CARBON TAXATION WHEN CONSUMERS SUFFER IMPERFECT SELF-CONTROL

BART DEFLOOR
UNIVERSITY COLLEGE GHENT.

Abstract:

Governments play a pivotal role in the creation of a more sustainable economy. By their policy measures, they influence consumer and producer behavior. This paper focuses on the consumer side of the problem. We analyse to what extent indirect tax policy (consumption taxes) can contribute to a more sustainable economy. Commodity consumption entails carbon dioxide emissions. When deciding upon which commodities to consume, households take into account some of the consequences of this externality, but not all of them. It is assumed that, though consumers are aware of the cost for the environment of emitting carbon dioxide, they do not always take decisions accordingly because they focus too much on the present.

The problem is that the consequences of emitting carbon dioxide only appear in the future, while the benefits (utility/fulfillment of needs) appear today. Consumers suffer imperfect self-control, they know that they should change their behavior now, but procrastinate to do it because they have a tendency to seek immediate gratification, present costs and benefits have undue salience over future ones (see Akerlof (1991)). An important feature of this type of pathological behavior is that individuals take repeated decisions (e.g. to consume one product) with small time intervals and that the consequences of each decision are small, remote in time and still avoidable today (Akerlof, 1991). Consequently, the 'true' valuation for carbon dioxide is not revealed by market behavior. Consumers do not consume the bundle they truly prefer. The assumption of rational, forward looking, utility maximizing households is violated. In these instances, the assumption of consumer sovereignty (the consumer knows best what is good for him) is violated.

We argue that this problem applies to carbon dioxide emissions due to consumption decisions and that the planner needs to take it into account when deciding about policy initiatives. As such the paper is about applied paternalism. The government acts against the short-run interest of the consumers today because he believes their short-run preferences are mistaken.

To analyse the tax problem, we use the concept of the marginal cost of funds, which measures the social welfare cost of raising one euro of tax money by increasing a specific (indirect) tax rate. The concept originated from the seminal paper of Ahmad and Stern (1984). In this contribution, only private commodities were considered, there was no externality. Externalities have been incorporated in marginal cost of funds analysis later (see e.g. Mayeres and Proost (2001)). In this literature, the total societal valuation of one unit of the externality is the sum of the willingness to pay of all consumers (the Samuelson rule).

We calculate the marginal cost of funds for a number of commodity taxes, based on which tax reform proposals can be motivated. The question is this: If the planner wants to increase social welfare, which taxes should be increased and which taxes should be decreased, and at the same time keep the revenue equal?

In order to do this, the social welfare function needs to be adapted in some way. We do this taking into account the fact that the planner has a different point of view on the valuation of the externality, carbon dioxide emissions. Technically, three corrections are needed. First of all, if the planner uses a higher value for the externality, the externality correction in the marginal cost of funds changes. Secondly, if the planner disagrees with the consumers on the valuation of carbon dioxide emissions, implicitly he considers them to be worse off than they think they are. This goes further than the mere correction for an externality. The third result is due to the fact that private utility experienced today counts relatively less in government decisions. Only a specific percentage of the private valuations count. We provide numerical estimates for each of these three corrections.