ENVIRONMENTAL ECONOMICS IN ACTION 2.3 Trading Pollution Permits: What's the Evidence?

Up until the introduction of the European Union's carbon cap-and-trade scheme, the USA had the most extensive experience of using tradable permit markets to control pollution. The initial moves towards use of TPPs came in the 1970s, due to conflicts between achieving national targets for clean air and allowing economic growth in industrialized states that were in violation of these national targets. Policy initiatives such as offsets, netting, and banking were brought together under the Emissions Trading Program in 1986. This allowed for limited permit trading in 'emission credits' for seven pollutants in 247 control regions across the USA.

In 1992, amendments to the Clean Air Act paved the way for a nationwide cap-and-trade system for sulphur dioxide emissions from power stations. The aim was to reduce total emissions to 50% of existing levels. The market began in 1995. Some 110 of the largest power stations were allocated permits based on historical emissions, and then allowed to trade. Even though SO_2 is a non-uniformly mixed pollutant, permits traded at a one-for-one rate. In 2000, 800 additional power stations were to be brought into the scheme.

Evidence suggests that the pollution permit markets have performed well. First, total emissions fell by more than the target level in phase 1, as firms banked permits for future use. The market in permits grew steadily, and permits prices fell from an initial high of around $1,000/tonne to around $100/tonne. The increasing volume of trading, which reduced transaction costs, and falling abatement costs caused this price fall. This last factor was due to suppliers of abatement equipment cutting their prices, since firms now had an alternative (buying permits), and by reductions in the price of low-sulphur coal due to deregulation.

Overall, the cost savings of the sulphur trading programme have been estimated at up to 50% of what the costs would have been if regulation had been employed instead. This implies a saving to the US economy of nearly $1 billion per year (Carlson et al., 2000). Finally, the total costs of the scheme seem to be less than the benefits, which include the economic value of avoided damage to human health, ecosystems, and recreational activities.

Another interesting piece of analysis is Petrick and Wagner (2014), who use data on 1658 German manufacturing installations over the period 2005–2010. They estimate the effects of the EU ETS on emissions, output, jobs and competitiveness. For emissions, they find that firms in the scheme 'substantially reduced their emissions' during phase 2 relative to a matched sample of firms outside the scheme: the difference in emissions is around 25%. This is mainly due to a fall in CO_2 emissions per unit of output (that is, by boosting energy efficiency), rather than cutting electricity consumption. There was no evidence that being in the scheme reduced employment, turnover or exports—it thus does not seemed to have harmed the competitiveness of German manufacturing firms.