

Microeconomics and global warming assignment

[Economics](#), [Microeconomics](#)



The fact that there has been such a detrimental effect on the planet from the extensive use of carbon dioxide emitting fossil fuels and ozone depleting chemicals shows that the private market is not capable of producing an economically efficient outcome. Externalities evolve when activities affect a third party who is not involved in this activity (Swan & Impeacher 2006) and in this case it is blatantly obvious that the rising world temperatures and its associated problems is an extremely large externality.

This market failure comes about from the lack of private property rights, which are the exclusive right of an individual when to use, rent or sell property (Swan & Impeacher 2006). In this case there is no single entity that has ownership of the air or atmosphere and due to this no one can demand restitution for damaging it. Just as economic theory that explains the problem of climate change it also provides the solution. The government must take action in the private market and through implementing policies, internalize these externalities.

This means putting a dollar value on the externalities and having this reflected in its price. With the three main policies being subsidies, a carbon price through taxation and a carbon price through a cap-and-trade system, they all do this but reach their target with vastly different levels of efficiency and effectiveness. Besides a subsidy is an economic incentive offered by the government to individuals or firms to consume or produce more of a good or service (Swan & Impeacher 2006). Its purpose is to increase the quantity of a good that produces a positive externality.

As shown in figure 1. 1 when only the private benefits are considered (POP, CO) there is a dead weight loss present which is a loss of consumer or producer surplus which isn't passed onto another economic party (Swan ; Impeacher 2006). If the government however is to intervene in this market and pay the extra money to consumers that the positive price Quantity Us ply ODL private benefit Figure 1. 1 us basis Sub IQ DO social benefit Dead weight loss externalities is worth, (PI- Sub) then ODL shifts out to DO as consumers now pay less (Sub).

The economy now operates at an efficient level of (IQ, P 1) where no dead weight loss is present. This same effect can be achieved if the subsidy were to be paid to the producer. By giving the subsidy to the reducer their production costs decrease and the supply curve shifts (SO SO) and consumers still pay Sub. A major difficulty in issuing subsidies however is to correctly measure the initial positive externalities. By introducing a subsidy that is not equal to the externalities will result in a dead weight loss still being present.

Subsidies also cause a problem where governments pick winners in the market, such that they are deciding who is to receive the extra money (Swan ; Impeacher 2006). Although they are acknowledging the positive externalities, by only subsidizing specific groups doesn't allow market ores to decide and as a result drastically reduces their efficiency. There are also many examples of subsidies being wasteful with a perfect example being the American attempt at subsidizing its farmers in corn ethanol that has

just raised world food prices and added to the wallets of American farmers (Swan & Impeacher 2006).

The attempt to keep many American farmers with a job in producing corn for bio-fuels has only sustained an inefficient market that has brought about many negative side effects. Even though there can be negatives through the implementation of subsidies they play a pivotal role in funding research and development. In this case development into such technologies as carbon capture offer too high a risk for individual firms to undertake without government funding (Economist 2009) but offer huge positive externalities if they are successful.

For this situation it is imperative that R&D is undertaken so that new technologies can be discovered and subsidies are highly effective at allowing this. Carbon Tax Price Quantity SS -?? private cost Demand SO = social cost tax DWELL A tax is a financial charge imposed on someone by a government (Swan & Impeacher 2006) and is similar to a subsidy in the fact that a dead weight loss is removed from society. With taxes however, they eliminate negative externalities by increasing the private cost curve to the social cost curve where the vertical distance between them is equal to the externalities (see figure 1.). Initially the good is being overproduced and underpriced (CO, POP) but after the tax is implemented the supply decreases and an efficient equilibrium is reached (IQ, p 1). The government now receives revenues equal to the rectangles A+B where rectangle A is contributed by the consumer and B by the producer. In this case a tax will be a carbon price that the government stipulates and according to Dimmitt

Singles, '... A \$40 carbon price now, doubling by 2050... Is needed to reach the pump target'(Economist 2009).

With current levels of carbon dioxide in the atmosphere at pump compared with dipped before the industrial revolution(Economist 2009), this tax will rapidly and effectively cause a change towards cleaner energy. A tax can also be considered efficient in the fact that unlike subsidies where the government picks the winning industry, once a tax is set it applies universally. To overcome this individuals will find their own most efficient way of adapting to the higher prices Of dirty energy and moving to cleaner alternatives. Cap-and-trade price ODL Figure 1. By setting a carbon price, a cap-and-trade system works in a similar effect to a tax. The cap-and -?? trade system works by finding the amount Of carbon emissions that corresponds to the socially efficient solution and then fixing it at that level. This amount (CO) is then portioned into small packages and sold on the private market. Through market forces an equilibrium price will be found (POP). Over time as demand increases (ODL DO), the supply stays fixed and as a result the price of the permits increases (POP p 1 However setting the right cap on the number of permits in practices is extremely difficult.

When the European Union started its Emissions Trading Scheme in 2005 it sent out parcels to 11500 factories in 5 dirty industries. Initially however many of the member states overestimated their emissions so that they would be given more permits which as a result decreased the carbon price. When the more permits were to be released in 2008 countries battled to get more than their gibbous until eventually some sued the commission that

issued the permits. After winning the case this caused the price to drop even further(Economist 2009).

Although its effectiveness here is limited, the cap and-trade system does operate highly efficiently. Even when the government doesn't issue the socially optimal number of permits initially, the cost of decreasing pollution, given the number of permits, will be minimized. This occurs due to the trade of the permits between companies depending on their level Of efficiencies at producing clean energy. The highly efficient firms hat don't require their permits can sell theirs to the less efficient which will push up their costs until eventually the inefficient are driven out of the market.

With the threat of climate change now reaching drastic levels it becomes not so much a question of should governments act but with what policies can they rectify this predicament. If implemented correctly the costs could be as little as 1% of global GAP but if this can't be done then the costs will rapidly increase(Economist 2009). Subsidies, although when executed poorly are highly inefficient, will play a fundamental role in funding ark that will provide the essential technologies to use clean, efficient energy.

For this part of the solution to climate change, subsidies provide an effective and efficient answer. A carbon price is also required if the negative externalities caused by using carbon intensive fuels for energy are to be accounted for. The most important thing about the carbon price however is the level it is set at so that it sends out an unmistakable signal to the market(Economist 2009). Both the tax system and cap-and-trade system are

based around putting an economic value on carbon however the result they give varies.