

How can the climate crisis be averted within a capitalist framework?

Term paper, POL2012 – Theories and Models in Political Economy

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Autumn 2021

1. Introduction

For the last couple of hundred years, the dominant economic system in the world has been capitalism. This is a system that emphasizes continuous growth, with the holders of capital as key players. At the same time, the climate crisis has emerged. Science has revealed that human actions play a major role in the emission of greenhouse gases.

The human species face a challenge that requires decisive action. Is there a contrast between green goals that will not necessarily generate profits, and the capitalist mindset of continuous growth? Or is this growth perspective exactly what we need to solve such a challenge?

In this paper, I study the mechanisms of capitalism and how they can be used to avert the ever emerging climate crisis, with the following research question: How can the climate crisis be averted within a capitalist framework?

2. Capitalism

As the term capitalism is used in many different ways, a definition is needed. In this paper, capitalism is defined in terms of its particular characteristics: private ownership of the means of production, with markets for labour, capital, land and goods, a distinctive role for the state, legitimising ideologies and expansionary tendencies. The most fundamental dynamics of capitalism relate to capital accumulation (Feola, 2020).

Capitalism can be said to be the preferred economic system of the neoclassical political economists. The point of interest for our study is the traditional belief of these neoclassical economists that the invisible hand of the market will figure things out – rather than the invisible hand of the state. In the reigning economic orthodoxy, actors like people and businesses, are expected to act perfectly rational and according to their own self-interests – seeking to maximize their own utility. Given that this happens within a framework of perfect competition, the economy as a whole will realise its maximum potential (the so-called pareto-efficient equilibrium). The practical example of this is described by the classical political economist Adam Smith, in his most approved work, *The Wealth of Nations*: “It is not from the benevolence of the butcher, the brewer, or the baker, that we expect our dinner, but from their regard to their own interest.” (Smith, 2004, p. 12).

Although the belief that the invisible hand of the market trumps that of the state, the state plays an important part as a contract enforcer. As thousands of contracts, arrangements and deals are done every day, the well-functioning constitutional state is important for capitalism to thrive. In traditional theory, the state also plays an important part in preventing externalities – the classical example being a factory polluting a river in its production, hindering another factory downstream in its production. It is well known that climate change will have considerable economic consequences on a global scale (e. g. Tol, 2010). Thus, we can state that within capitalism, the state should hinder climate gas emissions – at least in theory.

It should be stressed that capitalism comes in many forms (Hall & Gingerich, 2009), and that the amount of national varieties of capitalism means that we should be careful about drawing generalised conclusions from a paper like this. It is however useful to study the subject in a broad manner, as the climate crisis by nature is a broad crisis.

2.1 Market theory: a neoclassical approach

The main framework of the study of capitalism today is the neoclassical view. It goes hand in hand with the market-based approach of capitalism, as it makes economics appear as a hard science, with models that allow for deductive theories. Under its set of assumptions, it states that aggregate supply and demand in a market will interact to form an equilibrium. Let *Figure 1* illustrate aggregate prices for goods and services on the vertical axis, and aggregate quantity of goods and services on the horizontal axis.

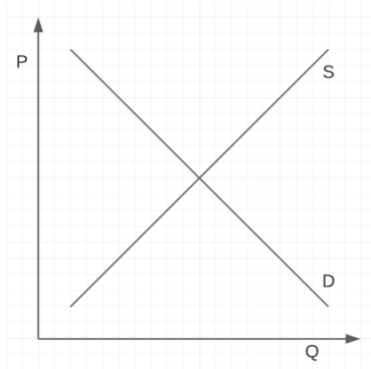


Figure 2

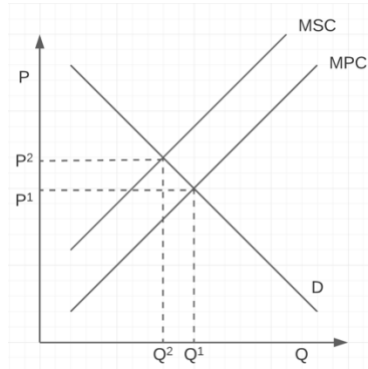


Figure 1

According to standard neoclassical microeconomics, this model can be used to make predictions about the markets of the real world. An increase in demand, shifting the demand curve upwards, will increase both prices and quantity. An increase in supply, will increase quantity and decrease prices – and vice versa. Thus, the market sorts things out itself, and government interventions in any shape or manner cannot be done without bringing about an efficiency loss.

However, as Arthur Pigou already pointed out in his 1920 book *The Economics of Welfare*, this theory only holds if one assumes that the pricing is right. In the case of pollution, there is a divergence between the private costs and the social costs, equal to the marginal damage of pollution. In order to ensure an efficient market outcome, pollution must be taxed in some way or another (Pigou, 1920, as cited in Metcalf, 2019).

As illustrated in *Figure 2*, we see that the initial equilibrium is at Q^1, P^1 , where demand meets supply. However, in this equilibrium, supply only reflects the marginal private cost (MPC). If we are to intercept the marginal social costs (MSC), we must shift the supply curve upwards. This creates the equilibrium Q^2, P^2 , where the cost for the society as a whole has been taken into account – internalizing the externality, in economic terms. Thus, from this highly simplified example, we can draw the following conclusion: In the market-based economy of capitalism, externalities like emission of climate gases, must be priced in order for the market to deal with them (Gillingham & Stock, 2018). In other words, the invisible hand of the market needs a little push from the invisible hand of the state in order to function properly.

3. The capitalist toolbox

As discussed, my definition of capitalism suggests that it is the role of the state to avert climate change, in order to prevent negative externalities. I have now also stated that within the capitalist framework, this must be done through pricing. In economic terms, emissions must be reduced to the point that the marginal benefits of the reduction equals the marginal costs. According to the existing literature, the two main market mechanisms in the capitalist system are carbon taxation and carbon pricing.

3.1 Carbon taxation

Putting a tax on energy sources that emit carbon dioxide is a direct way of pricing emissions. It is one of the most common market mechanisms, but it comes in many forms and with a range of local varieties. In general, the carbon tax is determined by the tax rate and the quantity of carbon emissions that the taxpayer emits, and is represented as a payment for every tonne of greenhouse gases the taxpayer emits into the atmosphere. The effect of the carbon tax is that the price of polluting is set, and thus the market determines the amount of pollution (Gillingham & Stock, 2018; Metcalf, 2019; Tsai, 2020).

3.2 Carbon trading

Another common market mechanism for reducing emissions is carbon trade, so-called cap-and-trade systems. Under this system, the government sets a cap on pollution, and then distributes permits which companies must have in order to be allowed to emit carbon during their activities. Companies which succeed in reducing carbon emissions can sell their quotas to companies which fail to do so, and thus a market clearing price for emissions is set. The largest and most known system of today is The European Union's Emission Trading System (ETS) (Metcalf, 2019; Tsai, 2020).

3.3 Empirical use of carbon pricing

Both carbon taxation and carbon trading involves a price on pollution, but how they do it differs. Where a carbon tax involves a fixed price on emissions, and then lets the market decide the amount emitted, a cap-and-trade system sets a cap on emissions, and then lets the market decide the price on those emissions – within the given cap. Most of the literature seem to favour a carbon tax over cap-and-trade systems, but their goal is the same, and they may even be used in combination. However, the question as to how high the price of carbon should be remains. Sen and Vollebergh (2018) estimate that an increase in the effective carbon rate of EUR 1 per tonne of CO₂ on average means a 0.73 per cent reduction in emissions over time. This allows for some calculations, like the carbon rate benchmarks of the Organisation for Economic Co-operation and Development (OECD).

Both taxes and cap-and-trade systems have been initiated in several parts of the world, yet only 21.5 per cent of global emissions are covered by a carbon price, according to The World Bank (2021). In addition, OECD has analysed the so-called carbon pricing score of the 44 OECD and G20 countries (representing 80 per cent of global emissions). In the latest update, from 2018, these countries achieved a score of only 19 per cent compared to the benchmark of EUR 60 per tonne CO₂ – which is a low-end benchmark for 2030 (OECD, 2021). In other words: we're not quite there yet.

4. Discussion

The literature is clear: If the world were ruled by economists of the reigning orthodoxy, carbon prices would drive most of the action on climate change. But unfortunately (or perhaps luckily), it is not. And carbon prices are as of yet not the big driver for climate action.

One explanation for this may be structural. Although carbon pricing is a tool to avert climate change, carbon prices are essentially taxation. It is hard for politicians to introduce taxation in any form, especially without reducing other expenses for their voters. Political parties arguing to introduce heavy carbon taxes risk losing large numbers of voters (Carattini et al., 2018).

At the same time, carbon taxes must be of a certain size – way higher than today's levels – in order to be effective. I want to highlight three main reasons for this. Firstly, the neoclassical view is that companies will invest in the development of green technology that are not yet competitive, or implement more climate friendly business models, if they believe that their existing activities will be taxed out of competitiveness in the future. However, this is only given if they truly believe that carbon prices will be high – which is hard to be assured of in the political climate of today. Secondly, we know that the energy market is inelastic, as energy is a necessity. By definition, taxes in inelastic markets must be of a certain size to have an effect. Thirdly, if increasing carbon prices are not deemed likely by the market, actors may choose to budget for carbon taxes rather than trying to innovate. Shifting to more climate friendly activities may involve high risk for companies. As they are risk averse, the logical thing to do may be to pay the taxes and get on with it. This means that carbon taxes would really have to hurt in order to be efficient.

This contradiction between the need for high carbon prices and the troubles which today's politicians have introducing them, is a clear challenge for carbon pricing as a concept.

Then there is the coordination challenge. In the economist utopia there exists only one carbon market, but in the real world this is not the case. As we have seen with the exodus of taxpayers, we must assume that some actors who are likely to suffer from increased carbon prices in their current country of residence, may move to other parts of the world with lower carbon prices. In the anarchic international system, this is hard, or maybe impossible to coordinate.

5. Conclusion

The point of departure for this paper is how the climate crisis can be averted within the capitalist framework. According to the neoclassical approach, the economic answer is straightforward: Apply a market-based tax in line with the theories of Pigou, so that the price of polluting reflects the costs. Thus, the market will sort itself out, as polluters who fail to innovate or change activities will go bankrupt. However, as discussed, this price on emissions must be high and it must apply to all markets in all of the world. It is politically challenging to introduce new taxes on the national level, and even more so in a coordinated effort on the international level.

The theory is there, and it's rather simple. But it represents a distinct contrast to the practise of today – and probably also of the future.

5.1 Criticism and future research

Although I do not hesitate to draw conclusions in this paper, there are several flaws. The paper only considers market mechanisms of capitalism, but in most capitalist systems there are also regulating authorities. In order to avert climate change, legislation and regulation may be as effective as market intervention, or even more. The paper also jumps straight into the neoclassical paradigm, applying its theories and accepting its assumptions without further discussion. This conveniently allows for deductions from its models, which the paper uses as a theoretical basis, but in the real world it cannot be blindly assumed that these assumptions are watertight.

This paper has taken the capitalist system for granted, discussing solutions to the climate crisis within a certain framework. Future research could look at the same problem with another set of glasses – is there another economic system that would tackle climate change in a better way than capitalism, and if so – how?

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