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Prices for Environmental Goods Are Fictions

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This paper shows that an attachment of prices by courts or state agencies to environmental goods is without proper economic foundation and a fiction. A valuation in monetary terms of damages to biotopes in oil pollution cases is arbitrary due to the missing market exchange processes. It does not make sense to attach an exchange rate to non-exchangeable goods. There are no markets and prices for biodiversity and there is no monetisation by central banks for any good outside of markets. Money, nevertheless created by central banks for non-exchangeable goods would be used in exchanges on markets and not left unused, only passively reflecting given "values" to non-exchangeable goods. By valuing and monetizing environmental goods central banks will produce a too large monetary base for the exchangeable goods and affect prices on markets in an inflationary way. Cash prices in the form of damages for intangible goods are not market prices, but pure "prevention prices" which are similarly justified like penalties, fines, and compensations. At a reasonable amount, they are effective, useful, and recommendable as an incentive device even if their basic justification is not built on market valuations.

Keywords: prices environmental goods, monetizing environmental goods central bank, value non-exchangeable goods, environmental goods prevention prices

Introduction

There are many goods indispensable for human life which are not produced in market processes and which are not exchanged. Prominent textbook examples of non-marketable goods are environmental goods (Colt & Knapp, 2016, p. 615; Tol, 2009, p. 29). There are many efforts to value them in monetary terms. Cost-benefit analysis and court judgements put money numbers in calculations in case of environmental damages. The "social cost" of carbon usage for example is an estimate of the costs of carbon emissions (Auffhammer, 2018, pp. 32-52). It estimates the change in social welfare in monetary terms for all future periods of time emanating from one tonne of carbon additionally emitted into the atmosphere, given a certain shape of future emissions and given a certain economic growth and demographic development. This number is used for policy actions and legal regulation and is assessed in Integrated Assessment Models (IAM)[1]. These models "integrate" socioeconomic scenarios that produce future emissions trajectories, which are fed into a simple climate model that translates emissions paths into concentrations and then produces scenarios for future temperatures, precipitation, and sea levels. These climatic outcomes are then fed into a set of damage functions, which map the climate model output into economic damages at regional or global level (Auffhammer, 2018, p. 34). The

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[1] The most familiar of these models are DICE (Dynamic Integrated Climate-Economy model by William Nordhaus), FUND (Climate Framework for Uncertainty, Negotiation and Distribution model by David Anthoff and Richard Tol), and PAGE (Policy Analysis of the Greenhouse Effect model by Chris Hope).

4th National Climate Assessment[2] states that with continued growth in emissions at historic rates, annual losses are projected to reach hundreds of billions of dollars by the end of the century. The problem here is the discovery and valuation of damages that are not covered by the usual economic output measures. The non-market damages, like the costs of social conflicts, changes in the health status of the population, and biodiversity change, can be extremely significant for the people involved, but are many times either completely neglected or included in an ad-hoc manner. Aufhammer states that

> it is shocking how little work has been done on the effects of climate change on nonmarket goods other than mortality. It is paramount that we begin developing approaches that will allow us to quantify damages from species loss, ecosystem services—as well as effects on human morbidity—and incorporate these into the models that estimate costs of climate change. (Auffhammer, 2018, p. 49)

The following paper will show that it is not possible to express in any consistent way the value of non-exchangeable goods in money terms. This will be clarified by analyzing the restrictions of the money supply by central banks with regard to non-exchangeable goods. Nevertheless, the importance of rather arbitrarily chosen money prices for the protection of non-exchangeable goods in creating appropriate incentives is acknowledged.

Prices and Monetisation of Non-exchangeable Goods

Non Exchangeable Goods and Their Measurement

The values in the National Accounting systems are the added sizes of goods and its valuations. Real gross domestic product is the value of the goods and services produced by the economy of a country, minus the value of the goods and services used for production-corrected by price changes. National accounts attempt to record all exchange transactions between companies and households. All goods and services produced constitute added value, provided that this is not an advance payment. The change in value added compared to the previous year serves as a measure of the development of an economy. It conveys a quantitative picture of the economic situation—as long as there are calculable exchanges.

Nobel Prize winners Stiglitz and Sen criticize the limited validity of the GDP. They state that basing important political decisions on the numbers of the GDP is “GDP fetishism”.

GDP does not measure health, quality of education and schools, the stability of family and marriages or leisure. “GDP measures everything, except the things that make life worth living”. Also, the environmental quality is missing in the GDP. In 2010, the German Council of Economic Experts considered that GDP was an incomplete picture of economic performance, lacking sustainability, non-market activities and leisure, distribution, social relations, democracy and educational achievements.

This paper addresses the problem that various processes cause significant nonmonetary damage for consumers in the realm of goods which are not included in GDP and not exchanged on markets. Additional examples are mental distress, pain, depression, and health problems due to environmental pollution. Since health is given at birth and is largely not related to markets, there is no market process to fully evaluate this good. There is no balance sheet in which the health of the population is recorded in money terms. There is no need for a monetary metric as long as these goods cannot be traded and thus the determination of the exchange conditions (prices) is not necessary.

[2] See nca2018.globalchange.gov.

No Monetisation of Non-exchangeable Goods by Central Banks

The prices on markets are merely reflecting exchange relations between goods. The value of good x is the amount of good y I have to sacrifice for it. The pricing system coordinates the actions of people involved and signals the value of the exchanged goods. Market transactions are predominantly settled in cash. Money is required and indispensable to allow a person to incur a trade deficit in market transactions with another agent and to make the claims against the debtor transferable to third parties which now can ask for goods to settle the original debt. Money is used to settle the production and distribution of marketable goods allowing multipart exchanges with transitional exchange deficits.

If prices are exchange relations between goods and if people are asked about the value of an environmental good like biotopes, then a correct answer requires that the respondents also express this value in cash by giving up other goods belonging to them. Valuations without consequences to the individual budget have little informative value (Hausman, 2012, p. 43)[3]. As there is no exchange, these valuations are not anchored in the real world of scarcity of marketable goods. They are rather free floating ideas in the realm of arbitrary valuations, albeit suggestively expressed in money terms. Any term expressed in money for environmental goods is just a fictitious valuation from another metric that does not create but pretends a non-existent comparability in the monetary metric.

Evaluating biotopes, the pollution by the Exxon Valdez in Alaska, suffering of people via monetary price terms is impossible, since an exchange processes is missing. You simply do not trade an unpolluted Alaska bay for a movie ticket. For this reason, there is no price, no monetary base, and no budget constraints in the national accounts and the central bank's money system for marine areas, Alaska bays, deep-sea biotopes, or polar bears outside of zoos. It makes no sense and is only a fiction to give these non-exchangeable goods a value which pretends to represent an exchange rate (price) for traded goods.

If such a value is nevertheless given to a non-exchangeable good say by an agency decision or a court, the representing sum of money must not be created by the central bank, because it would compete with the money in market transactions and would affect these prices in a pointless and inflationary way. Since money can only be spend on marketable goods and non-marketable goods cannot be bought by its "representing" amount of money, a monetisation of non-exchangeable goods would lead to inflation in the realm of marketable goods and to a distortion of price structures. The money created for the monetisation of intangible goods cannot be used to buy them but only to buy marketable goods, and will thus flood into the markets and will increase the prices there. This means that non marketable resources and intangible goods must not be monetised.

Nevertheless, adaptions to the volume of exchangeable goods have to be taken into account by federal banks. This becomes evident when looking at the example of a transition from non-market goods, such as maternity care at home, into a marketable good like day care centres with salaries and fees. The national accounts did not cover, count, or represent the previous household production of child care. The transition will now require an expansion of the monetary base by the central bank, so that the reorganization of child care through markets instead of home production can be carried out with additional needed money.

There is and should be no monetary base for resources that are not traded, such as vital air or biotopes, to avoid disrupting the price system of market commodities. If resources, such as human capital, are only partially

[3] The Contingent Valuation Method (CVM) prominently suggested by Carson, Hanemann, and Louviere does not solve the problem; see the critique by Hausman, J. (2012) referring to the hypothetical response bias.

monetized in their market processes, then the obligation to pay damages for their destruction also means the need to demonetise them through the central bank. A plague, for example reduces the life expectancy of the people, what will result in fewer market transactions are a result, which require a correspondingly reduced amount of money to avoid inflation on the remaining goods markets.

Prices for Non-exchangeable Goods as Incentive Systems

The law and economics literature (Shavell, 2004, p. 175; Adams, 1985) shows that for optimal behavioural control, especially in the area of accidents and damages, the victims and injurers, must be confronted with the costs of their actions in order to make them comply to the optimal precautionary measures to be taken by them. However, in the event of an accident, the level of the costs partly results in the destruction of non-marketable goods such as life, health, and environmental damages. Simply ignoring these non-tradable goods in compensation claims against the injurer will result in a wrongful redistribution between victim and injurer and give the false behavioural incentive to all potential injurer to neglect these goods in their costly prevention measures.

The calculation of fictitious values for intangible goods thus makes sense for courts to set certain behavioural incentives by their judgements. By setting a large sum of money in the case of damages even for non-marketable goods, courts can protect these non-marketable goods. In practice, they are examples of incentive payments for intangible goods, such as the sums of money for violations of the right to privacy in the case of unauthorized publication of pictures or lies in the Yellow Press. These prices do not represent an exchange relationship between personality rights and the published lies, but are intended to state a deterrence price to publishing lies. These amounts do not reflect the value of the pictures, but rather the court given value of prevention. By redistributing money from the market sphere of the injurer to the victim, the non-marketable goods of the victim are protected. This does not require a common and consistent metric with exchangeable goods. The amounts can be set largely arbitrarily without taking any exchanges or price relations into consideration. Obviously, the produced incentives and their market and non-market costs should never be overlooked.

The threat that courts are able to order the transfers of goods from the world of market goods (cash payment) in the event of the destruction of intangible goods (environment, privacy) is being used by the legal system to protect non-marketable goods through the fear of loss of marketable goods by the potential injurer. Cash prices in the form of damage payments for intangible non-exchangeable goods are not market prices, but pure “prevention prices”, which are similarly justified like penalties, fines, and compensations. At a reasonable amount, they can be effective, useful, and recommendable.

Concluding Remarks

Prices are exchange rates between exchangeable goods. To allow multipart exchanges between agents central banks creates the appropriate monetary base. Since money can only be spent on exchangeable goods, a monetisation of non-exchangeable goods would lead to inflation in the realm of marketable goods by the money flood which was created in the realm of non-exchangeable goods. Any number expressed in money for environmental or other non-exchangeable goods is just a fictitious valuation from another metric that pretends a non-existent comparability in the monetary metric.

Prices set by courts to sanction the destruction of non-exchangeable goods by an injurer are meant of set behaviour incentives for the protection of non-exchangeable goods. These prices do not represent any exchange relationship derived from market processes. They are chosen valuations taken from a different metric and they use market prices only to impose a loss to an injurer in his wealth of market goods to incentivize him to respect non-exchangeable goods. As these prices reflect only a transfer of marketable goods from injurer to the victim they produce only incentives with regard to the protection of non-exchangeable goods. The effects of a court ordered transfer of money are restricted to the realm of exchangeable goods. The money transfer only changes the person holding the claim to the market goods but does not extend to non-exchangeable goods. There is no need for the central bank to change the monetary base.

References

Auffhammer, M. (2018). Quantifying economic damages from climate change. *JEP, 32*(4), 32-52.

Adams, M. (1985). *Ökonomische Analyse der Gefährdungs-und Verschuldenshaftung*. Heidelberg: V. Decker.

Colt, S. G., & Knapp, G. P. (2016). Economic effects of an ocean acidification catastrophe. *AER, 106*(5), 615-619.

Hausman, J. (2012). Contingent valuation: From dubious to hopeless. *JEP, 26*(4), 43-56.

Shavell, S. (2004). *Foundations of economic analysis of law*. Cambridge, Massachusetts, London, England: The Belknap Press of Harvard University Press.

Tol, R. S. J. (2009). The economic effects of climate change. *JEP, 23*(2), 29-51.