

# 1 Integration of an Emission Trading Scheme

## 1.1 Scenario 1 : "price signal"

We overwrite the equation 5.15 of the price block in order to add the ETS cost (energy ce2 used in activity s).

We only consider energy goods ce2 (and not ce) since intermediary consumption of electricity does not induce dioxyde emissions.

**Name var 1**

$$PE_{ce2,s} E_{ce2,s} = PED_{ce2} ED_{ce2,s} + PEM_{ce2} EM_{ce2,s} + TCO_{ce2,s}^{VAL} + ETS_{ce2,s}^{VAL,SEC} \quad (1.1)$$

**Name var 2**

$$\begin{aligned} \text{delta}_{ce2,s}^{ETS,SEC} = & \left( \text{cover}_s^{\text{rateETS}} EMS_{ce2,s}^{SEC} \right) \\ & - \left( 1 - \text{effet}^{ETS,classique} \right) . Q_s^{ETS,free} \frac{EMS_{ce2,s}^{SEC}}{EMS_s^{SEC}} \end{aligned} \quad (1.2)$$

**Name var 3**

$$Q_s^{ETS,free} = \text{cover}_s^{\text{ratefree}} \text{cover}_s^{\text{rateETS}} EMS_s^{SEC} \quad (1.3)$$

**Name var 4**

$$P^{ETS,nominal} = \left( \frac{P^{ETS}}{1000000} \right) . PGDP \quad (1.4)$$

**Name var 5**

$$ETS_{ce2,s}^{VAL,SEC} = \left( P^{ETS,nominal} . \text{delta}_{ce2,s}^{ETS,SEC} \right) \quad (1.5)$$

**Name var 6**

$$ETS_s^{VAL,SEC} = \sum_{ce2} ETS_{ce2,s}^{VAL,SEC} \quad (1.6)$$

Name var 7

$$ETS^{VAL,TOT} = \sum_s ETS_s^{VAL,SEC} \quad (1.7)$$

Name var 8

$$Rec^{ETS,VAL} = \sum_{sets} ETS_s^{VAL,SEC} \quad (1.8)$$

Name var 9

$$Rec^{NETS,VAL} = \sum_{nets} ETS_s^{VAL,SEC} \quad (1.9)$$

## 2 Glossary

$elta_{ce2,s}^{ETS,SEC}$	Name var 2
$ETS_{ce2,s}^{VAL,SEC}$	Name var 5
$ETS_s^{VAL,SEC}$	Name var 6
$ETS^{VAL,TOT}$	Name var 7
$PETS,nominal$	Name var 4
$PE_{ce2,s}$	Name var 1
$Q_s^{ETS,free}$	Name var 3
$Rec^{ETS,VAL}$	Name var 8
$Rec^{NETS,VAL}$	Name var 9