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Foreign Direct Investment and Environment Regulations

Analytic Study

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ABSTRACT

This paper examined three different approaches of environmental regulations: Command-and-control approach, economic incentive approach and non-mandatory approach. In the first approach, there is involvement of the government such that it determines the standard of pollution emissions and the method to be adopted technologically ensuring thereby that the standards are fulfilled. On the contrary, in the second approach, producers enjoy the freedom to select their own technologies and methods in as much as legal standards are respected and rewards are provided financially for pollution reduction below the legal levels. As for the voluntary or non-mandatory approach, firms enhance their performance by voluntarily choosing the proper actions that are pushed by self-interest as firms do not risk losing acceptance of the public after disclosing information on their environmental performance. This paper highlights the importance of regulations enforcement, compliances and incentives. This entails studying the effect of imperfect information on environmental regulations. Hence the role of information is very vital for environmental regulations efficiency.

Keywords: FDI, Environment regulations, Command-and-control approach, Economic incentive approach, Non-mandatory approach

1-Introduction

Although there have been many concerns about the environmental and social impact of foreign direct investment, its flow increased to developed and developing countries, due to the increase of liberalization of global economy. 72% of FDI received by developed countries, development cooperation (2016). The pattern of FDI shows that there is a stronger preference in manufacture and service sectors in developed countries and neutral resources sectors in developing countries, investment in this sectors exploited limited regulate regimes. So FDI may have negative impact on environment and social development in many of developing countries, which is termed "the pollution haven theory ".

Regulating the relation between FDI and the environment has got the interest of many international organizations. A conference was held in 1999 highlighting the guidelines of such relationship. Also, another conference in the year 2002 held by the OECD shed light on the mining sector. In the conference, the environmental impact of FDI was discussed tackling a significant sector that is consistently being held responsible for pollution. Environment preservation was addressed also by the UN through depleting resources. In addition, the UN in its Agenda 21, Chapter 30 on "Strengthening the role of Business and Industry" highlighted the importance of:

- Making multinational corporations put environmental management as their top priorities due to its effect on sustainable development.
- The World Bank (WB) established a Multilateral Investment Guarantee Agency (MIGA) which is committed to direct FDI to developing countries with the partnership of clients that are environmental oriented to reduce poverty and ensure sustainable development.

Accordingly, it is very apparent that the issue of FDI and environment is of great concern to most of the international organizations, it is true that many policies and agreement are in action now, but the question is how effective they are? And to what degree are they applicable in practice? And if not what hinders this effort? To answer these questions This paper will examine three different approaches of environmental regulations.

Regulatory Approaches (Command-and-control approach, Economic incentive approach) and voluntary Approach **(**non-mandatory approach**)** followed by discussing regulations

enforcement, compliances and incentives. This also entails examining Implicitly the effect of information on environmental regulations.

2-Regulatory Approaches

Two major regulatory approaches are used for the purpose of pollution control: One related to command and control and another to economic incentive. Which one is much more effective? The first approach (command -and-control) is traditional and comes as standards which are directly imposed on firms. The second approach emerged as a result of criticizing the first. Furthermore, there is an ongoing debate on the most effective environment regulatory policy in which standards, fees, permits, Pigouvian taxation and Coasean bargaining are possible methods to control pollution emissions.

According to Klink (1994), Pigouvian taxation is a case of severe government intervention to correct for pollution. The government imposes taxation to achieve the social desirable outcome. However, the government bureaucracy, corruption and the possibility that the burden of this tax is passed to the consumers are limitations of such regulatory policy. On the other hand, Coasean bargaining is a case of free negotiations between different agents without government intervention. The market provides some kind of compensation between agents to correct for pollution. To achieve this, property rights should be well defined and the number of bargaining agents should be small to reduce transactional costs and to be able to reach a consensus(*). Finally, standards, fees and permits are discussed in details under command-and-control and economic Incentives regulatory approaches (El-Chaarani and Abraham, 2022).

Command-and-Control Approach

This approach is most preferably sought when emissions are extremely toxic and when the MAC - marginal abatement cost curves – are unchanging for all firms. Here, the most appropriate technology is decided by the control authority so that pollution does not surpass the standards that are determined for each pollutant as ceilings for emissions. The government is in charge to implement these standards. High inelasticity of marginal benefit

(*) See **Rosenkranz** and **Schmitz** (2007), **Ancev** (2006) and Klink (1994) for more **information** about Pigouvian taxation and Coasean bargaining.

of reduction in this approach could make the latter successful. What we really care for in this event is the emissions decrease.

On the other hand, command-and-control approach is always accused of being, inefficient with respect to cost effectiveness, creating asymmetric information problems such as the principal-agent problem and lacking flexibility that discourages firms from complying with regulations. This results in discouraging regulations enforcement. However, the economic incentive approach by contrast is more flexible. These limitations are not the only factors that negatively affect pollution control in the command-and-control approach. Problems in enforcement and compliance methods could also hinder regulations efficiency as discussed in the next subsection.

Enforcement and Compliance Methods

If environmental regulations are not enforced, they are surely unsuccessful, because firms that play in role in pollution are pushed to comply with the regulations through such enforcement. Some countries require firms to report to authorities, yet in such a method sometimes the polluting firms decrease their level of emissions, in which case damages occur. Such inaccurate information given may mislead the principal. **Per-**that, the government sends inspectors to check polluting firms in practice as a way to improve their compliance. Empirical evidence indicates that not only inspection results in accurate self-reporting, but it also reduces pollution Lin (2008). In addition, Laplante and Lanoie (1996) showed that even the threat of inspection increases compliance by firms as it reduces pollution levels.

Inspection is not the only method used to put regulations in action or to increase compliances. Performance-based contracts (PBC) can be a useful tool in enforcing regulations. The sources of effectiveness of PBC are explicitly defined statement of work with reachable performance standards, clearly written performance standards for each measurable service of the contract, obviously set methods of supervision, quality control and penalty payments US Department of Energy, (1998). In other words, all needed details and specifications required to end up into adopting an efficient way to do the work are

stated in the PBC. Furthermore, PBC could be used to solve principal-agent problem. This is through relying on measurable and quantifiable output ability in creating incentives for agent to take action in the principal's benefit. This is done through adding rewards or penalties that are dependent on the agent performance. For that, performance incentives, cost incentives, structure incentives, and management Incentives are used in PBC.

In addition to Inspection and PBC, compliance assistance by the government can be used to improve compliance of firms and enforce regulations. This can be either in the form of educational and technical assistance or financial assistance. Educational assistance is to let firms know their legal obligations to be aware of the cost of not complying (El-Chaarani, 2015; El-Chaarani and Abraham, 2022).

Also, educational and technical assistance identify to firms' methods of fulfilling their responsibilities. Furthermore, the government or international organization can also offer direct financial support to polluting firms at early stages. This is because sometimes financial burden can be an obstacle against compliance. For example, the Compliance Assistance Program of the Multilateral Fund of the Montreal -Protocol offers technical aid to developing countries through its regional offices (Principles of Environmental Compliance and Enforcement Handbook (2009).

Compliance incentives could be another useful method to increase regulations enforcement and firms' compliances. This is through policies that remove, decrease or ignore penalties under certain conditions for firms that voluntarily declare and correct noncompliance, and avoid any further environmental degradation. These voluntary actions could develop into a third regulation approach that will be discussed in details under non- mandatory approach.

In addition, public rating system is used to rate polluting firms on a scale. This provides firms with an incentive to comply with the said regulations so that they do not lose their reputation in front of the public. For example, Indonesia's Environmental Report Card provides color rates for polluting firms to reflect their degree of compliances as shown in table 1.

Also, recognition program, is another type of compliance -incentives that increases compliance. Under recognition programs such as that used in Mexico and US, firms that show historical evidence of regulations compliance, reduce their pollution levels, help in solving pollution problems and are active in environmental campaigns are recognized. If so, these firms get benefits in the form of less supervision or special administrative and management Incentives.

Table 1 Indonesia's Environmental Report Card

Compliance Status	Color Rating	Performance
Not complying	**Black**	Polluter does not control pollution and is deeply damaging the environment.
Not complying	**Red**	Polluter is doing an effort but not enough.
Complying	**Blue**	Polluter is meeting the standard
Complying	**Green**	Polluter is emitting emissions below the standards
Complying	**Gold**	Polluter is meeting high International

Source: Principles of Environmental Compliance and Enforcement Handbook (2009)

Last but not least, adopting economic incentive approach as an alternative to command-and-control approach can increase regulations enforcement and compliance. To show-that, economic incentive approach is discussed in details in the following section.

Economic Incentive Approach

In this approach, the producers have the freedom to select the suitable production methods inasmuch as levels of pollution are set within the frame of legal standards. Furthermore, they are getting rewards for pollution reduction, thus proving the flexibility and effectiveness of this approach. There is a critical issue hitherto which is information access as firms enjoying more experience and information are going for the best techniques that work on minimizing pollution.

Here, producers have the freedom to select the suitable production methods inasmuch as levels of pollution are set within the frame of legal standards. Furthermore, they are getting

rewards for pollution reduction Blackman (2006) and Tietenberg (1990). Hence, the best private choice can match with the best social choice though providing Incentives to firms.

Accordingly, achieving environmental goals is relatively easier and less costly than in the command-and-control approach. Access to information is a very crucial issue here. This is because firms with superior information and experience **are** more likely going to choose the best technique that minimizes pollution. Economic incentives can be provided by using two main policies so that firms reduce pollution. One policy is related to permits or emissions trading while the other one is related to emissions fees programs.

With respect to emissions trading or permits, Firms have the freedom to choose the appropriate technique for pollution reduction; they are rewarded by accessing the emission reduction credit (ERC) like the case in the US. The ERC could be used by firms in the future when their pollution levels are higher than the legal standard or they can be sold to other firms. It is as if firms are given permission to pollute (permits) through accessing these ERC. By making these permits transferable between firms, it provides firms with incentives to find out the cheapest method to reduce pollution.

To make the permits or emissions trading policy enforced, other policies such as the offset policy, the bubble policy, emissions banking and netting policies are used. The offset policy is to allow new firms or expanding ones adopting clean environmental techniques in production to enter into previously prohibited area, i.e. areas with high levels of pollution higher than the standard limit. This is to end up into offsetting the effect of polluting firms leading to improved environmental quality. The bubble policy on the other hand, treats several emitter points as if they are in one bubble. One point can pollute more than the standard limit provided that another one will pollute less so that the total emission level by the bubble is not exceeding the standard limit. In addition, netting allows expanding or modifying firms to escape from strict requirements of new firms. Finally, emissions banking save ERC received by firms for future use through offset, bubble or netting or simply for the sake of selling them latter.

Sometimes, emissions fees policy is used instead of permits or emissions trading policy in the economic incentive approach. Emission fees policy is usually used to water pollution in contrast with emissions trading policy that is more commonly used for air pollution.

Under emission fees policy, firms pay fees for polluting the environment depending on their degree of pollution. For example, in Italy, the fee is 9 times higher for firms that emit pollutants higher than the standard limit Tietenberg (1990). This gives incentive to firms to reduce pollution to escape, high charges. In Netherlands, revenues from fees are used in improving water quality, while in Japan they are used to compensate the victims of pollution. In general, Emissions fees come in two types: efficiency charge and cost-effective charge. The first is created by the fees paid by firms for damages caused by pollution while the second is achieved by reaching a legal emission at the lowest price possible.

Theoretical Background of Economic Incentive Approach Policies

Understanding the theory behind the economic incentive approach policy helps in setting methods of its enforcement which ultimately results in achieving the desired environmental goals. Assuming that all agents are cost minimizers and in spite of lack of complete information on methods of controlling pollution by the government, an economic incentive system can cost effectively allocate pollution control to polluting firms to meet the legal standard. The logical basis for this is that firms that minimize costs would also like to minimize the sum of the fees of emission and the costs of pollution control. Consequently, cost-effectiveness is reached via its one condition established by the equal marginal control costs by all polluting points.

The role of information here is very critical. This is apparent in two cases: when the government decides on the appropriate amount of fees and when the government lacks the knowledge of the best pollution control technique that minimizes cost. For case one, information is important because emission fees system will not lead to cost effectiveness unless the government knew the appropriate amount of fees to be charged or is willing to reach this through trial and error process. However, this is not a problem in the emissions trading system because the price of ERC is determined by the market. Initially when the government decides on the allowable. pollution emissions level, ERC can either be auctioned off by the government for polluter sources to purchase at the market clearing price or they can be obtained when polluters reduce emissions below the legal standard level.

Firms can buy and sell this ERC in the market where prices adjust to changes in supply and demand. Furthermore, to end up into cost effectiveness in emission trading system markets have to be competitive, firms are price takers, and transactional costs are low.

In case two, lack of information may encourage government to use economic incentive approach. The government usually relies on the economic incentive approach when it lacks the knowledge as the best pollution control technique that minimizes cost. The economic incentive approach gives incentives to firms so that those with the best knowledge of pollution control techniques are encouraged to reach environmental goals at minimum cost. This is similar to "Porter hypothesis" in describing FDI-environment relationship Porter and Van der Linde, (1995). It states that rigorous laws make producers innovate new methods that are un-harsh environmentally and thereafter exporting the same. Hence, strictness regarding the laws of the environment is not always the cause for competition Besides, regulation effectiveness is not prevented by the inaccuracy of information and this is contrary to the command and control approach. Wagner (2003).

Economic Incentive Approach in Practice

According to Tietenberg (1990), most of the empirical studies showed that pollution control costs are substantially lower in economic incentive approach than in the command-and-control approach. This moves in line with the theory which states that by mere coincidence control -and- command approach will lead to cost effectiveness. In addition, Terkla (1984) showed empirically that efficiency gains are reached when economic Incentive approach is used instead of the traditional methods which usually distort the market.

Furthermore, it is expected from the theory that economic incentive approach leads to more technical progress than command-and-control approach. The reason behind this is that economic incentive approach gives incentive to firms to compete and innovate to reach the best technology that minimizes cost. Dudek and Palmisano (1988) showed that this is also true in practice; however, the size of innovations is not very huge as expected.

Finally, Feldman and Raufer (1987) and Tietenberg (1989) showed that emission trading approach has another major advantage which is absent in command-and-control approach, namely, leasing credits. Under leasing, firms that experience a temporary decrease in their emissions below the legal standard in one of its plants can rent their extra credits to another,

facility and recollect them when needed. Thus, leasing credits leads to more flexibility which is useful for firms that have varying patterns of emissions across time.

In addition, Feldman and Raufer (1987) also showed that leasing is crucial for each policy controlling the effectiveness of cost by going through its influence on the demand and supply of credits of acid rain emissions. In spite of this, economic incentive approach is sometimes accused of several drawbacks which will be discuss in the next subsection.

Criticism of the Economic Incentive Approach

There are some limitations of the economic incentive approach whether in the form of emission trading policy or the emission fees policy. Among them is the inability of the emission trading approach to function effectively in the presence of high transactional costs. This is magnified if large firms exist in the market as they have bargaining power and are more powerful than small firms. Accordingly, only large firms will be able to bare high transactional costs and still make profit.

For that, emission fees program is more preferred than emission trading approach in the presence of large firms. It follows from this that also collusion of firms leads to the same result and is considered one of the limitations of the emission trading approach. In addition, emission trading approach needs Institutional abilities that are not available in developing countries. Finally, the assumptions of cost effectiveness in emission trading program such as competitive markets, price takers firms, and low transactional costs if violated constitute other limitations to the system. Accordingly, market Imperfection is another constraint. With respect to emission fees policy, the first drawback could arise from the miscalculations of the pollution charges by the government due to lack of knowledge.

The second limitation appears in the fact that emission fees have to be high enough to give incentive to firms to carry out abatement Mundle (1995). In addition, emission fees should be backed by an efficient administration system that modifies charges as circumstances change. This is not a problem with permits because prices adjust to changes in supply and demand.

With respect to stringent environmental laws effect in stimulating firms to innovate, Porter's hypothesis was criticized by Palmer et.al (1995) as he did not consider cost/benefit analysis regarding the effect of rigorous environmental laws in motivating firms to create

the best technologies, by showing that innovations are not stimulated unless benefits there from surpasses costs.

This can be explained by the analysis of Palmer and Jaffe which is considered a criterion for involving FDI outflows. Based on the hypothesis of Porter, in conclusion, rigorous regulations are not necessarily a cause for competitiveness. The two forms of economic incentive approach are generally criticized for its inapplicability in the developing countries due to the lack of the technical capabilities and financial availability which are needed to set the true number of fees, to check the emissions and record the permits trade Blackman (2006**)**.. Accordingly, voluntary (non-mandatory approach) could be used instead for environmental regulation. Nowadays, non-mandatory approach is gaining the acceptance of many environmental regulators and worldwide organization as a powerful and efficient tool for protecting the environment and controlling pollution.

2- Voluntary (Non-Mandatory Approach)

We can thereby understand that firms voluntarily choose actions to enhance their environmental performance because they are afraid to lose the acceptance of the public in case of disclosure of information Khanna and Anton (2002). In present times, consumers are more aware of the effects of pollution and environmental degradation. Hence, their demand for a cleaner environment will affect their choices of products. Thus, penalties costs, market pressures and public pressures give incentive to firms to take self-regulation actions towards pollution control. This is through adopting a holistic environmental, management system (EMS).

Environmental management system can be defined as the type of management that incorporates environment into production decisions, identifies sources of pollution and methods of decreasing it. In other words, EMS puts environment' protection as a goal to be achieved by firms while being engaged in the production process. Many governments in Europe or in the US are encouraging voluntary actions by the firms and EMS to correct their pollution level.

Several programs were conducted to this effect, namely 31 voluntary programs by USEPA and 310 voluntary agreements in the EU Khanna (2001). Besides, the public in most countries is provided win information on the environment concerning firms, let’s mention

the TRI (Toxics Release Inventory) and environmental labeling programs. And for countries that are unable to minimize pollution on their own due to a poor regulatory infrastructure like Indonesia, India, Mexico and Philippines, there are programs that disclose information World Bank (1999) motivating thereby the firms and individuals to adopt proper environmental actions.

Types of Non-Mandatory Approach

Public voluntary programs, bilateral initiatives and unilateral initiatives are the three types of this approach. The first requires that firms comply with the legal standards and use friendly techniques. Self-reporting is conducted to check the progress and non-mandatory agreement letter are signed. If we want to give examples thereon, we would mention the Green Lights and the Climate Change Program and the 33/50 program. Financial aid is sometimes offered to firms so that they join the program. On the contrary, the bilateral initiatives involve government-firm discussions on planning and setting abatement goals like Project XL (1994 and 1995) in the United States. Firms find a greater role to play in this approach than the first one in the light of the negotiations held on the measures to be used, the execution period and cost effectiveness.

As for the unilateral initiative, it is conducted without the involvement of the government. Here the firms get a chance to create their own systems of management to enhance their performance. They have the option to register with an accredited organization (ISO for instance) or engage in codes of conduct. The rigorousness of this initiative varies and most often the focus is on the method of bettering pollution control rather than the goal. The 3P program by the 3M Corporation, the WRAP (Waste Reduction Always Pays) are some examples of this initiative.

Theoretical Background and Motivations for Voluntary Initiatives

If there are no environmental regulations, profit maximizing firms are not motivated to control pollution. Yet, they may opt for pollution control on a voluntary basis if they were supplied with incentives like public recognition or penalties reduction. In addition, if regulations exist, firms are no more motivated to reduce pollution below the standard level.

This makes us go back to the Porter hypothesis when it was criticized by Jaffe and Palmer (1997) for not considering the cost-benefit analysis. And as per the pollution haven

hypothesis, the firms in developing countries are not encouraged to control pollution while there are no strict regulations. At this stage, FDI is attracted from developed countries suffering from high costs of pollution because of the rigorousness of laws, thus firms tend to always conduct calculations on cost/benefit prior to being engaged in innovations, foreign direct investment or even voluntary pollution control.

Storey and McCabe (1999) assuming that firms voluntarily adopt actions to reduce pollution as a result of self-interest and as such, it will be self-enforced. Contrary to the competitive market argument, these studies claim that it is when firms get an opportunity to influence input and output prices and environmental regulations, self-interest in self-regulation exists.

Public recognition through granting awards or certificate are considered one of the incentives for forms to adopt voluntary programs. Public recognition can increase the firm's shares of the market where its importance lies, just when MacDonald shifted from using polystyrene foam containers to paper wraps. Technical assistance is also capable of making firms go for voluntary pollution control. Furthermore, the chance to tailor the future environmental goals in favor of the firms is what also directs them towards the voluntary program. At last, when firms find it possible to flee from higher compliance costs in mandatory approach, they consider practicing voluntary actions to reduce pollution.

The major cause motivating firms to select non-mandatory actions is their expectations to gain profits to be self-enforced, according to many theoretical studies like Segerson and Miceli (1998), Schmelzer (1999), Lutz et al. (2000) and Wu and Babcock (1999). Finally, these researches demonstrated that strict legislative threats make voluntary approach more effective. Now social welfare can either be enhanced or reduced by the voluntary approach; the first case occurs when costs of imposing command and control approach are high while the second happens when firms are capable enough to influence the legal standards so that they set them in their favor rather than the society's.

Non-Mandatory Approach in Practice

Experimental studies, as the theoretical ones, also suggest that the major incentive for firms to take non-mandatory actions is their expectation to gain profits. We can mention Khanna (2001) Dasgupta (2000) Videras and Alberini (2000) and Henriques et. Al (1996). In

addition, the impact of regulatory threats, the desire to be publicly recognized and the past performance were inspected experimentally. Firms are encouraged to manage the environment properly when considering penalties costs which constitute the regulatory threats under the frame of a legal threat. That was proved by Videras and Alberini (2000) and Khanna and Damon (1999). Dasgusta et al (2000) also demonstrated that in order for firms to have a part in unilateral initiatives, they shall be motivated by regulatory pressures.

Voluntary approach can be affected by past environmental performance. In order for firms to stay away from high costs of compliance, they are motivated to be part of the non-mandatory approach through low environmental performance as per some experimental studies. This result was reached by Khanna and Damon (1999) and King and Lenox (2000) when emissions per unit sales/employees or high levels of emissions represented bad performance of firms.

As consumers, nowadays are more conscious regarding the negative effect of pollution and degradation of the environment, they are requesting healthier products, thereby motivating firms to take non-mandatory actions to control pollution. Otherwise, they will not gain any acceptance from the public because information was disclosed. Thence, goods choices will be definitely affected with the continual demand for a cleaner environment. Undoubtedly firms were influenced by public pressure in a positive way and this was what Khanna (2001) concluded.

According to Videras and Alberini (2000) and Arora and Gangopadhyay (1995), voluntary approach is more expected to be adopted by large firms – in terms of their total sales and employees number – due to two reasons. The first could be because of the lower marginal costs of abatement at large firms as a result of economies of scales and the second could be that such firms are noticeable and by this way they can increase the market share when they utilize methods in favor of the environment.

Yet, we cannot set a conclusion on how the voluntary approach reduces pollution. Taking voluntary actions, according to King and Lenox (2000) are not always the only way towards bettering the environmental performance. Several reasons stand behind that: the flexible level of enhancement and unmonitored progress, particularly with one-sided initiatives. Investigations on the effect of Responsible Care in the firms performance were

conducted via a cross sectional time series data over the period 1991-1996. This program was firstly launched in Canada in 1984 and was experienced by 40 other countries later on. It works on instructing firms on the proper practices in regard to management for the purpose of guaranteeing a healthy ambiance for the employees and community, thereby minimizing pollution levels.

Membership in this Responsible Care Program entitles firms to use a registered trademark for public recognition. A collective model confirms that improvement is slower with members than with non-members and even not faster than it used to be. But it was obvious for the fixed model that the said program was purport less to the betterment of the environment. Yet results vary if workers and community safety were considered. Let's come back to the aforementioned 33/50 program which motivates firms to opt for a voluntary approach to reduce 17 high toxic chemicals by 33% in 1992 and 50% in 1995. It was launched by the USEPA in 1991. This was studied by Khanna and Damon (1999). Emissions were reduced considerably thanks to the participation in the 33/50 program.

According to Khanna (2001) he affirmed that there are no decisive results now unless more adequate facts on the voluntary approach versus command and control approach were reachable. Furthermore, in order to widen the scene, other pieces of information shall be present at hand such as the impacts of going in for the voluntary approach, namely amongst others, the minimization of the unforeseen environmental conditions.

3-Conclusion

This paper examined three different approaches of environmental regulations: Concerning command and control approach, it is continually reproved for its inefficiency and rigorousness, leading to inaccurate information and absence of a flexible perspective that hinders firms from abiding by regulations. On the other side, under the economic incentive approach. Environmental goals here are comparatively more attainable and then costly. Yet, in its two forms - emission trading policy or the emission fees policy – it is not favored in developing countries for its inapplicability. Thus, we can choose non-mandatory approach as a substitute for environmental regulations. And what motivates firms to take voluntary measures to control pollution but expecting to gain profits in addition to self-interest? But further fact-finding is required on this new approach.

International organizations are the ones that more likely encourage the economic incentive approach and the non-mandatory approach. They focus on information transparency and technical practices in regard to governing the relation between FDI and the environment after completely relying on the traditional command and control approach proven to be inefficient. Such international organizations strongly recommend the regeneration of the most cost-effective practices.

Enforcement of regulations is very crucial as they may be regarded as a failure if they were not implemented. Logically, firms are pushed to abide by the regulations thanks to their enforcement. For this purpose, inspection, PBC, compliance assistances and incentives are being adopted. Information strongly affects compliance and efficiency as some polluting firms may hide their true level of emissions so that they stay away from pollution costs. As a result, problems between the principal and the agent arise. Furthermore, what makes the command and control approach inefficient is not knowing the best technique with the least cost to reduce pollution.

The economic incentive approach does not suffer from this issue thanks to the best technical methods chosen by the experienced firms, thereby minimizing pollution to a great extent. Consequently, information asymmetry is not an obstacle to effective regulation in this approach compared to the command and control approach. Cost effectiveness will not be achieved through emission fees system if the government is not aware of the suitable number of chargeable fees or is not tending to know it by trial and error process. With permits, this is not deemed a problem because prices are adjustable to changes in supply and demand.

At last, firms are motivated to abide by the regulations on environment by disclosing information in this respect because they will not risk their reputation after all before the public. As such, there is a focus on information's impact on implementing environmental regulations in new trends like the non – mandatory approach.

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