0.200	101.000	0.262	0.105	0.155	0.926	0.001	1.000	0.000	4500.000	1.051	-0.039
4	(150,100)	0.799	0.475	0.070	1.000	0.000	670.000	0.428	0.204	0.138	0.927	0.000	1.000	0.000	4500.000	1.047	-0.034

TABLE 2. Simulation Result

iid5		post		nonpost	
Model	X.pn.	coverage	lenght	coverage.1	lenght.1
1	(10,100)	0.639	0.271	0.556	0.397
2	(50,100)	0.848	0.441	0.248	0.320
3	(120,100)	0.653	0.389	0.000	0.445
4	(200,100)	0.821	0.342	0.001	0.388

TABLE 3. Simulation Result

		AR1 (0.7)		AR1 (1)	
Model	X.p.n.	coverage	lenght	coverage.1	lenght.1
1	(10,100)	0.402	0.158	0.672	0.264
2	(50,100)	0.541	0.212	0.362	0.142
3	(120,100)	0.568	0.223	0.525	0.206
4	(200,100)	0.513	0.201	0.741	0.540

Then we compute the method used by lahiri (On the residual empirical process based on the ALASSO in high dimensions and its functional oracle property). In this paper, Lahiri uses the ALASSO estimator and shows that the empirical distribution of estimated residual behaves approximately as a gaussian noise. He then deduces a confidence band of prediction of the variable of interest (y) based on the empirical distribution of the residual.

TABLE 4. Simulation Result

		iid1		iid5		AR	
Model	X.pn.	coverage	lenght	coverage.1	lenght.1	coverage.2	lenght.2
1	(10,100)	0.907	3.612	0.915	3.692	0.934	3.798
2	(50,100)	0.957	3.875	0.941	3.789	0.926	3.732
3	(120,100)	0.920	3.666	0.976	4.097	0.943	3.758
4	(200,100)	0.931	3.774	0.952	3.902	0.923	3.887