



```

name: <unnamed>
log: /home/olvar/teaching/ms_thesis/2012/cecilie/sim_modell/cj_simdata.smcl
log type: smcl
opened on: 6 Dec 2012, 11:36:23

```

```

1 .
2 . use "../data/nphour.dta", clear
   (NordPool Hourly System Dates)
3 .
4 . tab year idx

```

Year	Sample index (old NO1)		Total
	0	1	
2002	8,736	0	8,736
2003	3,864	4,872	8,736
2004	0	8,904	8,904
2005	0	8,736	8,736
2006	0	8,736	8,736
2007	0	8,736	8,736
2008	0	8,736	8,736
2009	0	8,904	8,904
2010	8,568	168	8,736
2011	8,736	0	8,736
2012	7,464	0	7,464
Total	37,368	57,792	95,160

```

5 . tab year idz

```

Year	Sample index (NO1 pre NorNed)		Total
	0	1	
2002	8,736	0	8,736
2003	8,736	0	8,736
2004	2,520	6,384	8,904
2005	0	8,736	8,736
2006	0	8,736	8,736
2007	0	8,736	8,736
2008	6,216	2,520	8,736
2009	8,904	0	8,904
2010	8,736	0	8,736
2011	8,736	0	8,736
2012	7,464	0	7,464
Total	60,048	35,112	95,160

```

6 .
7 . drop if year>2011
   (7464 observations deleted)
8 . drop if year<2004
   (17472 observations deleted)
9 . drop if week>52
   (336 observations deleted)
10.
11.

```

```
12. di _newline

13.
14.
15. gen t = _n

16. sort t

17. tsset t
    time variable: t, 1 to 69888
    delta: 1 unit

18. ipolate temp_osl t, generate(tempx_osl)
19. ipolate temp_cph t, generate(tempx_cph)
20. drop t
21. sort time

22. tsset time, clocktime delta(1 hour)
    time variable: time, 29dec2003 00:00:00.000 to
    01jan2012 23:00:00.000, but with gaps
    delta: 1 hour

23.
24. label var tempx_osl "temperature in Oslo"
25. label var tempx_cph "temperature in Copenhagen"

26.
27.
28. gen heatdeg_osl = 0

29. replace heatdeg_osl = (17-tempx_osl) if tempx_osl < 17
    (62681 real changes made)

30. label var heatdeg_osl "Heating degree Oslo when tempx_osl<17"

31.
32. gen lnheatdeg_osl = 0

33. replace lnheatdeg_osl = ln(heatdeg_osl) if heatdeg_osl > 1
    (60637 real changes made)

34. label var lnheatdeg_osl "Log of heatingdegree in Oslo"

35.
36. gen lnheatdeg_osl_2 = (lnheatdeg_osl)*(lnheatdeg_osl)

37. label var lnheatdeg_osl_2 "lnheatdeg_osl squared"

38.
39. gen rel_reservoir_nol = (1/nol_short)

40. label var rel_reservoir_nol "Relative reservoir filling"

41.
42. gen lnrel_reservoir_nol = ln(rel_reservoir_nol)

43. list date year week day hour idz rel_reservoir_nol if lnrel_reservoir_nol==. & id
    > z
```

```

44. tab year if lnrel_reservoir_nol==.
    no observations
45. label var lnrel_reservoir_nol "Log of relativ reservoir in NO1"
46.
47. gen lnprod_nol = ln(prod_nol)
48. list date year week day hour idz prod_nol if lnprod_nol==.
49. label var lnprod_nol "log of prod_nol"
50.
51. gen lnprice_nol = ln(price_nol)
    (4 missing values generated)
52. list date year week day hour idz price_nol if lnprice_nol==.

```

	date	year	week	day	hour	idz	price-ol
48700.	26.07.2009	2009	30	7	4	0	0.00
48701.	26.07.2009	2009	30	7	5	0	0.00
48702.	26.07.2009	2009	30	7	6	0	0.00
48703.	26.07.2009	2009	30	7	7	0	0.00

```

53. //if price equal to zero in some hours --> fix it
54. replace lnprice_nol = ln(0.01) if price_nol<0.01
    (4 real changes made)

```

```

55. label var lnprice_nol "log of price_nol"

```

```

56.
57. gen lnpc coal = ln(pcoal)
58. label var lnpc coal "log of pcoal"
59. gen lnpoil = ln(poil)
60. label var lnpoil "log of poil"

```

```

61.
62. gen lnco2_p = 0
63. replace lnco2_p = ln(co2_p) if co2_p>1
    (60216 real changes made)

```

```

64. sum lnco2_p

```

Variable	Obs	Mean	Std. Dev.	Min	Max
lnco2_p	69888	2.50863	1.040534	0	3.543854

```

65. label var lnco2_p "log of co2_p"

```

```

66.
67. gen lncons_nol = ln(cons_nol)
68. list date year week day hour idz cons_nol if lncons_nol==.
69. label var lncons_nol "log of cons_nol"
70.
71. gen lndlength_osl = ln(dlength_osl)

```

```

72. label var lndlength_osl "log of daylength in Oslo"
73.
74. gen lngen_dkl_wind = 0
75. list date year week day hour idz gen_dkl_wind if lngen_dkl_wind==. & idz
76. //if generation of wind is equal to zero in some hours --> fix it
77. replace lngen_dkl_wind = ln(0.01) if gen_dkl_wind<0.01
   (2 real changes made)
78. replace lngen_dkl_wind = ln(gen_dkl_wind) if gen_dkl_wind>=0.01
   (69876 real changes made)
79. label var lngen_dkl_wind "Log of gen_dkl_wind"
80.
81. gen lnprice_eexh = ln(price_eex)
   (178 missing values generated)
82. //list date year week day hour idz price_eex if lnprice_eexh==.
83. //if price equal to zero in some hours --> fix it
84. replace lnprice_eexh = ln(0.01) if price_eex<0.01
   (178 real changes made)
85. label var lnprice_eexh "Log of price_eex"
86.
87. gen lnprice_eexd = ln(price_eexd)
   (48 missing values generated)
88. list date year week day hour idz price_eexd if lnprice_eexd==.

```

	date	year	week	day	hour	idz	price_~d
50377.	04.10.2009	2009	40	7	1	0	-11.59
50378.	04.10.2009	2009	40	7	2	0	-11.59
50379.	04.10.2009	2009	40	7	3	0	-11.59
50380.	04.10.2009	2009	40	7	4	0	-11.59
50381.	04.10.2009	2009	40	7	5	0	-11.59
50382.	04.10.2009	2009	40	7	6	0	-11.59
50383.	04.10.2009	2009	40	7	7	0	-11.59
50384.	04.10.2009	2009	40	7	8	0	-11.59
50385.	04.10.2009	2009	40	7	9	0	-11.59
50386.	04.10.2009	2009	40	7	10	0	-11.59
50387.	04.10.2009	2009	40	7	11	0	-11.59
50388.	04.10.2009	2009	40	7	12	0	-11.59
50389.	04.10.2009	2009	40	7	13	0	-11.59
50390.	04.10.2009	2009	40	7	14	0	-11.59
50391.	04.10.2009	2009	40	7	15	0	-11.59
50392.	04.10.2009	2009	40	7	16	0	-11.59
50393.	04.10.2009	2009	40	7	17	0	-11.59
50394.	04.10.2009	2009	40	7	18	0	-11.59
50395.	04.10.2009	2009	40	7	19	0	-11.59
50396.	04.10.2009	2009	40	7	20	0	-11.59
50397.	04.10.2009	2009	40	7	21	0	-11.59
50398.	04.10.2009	2009	40	7	22	0	-11.59
50399.	04.10.2009	2009	40	7	23	0	-11.59
50400.	04.10.2009	2009	40	7	24	0	-11.59
52369.	26.12.2009	2009	52	6	1	0	-35.57
52370.	26.12.2009	2009	52	6	2	0	-35.57
52371.	26.12.2009	2009	52	6	3	0	-35.57
52372.	26.12.2009	2009	52	6	4	0	-35.57
52373.	26.12.2009	2009	52	6	5	0	-35.57
52374.	26.12.2009	2009	52	6	6	0	-35.57
52375.	26.12.2009	2009	52	6	7	0	-35.57
52376.	26.12.2009	2009	52	6	8	0	-35.57
52377.	26.12.2009	2009	52	6	9	0	-35.57
52378.	26.12.2009	2009	52	6	10	0	-35.57
52379.	26.12.2009	2009	52	6	11	0	-35.57

52380.	26.12.2009	2009	52	6	12	0	-35.57
52381.	26.12.2009	2009	52	6	13	0	-35.57
52382.	26.12.2009	2009	52	6	14	0	-35.57
52383.	26.12.2009	2009	52	6	15	0	-35.57
52384.	26.12.2009	2009	52	6	16	0	-35.57
52385.	26.12.2009	2009	52	6	17	0	-35.57
52386.	26.12.2009	2009	52	6	18	0	-35.57
52387.	26.12.2009	2009	52	6	19	0	-35.57
52388.	26.12.2009	2009	52	6	20	0	-35.57
52389.	26.12.2009	2009	52	6	21	0	-35.57
52390.	26.12.2009	2009	52	6	22	0	-35.57
52391.	26.12.2009	2009	52	6	23	0	-35.57
52392.	26.12.2009	2009	52	6	24	0	-35.57

```

89. //if price equal to zero in some hours --> fix it
90. replace lnprice_eexd = ln(0.01) if price_eexd<0.01
    (48 real changes made)

91. label var lnprice_eexd "Log of price_eexd"

92.
93. gen lnipi = ln(ipi)

94. label var lnipi "Log of Industrial Prod Index"

95.
96. gen heatdeg_cph = 0

97. replace heatdeg_cph = (17-tempx_cph) if tempx_cph < 17
    (57935 real changes made)

98. label var heatdeg_cph "Heating degree Copenhagen when tempx_cph<17"

99.
100 gen lnheatdeg_cph = 0

101 replace lnheatdeg_cph = ln(heatdeg_cph) if heatdeg_cph > 1
    (54752 real changes made)

102 label var lnheatdeg_cph "Log of heating degree in CPH"

103
104 gen lnheatdeg_cph_2 = (lnheatdeg_cph)*(lnheatdeg_cph)

105 label var lnheatdeg_cph_2 "lnheatdeg_cph squared"

106
107 gen gen_dk1_thermal = (gen_dk1_cent + gen_dk1_decent)

108 label var gen_dk1_thermal "Generation of thermal power DK1 (both central and dece
    > ntral)"

109
110 gen lngen_dk1_thermal = ln(gen_dk1_thermal)

111 list date year week day hour idz gen_dk1_thermal if lngen_dk1_thermal==. & idz

112 label var lngen_dk1_thermal "Log of gen_dk1_thermal"

113 gen llngen_dk1_thermal = l.lngen_dk1_thermal
    (3 missing values generated)

```

```

114
115 gen lnprice_dk1 = ln(price_dk1)
    (235 missing values generated)

116 // list date year week day hour idz price_dk1 if lnprice_dk1==.
117 // if price equal to zero in some hours --> fix it
118 replace lnprice_dk1 = ln(0.01) if price_dk1<0.01
    (235 real changes made)

119 label var lnprice_dk1 "Log of price_dk1"

120
121 gen lncons_dk1 = ln(cons_dk1)

122 list date year week day hour idz cons_dk1 if lncons_dk1==.

123 label var lncons_dk1 "Log of consumption in DK1"

124
125 gen lndlength_cph = ln(dlength_cph)

126 list date year week day hour idz dlength_cph if dlength_cph==.

127 label var lndlength_cph "Log of daylength in CPH"

128
129 gen dksumm = (week >= 27) & (week <= 34)

130 label var dksumm "Summer vacation time in DK1"

131
132 di _newline

```

```

133 sum trend poil pcoal co2_p ipi ///
> nol_cap exp_cap_dk1_nol exp_cap_nol_dk1 ///
> exp_vol_dk1_de exp_vol_dk1_dk2 exp_vol_dk1_se ///
> exp_vol_rs_rm exp_vol_rs_se if idz

```

Variable	Obs	Mean	Std. Dev.	Min	Max
trend	34944	1567.255	422.0948	834	2296
poil	34944	47.47294	10.1001	26.84129	68.29782
pcoal	34944	47.58995	10.73894	33.99925	93.53217
co2_p	34944	17.17654	9.44626	0	34.6
ipi	34944	104.458	10.90154	68.6	129.1
nol_cap	34944	55630	0	55630	55630
exp_cap_d~ol	34944	672.8309	254.3724	-643	950
exp_ca~l_dk1	34944	721.8352	260.787	-257	1000
exp_vol_d~de	34944	504.6788	708.1257	-1197	2084
exp_vol_dk~2	0				
exp_vol~l_se	34944	-91.44873	342.5772	-810	747
exp_vol_rs~m	34944	-2.565791	155.1355	-605	598
exp_vol_rs~e	34944	224.2869	1174.767	-2620	2356

```

134
135 list date year week day hour exp_vol_dk1_se if exp_vol_dk1_se>1000

```

	date	year	week	day	hour	exp_vo..
52273.	22.12.2009	2009	52	2	1	15500.0

```
136 list date year week day hour exp_vol_dk1_se if year==2009 & week==52 & day==2 & h
> our<4
```

	date	year	week	day	hour	exp_vol..
52273.	22.12.2009	2009	52	2	1	15500.0
52274.	22.12.2009	2009	52	2	2	359.0
52275.	22.12.2009	2009	52	2	3	359.0

```
137 replace exp_vol_dk1_se=359 if year==2009 & week==52 & day==2 & hour==1
(1 real change made)
```

```
138
139 tab year co2_d
```

Year	Dummy for CO2 market		Total
	0	1	
2004	8,736	0	8,736
2005	936	7,800	8,736
2006	0	8,736	8,736
2007	0	8,736	8,736
2008	0	8,736	8,736
2009	0	8,736	8,736
2010	0	8,736	8,736
2011	0	8,736	8,736
Total	9,672	60,216	69,888

```
140
141 gen exp_dk1 = exp_vol_dk1_de + exp_vol_dk1_se
142 gen exp_nol = exp_vol_rs_rm + exp_vol_rs_se
143
144 keep year week day hour ///
>   tsin tcos dsumm dksumm dwkday lndlength_osl lnipi ///
>   lnheatdeg_osl lnheatdeg_osl_2 lnheatdeg_cph lnheatdeg_cph_2 ///
>   gen_dk1_wind nol_inflow nol_normcont exp_dk1 exp_nol ///
>   tempx_osl tempx_cph
145 order year week day hour ///
>   tsin tcos dsumm dksumm dwkday lndlength_osl lnipi ///
>   lnheatdeg_osl lnheatdeg_osl_2 lnheatdeg_cph lnheatdeg_cph_2 ///
>   gen_dk1_wind nol_inflow nol_normcont exp_dk1 exp_nol ///
>   tempx_osl tempx_cph
146
147
148 des, n
```

Contains data from **../data/nphour.dta**

```
obs:      69,888      NordPool Hourly System Dates
vars:     22          16 Nov 2012 00:35
size:    5,730,816
```

variable name	storage type	display format	value label	variable label
1. year	int	%6.0f		Year
2. week	int	%4.0f		Week
3. day	int	%4.0f		Day
4. hour	int	%4.0f		Hour
5. tsin	float	%5.3f		Trigonometric cycle (sine)
6. tcos	float	%5.3f		Trigonometric cycle (cosine)
7. dsumm	byte	%4.0f		Dummy for summer vacation
8. dksumm	float	%9.0g		Summer vacation time in DK1
9. dwkday	byte	%4.0f		Dummy for workingdays
10. lndlen~1	float	%9.0g		log of daylength in Oslo
11. lnipi	float	%9.0g		Log of Industrial Prod Index
12. lnheat~1	float	%9.0g		Log of heatingdegree in Oslo
13. lnhe~1_2	float	%9.0g		lnheatdeg_osl squared
14. lnheat~h	float	%9.0g		Log of heating degree in CPH
15. lnhe~h_2	float	%9.0g		lnheatdeg_cph squared

```

16. gen_dk~d float %4.2f          Generation of wind
17. nol_in~w float %8.3f         NO1 inflow (GWh)
18. nol_no~t float %8.2f         NO1 normal res (smooth)
19. exp_dk1 float %9.0g
20. exp_nol float %9.0g
21. tempx~l double %10.0g        temperature in Oslo
22. tempx~h double %10.0g        temperature in Copenhagen

```

Sorted by:  
**Note: dataset has changed since last saved**

```

149
150
151 //
152 // pull out each year - separate data files
153 //
154 forvalues y = 2004/2011 {
155     di _newline
156     di "*****"
157     di "*"      Year: "`y'"
158     di "*****"
159     di _newline
160
161     preserve
162     keep if year=="`y'"
163     sort year week day hour
164     sum nol_inflow gen_dk1_wind tempx_osl tempx_cph
165
166     di _newline
167
168     saveold cj_`y', replace
169     !st9 cj_`y'.dta cj_`y'.mat -y
170
171     restore
172     di _newline
173
174 }

```

```

*****
*      Year: 2004
*****

```

(61152 observations deleted)

Variable	Obs	Mean	Std. Dev.	Min	Max
nol_inflow	8736	232.7055	168.5649	23.43729	966.6337
gen_dk1_wind	8736	550.265	502.5582	1.2	2187.4
tempx_osl	8736	5.169805	9.379179	-17	29.5
tempx_cph	8736	8.473556	6.594903	-6.5	27

file cj\_2004.dta saved

```

*****
*      Year: 2005
*****

```

(61152 observations deleted)

Variable	Obs	Mean	Std. Dev.	Min	Max
nol_inflow	8736	263.958	200.6385	17.87915	819.6537
gen_dk1_wind	8736	568.0345	507.515	.3	2230.3
tempx_osl	8736	6.042277	8.354843	-23	30
tempx_cph	8736	9.229078	7.107757	-13	29

file cj\_2005.dta saved



\*\*\*\*\*  
 \* Year: 2006  
 \*\*\*\*\*

(61152 observations deleted)

Variable	Obs	Mean	Std. Dev.	Min	Max
nol_inflow	8736	223.0065	147.2484	13.40213	642.7469
gen_dkl_wind	8736	527.872	485.681	0	2195.9
tempx_osl	8736	6.232076	9.454596	-20	28.5
tempx_cph	8736	9.860045	7.812878	-8.5	28.33333

file cj\_2006.dta saved

\*\*\*\*\*  
 \* Year: 2007  
 \*\*\*\*\*

(61152 observations deleted)

Variable	Obs	Mean	Std. Dev.	Min	Max
nol_inflow	8736	278.5232	207.1848	28.49128	836.2436
gen_dkl_wind	8736	636.1943	565.4931	.2	2207.7
tempx_osl	8736	5.861445	8.494848	-20	29
tempx_cph	8736	9.938082	6.010151	-7	28.66667

file cj\_2007.dta saved

\*\*\*\*\*  
 \* Year: 2008  
 \*\*\*\*\*

(61152 observations deleted)

Variable	Obs	Mean	Std. Dev.	Min	Max
nol_inflow	8736	269.5526	211.8724	26.9797	944.7238
gen_dkl_wind	8736	594.1706	555.3739	.1	3602.2
tempx_osl	8736	6.306414	7.866264	-16	30
tempx_cph	8736	10.10368	6.228775	-5	28

file cj\_2008.dta saved

\*\*\*\*\*  
 \* Year: 2009  
 \*\*\*\*\*

(61152 observations deleted)

Variable	Obs	Mean	Std. Dev.	Min	Max
nol_inflow	8736	254.6264	166.9918	34.57185	662.1877
gen_dkl_wind	8736	582.8314	512.5028	.1	2876.2
tempx_osl	8736	5.200485	9.102497	-22	30
tempx_cph	8736	9.647293	7.000629	-9	28

file cj\_2009.dta saved

```
*****
*           Year: 2010
*****
```

(61152 observations deleted)

Variable	Obs	Mean	Std. Dev.	Min	Max
nol_inflow	8736	208.2717	174.2668	24.67913	856.628
gen_dkl_wind	8736	675.2339	565.1197	.4	2541.8
tempx_osl	8736	2.943805	10.98166	-25.5	24.5
tempx_cph	8736	8.011733	8.101502	-12.5	28.66667

file cj\_2010.dta saved

```
*****
*           Year: 2011
*****
```

(61152 observations deleted)

Variable	Obs	Mean	Std. Dev.	Min	Max
nol_inflow	8736	304.2855	189.2812	17.02757	900.6835
gen_dkl_wind	8736	813.7473	657.0749	.8	2661.3
tempx_osl	8736	5.834087	9.00469	-25.5	25.5
tempx_cph	8736	9.606447	6.747018	-7.333333	25.66667

file cj\_2011.dta saved

```
160
161
162 log close
      name: <unnamed>
      log: /home/olvar/teaching/ms_thesis/2012/cecilie/sim_modell/cj_simdata.smcl
      log type: smcl
      closed on: 6 Dec 2012, 11:36:26
```

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