

## **Abstract**

Most cap-and-trade systems allocate permits for free. However, they differ dependent on whether closing plants and new entrants get free permits. Free permits do not have any impact on the static problem of a plant but they affect the dynamics. I use a dynamic model with heterogeneous firms to quantify the effect on exit/entry, investment and welfare of different allocation rules. I adapt the model to the electricity sector, add a cap-and-trade regulation and equilibrium conditions for the pollution market. I calibrate the model with data from the power plants participating in the US SO<sub>2</sub> program and quantify the effects of two allocation schemes: The US SO<sub>2</sub> case, in which closing plants keep their permits and new entrants do not get any of them; The EU-ETS case, in which plants lose permits upon exit and new entrants get allowances.

If the US switched to the EU-ETS allocation scheme, the price of output would be 1:5% lower, the price of permits 7:6% higher, and there could be a distribution of dirtier and less productive plants. Consumers are better off if the US switched to the EU-ETS system (higher output), while producers are better off with the US SO<sub>2</sub> system (higher profits).