Market failure and the role of public administration

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Abstract. *The paper is about market failure and the influence of the institutional approach on it and it started from the idea of Veblen, a great 20th century economist, who presented institutionalism as an alternative to neoclassical economics. Based on neoclassical economics, in addition to explaining how a well-functioning market leads to the maximisation of welfare, an analysis of market failure was also made.*
The objective of the paper is to analyse market failure based on institutional economics. In addition, it was examined to determine how institutional solutions can result in limiting certain types of market failure.

Keywords: *Market failure, Market efficiency, Externalities, Regulation, social cost, Inflation, State, Intervention, Public goods, Incomplete markets.*

JEL: D62, E31, G18, H83.

1. Introductory part

In the early 19th and 20th centuries, institutionalism was presented by T. Veblen as an alternative to neoclassical economics. On the basis of neoclassical economics, in addition to an explanation of how an efficiently functioning market leads to welfare maximisation, we also find an analysis of market failure.

1.1 The main theme

The main theme of the present study is an attempt to synthesise these concepts, in particular to show how the institutional approach changes the perception of market failure.

Thus, we have developed the following hypothesis: Market failure can be reduced by regulation that reduces the social costs of negative externalities.

The main objective of this study is to analyse market failure based on institutional economics. In addition, it was examined to determine how institutional solutions can result in limiting certain types of market failure.

The relationship between the New Institutional Economics and the neoclassical interpretation of market failure can mainly be noted when it comes to explaining the reasons for the existence of markets and the methods used to counteract externalities.

The test of the research hypothesis on mitigating market failure situations through regulation that lowers social costs was carried out through a qualitative research method, namely the Case Study. This is a method of directly confronting participants with a real, authentic situation, taken as a typical example, representative of a set of problematic situations and events**.** (www.qreferat.com, n.d) I chose this method because I wanted to analyse the phenomenon in depth and not use statistics to draw general conclusions.

Moreover, it allows the observation of events that only occur naturally and cannot be reproduced at will. In this way, previous theories that were only hypothetical until now can be verified.

The tools applied in this study are Data Analysis and Literature Review.

2. Literature aspects

There is a vast literature on market failure dating back to classical political economy and 19th century criticism.

If, however, a systematised approach to market failure, which has been defined on the basis of neoclassical economics, is used as a point of reference, two articles by F. Bator The simple analytics of welfare maximisation (Bathor, 1958, p. 351-379) and The anatomy of market failure should be mentioned.

The first of these articles contains an overview of the neoclassical efficiency criteria for which market failure is most often defined. The latter presents this failure.

In addition to Bator's publications mentioned above, there was an article by K.J. Arrow & G. Debreu (Arrow & Debreu, 1954, p. 265-290) preceding them, in which they presented the evidence for general equilibrium.

Market failure resulting from lack of perfect competition was noted in the 19th century by A.A. Cournot (Cournot, 2020).

Externalities arose in the context of divergences (Pigou, 1920) between the marginal social net product and the marginal private net product, and were later analysed in the works of Buchanan & Stubblebine, Meade and Scitovsky (Medema, 2014, p. 111-132).

Although it is difficult to point to a clearly defined list of market failures, there is some consensus on this point. In the microeconomic perspective, market failures are: lack of confidence of competition (the monopolisation problem) and related economies of scale, externalities, public goods, information asymmetry and incomplete markets. Considering the macroeconomic perspective, market failure can include: unemployment, inflation or economic fluctuations (Bathor, 1958, p. 351-379).

There is therefore no consensus in the economic literature on the scope of phenomena that can be clearly defined as market failure.

The contemporary view of market failure embedded in the tradition of neoclassical economics, which has been defined by F. Bator (Bathor, 1958, p. 351-379**)** as “typically, at least in the allocation of market sustainability theory”, desirable “activities” to stop “undesirable” activities means, by definition, that the market is treated as an allocation mechanism, the use of which should lead to the optimal outcome within clearly defined efficiency criteria.

Moreover, Pareto argued that when these criteria are met, welfare is maximised. It follows from the first fundamental theorem of welfare economics that every allocation obtained through the market is an optimal allocation. Market uncertainty can therefore be associated with the inability to achieve welfare in the social dimension using supply and demand under perfect competition.

F. Bator made it clear that the model he presented does not explain how the existing social and economic system works. It only shows a set of strictly formulated assumptions, when these are met, an optimal solution, which was defined by Pareto, becomes possible to achieve. Bator also argued that there are many factors in the real world that disrupt the achievement of the most desirable solution.

These include "imperfect information, inertia and resistance to change, infiltration of costless lump-sum fees, business people's desire for a quiet 'life', uncertainty and inconsistent expectations, the vagaries of aggregate demand, etc." (Bathor, 1958, p. 352)

The dichotomy between market failure considered at the level of a theoretical model and the empirical analysis of this phenomenon in relation to the actual solutions of a given socio-economic system was highlighted by A. Marciano & SG Madema, who argued, "It also reveals a crucial distinction between the failure of markets as a system of economic and social organisation and the failure of a single market to function according to the dictates of a given objective function." (Giza, 2019)

The authors also draw attention to the fact that the interpretation of market failure depends largely on historical context. Initially, the market was criticised mainly as a socio-economic system.

In the 19th century, T.R. Malthus expressed concern about the prospects for human development resulting from the limited resources on Earth. He also criticised J.B. Malthus' idea of the stability of the market economy. Say. K. Marx focused on the fundamental conflict between capital and labour and the social tensions that result from this conflict. JM Keynes tried to explain the greatest economic disaster of the early 20th century, which was the Great Depression of 1929-1933. A. Marciano & SG Madema (Bathor, 1958, p. 351-379) started the market failure dispute in the article Market Failure in Context Introduction in the Collected Articles published in the History of Political Economy in 2015.

"The economist Adam Smith in his work "La Rischesse des Nations" (Smith, 2009, p. 15) remarked that enterprise and individuals active in the market behave as if guided by an "invisible hand" that favours the "spreading" of favourable results over all.

The 'invisible hand' metaphor implies that in the market, the pursuit of self-interest contributes to the welfare of all.

From this point of view, the market is an organisation of economic activity that leads to efficient situations. The term 'market failure' is used to designate a situation in which the market alone cannot allocate resources efficiently.

The welfare economics developed by the neoclassical school is a form of liberal interventionism which theorises market failure based on the theory of partial equilibria and general equilibrium, directly inspired by Keynesian theory. (Vuță, n.d, p. 1-2)

This explains why, by continually increasing fiscal pressure and public spending through the price system and the market economy, certain problems (property rights, individual freedom, etc.) (RegieLive, n.d.) cannot be effectively addressed.

Public intervention is based on welfare theory (general equilibrium theory initiated by L. Walras) (Walras, 1989, p. 351-359) (and continued by Debren, Wolfelsperger, 1995, etc.), and 'market failure' can be found in the following forms: collective goods, externalities, information asymmetry, natural monopoly.

3. Case study

Among these, I have chosen as a case study an externality, namely the phenomenon of global pollution, which I have analysed using the IPCC reports of 2001, 2007, 2019, 2021.

According to these, scientists have established that human activities have become a dominant force and are responsible for most of the observed rise in the last 50 years.

Economists and accountants have long been aware of the externalities of modern industrial society. This is an important case of market failure, whereby firms act within a market in such a way as to affect people outside it. Such activity is unlikely to produce outcomes that involve the most efficient use of resources.

Since the industrial revolution, businesses have operated in an environment in which they have not borne all the costs of production because of their ability to externalize some of the costs through air and water pollution. (Stern, 2006)

There seems to be a new consensus on the need to take urgent action to reduce the build-up of carbon in the atmosphere, but there is no global consensus on the

urgency of the action needed and the best way to tackle the problem. (Preston & Jones, 2006, p. 15)

Many governments appear to have accepted the need to impose a price on carbon emissions to the atmosphere as a way of generating a market-based adjustment to the relative cost of different energy sources. Such a system could adjust relative prices over time to produce a long-term environmentally favourable outcome, but it may act too slowly and with too much uncertainty to have the desired result. (Andrew, 2008, p. 399)

A carbon tax on all fixed energy sources would be much simpler to implement and would have a much more certain impact. A tax would be more appropriate than a market mechanism that is subject to all the problems of market failure that have created the problem of carbon pollution.

Carbon markets have started to develop in recent years, giving firms some options to offset their emissions by trading with less polluting firms. But critics of carbon trading say it is a "con game" that allows firms to dump some carbon in one place while supposedly removing it elsewhere. Information, measurement and pricing are key issues in any market, and an efficient market requires well-informed players. An uninformed market will not produce optimal resource allocation decisions and there is a real risk that those taking advantage of market failures will dispose of carbon at little or no cost. (Allen Consulting Group, 2006)

Below, we have conducted an analysis of IPCC reports from 2001 to 2021 as follows.

3.1. Climate change 2001

The basis for determining what constitutes "dangerous anthropogenic interference" will vary from region to region – depending both on the local nature and consequences of climate change impacts and the adaptive capacity available to cope with these changes – depends on mitigation capacity, as both the magnitude and pace of change are important.

There is no universally applicable best set of policies; rather, it is important to consider both the robustness of different policy measures to a range of possible future worlds, and the extent to which these specific climate policies can be

integrated into broader sustainable development policies. (Watson & Core Writing Team, 2001)

The third report (TAR) provides an assessment of new scientific information and evidence as a contribution to policy makers in determining what constitutes "dangerous anthropogenic interference with the climate system".

It primarily provides new projections of future greenhouse gas concentrations in the atmosphere, global and regional patterns of change and rates of change in temperature, precipitation and sea level, and changes in extreme climate events. It also examines the possibilities of abrupt and irreversible changes in ocean circulation and ice sheets.

Second, it provides an assessment of the biophysical and socio-economic impacts of climate change, in terms of risks to unique and threatened systems, risks associated with extreme weather events, distribution of impacts, aggregate impacts, and risks of large-scale and high-impact events.

Third, it provides an assessment of the potential to achieve a wide range of levels of greenhouse gas concentrations in the atmosphere through mitigation, as well as information on how adaptation can reduce vulnerability.

In 2001, TAR assessed available information on the timing, opportunities, costs, benefits and impacts of different mitigation and adaptation options. It indicated that there are opportunities for countries acting individually and in cooperation with other countries to reduce the costs of mitigation and adaptation and to achieve the benefits associated with achieving sustainable development.

The report also inferred the following:

The Earth's climate system has demonstrably changed at both global and regional scales since pre-industrial times, some of which can be attributed to human activities.

Human activities have increased atmospheric concentrations of greenhouse gases and aerosols since pre-industrial times. Atmospheric concentrations of the main anthropogenic greenhouse gases (i.e. carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O) and tropospheric ozone (O3)) reached their highest recorded levels in the 1990s, mainly due to fossil fuel combustion, agriculture and land use change.

Surface temperature increase in the 20th century for the northern hemisphere is likely to have been higher than in any other century in the last thousand years. The data available before 1860 in the southern hemisphere are insufficient to compare recent warming with changes over the last 1000 years. Temperature changes have not been globally uniform, but have varied between regions and different parts of the lower atmosphere. (Watson & Core Writing Team, 2001)

Following the findings, the authors of the third assessment report assigned confidence levels that represent their collective judgement as to the validity of a conclusion based on observational evidence, modelling results and the theory they examined. The following words were used throughout the text of the Synthesis Report to the TAR regarding the WGI findings: virtually certain (greater than 99% chance that a result is true); very likely (90-99% chance); likely (66-90% chance); moderately likely (33-66%) chance); unlikely (10-33% chance); very unlikely (1-10% chance); and exceptionally unlikely (less than less than 1% chance).

An explicit uncertainty interval (±) is a probable interval. Confidence estimates for WGII findings are: very high (95% or higher), high (67-95%), medium (33-67%), low (5-33%) and very low (5% or less). No confidence levels have been assigned in WGIII.

There is new and stronger evidence that most of the observed warming over the past 50 years is attributable to human activities. Detection and attribution studies consistently find evidence of an anthropogenic signal in the climate record over the past 35-50 years. These studies include uncertainties in forcing due to anthropogenic sulphate aerosols and natural factors (volcanoes and solar irradiance), but do not consider the effects of other anthropogenic aerosols and land use change.

3.2. 2007 IPCC Report - Some facts and figures on the science involved

In the summary of the relationship between climate change and weather, a working group contribution to the Fourth Report of the Intergovernmental Panel on Climate Change states that: Although many factors continue to influence climate, scientists have determined that human activities have become a dominant force and are responsible for most of the observed warming over the past 50 years. (IPCC, 2007-WG1 AR4, p. 105) Human-induced climate change has resulted primarily from changes in the amount of greenhouse gases in the atmosphere, but also from changes in small particles (aerosols) and changes in land use.

Some of the main findings of the IPCC's fourth report are as follows:

- Global temperatures have risen by 0.748C (±0.188) over the last 100 years.
- 11 of the last 12 years are among the 12 hottest years on record.
- Snow cover has decreased in most regions.
- The summer period has been extended by 12.4 days.
- Arctic sea ice decline is now 2.7% (±0.6%) per decade.
- Sea level has risen by 1.9 mm (±0.5 mm) per year between 1961 and 2003. (Australian Business Council, 2006)

NASA publishes its latest technical report on sea level rise, an update of the 2017 edition, which includes projections for sea level rise through 2150. The agency warns that sea levels could rise in the next 30 years by as much as in the past 100 years. (Wikipedia, 2022)

The IPCC has estimated climate impacts for a range of GHG scenarios, from a business-as-usual scenario to one in which emissions are drastically reduced, in which businesses invest heavily in a carbon-constrained economy, in which new technologies are born, in which GHGs stabilise at current levels, and in which the planet faces only moderate climate change in the future.

Consistent with the IPCC position, Stern (2006) notes that before the industrial revolution, GHGs in the atmosphere were 280 parts per million (ppm), compared to the current level of 385 (ppm). The level should not exceed a range of 450-550 ppm, as any level above this range will greatly increase the risk of very damaging effects such as crop failures, water shortages, flooding and cyclonic weather events. (Betz & Sato, 2006, p. 351-359)

3.3. IPCC Report 2019

This report on climate change and soil responds to the decision of the Panel of Experts in 2016 to prepare three special reports during the sixth assessment cycle, taking into account proposals from governments and observer organisations.

This report addresses greenhouse gas (GHG) fluxes in terrestrial ecosystems, land use and sustainable land management in relation to climate change adaptation and mitigation, desertification, land degradation and food security.

This report follows the publication of other recent assessments, including the IPCC Special Report on Global Warming of 1.5°C (SR15), the Intergovernmental

Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) Thematic Assessment on Land Degradation and Restoration, the IPBES Global Assessment Report on Biodiversity and Ecosystem Services and the UN Convention to Combat Desertification (UNCCD) Global Land Outlook. The present study provides a current assessment of the state of knowledge, while seeking to ensure consistency and complementarity with other recent reports.

Since the pre-industrial period (1850-1900), the observed mean land surface air temperature has increased considerably more than the global mean surface temperature (land and ocean) (GMST) (high confidence). From 1850-1900 to 2006-2015, the mean land surface air temperature increased by 1.53°C (highly likely range 1.38°C to 1.53°C). The frequency and intensity of droughts increased in some regions (including the Mediterranean, Western Asia, many parts of South America, much of Africa and North-East Asia) (medium confidence) and the intensity of global heavy precipitation increased (medium confidence) (68°C), while GMST increased by 0.87°C (range of probability 0.75°C to 0.99°C) (Masson-Delmotte et al., 2019)

Satellite observations have shown a greening of vegetation over the last three decades in parts of Asia, Europe, South America, central North America and south-eastern Australia. Global warming has led to changes in climate zones in many regions of the world, including the expansion of arid climate zones and the contraction of polar climate zones (high confidence). As a result, many plant and animal species have experienced changes in their ranges, abundance and seasonal activities.

Climate change has already affected food security due to warming, changing rainfall patterns and more frequent extreme events (high confidence). During 2007-2016, agriculture, forestry and other land use activities (AFOLU) accounted for about 13% of CO2 emissions, 44% of methane (CH4) emissions and 81% of nitrous oxide (N2O) emissions from human activities globally, representing 23% (12.0 ± 2.9 GtCO2eq yr-1) of total net anthropogenic GHG emissions (medium degree). If emissions associated with pre- and post-production activities in the global food system are included, they are estimated to account for 21-37% of total net anthropogenic GHG emissions (medium). (Masson-Delmotte et al., 2019)

Delayed action in all sectors leads to an increasing need for large-scale deployment of adaptation and mitigation options on the ground and may lead to a diminishing

potential for the range of these options in most regions of the world and limit their current and future effectiveness (high confidence). Action now can avoid or reduce risks and losses and generate benefits for society (medium confidence). Prompt action to mitigate and adapt to climate change, aligned with sustainable land management and sustainable development, depending on the region, could reduce the risk of millions of people facing extreme weather events, desertification, land degradation and food and livelihood insecurity (high confidence).

In future scenarios, postponing the reduction of greenhouse gas emissions implies trade-offs that lead to significantly higher costs and risks associated with rising temperatures (medium confidence). Delays in avoiding or reducing land degradation and promoting positive ecosystem restoration risk long-term effects, including rapidly declining agricultural and pasture productivity, permafrost degradation and difficulties in peatland restoration (medium confidence).

Delaying GHG emission reductions from all sectors implies trade-offs, including irreversible losses of terrestrial ecosystem functions and services necessary for food, health, settlements and production, leading to increasingly significant economic impacts on many countries in many regions of the world (high confidence).

3.4. IPCC Report 2021

Since AR5, improvements in estimates based on observations and information from palaeoclimate archives provide a comprehensive picture of each component of the climate system and its changes to date.

It is unequivocal that human influence has warmed the atmosphere, ocean and land. Rapid and large-scale changes have occurred in the atmosphere, ocean, cryosphere and biosphere. Each of the last four decades has been successively warmer than any decade preceding it since 1850.

In the first two decades of the 21st century (2001-2020), the global surface temperature was 0.99 [0.84-1.10] °C warmer than in 1850-1900. From 2011 to 2020, global surface temperature was 1.09 [0.95-1.20] °C warmer than 1850-1900, with larger increases over land (1.59 [1.34-1.83] °C) than in the ocean (0.88 [0.68-1.01] °C). The estimated increase in global surface temperature since AR5 is mainly due to additional warming from 2003-2012 (+0.19 [0.16-0.22] °C). (IPCC, 2021)

In addition, methodological improvements and new datasets have contributed about 0.1°C to the updated warming estimate in AR6.

It is very likely that human influence is the main cause of the global glacier retreat since the 1990s and the decrease in Arctic sea ice area between 1979-1988 and 2010-2019 (decreases of about 40% in September and about 10% in March). There has been no significant trend in Antarctic sea ice area between 1979 and 2020 due to opposing regional trends and high internal variability.

Human-induced climate change is already affecting many weather and climate extremes in all regions of the globe. Evidence of observed changes in extreme events such as heat waves, heavy precipitation, droughts, tropical cyclones and, in particular, their attribution to human influence has strengthened since AR5.

It is almost certain that since the 1950s extreme heat events (including heat waves) have become more frequent and more intense in most parts of the Earth, while extreme cold events (including cold waves) have become less frequent and less severe, and there is a high degree of certainty that human-induced climate change is the main driver of these changes. The frequency of marine heat waves has roughly doubled since the 1980s (high confidence), and human influence has most likely contributed to most of these heat waves since at least 2006.

Warming of the climate system has caused global mean sea level to rise through loss of land ice and thermal expansion due to ocean warming. Thermal expansion explained 50% of the sea level rise between 1971 and 2018, while glacier ice loss contributed 22%, ice sheets 20% and changes in land water storage 8%. The rate of glacier loss quadrupled between 1992-1999 and 2010-2019. Together, glacier and glacier mass loss contributed dominantly to the increase in global mean sea level during 2006-2018 (high confidence). (IPCC, 2021)

There have been interventions aimed at introducing a carbon tax. The two alternatives were agreed emissions targets and an ETS, but failed. Both options could have contributed to a solution, but have a slower and less certain impact than a carbon tax. The Kyoto Protocol sets agreed emissions targets, but the evidence so far suggests that most countries will not meet their targets. The immediate need for economic growth seems to be pushing into the background the less immediate need to limit greenhouse gas emissions. The relevant sanctions will be difficult to apply against any sovereign country unwilling to comply with the targets.

However, rapid changes are taking place in the atmosphere, ocean, cryosphere and biosphere. Each of the last four decades has been successively warmer than any decade preceding it since 1850.

Human-induced climate change is already affecting many extreme weather and climate phenomena in all regions of the globe. Evidence of observed changes in extreme events such as heat waves, heavy rainfall, droughts, tropical cyclones has strengthened since AR5.

Global surface temperatures will continue to rise until at least mid-century under all emission scenarios considered. Global warming of 1.5℃ and 2℃ will be exceeded in the 21st century unless significant reductions in emissions, CO_2 and other greenhouse gases are achieved in the coming decades.

According to economists, a carbon tax is the answer, as they see the alternative not as a well-designed and credible ETS, but a distorted one surrounded by uncertainty about key parameters. The two big advantages of a carbon tax over an emissions trading system are that the tax would be more transparent and visible, and therefore harder to evade or avoid, and the revenue would go to a responsible government, which could use the extra funds for a socially useful purpose, such as ensuring access to green energy for low-income households and funding green energy sources.

The design of a carbon tax is probably much simpler than that of an ETS, as the aim is to change the relative price of carbon generation in the atmosphere as a way of reducing the volume of GHGs.

In contrast, an ETS aims to indirectly change the price of GHGs by specifying a fixed amount of such gases that can be generated in total. Businesses would face greater certainty under a carbon tax because the increase in costs would be specified by the tax rate.

Thus, the conclusions drawn from this case study were as follows:

The Earth's climate system has demonstrably changed at both global and regional scales, some of which can be attributed to human activities.

Human activities have increased atmospheric concentrations of greenhouse gases and aerosols since pre-industrial times. Atmospheric concentrations of the main anthropogenic greenhouse gases (i.e. carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O) and tropospheric ozone (O_3)) have reached their highest recorded levels mainly due to fossil fuel combustion, agriculture and land use change.

Global surface temperatures will continue to rise until at least mid-century under all emission scenarios considered. Global warming of 1.5°C and 2°C will be exceeded unless significant reductions in emissions, CO_2 and other greenhouse gases are achieved in the coming decades.

Most economists believe that a carbon tax (a tax on the amount of CO_2 emitted from energy use) would be a superior policy alternative to an emissions trading scheme.

There are several advantages of a carbon tax over an emissions trading scheme. The impact and incidence of a tax would be more certain than an ETS, as the tax could be levied on the volume of emissions at a publicly announced rate. The impact would be gradual, as a levy could be phased in gradually, with scheduled rate adjustments according to an announced timetable, giving industry time to adjust. The charge itself would be stable, unlike the price fluctuations that occur in an ETS market, as seen in the EU ETS. The economic effect would also be more certain as the increased cost of emissions would be stable. In addition, revenues would be collected by the government, which would make it easier to recycle revenues to low-income households and GHG reduction projects, or could be used to reduce other taxes in a way that increases the fairness and efficiency of the tax system.

There are also other likely benefits. Price instability in an ETS market would add uncertainty and could have a negative impact on investment decisions and the level of economic activity in productive sectors of the economy.

In the case of a tax, there would be no need for a secondary market or a series of complex derivatives, which could distort revenue flows and economic activity and divert revenues from abatement activities to a small number of market players who could exploit the volatility of an ETS market.

Clearly, managing a carbon tax would be simpler than an ETS and could become the responsibility of existing institutions, unlike an ETS, which requires a number of new institutions such as a registration and enforcement body, a monitoring authority and a new trading entity, thereby reducing market failure and showing the usefulness of state intervention.

As a result of these considerations, and based on a research conducted using the analysis of 'Market Failure and the Role of Public Administration', this paper identified the main types of market failure and their causes, the study focusing on negative externalities, indices and Ipcc reports, confirms the hypothesis that,

'Market failure can be reduced by a regulation that mitigates the social costs produced by negative externalities.', namely, the introduction of a carbon tax.

The previous theories that were only hypothetical until now were verified by the tools applied in the case study (data analysis, biographical analysis, bibliographical research and scientific resources from the international databases E-information https://www.e-information.ro, IPCC reports considering the years 2001, 2007, 2019, 2021 on which we analyzed the data necessary to prove the hypothesis in order to regulate a carbon tax that would reduce the negative effects of them with incidence in market failure.

We have also used different bibliographic resources to study the phenomenon, its history, causes, types of failure, useful in understanding and deducing possible solutions.

All these resources are found below in the Bibliography of the paper.

References

Aaron, H.J. (1990). Lessons for Tax Reform, in J. Slem- rod (ed.), *Do Taxes Matter: The Impact of the Tax Reform Act of 1986*.

Akerhielm, K. (1995). Does Class Size Matter?, *Economics of Education Review*, 13(3).

Akerlof, G. (1970). The Market for Lemons: Qualitative Uncertainty and the Market Mechanism, *Quarterly Journal of Economics*, 84.

Allen Consulting Group (2006). *Slashing greenhouse gas emissions: Economic, social and environmental impacts for Australia,* Melbourne: Allen Consulting Group, available online at: http://www.allenconsult.com.au.

Allen Consulting Group (2006). *Deep Cuts in Greenhouse Emissions: Economic, Social and Environmental Impacts for Australia,* Melbourne: Allen Consulting Group. http://www.allenconsult.com.au.

Andrew, B. (2008). *Market Failure, Government Failure And Externalities In Climate Change Mitigation: The Case For A Carbon Tax*, Austria: Charles Darwin University, p. 399.

Arrow, J., Debreu, G. (1954). Existence of an Equilibrium for a Competitive Economy, *Econometrica*, 22(3). 265-290.

Australian Business Roundtable (2006). *The business case for early action. Australian Business Council,* available online at: http://www.businessroundtable.com [Accessed on: 06.04.2022].

Bathor, F.-M. (1958). The Anatomy of market failure. *Quarterly Review of Economics*, 72(3), p. 351-379.

Betz, R. and Sato, M. (2006), *Emissions trading: lessons from the first phase of the EU ETS and prospects for the second pase*, Climate Policy, p. 351-359.

Cournot, A. (1838). *Théorie des richesses,* available online at: https://mathshistory.st-andrews.ac.uk/Extras/Cournot_1838_book/, last update: November 2020 [Accessed on 06.06.2022].

Free Encyclopedia. article last edited on 17 April 2022, 13:05, available online at: https://ro.wikipedia.org/wiki/2022_%C3%AEn_%C8%99tiin%C8%9B%C4%83.

Giza, W. (2019). Ekonomia i Prawo, *Economics and Law,* 18(1), The institutional dimension of market failure, p. 5-15.

IPCC (2019). *Climate change and land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security and greenhouse gas fluxes in terrestrial ecosystems*. [Shukla, P.R., Skea, J., Calvo Buendia E., Masson-Delmotte, V., Pörtner, H.-O., Roberts, D.C., Zhai, P., Slade, R., Connors, S., Van Diemen, R., Ferrat, M., Haughey, E., Luz, S., Neogi, S., Pathak, M., Petzold, J., Portugal Pereira, J., Vyas, P., Huntley, E., Kissick, K, Belkacemi, M., Malley, J., (eds.)], available online at: https://www.ipcc.ch/site/assets/uploads/2019/11/SRCCL-Full-Report-Compiled-191128.pdf, [Accessed on: 08.06.2022].

IPCC (2021). *Summary for policy makers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V., Zhai, P., Pirani, A., Connors, S.L., Péan, C., Berger, S., Caud, N., Chen, Y., Goldfarb, L., Gomis, M.I., Huang, M., Leitzell, K., Lonnoy, E., Matthews, J.B.R., Maycock, T.K., Waterfield, T., Yelekçi, O., Yu and B. Zhou, R. (eds.)]. United Kingdom; University Press, Cambridge, available online at: https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf, [Accessed on: 08.06.2022].

Market Failures versus Government Failures, course, available online at: https://biblioteca.regielive.ro/cursuri/economie/esecurile-pietei-versus-esecurile-guvernamentale-215768.html [Accessed on 08:06.2022].

Medema, S.-G. (2014). Neither Misunderstood Nor Ignored: The Early Reception Of Coase's Wider Challenge To Smith, A. (1999). La Richesse des nations, *Philosophie*, 1, French ed., p.15.

The Analysis Of Externalities, *History Of Economic Ideas*, 22(1), Aspects Of The History Of Welfare Economics, p. 111-132.

Pigou, A.-C. (1920). The economics of welfare, *The Online Library Of Liberty*, Liberty Fund, Inc. 2005, available at http://files.libertyfund.org/files/1410/Pigou_0316.pdf.

Vuță, M. (n.d.). Modern approaches to the failure of the people and externalities, p. 1-2.

Walras, L. (1989). Melanges d'économie politique et sociale, *Albert Jolink & Jan van Daal The Economist*, 137, p. 351-359.

Watson, R.-T., Core Writing Team (2001), Climate Change 2001: Synthesis Report, published by the Cambridge University Press Syndicate in 2001, available online at https://www.ipcc.ch/site/assets/uploads/2018/03/WGI_TAR_full_report.pdf [Accessed on: 27.05.2022].

www.qreferat.com (n.d.). *Studiul de caz – pedagogie referat.* available online at: https://www.qreferat.com/referate/pedagogie/Studiul-de-caz-pedagogie433.php [Accessed on 12.06.2022].