

# Tradable permits essay



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**Definition of Tradable Permits** The contemporary economists attempt to achieve environmental objectives using market based policies or indirect taxes. The taxes and programs are developed because the government attempts to limit the overall pollution that factories and industries excerpt. The most important aspect of tradable permits is that they can be traded between firms. This market based system allows firms to reduce pollution at the lowest cost possible.

Unlike command economies that specify which technology the firms are allowed to use to manufacture with. However, there are problems that are accompanied with this market based system of issuing permits. And moreover these conflicts cannot be avoided so easily. This essay analyzes the exact method that governments use to issue the permits and whether or not these permits really help the economy and the environment as much as they should. However, in order to analyze such an issue accurately, one would need to know exactly what tradable permits are and how they are used.

The tradable permits are also known as tradable environmental allowances. The basic idea of issuing the permits is a variation on regulating negative externalities using indirect taxes. The actions that the permits allow can be categorized as the emitting or extracting of pollution. These permits allow industries to emit a certain level of pollution, if they exceed these levels then the firm would be forced to pay fines. Of course, an accredited verifier must verify the amount of greenhouse gases emitted.

Otherwise the amount of greenhouse gases could not be monitored. An example of the attempted preservation of the environment may be, that an industry may only emit a tone of sulfur dioxide over a year but, next year the permit will lower the amount of sulfur that is allowed to be produced. Thus, firms must invest more money into machinery that is more environmentally friendly. Since tradable permits can be traded, the permit will move to its most efficient user. In other words, once an industry has purchased a permit from the government and it has successfully reduced its emissions, the firm can sell its permits to an industry that is exceeding its level of pollution.

Therefore, environmental goals will be achieved at substantial cost savings for firms. In terms of helping society the tradable permit system can be understood better with the use of a diagram. The diagram below called “ the Diagrammatic Representation of Taxation on Negative Externality,” represents the system of the tradable permits. The points A, B and C form a triangle, which illustrates the vastness of the negative externality. It is the cost of the negative externality. The diagram also shows that the pollution has caused a shift in the marginal social cost at point A to point C.

The marginal social cost is now lower in price but, higher in the quantity of pollution. The green arrow represents the shift in the marginal social cost, which is caused by pollution. The red arrow represents the shift that could be caused through the use of tradable permits. In other words, the government is trying to shift the marginal private cost to the left using the tradable permits system, in order to lower the amount of pollution excreted at substantial cost savings. Diagram 1: Diagrammatic Representation of

Taxation on Negative Externality. The largest and probably most important emissions trading scheme was developed by the European Union.

The EU applies its program in 25 different countries. The European Union has decided to run a trial phase just to make sure the program works well. The trial runs from 2005 to 2007. The trial phase and perhaps real phase coincide with the first Kyoto Protocol rule.

The second phase commences in 2008 and ends in 2012. The Kyoto Protocol commitment basically tells countries how much they are expected to reduce the level of their emissions. The EU ETS is the first international trading scheme that covers 11, 500 energy-intensive installations in the EU. The energy-intensive installations represent close to half of Europe's emissions of CO<sub>2</sub>. The first scheme that the ETS used provided permits for firms free of charge.

But, in the second phase, the government will probably auction the permits off so that the allocation of permits is at its optimum level. The EU ETS is a perfect example of a scheme that is used today that provides tradable permits for European firms. EU ETS has yet to confirm whether or not the scheme truly does work well, but they are confident in their solution to a global problem. Fiscal Policy and Tradable Permits To really understand how the environmental schemes interact with the fiscal system, it would be helpful to know more about the double dividend hypothesis.

The primary idea behind the hypothesis is that revenues from auctioned tradable permits could pay for lowering labor taxes; for example, income and payroll taxes. This would invariably increase employment and reduces

pollution simultaneously. The double dividend issue is particularly noticeable in the context of climate change because the revenue potential is extremely large. The article, “ Are Tradable Permits a Good Idea? ” purposes this idea, “ Suppose the United States was to recommit to its pledge under the initial Kyoto Protocol agreement to reduce annual carbon emissions to 7% below 1990 levels 1. 16billion tons by 2010. ” This may be achieved via a tax on the carbon content of fossil fuels from \$50 to \$150 per tone of carbon.

This of course depends on whether or not the United States can buy credits for carbon reductions overseas. However, if the indirect tax on carbon were \$75 per tone, then the revenue raised could be \$90 billion per year. This shows the immense amount of money a country can gain by taxing and attempting to reduce emissions. This is a good advantage for the government, because they could earn a huge amount of money from tradable permits schemes.

Nevertheless, if one looked at this issue more closely the links between environmental taxes and the broader tax system would be far more complex than expected. Environmental taxes raise the cost of business for industries that produce products and in this manner they would act like a tax on economic activity. In other words, prior to revenue recycling, there would be fewer levels of production and employment because of the absence of taxes. In a macroeconomic perspective, the effects of employment might offset the employment gains from recycling emissions tax revenues in the labor tax reductions. Therefore, environmental taxes must be justified based on environmental grounds because the taxes must help the environment more

than the people or the economy. Another issue is that the tradable permits raise the firms' production costs and reduce the economic activity.

This is because when the firm that produces pollution increases its production it must either buy permits to cover the extra emissions or forgo sales of its own to other firms. Therefore, the firm must pay a penalty for increasing its output. Hence, grandfathered permits could have harmful effects on employment and total revenue. However, when the tradable permits are used in this same manner.

This has two very important policy implications. Foremost, the economy would be more efficient with emissions taxes or auctioned permits than freely allocating permits to firms. The ETS has done this exact thing in their first phase. The economists responsible for tax have discovered that for each dollar of revenue used to reduce income taxes, there could be a gain in economic efficiency between \$. 20 and \$.

50. If the lower income tax were lower it would increase employment and also reduce any distortions in the pattern of expenditure between tax favored spending and normal/ordinary spending. In the example used before, that mentioned carbon spending, the United States might make more money per year if they created a tax on carbon or auctioned permits. Secondly, the economic costs of grandfathered permits can be far too high because according to Parry et.

Al. the costs of the United States of meeting the Kyoto Protocol by this system imposed on fossil fuels producers, rises from about \$25 billion to \$55 billion dollars per year. Furthermore, taking into account the fiscal

interactions with grandfathered permits, might compromise the ability to generate net benefits for the society. In the table 1, the first policy is the original target for the U.

S, under the carbon emissions Kyoto Protocol. The second policy has the goal of meeting a 50% reduction in sulfur. The table shows that the cost in billions per year for using grandfathered permits would be higher with taking the fiscal interactions into account because the resulting value is negative and this would mean that the country is making a loss. This can only be deduced and approximately correct if the grandfathered permits are sold at \$75 per ton. However, without the fiscal interactions and the use of grandfathered permits the costs would be less.

In the table it seems that the highest benefits could be made under the original Kyoto Protocol using either taxes or auctioned permits at \$75 per ton and benefits of \$70 per ton. The grandfathered permits or emissions tax/auctioned permits wouldn't produce enough benefits in comparison to the first policy and the use of emissions tax/auctioned permits. Although the second policy would of sulfur or permit price of \$200 per ton and benefits of \$1, 000 per ton it still would not beat the first policy and the auctioned permits or tax system. Table 1: Implications of Fiscal Interactions Policy

Goal	Instrument	Without Fiscal Interactions Annual Costs (\$ billion)	With Fiscal Interactions Annual Costs (\$ billion)	Annual Environmental Benefits (\$ billion)	Benefits Minus Costs (\$ billion)
1	Grandfathered Permits	25a5545b-10	1Emissions Tax/auctioned Permits25a10-3545b10-35	2	Grandfathered Permits1. 0c1. 710d8.

3 2Emissions Tax/auctioned Permits1. 0c1. 210d8. 8 Xa= An assumption of carbon taxes or permit prices of \$75 per ton Xb= An assumption of benefits of \$70 per tonXc= An assumption of sulfur taxes of permit prices of \$200 per ton Xd= An Assumption of benefits of \$1, 000 per ton Considering grandfathered sulfur dioxide permits that reduce the emissions of power plants by about fifty percent or ten million tons. The annual benefits mainly from reduced mortality have been measured and calculated to be at more than \$10 billion.

The approximated annual cost of the program, including the fiscal interactions are far lower. In fact they have been calculated to be at about \$1.7 billion under the grandfathered system. Then again it may be \$1. billion if the permits are auctioned. However, even if the permits are auctioned or not the approximated benefits overflow the costs for the sulfur dioxide scheme.

According to the source “ Are Tradable Emissions Permits a Good Idea? ,” by Ian W. H. Parry, that if auctioned permits were implemented the revenues would be used to cut other taxes. This appears to be only true for European countries such as Denmark. Denmark recently introduced a new scheme of taxes on electricity, fossil fuels, carbon dioxide and sulfur dioxide.

Analysis of ArticlesAn analysis that I made (using contemporary news articles over a 3 month period) regarding greenhouse taxes put the system of tradable permits that some countries use in a different light. “ In America they call it the China question. In every country that has contemplated regulating greenhouse gases, it is seen as a problem. ” Reports the “ Emissions Suspensions” article from the Economist web site. The countries



that are contemplating regulating emissions taxes are worried because they cannot ensure that any policy that they create can be harmful for domestic farms and act as an advantage for MNCs.

In other words, the firms are worried because if the cost of the compliance puts factories in countries that have strict regulations out of business, whilst other factories from different nations do not have strict regulations and can produce emissions without concern. This doesn't help the country that is attempting to make a difference nor the world because the overall emissions will either be higher or stay the same. The country that has integrated all of the regulations on greenhouse gases, is also losing investment and jobs. In 1997 America's Senate voted 95-0 to rebuke any contract or treaty on climate change that didn't engulf industrial rivals such as China. However, a bill was sent in the form of carbon tariffs, that almost convinced the Senate to integrate the law.

The bill was created so that American factories could be sheltered from unfair competition from imports or industries outside the U. S. Nevertheless, the reason why the tariff was not made into a policy was because factory owners warned the government that such a tariff would cost millions of jobs. The European Union has already integrated an emissions policy, but France's president wants the policy to include an extra carbon tariff.

The article speaks of the Peterson Institute for International Economists, which says that the damage created by tariffs would be small. The institution basically stated that most manufactures do not use an excess amount of energy. Therefore, the main source of emissions would not suffer big costs.

In fact, the energy that is used in these industries makes up less than 1% of the cost for producing furniture, cars or computers. The article also states that the more energy intensive industries, such as power generators would not be affected because they have no foreign competition and if needed they could pass on extra costs to their customers.

Another study from the Pew Centre on Global Climate Change confirmed the article's statements that industries would not be affected by the change too much. They assumed that there could be a \$15 carbon price increase designed to reduce emissions. They applied calculations and data that were collected of past effects of a rise in energy prices on industries. The study concluded that the output of the industry would fall by 2% or less. The paper and glass industries would face an even bigger contraction, which would be at approximately 5%.

These analyses are important because they suggest that the politicians are over-reacting. The reason for their disregard for carbon tariffs could exist because such policies are difficult to implement. The customs officials would probably assess the emissions embedded in imports, which is an extremely complicated task or they could make arbitrary assumptions. The point that many studies also discover is that these carbon caps may bring benefits in the form of industries making windmills or solar panels. Therefore, in this case it would seem that the politicians are holding back the progress for creation of a more environmentally friendly world. Now that we have discovered new knowledge about how the politicians react to new schemes like the tradable permit program, it would not be a bad idea to refer to data I have collected earlier in this essay.

In fact, in Chapter One I mentioned that the EU ETS has engulfed 11, 500 energy intensive installations in its program. Considering that these 11, 500 factories are spaced out over the entire European Union, which means 27 different countries. The effect or losses may in fact be larger than initially expected. Therefore, the politicians speculation of mass numbers of unemployment could in fact be fairly accurate. Hence, I would need further information to better understand what the politicians and firms are experiencing. Ergo, I have provided more articles from different sources.

Alternatives to Tradable Permits In this essay we have looked at many different perceptions of tradable permits. But I decided to analyze the methods that governments use without tradable permits and whether or not these methods are indeed better than tradable permits. My first example regards a state in the U. S that has diminished worrisome thoughts of climate change. Ever since Mr.

Schwarzenegger's election in 2004, he has made policies that concern all western states to sought alternative to fossil fuels. Mr. Schwarzenegger has signed a bill in 2006 that says that California must cut its emission levels to the levels of 1990 by 2020. Critics find the bill a risky move especially when California's population is expected to increase by 42%.

If California were a country it would be the worlds eighth biggest economy nevertheless, it would only be the worlds 16th biggest polluter. California's biggest conflict is its cars and trucks because they account for more than 40% greenhouse gases. Therefore, the state wishes to tighten emissions limits on vehicles beginning in 2009. The state has also ordered that all

vehicles must reduce carbon emissions by 10% until 2020. The future generations of Californian's are expected to use cleaner electricity. In order for this to happen the state subsidizes solar power.

Despite California's well-hearted attempts, the United States as a whole has only reduced its emissions by 11% last year. The problem with this system is that the states are giving the firms less of a chance of reducing emissions than if they distributed tradable permits. This is because the energy companies are complaining that there is not enough supply on the market to make wind and sun farmers. At least, at the price these firms are willing to pay. The plan to promote solar power has been hindered because of the high cost of photovoltaic panels.

Overall, the cost for this solar power would inevitably create high energy bills for household. Despite, the enormous amounts of subsidies that were provided by the government for this project. The public utilities commission fears that the aims of the states will not be made and refers to them as "unrealistic." Even Art Rosenfeld, an energy commissioner, cannot make the sums add up so that the energy efficiency contract can be met in 2020. Even the UK's attempt to meet its domestic target failed. They adopted their own target to reducing greenhouse gases.

The plan proved to be a humiliating dereliction because the target was set to be 20% lower than 1990 levels by 2010. They have luckily fulfilled the Kyoto Protocol agreement but, the latest figures from the Department for the Environment Food and Rural Affairs show that UK's figures will not be met. The figure below called, " Meeting Domestic and Kyoto Targets" shows how

the emissions have been reduced in the UK and how they meet the Kyoto protocols expectations. However, the blue line below shows how the target that the UK has set for itself cannot be met because their CO<sub>2</sub> has not been reduced enough. Impact of Tradable Permits on Canada Annex I countries adopted an emissions trading scheme in order to stabilize the CO<sub>2</sub> levels by 2010. These emissions levels are expected to meet the level of emissions Canada had in 1990.

The goal is achieved by means of individual emissions trading schemes, the goal is to decrease the emissions by 34% (or  $150 \times 10^6$ ). After Canada achieves this goal they wish to reduce their CO<sub>2</sub> emissions by  $50 \times 10^6$  until 2020. The diagram below called Tradable Permit Prices, “ illustrates carbon permit prices for nine large Annex II countries in the 2010 scenario. The term Annex II is used to describe all Annex I countries except the twelve nations that are undergoing the transition to a free market economy. Annex I countries are all nations from the Organization for Economic Co-operation and Development (OECD) including the European Union and twelve countries undergoing a transition to a free market economy.

As a result of permit prices that range from \$325 per tone of carbon dioxide to \$425 per tone by 2010, the end user energy prices would be higher because of the carbon stabilization. As one can see in the diagram Italy has the highest value of \$US/tone of carbon dioxide. In fact, in 2020 it is suppose to reach an all time high of more than \$2200. In order to stabilize carbon dioxide emissions in Canada economists have estimated that that the total primary energy consumption must be reduced by 17% in 2010 and 19% in 2020.

In terms of growth rate Canada may only have a projected 1.1% average annual increase between 2005 and 2020. This value moderates to about 0.2% per year in this stabilization scenario. The lower consumption values can be achieved by using the provided energy more efficiently.

It is also interesting to see what the forecast for Canada's GDP would be considering the impact of the tradable permits. Diagram 3 below called Canada's Real GDP Impact illustrates the impact of the tradable permit scheme in a 2010 scenario. The overall result in the diagram shows a weaker economy for Canada for the duration of the first thirteen years. But after these years the line moves up and continues this trend until 2020. The reason for this decrease is because if there were an increase in energy prices this would lead to an inevitable down fall in investment.

The relative price of goods that have an intensive use of carbon rise, which would produce substitutions and income effects that reduce economic activity in Canada. The nature of this international policy involuntarily makes all Annex I countries go through an adjustment, which would cost translate into the reduced demand for Canada's exports. The primary conclusion one can deduce through this data is that the Canadian economy would experience essential adjustment costs for more than a decade. But, in the end Canada would produce almost the same level of output by 2020, at of course, a reduced level of CO<sub>2</sub>. However, it is an essential note that during the period of transition, certain sectors of the economy will either grow or contract in importance.

This of course depends on the alteration in their costs structure, competitiveness and the change due to differences in the demand for their goods and services. General Consensus The general consensus for tradable permits is that they provide the strongest and most efficient technology. Even in the long run there should be significant benefits in terms of the innovation and distribution of environmentally-less damaging technology. In fact, this essay has done so more than other types of policies.

All emissions face an opportunity cost from the tradable permit system that will provide incentives beyond the levels that arise from other policies. Another reason why tradable permits have more advantages is because the technology that derives from this market based system are less likely result to be sub-optimal. When considering other systems there is a risk that the technology would be far below optimal level. The earlier examples mentioning alternatives to the tradable permit system are good for only a short period of time. The governor of California set high standards for his state to meet, and some of the targets have been met.

However, the plans may turn out to be simple derelictions because there are too many disadvantages when the government intervenes in the market. For example, there will be slower progress when using a system like this because the firms will take their time in choosing the right type of environmentally friendly technology. Even the plan to promote environmentally friend goods such as solar panels can be stymied when the prices of such goods are far too high. The firms and politicians fear of unemployment are also far too high, especially if they used a indirect tax system. However, tradable permits bring also disadvantages such as, credit

market failures, which discourages banks that lend loans to firms for their low feasible high-return investment for instance research and development of new technology. There is also a difficulty of excluding others from the benefits that the research and product development because it results in the firms lack in incentives to provide money for the necessary investments to carry on the research.

All these reasons can stymied the path of technological change. The tradable permits system can provide the incentives for the correct innovation, the rate of this innovation can and may be slower than initially desired. Ergo, it would be an intelligent idea to use a tradable permit system that addresses the environmental externality but, also another type of system that addresses the technological market failure.