**TEME**, Vol. XLVIII, Nº 1, January – March 2024, pp. 261–279

Review article https://doi.org/10.22190/TEME231119014D
Received: November 19, 2023 UDC 330.341
Revised January 15, 2024
Accepted: March 16, 2024

# THE PREFERRED EXTERNALITIES-CORRECTING SYSTEM FOR PRACTICAL APPLICATION

**Srđan Đinđić***

University of Kragujevac, Faculty of Economics, Kragujevac, Serbia

ORCID iD: Srđan Đinđić https://orcid.org/0000-0003-4884-2533

**Abstract**

This study sets two goals which are represented by the answers to the following two basic questions. What are the possibilities of national policy-makers in terms of the efficient correction of negative externalities? Since available externality correction systems give suboptimal ex post results, which system is preferable, and under what conditions? The possibilities of the policy-maker to ensure the social optimum are determined by 'enlightenment' ('knowledge') and 'commitment' to social goals. When the actual (ex post) marginal private costs for emission reduction are higher than the planned (ex ante) marginal private costs for emission reduction, and when the marginal social benefit is elastic, the Cap-and-Trade system is more undesirable than the price system. When the actual (ex post) marginal private costs for emission reduction are greater than the planned (ex ante) marginal private costs for emission reduction, and when the marginal social benefit is inelastic, the price system is more undesirable than Cap-and-Trade system.

**Key words**: externality, Pigouvian tax, Cap-and-Trade, efficiency, practical implementation.

# ПРЕФЕРИРАНИ СИСТЕМ КОРЕКЦИЈЕ ЕКСТЕРНАЛИЈА ЗА ПРАКТИЧНУ ПРИМЕНУ

**Апстракт**

У овом раду су постављена два циља које представљају одговори на два основна питања. Које су могућности креатора националне политике у погледу ефикасне корекције негативних екстерналија? Пошто расположиви системи за корекцију екстерналија дају субоптималне ex post резултате, који систем је пожељнији, и под којим условима? Могућности креатора политике да обезбеди друштвени оптимум су детерминисане 'просвећеношћу' ('знањем') и 'посвећеношћу' друштвеним циљевима. Када су стварни гранични приватни трошкови за смањење емисије већи од планираних граничних приватних трошкова за смањење емисије, и када је еластична гранична друштвена корист, систем „ограничи и тргуј" је непожељнији од 'ценовног система'. Када су стварни гранични приватни трошкови за смањење емисије већи од планираних граничних приватних трошкова за смањење емисије, и када је гранична друштвена корист нееластична, ценовни систем је непожељнији од система 'ограничи и тргуј'.

**Кључне речи**: екстерналија, Пигуовски порез, ограничи и тргуј, ефикасност, практична примена.

* Corresponding author: Srđan Đinđić, University of Kragujevac, Faculty of Economics, Liceja Kneževine Srbije 1A, 34000 Kragujevac, Serbia, srdjanmdjindjic@gmail.com

## *INTRODUCTION*

During a century of evolution, the attractiveness of the 'economy of externalities' oscillated from conspicuous favouritism, through occasional neglect, to interdisciplinary analysis and interpretation. This is an 'old' idea dating back at least to Pigoua (1920), who developed the classical analysis of taxation of external effects in order to correct incentives, and then transferred it to Arrow, Coase and other professional 'giants'.

Why has the economy of externalities been chosen as a research subject? The concept of externalities is an important idea in economics, a useful approach for exploring dynamic relationships within different sociotechnical subsystems of a given social system, including respectable global implications.

This study is inspired by the idea of the achievement of two research objectives. The first objective of the study represents the answer to the question of what the possibilities of policy makers in terms of the efficient correction of negative externalities in the spheres of production and consumption are. The second objective of the study is guided by the question of which system is closer to the social optimum, and under what conditions, since the ex post results of the available systems for the correction of externalities, $E_{TAX}$ and $E_{C\&T}$, are suboptimal.

The study has two starting 'points'. The first assumption of the study is as follows: the policy-maker effectively balances the interactions between key actors in society – the individual, the economy and the environment, and ensures the optimum of public interests (allocative efficiency, i.e. maximisation of social well-being). The second assumption of the study is as follows: the (un)desirability of the available systems depends on the change in the marginal private (social) costs for emission reduction, MPCRE, and the (in)elasticity of the marginal social benefits from emission reduction – $MSB_{ELASTIC}$, $MSB_{INELASTIC}$.

The structure of the study comprises seven parts. The second part of the study covers the methods used in the research, the concepts meant to ensure the quality of the research, and concluding comments. The third part presents our thoughts on the essential standpoints of the leading authors during the century-long development of the economy of externalities. The fourth part of the study explicitly defines the goal of policy-makers. In the fifth part of the study, titled "Prices vs. Quantities", we analyse the available instruments for achieving the explicitly defined goal of policy-makers – 'Command and Control Regulation' ('C & C'), 'Price System ('Pigouvian tax') and 'Combined system' ('Cap and Trade', 'C & T'). In the sixth part of the study, we broaden the analytical vision by introducing uncertainty in terms of the practical application of focused systems. The (un)desirability of the 'Price System' ('Pigouvian tax') and 'C & T system' (including the quantitative system) is assessed in the context of the interaction

of MPCRE growth and MSB (in)elasticity. The seventh part of the study is dedicated to concluding remarks.

## *METHODS AND CONCEPTS*

### *Methods*

A strict comparative analysis was used to evaluate the conceptual-functional performance of focused systems for the correction of externalities.

Three models of partial equilibrium are mainly used in the literature to analyse the effects of negative externalities.

In this study, the demand (supply) curves were observed as a function of benefits (costs), according to Mas-Colell, Whinston, and Green (1995), Kreps (2013), and Nicholson and Snyder (2017).

Excess burden or dead-weight loss, DWL, is estimated according to the methodology initially established by Harberger (1964).

### *Concepts*

The price system, 'Pigouvian tax', was used according to Eurostat (2013), the EC (European Commission, 2020), the UN (2021), the U.S. Department of the Treasury, Office of Tax Analysis (2017), and CE Delft (2020).

The combined system (Cap and Trade, 'C & T') was used according to CEEPR, MIT Center for Energy and Environmental Policy Research (2015), 'C2ES' (Center for Climate and Energy Solutions, US, 2020, 2022), the US EPA (United States Environmental Protection Agency, 2021, 2022, 2023), and IPCC (Intergovernmental Panel on Climate Change, 2022, 2023).

## *EXTERNALITIES: A TIMELESS AND COMPREHENSIVE PHENOMEN*

Externality is a consequence of industrial or commercial activity affecting entities that are not directly involved in transactions, without this being reflected in market prices – what economists call 'externalities' (Tax Foundation). Today, after more than a century of evolution (1920–2023), the economics of externalities has developed in several fundamental problem directions.

The initial idea and application of the theory of external effects arose in the framework of the debate on the quality of the environment. Arthur Cecil Pigou (1920), the originator of the concept, laid the 'foundation' that the following generations of 'architects' supported and/or criticised.

From the perspective of the originator of the concept, Arthur Cecil Pigou, the economy of externalities is synonymous with a problem that is within the competence of a 'benevolent' policymaker, who 'knows' and 'can' practically solve it in a 'dedicated' and 'efficient' way, through an 'ideal' tax.

Kenneth Joseph Arrow became 'famous' for 'Arrow's economy', Arrow's impossibility theorem and the market for externalities (Maskin, 2019).

From the perspective of Kenneth Joseph Arrow, the economy of externalities is synonymous with the ability to 'marketise' non-market interactions through the system of 'personalised prices'.

Ronald Harry Coase became 'famous' for a theoretical concept the focus of which is the privatisation of resources in public property (Foss, Kristen, & Foss, 2014).

From the perspective of the privatisation and management of resources in public ownership, the economy of externalities is synonymous with the economic (social) reality between two systems of solutions, private (market) and public, which are unable to operate effectively.

Based on established instruments, microeconomics scrutinises the effect of externality-correcting taxes on prices and the distribution of benefits.

When we look at externality-correcting taxes within different partial equilibrium models, for the purposes of this study, we have systematised all analyses into two categories: (1) 'usual' analysis, to which this study also belongs, and (2) 'new' analysis. These two types of analyses differ from each other in terms of the focal issue (Kotchen, 2021, 2022).

From the perspective of partial equilibrium, the economy of externalities is an ambiguous benchmark, a synonym for the inefficient behaviour of certain social actors, in the form of excessive or insufficient production or consumption, and a synonym for the WG ratio, welfare gain, and TR – tax revenue (change welfare per unit of collected tax/excise revenue).

As a complement to the classic works, 'today' the topic of externalities is explained from new aspects and from a comprehensive view. The new business philosophies of the companies are explained within the framework of the redefinition of corporate social responsibility, that is, within the framework of the redefinition of the concept of competitive advantages: the prosperity of the company is the result of catalysts of development that are 'shrouded in mystery' (Balland, P -A 2022). In order to avoid the problems that burden conventional theories, the path to the 'general theory of externalities' is mapped: externalities are an authoritative 'verifier' of social demand for management institutions. In the real world, where 'abundance' and 'scarcity' vary depending on resources, people, contexts and nations, externalities persist and point to social demand for a new design of management institutions. Nowadays, the presence of externalities is at an all-time high, and the social demand for 'management' is

not only unfulfilled, but also on the rise. The finding represents a real current and futuristic challenge, which is why the affirmation of the problem of externalities can be an important message of this study (Frichmann, M.B and Ramelo, B. G. 2023). When the concept of 'economic' externalities gives way to the concept of 'social' externalities, then the fact of the 'universal' nature (character) of social (economic) externalities is glorified – the concept of 'economic' externalities, based on the tradition of Pigou and Arrow, should be extended by the concept of 'social' externalities, through the idea of the general (ubiquitous) interdependence of people, the constituents of a given social system (Fleurbaey, M., et al, 2021; Manski, C.F. 2000).

The first objective of the study represents the answer to the question of what the possibilities of policy makers in terms of the effective correction of negative externalities in the spheres of production and consumption are. The purpose of the analysis is for people to fully and directly face the consequences of their own activities, as citizens, as workers, as businessmen, and as policy-makers. The first presumption of the study is as follows: the policy maker effectively balances the interactions between the key actors in society, the individual, the economy and the environment, and ensures the optimum of public interests (allocative efficiency, i.e. maximisation of social well-being). The first starting point was not confirmed in the study. In terms of planned goals, the achieved results and upcoming challenges for the economy of externalities, the situation in the third decade of the new century and the situation in the second decade of the last century are essentially equivalently determined systems. We live in the circumstances of the permanent hundred-year presence of essentially identical 'open' questions, although, the manifestations and character of certain problems are partially different.

From the perspective of the explicit message of the current part of the presentation, from the position of being able to summarise a hundred years of experience in dealing with externalities, the economy of externalities is synonymous with the lack of relevant 'knowledge' and the lack of 'reciprocity'. In other words, the economy of externalities is synonymous with the 'improvement of markets and management institutions'. Educational and personnel policy are leitmotifs. We have just noted a current and futuristic-oriented message that corresponds to the first objective of the study.

## *THE GOAL OF POLICY MAKERS*

According to the tradition of Pigou and Arrow, economic externalities arise due to spill-over effects the market cannot valorise. Externalities can arise from the production of a product or from the consumption of a product, and can be negative or positive. The focus of this work are negative externalities, due to the production and consumption of products or services.

The correction of externalities is a significant issue for economic policy. By default, individuals (in their capacity as citizens, i.e. in the form of households) and companies do not internalise 'indirect' costs or 'indirect' benefits from their economic transactions. Who should act in the public interest, and who is the corrector of negative externalities?

What is the role of the individual? The position of 'citizen' is limited, determined, and dependent on the character and level of a given social community development. Social norms, in a formalised (laws or regulations) or informalised form (social conventions), are regulators of the social behaviour of people.

Standard financial reports of the company enable the analysis of financial performance and profitability, and ensure the transparency of entrepreneurial business. Standard financial reports do not provide information on the responsibility of the company's business towards society, nor do they include any information on spill-over effects (on the amount of damage, MD, i.e. on the emission of MEC). As the impacts of companies on society get more and more attention, greater expectations are placed on accounting systems to take into account the internal and external effects of emissions on stakeholders. External damages (costs) should be recognised in financial reports: what is important are the 'ways' to expand traditional balance sheets and income statements/'P & L' with information about the environmental, and the social and economic impacts of the company on society (Lascol, B., 2021; Edward, X., et al, 2023).

Management institutions act in the public interest of a given country. The policy-maker defines the standards that enable the maintenance of balance between the environment (social cost) and economic activity (private cost), and tends to neutralise negative externalities. The ascertainment about the 'state' as the only, exclusive representative of public interest attracts three questions from the real world.

Is a change in the hierarchy of goals necessary? First of all, a factual affirmation of the issue of the effective correction of negative spill-over effects is necessary. The standpoint that only the state knows how to manage the balance of externalities between the individual, the economy and society, by determining the benchmark (zero) value that cancels the functions of externalities, that is, by determining the value intervals in which the functions become positive or negative, has advantages and disadvantages. However, leaving aside the "broad" elaboration, the central comment is that the state, as a unique 'corrector' ('arbiter'), does not often have the regulation of externalities in its focus. The revenue bounty of the excise system is an unsurpassed 'favourite' in the hierarchy of goals, including final allocatively inefficient solutions and outcomes.

What is the critical factor for the effective action of policy-makers? The volatility of economic circumstances is a critical factor. In an idealised world i.e. in a perfect world of 'universal knowledge', 'universal benevo-

lence' and 'complete certainty', in terms of the tendencies of basic economic variables, in principle, all systems for the correction of externalities are mutually equivalent. In the real world, however, multiple market failures are a 'complete certainty'. Since a policy-maker makes decisions based on 'planned' (ex ante) values of costs (benefits), that may differ from 'real' (ex post) values, incomplete knowledge, asymmetric information and an uncertain business environment are important determinants of the (un) desirability of certain systems (outcomes).

What is the policy makers' goal in terms of correcting the negative externalities that a company spills over to society? We respected the standard economic rule (theory of choice) – 'goods are desirable'. 'Desirable goods' is the provision of clean air, for example. A policy maker's goal is to 'plan' in advance (ex ante), to ensure the 'planned' ('expected', ex post) socially efficient amount (level) of 'reducing' the emission of marginal external costs (MEC). We will mark this with E*, i.e. (complementary), to provide the socially efficient "amount" of MEC (MD) emission that is 'allowed' to be emitted in a given society. The policy-maker finds the state of social optimum, i.e. the planned (ex ante) socially efficient amount (level) of MEC/MD reduction, 'E*', according to the universal optimality condition – the equality of the planned marginal social (total) costs 'for reducing' MEC, 'MSC*', and the planned marginal social (total) benefits 'from reduction' MEC, 'MSB' ('MSC* = MSB'). In principle, the policy-maker can achieve one planned goal, E*, by means of two alternative, market-oriented, systems: 'price' ('Pigouvian tax') or 'quantity' (combined, 'C & T' system).

## *PRICES VS. QUANTITIES*

A policy-maker has three basic ways to direct companies towards one goal, towards the realisation of the planned (ex ante) socially efficient amount of emission reduction, 'E*'. (i) 'Command and Control Regulation' ('C & C') is a traditional non-market approach based on 'quantity' ('quantitative system'). The 'price system' ('Pigouvian tax') explicitly determines the ideal 'price', the tax per each unit of emission: t = MEC. The 'Combined system' ('Cap and Trade', 'C & T') explicitly determines the planned total 'quantity' of permitted emission ('cap') in society: a mix of explicitly determined 'quantity' and transferable permissions for emission. A strict evaluation of the performance of the three systems was performed according to four criteria, out of which the fourth criterion represents the following thematic unit: (1) efficiency, (2) conceptual focus, (3) administration procedure, (4) preferred system for practical implementation.

**Efficiency**. The quantitative system ('C & C') is ineffective. The price system is efficient, leading to an efficient outcome, E*, since each company/emitter reduces emissions exactly to the 'point' of equality of the

planned price per unit of emission reduction, t*, and individual MPCRE*s, t* = MPCRE*s. The combined system ('C & T') is also efficient, since each company reduces emissions exactly to the 'point' of equality of the planned price of the permission for emission and individual MPCRE*s, p* = MPCRE*s.

**Conceptual focus.** When implementing a price system, the policy-maker explicitly determines a 'price' for a unit of MEC emission. What does the conceptual focus on 'price' mean? The creator fixes the 'price' and, thus, explicitly guarantees that the company's cost per unit of MEC reduction is not higher than the defined 'ceiling', t* = MEC. Then, each company individually reduces MEC emissions exactly to the point of equality t* = MPCRE*. In other words, at the level of the planned social optimum, 'E*', the equality applies: t* = MEC = MPCRE* (i.e. t* = MSB = MSC* = MPCRE*). What is the Quantity of emission of MEC? 'Quantity', i.e. the level of protection of society from negative spill-overs is residual, a true unknown.

When opting for a combined system ('C & T'), the policy maker explicitly determines the total 'quantity' of permitted emission of MEC ('emissions cap'). What does the conceptual focus on 'quantity' mean? The creator fixes the total 'quantity' and thus explicitly guarantees that the quantity of negative spill-overs is not greater than the quantitatively permitted 'ceiling' ('cap'). That is, the creator implicitly guarantees that the planned socially efficient quantity of emission reduction, 'E*', will be achieved. What is 'Price', i.e. the company's cost per unit of MEC? 'Price' is residual, a true unknown.

**Systems administration.** The policy-maker has two basic 'concerns' with regard to the management of the price system. The first is to practically determine the level of externality-correcting taxes, but in such a manner that they converge to the level of theoretically 'ideal' corrective taxes, t = MEC ('emissions tax'). Second, since the focus is on 'price', the policy-maker has to identify economic situations for which 'price' is the preferred system for practical implementation.

Since the cost of emission reduction is determined by the market prices of permissions for emission, 'p', and permission prices may fluctuate or escalate, the policy-maker has five basic administrative 'concerns' over the 'C & T' system. The policy maker has to: (1) continuously monitor the social reality/adequacy of the 'emissions cap' and, if needed, (2) obtain the offer of additional permits ('cost containment reserve' policy); (3) determine the 'lowest prices' for permits ('price floors'); (4) determine the 'highest prices', the so-called 'safety valve' (allowed reserve that acts like a price ceiling); and (5) since the focus is on 'quantity', the policy-maker has to identify economic situations for which 'quantity' is the preferred system for practical implementation (USA, CEEPR, 2015; 'C2ES', 2020; US EPA, 2021, 2022, 2023; Bruce, N, 2001).

## *PREFERRED SYSTEM FOR PRACTICAL IMPLEMENTATION*

The policy-maker's goal is to plan and provide a 'planned' socially efficient quantity of MEC emission reduction to society, 'E*' The policy-maker knows the exact amounts of the key variables for decision-making and realises the planned social optimum, 'E*', according to the condition of equality MSC* = MSB, where, at the same time, the externality tax represents the marginal cost for emission reduction and the marginal benefit from the emission reduction, t* = MSC* = MSB, i.e. t* = MPCRE*. Under conditions of 'full certainty', the policy-maker can achieve one planned goal, E*, by means of two alternative, market-oriented systems: "price" ('Pigouvian tax') or 'quantity' ('C & T' system). In other words, the result of the price system, '$E_{TAX}$', is equal to the result of the combined system, '$E_{C\ \&\ T}$', i.e. both systems provide an identical result, an identical emission reduction:

$$E_{TAX} = E_{C\ \&\ T} = E^*$$

In general, the policy-maker makes decisions on the basis of three universal principles. First, the state of social optimum (state of allocative efficiency), 'E', is determined according to the equality of social costs for emission reduction and social benefits from emission reduction, 'MCS = MSB'. Second, when the quantity of emission reduction is less than the quantity of emission reduction at the social optimum, 'E', then the social benefit from emission reduction is greater than the social costs for emission reduction – a state of allocative inefficiency due to insufficient emission reduction; in the general case: 'MSB > MSC'. Third, when the quantity of emission reduction is greater than the quantity of emission reduction at the social optimum, 'E', then the social costs for emission reduction are greater than the social benefits from emission reduction – a state of allocative inefficiency due to excessive emission reduction; in the general case: 'MSC > MSB'. We have expressed the 'main' directions we will configure the upcoming analysis around.

In an uncertain real world, the mistakes of policy-makers are quite certain. Hypothetically, we have zoomed in on one representative company from the national group of 'MEC emitter companies', and there are ambiguities regarding the valuation of costs and benefits. We focused on a situation that faithfully approximates problems in the real world. We apostrophised a specific error in the form of inequality between 'planned' (ex ante) and 'real' (ex post) amounts of key variables. We assumed that, due to the changed business environment, an inequality appeared between the lower 'planned' marginal private costs for reduction of MEC emission on society, 'MPCRE*', and the higher "real" marginal private costs for reducing spill-over effects on society, which we marked 'MPCRE**' (MPCRE** > MPCRE*, i.e. MSC** > MSC*). In the changed parametric environment, the policy maker-determines the 'real' social optimum ('real'

socially effective quantity of MEC emission reduction), 'E**', according to the universal condition of equality of costs and benefits, MPCRE** = MSB, i.e. MSC** = MSB, which is why:

$$E^{**} < E^{*}$$

Under the changed circumstances, both systems give suboptimal ex post results, since '$E_{TAX}$' (quantity of emission reduction under the price approach) and '$E_{C\&T}$' (quantity of emission reduction under the combined approach, 'C & T') are not equal to the quantity of emission reduction at the actual social optimum, 'E**'. When the policy maker opts for one approach, he 'closes' himself, at least temporarily, to the concrete systemic consequences of the chosen/applied approach. The analytical focus is on two determinants – MPCRE growth and MSB (in)elasticity, and their combined impact on the quantitative distance of '$E_{TAX}$' and '$E_{C\&T}$' from the actual social optimum, 'E**'. We evaluate systemic consequences through two questions. The first question is the direction of influence. In what 'direction' does the increase in MPCRE and the (in)elasticity of MSB affect the quantitative deviation of '$E_{TAX}$' and '$E_{C\&T}$' from the 'actual' social optimum, 'E**'? The second question revolves around the degree of influence. 'How much' does the increase in MPCRE and the (in)elasticity of MSB affect the quantitative deviation of '$E_{TAX}$' and '$E_{C\&T}$' from the 'actual' social optimum, 'E**'?

*In what 'direction' does the increase in MPCRE and the (in)elasticity of MSB affect the quantitative deviation of '$E_{TAX}$' and '$E_{C\&T}$' from the "actual" social optimum, 'E**'?* In response to the growth of MPCRE, the price system will always lead to a smaller reduction of emission quantity ($E_{TAX} < E^{**}$), i.e. a combined system ('C & T') will always lead to a greater reduction of emission quantity ($E_{C\&T} > E^{**}$), in relation to the quantity of emission reduction at the 'actual' social optimum, 'E**'. Why? It is because of different key performance indicators. The price approach is refined by the essential logic of the microeconomic concept 'economies of scale'. How does company management react to the new combination of determinants, identical tax (t*) and higher costs (MPCRE**)? In conditions of hyper-competition, and based on predictive analytics and enterprise resource planning, management rationalises company costs, and always chooses a cheaper solution: the cost to the company is never higher than the tax imposed by the policy-maker. As long as the inequality MPCRE** < t* is active, the company reduces the emission of MEC to society. In case MPCRE** > t*, business strategy adapts to the challenge, and corporate social responsibility 'disappears' (the company stops investing in 'green tech') and starts paying taxes. The practical consequence of this fact is: $E_{TAX} < E^{**}$. Due to the key performance indicator, 'C & T' system is in the 'shadow of the green economy'. With the price system, the tax per unit of emission is fixed. By choosing the 'C & T' system, the pol-

icy maker fixes the 'emissions cap' for a given period of time. The ceiling ('cap') for the total quantity of emissions that can be spilled over to society is 'resistant' to the increase in costs, from MPCRE* to MPCRE** (E* = $E_{C\&T}$). The practical consequence of this fact is: $E_{C\&T} > E^{**}$. Finally, in the real world, there is a need for the policy-maker to intervene, to administratively determine the maximum/minimum price of permits, i.e. to 'protect' the company's costs from the eventual escalation of the market price of the permit, as we precisely noted in the appropriate place.

*'How much' does the increase in MPCRE and the (in)elasticity of MSB affect the quantitative deviation of '$E_{TAX}$' and '$E_{C\&T}$' from the 'actual' social optimum, 'E**'?* E** is a variable indicator. The quantitative variation E** is the resultant of the interaction of two determinants, the elasticity (inelasticity) of social benefits from emission reduction, $MSB_{ELASTIC}$ and $MSB_{INELASTIC}$, and the growth of costs, from MPCRE* to MPCRE**. When we use Harberger's methodology ('Harberge's triangles') in the context of two systems (the price system and the 'C & T' system), two extreme forms of MSB elasticity (elastic and inelastic social benefit from emission reduction, $MSB_{ELASTIC}$ and $MSB_{INELASTIC}$) and cost growth (growth from MPCRE* to MPCRE**), then we define the excess burden, i.e. the deadweight loss for the society, 'DWL', on the bases of the area of four Harberger's triangles: $\Delta DWL_{TAX\text{-}ELASTIC}$, $\Delta DWL_{TAX\text{–}INELASTIC}$, $\Delta DWL_{C\&T\text{–}ELASTIC}$, and $\Delta DWL_{C\&T\text{–}INELASTIC}$. The area of each of these four triangles is determined by the corresponding size (value) of the base, 'B', and height, 'h', $B_{TAX\text{-}ELASTIC}$ and $h_{TAX\text{-}ELASTIC}$; $B_{TAX\text{-}INELASTIC}$ and $h_{TAX\text{-}INELASTIC}$; $B_{C\&T\text{-}ELASTIC}$ and $h_{C\&T\text{-}ELASTIC}$; $B_{C\&T\text{-}INELASTIC}$ and $h_{C\&T\text{-}INELASTIC}$.

**The 'Basis' of Harberger's triangles when the MSB is elastic or inelastic, '$B_{C\&T\text{-}ELASTIC}$ vs. $B_{C\&T\text{-}INELASTIC}$', and efficiency losses created by the 'C & T' system ('$\Delta DWL_{C\&T\text{–}ELASTIC}$' and '$\Delta DWL_{C\&T\text{–}INELASTIC}$').** When we analyse 'C & T system', the 'basis' $\Delta DWL_{C\&T}$ is the difference between social costs for emission reduction, 'MPCRE**' (MPCRE** = MSC**), and social benefits from emission reduction, 'MSB' (MSB = MEC = MPCRE*= t*) on the quantity of emission reduction 'E*'. 'E*' is a fixed quantity of emission reduction: E* = $E_{C\&T}$. 'Basis' $\Delta DWL_{C\&T\text{-}ELASTIC}$, '$B_{C\&T\text{-}ELASTIC}$', increases with the growth of the 'elasticity' of social benefits from emission reduction ('$MSB_{ELASTIC}$') – the more horizontal the MSB curve, the greater the difference between social costs and benefits, i.e. the basis '$B_{C\&T\text{-}ELASTIC}$' is maximal. What does the statement that the base of the triangle is maximal (i.e. '$B_{C\&T\text{-}ELASTIC}$' is maximal) mean when the absolute value of the slope of the linear curve quite 'slightly' decreases (i.e. when it is $MSB_{ELASTIC}$)? This statement explicitly indicates that 'C & T' is not the preferred system for all public policies for which the marginal benefit of the next unit of emission reduction is approximately constant. When the marginal social benefit from emission reduction is 'inelastic' ('$MSB_{INELASTIC}$'), the opposite comment applies. 'Basis' $\Delta DWL_{C\&T\text{-}INELASTIC}$,

'$B_{C\&T\text{-}INELASTIC}$', decreases with decreasing 'elasticity' (i.e. with increasing 'inelasticity') of marginal social benefits from emission reduction ('$MSB_{INELASTIC}$') – the more vertical the MSB curve, the smaller the difference between social costs and benefits, i.e. '$B_{C\&T\text{-}INELASTIC}$' base is minimal.

**The 'Basis' of Harberger's triangles when MSB is elastic or inelastic, '$B_{TAX\text{-}ELASTIC}$ vs. $B_{TAX\text{-}INELASTIC}$', and efficiency losses created by the 'price system' ($\Delta DWL_{TAX\text{-}ELASTIC}$ and $\Delta DWL_{TAX-INELASTIC}$).** When we analyse the 'price system', 'basis' $\Delta DWL_{TAX}$ is the difference between the social benefits from emission reduction, 'MSB' (MSB = MEC), and social costs for emission reduction ('t* = MPCRE**'), on the quantity of emission reduction '$E_{TAX}$'. '$E_{TAX}$' is a variable quantity of emission reduction, since the quantity of emission reduction depends on the change in the elasticity of MSB and the growth of costs for emission reduction. 'Basis' $\Delta DWL_{TAX\text{-}ELASTIC}$, '$B_{TAX\text{-}ELASTIC}$', decreases with the growth of the 'elasticity' of social benefits from emission reduction ('$MSB_{ELASTIC}$') – the more horizontal the MSB curve, the smaller the difference between social benefits and costs, i.e. the '$B_{TAX\text{-}ELASTIC}$' basis is minimal. When the marginal social benefit from emission reduction is 'inelastic', $MSB_{INELASTIC}$, the opposite comment applies. 'Basis' $\Delta DWL_{TAX\text{-}INELASTIC}$, '$B_{TAX\text{-}INELASTIC}$', increases with decreasing 'elasticity' (i.e. with increasing inelasticity) of social benefits from emission reduction ('$MSB_{INELASTIC}$') – the more vertical the MSB curve, the greater the difference between social benefits and costs, i.e. '$B_{TAX\text{-}INELASTIC}$' basis is maximal. What does the statement that the base of the triangle is maximal (i.e. '$B_{TAX\text{-}INELASTIC}$' is maximal) mean practically when the absolute value of the slope of the linear curve (i.e. when it is MSB-$_{INELASTIC}$) is very 'dynamically' decreasing? This statement explicitly indicates that the 'price system' is not the preferred system for all public policies for which the marginal benefit of the next unit of emission reduction is 'dynamically' decreasing.

**'Heights' of Harberger's triangles when MSB is inelastic ('$MSB_{INELASTIC}$'), '$h_{C\&T\text{-}INELASTIC}$' and '$h_{TAX\text{-}INELASTIC}$', and efficiency losses created by two systems ($\Delta DWL_{C\&T-INELASTIC}$ and $\Delta DWL_{TAX-INELASTIC}$).** Using two systems, the 'price system' and the 'C & T' system, under the influence of two determinants, the inelastic MSB ('$MSB_{INELASTIC}$') and the growth of MPCRE (from 'MPCRE*" to "MPCRE**'), we defined three different quantitative reactions, whose 'distances' represent two heights of two Harberger's triangles - '$h_{C\&T\text{-}INELASTIC}$' and '$h_{TAX\text{-}INELASTIC}$', for which the inequality applies:

$$E_{TAX} << E^{**} < E_{C\&T}$$

The focus is on the small 'distance' between $E_{C\&T}$ and E**. What does this 'small' distance represent? 'Distance' is the height ('$h_{C\&T\text{-}INELASTIC}$') of Harberger's triangle $\Delta DWL_{C\&T-INELASTIC}$. The distance ('E** <

$E_{C\&T}$') consists of a 'small number' of emission reduction units for which the social costs are greater than the social benefits. With the 'C & T' approach, the quantity of emission reduction is fixed ($E_{C\&T} = E^*$). A fixed quantity of emission reduction, $E_{C\&T}$, in combination with 'inelastic' social benefit ('$MSB_{INELASTIC}$') and the growth of MPCRE (to 'MPCRE**'), results in a 'small' quantitative deviation, i.e. a 'small distancing' from the actual social optimum, 'E**'.

**'Heights' of Harberger's triangles when MSB is elastic ('$MSB_{ELASTIC}$'), '$h_{C\&T\text{-}ELASTIC}$' and '$h_{TAX\text{-}ELASTIC}$', and efficiency losses created by two systems ($\Delta DWL_{C\&T–ELASTIC}$ and $\Delta DWL_{TAX–ELASTIC}$).** Similar to and fundamentally different from the above noted standpoint, under the influence of two determinants, the elastic MSB ('$MSB_{ELASTIC}$') and the growth of MPCRE (to 'MPCRE**'), we defined three different quantitative reactions, whose 'distances' represent two 'heights' of two Harberger's triangles, '$h_{C\&T\text{-}ELASTIC}$' and '$h_{TAX\text{-}ELASTIC}$', for which the inequality applies:

$$E_{TAX} < E^{**} << E_{C\&T}$$

The focus is on the large 'distance' between $E_{C\&T}$ i E**. The determinant has changed - '$MSB_{ELASTIC}$' is now a benchmark. The 'distance' is the height ('$h_{C\&T\text{-}ELASTIC}$') of Harberger's triangle $\Delta DWL_{C\&T–ELASTIC}$. The distance ('$E^{**} << E_{C\&T}$') consists of a 'large number' of emission reduction units for which the social costs are greater than the social benefits. With the 'C & T' approach, the quantity of emission reduction is fixed ($E_{C\&T} = E^*$). A fixed quantity of emission reduction, $E_{C\&T}$, in combination with 'elastic' social benefit ('$MSB_{ELASTIC}$') and the growth of 'MPCRE' (to 'MPCRE**'), results in a 'large' quantitative deviation, i.e. by 'great distancing' from the actual socially effective quantity of emission reduction on society, 'E**'.

The second goal of the study is represented by the following question. Given the suboptimal ex post results of the available systems for the correction of externalities, '$E_{TAX}$' and '$E_{C\ \&\ T}$', which system is closer to the actual social optimum, 'E**', and under what conditions? The second assumption of the study is as follows: the (un)desirability of the available systems depends on the change in the marginal private (social) costs for emission reduction, 'MPCRE', and the (in)elasticity of the marginal social benefits from emission reduction, '$MSB_{ELASTIC}$', '$MSB_{INELASTIC}$'.

When MPCRE are increased, from MPCRE* to 'MPCRE**', and when the marginal social benefit from emission reduction of MEC is 'elastic' - '$MSB_{ELASTIC}$', the 'C & T' system is more undesirable, less efficient than the price system, because it generates a higher DWL for the society – $DWL_{C\&T\text{-}ELASTIC} > DWL_{TAX\text{-}ELASTIC}$. Explicitly, the price system initiates a smaller DWL compared to the greater loss of efficiency created by the 'C & T' system. National and global environmental policy and

strategies are paradigmatic examples for the favouring and practical application of the price system.

When MPCRE are increased, from MPCRE* to 'MPCRE**', and when the marginal social benefit from emission reduction of MEC is 'inelastic' – '$MSB_{INELASTIC}$', the price system is more undesirable, less efficient than the 'C & T' system, because it generates a higher DWL for the society – $DWL_{TAX–INELASTIC} > DWL_{C\&T\text{-}INELASTIC}$. Explicitly, the 'C & T' system initiates a smaller DWL compared to the greater loss of efficiency created by the price system. Earthquakes, floods, and all forms of accidental situations with potentially fatal outcomes are paradigmatic examples for the favouring and practical application of the 'C & T' system. In order to recapitulate the current analysis, based on the works of the classics – Weitzman (1974), Baumol & Oates (1988), Bruce (2001), Cnossen (2005), Hindriks & Myles (2006), Hyman (2014), Gruber (2019), Cnossen & Jacobs (2021), we present Figure 1.

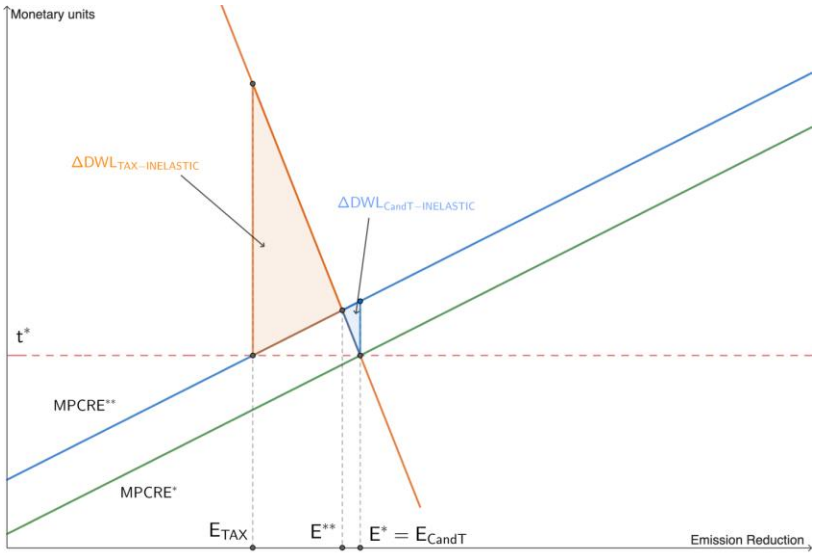


*Figure 1. $DWL_{TAX}$ vs. $DWL_{CandT}$, when MPCRE are increased, and when the inelastic marginal social benefit from emission reduction of MEC*
Source: Processed by the author based on the works of the classics noted above

With this research, we have evaluated the performance of two market-oriented systems in the context of determinants that reflect practical events in the real world. What is the final decision of policy makers on the (un)desirability of the system in modern conditions of 'augmented reality'? The question of the factual desirability (applicability) of the system touches the very essence of a specific society, the synergistic effect of the private economy (including social entrepreneurship and corporate social responsi-

bility, CSR), and the public economy (including environmental engineering/management and social economy). The final decision depends on the social (institutional) consensus on a debatable and contradictory questions of whether a specific society practically needs a system that primarily "protects" the company's costs, or whether the level of society's protection is a decisive factor that decides on the preferred system for correcting externalities. The universal complexity of the answer to these questions is undoubtedly confirmed by the presence of a diverse mix of price and 'C & T' systems in the real world.

## *CONCLUSION*

The economy of externalities implies relevant economic issues for the functioning of modern society and the shaping of public policies. This study sets two goals which are represented by the answers to two basic questions.

The first question is as follows. What are the possibilities of national policy makers in terms of the efficient correction of negative externalities in the spheres of production and consumption? The results of our research are as follows.

The possibilities of the policy maker to ensure the social optimum are determined by 'enlightenment' ('knowledge') and 'commitment' to social goals. In terms of 'enlightenment' and 'commitment', the capacities and orientation of policy-makers are either objectively (subjectively) limited, or they are inadequately oriented. Since the existence of externalities is equivalent to incomplete valorisation of effects, incomplete valorisation is a consequence of the lack of 'knowledge' and absence of 'mutual concern'.

The tendency towards 'social optimality' is an unattainable ideal, and therefore cannot be the focus of the academic and professional public. It is necessary to zoom in on the possibilities for improving the 'existentially' important subsystems of the social system, improving the market and management institutions, above all. Educational and personnel policy are both essence and leitmotifs.

The second question is as follows. Since available externality correction systems give suboptimal ex post results, which system is preferable, and under what conditions? When evaluating the practical applicability of available externality - correcting systems in changing economic circumstances, three results of this study are important.

First, when MPCRE are increased, from MPCRE* to 'MPCRE**', and when the marginal social benefit from emission reduction of MEC is 'elastic' – '$MSB_{ELASTIC}$', the 'C & T' system is more undesirable, less efficient than the price system, since it generates a higher DWL for the society – $DWL_{C\&T\text{-}ELASTIC} > DWL_{TAX\text{-}ELASTIC}$. Explicitly, the price system initiates a smaller DWL compared to the greater efficiency loss created by the

'C & T' system. National and global environmental policy are paradigmatic examples for the favouring and practical application of the price system.

Second, when MPCRE are increased, from MPCRE* to 'MPCRE**', and when the marginal social benefit from emission reduction of MEC is 'inelastic' - '$MSB_{INELASTIC}$', the price system is more undesirable, less efficient than the 'C & T' system, since it generates a higher DWL for the society – $DWL_{TAX–INELASTIC} > DWL_{C\&T\text{-}INELASTIC}$. Explicitly, the 'C & T' system initiates a smaller DWL compared to the greater efficiency loss created by the price system. Earthquakes, floods, and all forms of accidental situations with potentially fatal outcomes are paradigmatic examples for the favouring and practical application of the 'C & T' system.

Third, the practical choice of a specific system depends on the social (institutional) consensus on the relative importance (necessity) of certain systems, that is, the specific choice depends on the hierarchy of goals in society – the balance between economic policy (profit-maximising mission) and environmental policy (corporate social responsibility mission).

## *REFERENCES*


Balland, P-A., Broekel, T., Diodato, D., Guiliani, E., Hausmann, R., O'Clery, N., & Rigby, D. (2022). The new paradigm of economic complexity. *Research Policy*, Volume 51 (3). Elsevier. https://doi.org/10.1016/j.respol.2021.104450

Baumol, J.W. & Oates, W.E. (1988). *The Theory of Environmental Policy*. Cambridge University Press. http://econdse.org/wp-content/uploads/2014/07/Baumol_Oates_Theory_of_Environmental_Policy_1988-2.pdf

Bruce, N. (2001). *Public Finance and the American Economy*. New York: Addison-Wesley Longman, Inc.

CE Delft. (2020). *Handbook on the External Costs of Transport, Version 2019*. Brussels: European Commission. https://op.europa.eu/en/publication-detail/-/publication/9781f65f-8448-11ea-bf12-01aa75ed71a1

Center for Climate and Energy Solution, "C2ES". (2022). *Comments of the Center for Climate and Energy Solution. The new paradigm of economic complexity*. Research Policy, 51 (3). https://www.sec.gov/comments/climate-disclosure/cll12-8911568-244358.pdf

Cnossen, S. (Ed.). (2005). *Theory and Practice of Excise Taxation*. Oxford: OUP.

Cnossen, S., & Jacobs, B. (Eds.). (2021). *Tax by Design for the Netherlands*. Oxford: OUP.

Eurostat. (2013). *Environmental taxes, A statistical guide*. Luxembourg: Publications Office of the European Union. DOI: 10.2785/47492

European Commission. (2020). *External costs - Energy costs, taxes and the impact of government interventions on investments: final report*. Luxembourg: Publications Office of the European Union. https://op.europa.eu/en/publication-detail/-/publication/91a3097c-1747-11eb-b57e-01aa75ed71a1/language-en

Fleurbaey, Marc, Kanbur, R., & Viney, B. (2021). Social Externalities and Economic Analysis. *Journal Social Research*, 88 (1), 171-202. Princeton: Princeton School of Public and International Affairs. https://collaborate.princeton.edu/en/publications/social-externalities-and-economic-analysis

Foss, Kristen, & Foss, N. (2015). Coasian and modern property rights economics, *Journal of Institutional Economics*, 11 (2), 391-411. Cambridge: Cambridge University Press. DOI: https://doi.org/10.1017/S1744137414000484

Frichmann, Brett, M., & Ramelo, B. G. (2023). Externalities, Scarcity, and Abundance. *Sec. Research Policy and Strategic Management*, Volume 7. https://www.frontiersin.org/articles/10.3389/frma.2022.1111446/full

Gruber, J. (2019). *Public Finance and Public Policy*. New York: Worth Publishers.

Harberger, A. C. (1964). The measurement of waste. *American Economic Review*, 54 (3), 58-76. http://www.jstor.org/stable/1818490?seq=1&cid=pdf-reference#references_tab_contents

Harberger, A. C. (1964). Taxation, resource allocation, and welfare, *NBER and The Brookings Institution*, 25-80. Princeton, NJ: Princeton University Press. https://www.nber.org/system/files/chapters/c1873/c1873.pdf

Kotchen, M. (2021). The Producer Benefits of Implicit Fossil Fuel Subsidies in the United States. *Proceedings of the National Academy of Sciences*, 14(118). https://doi.org/10.1073/pnas.2011969118

Hindriks, J. & Myles, G.D. (2006). *Intermediate Public Economics*. The MIT Press Cambridge, Massachusetts London, England. http://econdse.org/wp-content/uploads/2014/07/Hindriks_Myles_Intermediate_Pub_Eco_2006_chs_1_2_7.pdf

Hyman, D.N. (2014). *Public Finance, A Contemporary Application of Theory to Policy*. Mason, OH, US: South-Western Cengage Learning.

Kotchen, M. (2022). Taxing externality: Revenue vs. Welfare Gains with an Application to U.S. Carbon Taxes. NBER Working Paper No. 30321. https://www.nber.org/system/files/working_papers/w30321/w30321.pdf

Kreps, M.D. (2013). *Microeconomic Foundations I: Choice and Competitive Markets*. Princeton, New Jersey: Princeton University Press

Lascols, B. (2021). Accounting and Reporting for Externalities: Balance of Externalities. *Mary Ann Liebert,, Inc.* 14 (2), 115-121. https://doi.org/10.1089/scc.2020.0051

Manski, C.F. (2000). Economic Analysis of Social Interactions. *Journal of Economic Perspectives*, 14 (3), 115–136. DOI: 10.1257/jep.14.3.115

Mas-Colell, Andreu, Whinston, M.D., & Green, J.R. (1995). *Microeconomic Theory*. Oxford, UK: OUP. http://www.hawkinqian.com/uploads/media/2014/09/Microeconomic_Theory.pdf

Maskin, E. (2019). The Economics of Kenneth J. Arrow: A Selective Review. *Annual Review of Economics*, Vol. 11, 1-26. https://doi.org/10.1146/annurev-economics-080218-030323

Nicholson, W. & Snyder, C. (2017). *Microeconomic Theory: Basic Principles and Extensions*. Boston, USA: Thomson, South-Western.

Pigou, A. C. (1920). *The economics of welfare*. London: Macmillan

Schmalensee, R., & Stavins, R.N. (2015). Lessons Learned from Three Decades of Experience with Cap-and-Trade. *MIT CEEPR (MIT Center for Energy and Environmental Policy Research). CEEPR WP 2015-015*. https://ceepr.mit.edu/wp-content/uploads/2021/09/2015-015.pdf

United Nations. (2021). *United Nations Handbook on Carbon Taxation for Developing Countries*, New York: UN. https://financing.desa.un.org/document/un-handbook-carbon-taxation-developing-countries-2021

US, EPA. (2021, 2022, 2023). *Power Sector Programs – Progress Report*. Washington, DC: United States Environmental Protection Agency. https://www3.epa.gov/airmarkets/progress/reports/pdfs/2021_full_report.pdf

Weitzman, M.L. (1974). Prices vs. Quantities. *The Review of Economic Studies*. 41 (4): 477–491. https://scholar.harvard.edu/files/weitzman/files/prices_vs_quantities.pdf

# ПРЕФЕРИРАНИ СИСТЕМ КОРЕКЦИЈЕ ЕКСТЕРНАЛИЈА ЗА ПРАКТИЧНУ ПРИМЕНУ

**Срђан Ђинђић**
Универзитет у Крагујевцу, Економски факултет, Крагујевац, Србија

**Резиме**

Економију екстерналија чине релевантна економска питања за функционисање савременог друштва и обликовање јавних политика. У овом раду су постављена два циља које представљају одговори на два основна питања. Које су могућности креатора националне политике у погледу ефикасне корекције негативних екстерналија у сферама производње и потрошње? Пошто расположиви системи за корекцију екстерналија дају субоптималне ex post резултате, који систем је пожељнији, и под којим условима?

Данас, након више од једног века еволуције (1920 – 2023), економија екстерналија се развила у неколико основних проблемских праваца, укључујући дисонантна образложења значаја и ефеката екстерналија. Иницијална идеја и примена теорије екстерних ефеката настале су у оквиру расправе о квалитету животне средине (Артур Сесил Пигу). Кенет Ароу је постао ‘славан’ по тржишту за екстерналије. Роналд Коуз је постао „славан“ по теоријском концепту чији је фокус приватизаија ресурса у јавној својини. Модел макроекономске стабилизације је занемарио макроекономске екстерналије, које су посебно значајне у стагнантном и/или кризном периоду, попут економске ситуације протеклих деценија новог века. На основу устаљеног инструментарија, микроекономија проучава ефекат пореза који коригују екстерне ефекте на цене и дистрибуцију користи. Тематика екстерналија се „данас“ објашњава са нових аспеката и из свеобухватне визуре. Прва претпоставка рада гласи: креатор политике ефикасно балансира интеракције између кључних актера у друштву, појединца, економије и животне средине. Прва полазна ‘тачка’ није потврђена у раду. У погледу планирних циљева, остварених резултата и предстојећих изазова за економију екстерналија, стање у трећој деценији новог века и стање у трећој деенији прошлог века су суштински еквиваленто детерминисани системи. Живимо у околностима перманентног стогодишњег присуства суштински идентичних ‘отворених’ питања, мада се манифестације и карактер појединих проблема делимично разликују.

Према традицији Пигуа и Ароуа, екстерналије настају због ефекта преливања које тржиште не може да валоризује. У фокусу овог рада су негативне екстерналије услед производње и потрошње производа или услуга. Циљ креатора политике је да обезбеди планирану (ex ante) друштвено ефикасну количину смањења емисије граничних екстерних трошкова (ГЕТ), E*. У принципу, креатор политике може да оствари један планирани циљ, E*, помоћу два алтернативна, тржишно оријентисана система: ‘цене’ (‘Пигуовски порез’) или ‘количине’ (комбиновани систем’ограничи и тргуј’).

У неизвесном реалном свету су извесне грешке креатора политике. Пажњу смо концентрисали на конкретну грешку у форми неједнакости између „планираних“ и „стварних“ износа кључних варијабли, ГПТСЕ* ≠ ГПТСЕ**. У аналитичком фокусу су две детерминанте, раст ГПТСЕ, са ГПТСЕ* на ГПТСЕ**, и (не)еластичност граничне друштвене користи, ГДКЕЛАСТИЧНА, ГДКНЕЕЛАСТИЧНА. ‘Колико’ повећање ГПТСЕ и (не)еластичност ГДК утичу на квантитативно одступање ценовног система, ЕПОРЕЗ, и система ограничи и тргуј, ЕО-Т, од количине смањења емисије на стварном друштвеном оптимуму, E**?

Друга претпоставка рада гласи: (не)пожељност расположивих система зависи од промене граничних приватних (друштвених) трошкова за смањење емисије, ГПТСЕ, и (не)еластичности граничних друштвених користи од смањења емисије. Када су повећани ГПТСЕ, на ГПТСЕ**, и када је ГДК еластична – ГДКЕЛАСТИЧНА, систем ограничи и тргује је непожељнији, зато што генерише већи чист губитак за друштво ('DWL'). Другим речима, ценовни систем је пожељнији. Национална и глобална климатска политика су парадигматски примери за фаворизовање и практичну примену ценовног система. Када су повећани ГПТСЕ, на ГПТСЕ**, и када је ГДК нееластична – ГДКНЕЕЛАСТИЧНА, ценовни систем је непожељнији, зато што генерира већи чист губитак за друштво ('DWL'). Другим речима, систем ограничи и тргуј је пожељнији. Земљотреси, поплаве, сви облици акцидентних ситуација са потенцијално фаталним исходима су парадигматски примери за фаворизовање и практичну примену система ограничи и тргуј.

Питање фактичке пожељности (апликабилности) система тангира саму есенцију конкретног друштва и хијерархију циљева. Да ли је конкретном друштву практично потребнији систем који „штити" трошкове предузећа, или је ниво заштите друштва пресудан фактор који одлучује о преферираном систему за кориговање екстерналија?