Pigouvan Tax as a Support System for Economic Development of Indonesia

Mohammad Rizal Gaffar 1*, Nugroho Hardiyanto 2, Wahyu Rafdinal 3
1 Commerce Administration, Politeknik Negeri Bandung, Bandung, Indonesia
2 Commerce Administration, Politeknik Negeri Bandung, Bandung, Indonesia
3 Commerce Administration, Politeknik Negeri Bandung, Bandung, Indonesia

**ARTICLE INFO**

**ABSTRACT**

Industrial development is an important factor in measuring a country's economic development. On the other hand, the development of several industries today has had a negative impact on other industries. This situation results in the unequal economic development of the people, where some parties get bigger profits and other parties are forced to pay dearly for the profits that other parties get. This study aims to analyze the Pigouvian Tax as one of the effective answers to reduce the impact of negative externalities. This study uses data on negative externalities and Pigouvian Tax from books, the Internet, and literature related to the research topic. The result indicates that the Pigouvian Tax can be a medium for correcting negative externalities as a result of industrial activities in order to bring equitable economic development for all citizens of Indonesia.

**ISSN:** 2774-4256

**Keywords:** Pigouvian Tax; Externality; Green Industry.

**Introduction**

Industrial development can be a measure of the prosperity of the country. The level of a country's economy will increase in line with its industrial development. Every country is competing to promote the industry with the aim of prospering the life of the country and its nation. Indonesia as one of the countries that are aggressively advancing its industrial development has also succeeded in maintaining its economic growth of above 5% for the past five years (Tirto.id, 2020). This of course is an achievement that should be maintained.

Industrial development has a significant impact on the environment (Henderson, 1997). Initially, the negative impact on the environment may not be felt, but it turns out that it affects the rate of economic growth itself. Forest fires, floods, landslides, air pollution, and many other negative impacts of these industrial activities (Haryanto, 2018). This negative impact then affects the effectiveness of the utilization of economic production factors, which leads to inhibition of economic growth.
Industrial activities are increasingly having a negative impact because they contaminate or damage non-rivalry and non-excludable things so that other people are forced to pay compensation for the damage. Public goods, including non-rivalry and non-excludable, are free to be used by others. The irony in industrial activities is that these public goods are badly affected so that they interfere with other people who also have the right to use them. These bad effects are called negative externalities (Lazăr, 2018). Previous studies analyzed the important role of Pigouvian Taxes in solving environmental issues in Canada (Childs & Stevens, 2021) and Sweden (Nilsson & Sandsborg, 2016). Thus, this research will explain whether the Pigouvian tax will also be suitable to be applied in Indonesia.

Pigou & Aslanbeigui (2017) states that there are two types of externalities, namely, positive externalities (beneficial to society) and negative externalities (actors get more benefits than society). Lazăr (2018) states that this externality occurs when the activities of one unit affect the welfare of another entity that occurs outside the market mechanism (a non-market mechanism). In this case, externalities can affect economic efficiency. Meanwhile, Fisher (1996) argues that externalities occur when the activity of an economic actor (both production and consumption) affects the welfare of other economic actors and events that occur outside of market mechanisms. Thus, externalities will also affect economic efficiency.

The government also agrees with the negative impact of environmental damage on economic growth. Through the Regulation of the Minister of Industry of the Republic of Indonesia Number 39 of 2018 concerning Green Industry Certification Procedures, the government tries to minimize negative externalization as an effect of industrial activities (Kemenperin, 2018). In 2013, the government also awarded green industry awards to 69 companies that have implemented efforts to save and use natural resources that are environmentally friendly and renewable. Industrial activities often benefit actors and harm society. From the bad impact that has been transferred to other economic factors, it is necessary to suppress negative externalization in order to move towards the prosperity of the people, especially in Indonesia. Mankiw (2012) argues that negative externalities can be suppressed by imposing the external effects of industrial activities on the perpetrators. The solution is in the form of tax imposition on parties that cause negative externalization. This tax is known as the Pigouvian Tax. With this tax, the sustainability of public goods will be maintained and can be reused by many people in an effort to improve their lives. Thus, this research is important to explain how this Pigouvian tax is applied in Indonesia. This article will focus on how
Pigouvan Tax as a system to suppress negative externalization will support Indonesia's economic development.

Theoretical Review

Pigouvian Tax

Taxes that can be corrected for this negative externalization are known as Pigouvian Taxes. Pearce & Turner (1990) stated that the costs of negative externalities that were previously not imposed on any party because of their non-private nature and free of charge will now be borne by the perpetrator. This tax will make players more aware of their industrial production because of the tax burden they have to pay for each production. With this tax, the sustainability of public goods will be maintained and can be used again by many people in an effort to improve their welfare (Altemeyer-Bartscher, Rübbelke, & Sheshinski, 2010; Jacobs & de Mooij, 2015).

Pigouvian taxes aim to collect, from participants to the transaction, the amount of money demanded by persons not involved in the transaction to receive externalities and then compensate them for the money (Witkin, 2019). A Pigouvian intervention that is defined as equal to the marginal cost or benefit of an externality, theoretically eliminates the distortion of the externality and results in socially optimal consumption (Cawley & Ruhm, 2011). It is important to remember that the size of a Pigouvian intervention does not reflect the costs of fixing externalities. Fixing externalities would involve finding and funding processes to reduce the social costs of negative externalities (making problem-causing market processes less harmful) or supporting the development of positive externalities (making profit-causing market processes cheaper or more effective) (Witkin, 2019). Externalities and fixes may not match perfectly - many externalities may not have a solution, and some may have several viable solutions. For example, carbon capture technology is one possible solution to carbon emission externalities, but it is not the only solution (Witkin, 2019).

Pigouvian tax considers situations with public goods and user populations where each of them can choose to use the public good or use a more expensive alternative instead. Users of the public good “condense” it, causing negative externalities for others so that social planners want to reduce the use of the public good to a socially optimal level, with a tax on that use. An example of this scenario can be described as follows: (1) Toll road. Commuters can use the road by driving to work or using public transportation. There are inconveniences to taking public transportation, but driving a car can increase congestion on the roads leading to increased travel time for
everyone; (2) Carbon tax. People using carbon-based energy sources may choose to use more expensive renewable energy sources (eg electric cars vs petrol cars). Carbon-based energy sources have externalities in terms of pollution and global warming. Carbon taxes encourage a shift to renewable energy sources (Childs & Stevens, 2021). These examples illustrate the role of the Pigouvian tax in everyday life. This study will explain how this tax can be applied in Indonesia.

Externalities

Every action taken by humans will always have an impact on others, whether it's good or bad. As social creatures whose survival efforts have to come in contact with other people, we should take responsibility for actions that affect other people. In the realm of economics, this is known as an externality. Mankiw (2012) states that externalities are "the uncompensated impact of one person's actions on the well-being of a bystander". There are two types of externalities namely: (1) Positive externalization, namely the benefits obtained by the community as a result of activities carried out by several parties without having to pay to get them. One example is the development of the internet. The internet has brought the world to a new stage of civilization that is different from before. Internet companies get compensation for the products they produce. On the other hand, people also get positive benefits in information and self-actualization; (2) Negative externalization, namely the negative impact that must be borne by the community as a result of production activities. In this case, the non-actors must pay fees or compensation for industrial activities that they do not carry out. A common example of this negative externality is environmental damage caused by industry.

When the damage to the externality is less than the cost of the solution to the externality, the optimal approach is to let the externality exist with a Pigouvian intervention that redistributes funds to maximize social welfare (Witkin, 2019). Meanwhile, when the cost of the solution is less than the total cost of the externality, the optimal approach is to fund appropriate measures to improve or resolve the externality (Witkin, 2019). Determining which of the two approaches is more efficient requires a comparison of the total cost of resolving the externality to the total cost of allowing the externality to continue.

Method

In writing this article, the author uses qualitative methods, where this research departs from data collection through library research and is processed using several
approaches. Sherman & Webb (1988) assume that qualitative research is concerned with meaning as they appear to, or are achieved by persons in lived social situations. Endraswara (2011) also mentioned that qualitative research uses the researchers as the key to the research which is elaborated in the form of words or pictures than numbers, and the process is more priority than the result because literature establishes interpretations.

From a methodological perspective, this study was conducted with a single level to answer the research objectives, while the triangulation objective was achieved if applying more than one level throughout the case studies in the same location (Krishnamoorthi & Mathew, 2018). The main reason for not applying several levels is in its application, this Pigouvian tax has not been implemented in Indonesia, so this study only analyzes the literature and explains its suitability for the Indonesian context. In writing this article, data were obtained from books and online articles as well as the author's observations on the impact of industrial activity on the productivity of natural resources and society itself. The data obtained were then analyzed with the author's insights to achieve the goals of writing this article.

**Result and Discussion**

Before answering how important the Pigovian tax is in Indonesia, we need to know what problems Indonesia faces that can be controlled with the Pigovian tax. The industrial world is now growing rapidly. First, is the impact of industrial activities. Industrial growth is a benchmark for a country's economic development, in other words, the economy in Indonesia is also developing. Central Bureau of Statistics noted that Indonesia as one of the countries that are aggressively advancing its industry has also succeeded in maintaining its economic growth of above 5% for the past five years. It turns out that rapid industrial development as economic support has an impact on environmental pollution and has quite an impact on society in general. Industrial activities contaminate the effectiveness of public goods so that people who depend on non-rivalry and non-excludable public goods find it difficult to carry out economic activities in order to meet their needs. In this case, they suffer losses by incurring costs of economic activities that they do not do, while the actors in these economic activities continue to benefit from their activities.

Second, is the impact of natural capital. Indonesia is a country with a lot of natural resources, in other words, Indonesia provides abundant natural capital for its people to use their needs and fulfill their welfare (Measey, 2010; Quincieu, 2015). Natural capital is a collective term for the Earth's natural assets and the ecosystem services
resulting from them, which enable humans to live. Ecosystem services, which are a form of natural capital, form the basis for all human economic activity, which includes food, water, and energy (Robinson et al., 2013). The good use of natural capital will be very profitable for Indonesia, which should not have to pay any more for the availability of this huge capital. The irony that occurs with industrial development is the deterioration of the function and usefulness of natural capital so that natural capital becomes an asset that must be paid a very high price. CNN (2018) reported that in 2011, recorded diseases due to air pollution from coal industry activities reached 7,500. By 2030 that figure is predicted to triple and it is estimated that the health costs of respiratory diseases in Indonesia could cost up to the US $ 805 billion or Rp11,250 trillion between 2012 and 2030. A fantastic price to pay while maintaining the existence of the industry.

In answering these problems, the Pigouvian tax can be applied in Indonesia. The negative externalities created by industrial activities deserve serious attention from all levels of society, from industry players to policy makers. Prudent steps must be taken immediately before this becomes out of control. Industry players who cause negative externalization must be responded to correctly, giving compensation in the form of Pigouvian Tax will be very appropriate in supporting this correction system. The imposition of taxes on the impact of industrial activities imposed in the Pigouvian Tax will lead industry players to be more aware of their production because every item they produce will be charged a fee. With the applicable tax imposition on industrial activities, the government can also provide compensation to affected communities. Pigou & Aslanbeigui (2017) argued that railroad companies should compensate farmers and other property owners who suffered losses from the dangers of fire and smoke emitted by trains. By providing this compensation, the Pigouvian Tax can maintain the prosperity of the community.

The implementation of the Pigouvian tax has caused debate by various parties (Lazăr, 2018). There have actually been many movements to criticize negative externalization as a result of this industrial activity. Environmental activists have developed a skeptical view of industrial activity and they are starting to echo the growing protests. Rejection of industrial development by communities in several regions in Indonesia, as well as other unmapped and well-coordinated movements. The government as the voice of the people in this democratic country actually has the privilege to coordinate this. Based on articles 33-34 of the 1945 Constitution, which regulates the role of the state in safeguarding the people's welfare, it will be a great force in regulating industrial policies related to sustainable development (Kemenkeu,
2013). For this reason, more in-depth analyzes are needed regarding the impact of this Pigouvian tax implementation in Indonesia. If this has a good impact, prior to its implementation, socialization should be carried out, especially for companies or households that will pay this tax.

Pigouvian Tax focuses on people's welfare. As stated by the constitution, the government plays an important role in the welfare of the people (Edenhofer, Franks, & Kalkuhl, 2021). The policies are expected to reduce negative impacts related to environmental damage. For example, the implementation of environmental policies by the United States government and European Union, namely: (1) Emission charge of CFC (determination of tax policy on the use of Chloro – Fluro Carbon); (2) Permit system allowing a fixed amount of emission; (3) Subsidy (Heindl & Löschel, 2012; Krass, Nedorezov, & Ovchinnikov, 2013; Tietenberg, 2010). Pigouvian Tax application can be seen in the policies implemented by the United States government in an effort to suppress the negative externalization of industrial activities. Reflecting on the policy of the United States, there are several forms of policy points that the Indonesian government can also apply, such as (1) Government policies related to environmental pollution; (2) Negative Externalization Compensation; (3) Environmental agents; (4) Socialization of the green environment; (5) Green Industry Award.

Conclusion

As a developing country, Indonesia needs all production factors that can support its economic activities. Nature is the most effective and friendly capital for the Indonesian people because they do not have to spend money to use it. This thing that sounds good is not as beautiful as the application in the field. Natural capital which should be easily accessible is becoming very difficult to obtain. The reason is that economic activities that actually support the people's economy actually have a negative impact.

The negative externalization caused by industrial activity is already at a stage that requires attention. If this continues, it will cause imbalances in the economic growth of the Indonesian people. Therefore, we need a system that can correct this negative externalization. Pigouvian Tax responds to this anxiety by providing compensation which is a middle way between those who have an impact and those who are affected. Pigouvian Tax aims to prosper the people equally and this is what is needed in building the economy of a nation.
The government's role in suppressing the negative externalization of industrial activities will be very vital. With the existence of government regulations that are based on law and the application of compensation through Pigouvian Tax. In its implementation, the government must be consistent in giving actions according to what is written, so that the application will be maximized in an effort to achieve equitable prosperity.

**Future Research Direction**

This research, of course, still cannot answer all the questions and problems about negative externalization and how to suppress it. This research only focuses on several forms of negative externalization through the application of the Pigouvian Tax. Further research can add several variables such as the types of taxes or policies applied based on the implementation of the Pigouvian Tax and sustainable development as a follow-up to the Pigouvian Tax that has been applied. Future research can also add to other variables that future researchers feel are important.

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