

# Free Riding Problem: Perspectives and Solutions

**Ram Kumar Dwivedi**, M.B.A., Assistant Professor- Institute of Business Management (PG)

GLA University, 17<sup>th</sup> km. milestone, Delhi-Mathura Highway, Village and Post: Chaumuhan, Mathura, Uttar Pradesh, India.

**ShivangRampriyan**, Bachelor of Technology, Department of Mechanical Engineering, Indian Institute of Technology, HauzKhas, New Delhi, India.

**Dr.Ankit Saxena**, M.B.A., Ph.D., Associate Professor - Institute of Business Management (PG), GLA University, Mathura, Uttar Pradesh, India.

**Dr.Arun Koushal\***, **HimaniOberoi\***, **ShivamBharadwaj\***

\* Assistant Professor- Institute of Business Management (PG), GLA University,

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## Abstract:

Non-excludability is a defining feature of public goods. This makes it expensive to restrict their access to a specific section of the population, which encourages many users of these goods to shirk off their responsibility of paying for the benefits they receive at the expense of the others, who pay. Due to these behaviors, most studies on the above-mentioned free riding problem have been focused on understanding free riding in an economic perspective.

In this paper, we first define the free riding problem from a market perspective and highlight its core elements using a similar approach. Then we try to frame the concept of free riding in an institutional perspective and analyze it using the concept of prisoners' dilemma, adopting mathematical approach of the game theory. Moving ahead, we also describe free riding through its associated moral hazard, while simultaneously invoking multiple theories on ethics to provide justifiable explanations and solutions to the observed behaviors of free-riders. Throughout the paper, we have tried to support our reasoning through logical deductions from hypothetical case studies, which enabled us to arrive at conclusions which will explain the observations. Had we not analyzed the free riding problem from a lens of multiple socioeconomic perspectives, it would have been difficult to exhaustively explain the results of the cases. Towards the end of the article, we involve concepts from a fairly recent branch of study in social sciences, viz., Political Economy. This opened up newer vistas providing a fresher gaze on the free riding problem under the realm of capitalism, welfare and environmental justice. We conclude by providing constructive insights on the behaviors of free-riders and summarizing the various solutions inferred throughout the text.

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## Introduction

Classical economic theories have focused on “prices” as the regulator of markets. It was said that in a perfectly competitive, free-market with the absence of coercion, the “Invisible Hand” promotes mutual cooperation even when each individual emphasizes on his own interest. In the logic of collective action, this implies that individual decisions, entirely based on rationality, ultimately lead to an overall rational scenario. However, this reasoning stands firm only when we are talking about goods which need to be paid for consumption. The problem then arises in cases where the goods are non-exclusive and non-rival. In such cases, there emerges an incentive to shirk individual responsibility by not paying for the goods, while deriving maximum utility from the consumption of such goods. This is called the free-riding problem, and the shirkers are unsurprisingly termed as free-riders.

The free riding problem has been primarily considered an economic construct. After discussing its implications and solutions from a market perspective we shall observe the problem through other perspectives like individual, environmental etc.

### “Free riding problem”: A market approach

The free riding problem can be understood as an extra load over common resources which are generated through their use or excess use by those who are not contributing their full efforts or not contributing at all. The free riding problem is viewed as collapse of popular *free market system* in a way because it occurs when some members of society aren’t paying their genuine contribution towards the costs of a shared resource, ultimately making the resource economically infeasible to produce. Therefore, the Government should intervene, if a market failure is eminent.

However, the government should be very cautious in market intervention because the collapse of the market system is merely a necessary condition but not a sufficient one. (Wolfgang L, 1988) For example, advent of online marketing companies almost broke the traditional neighborhood shop’s business system in India. Local shop owners and industries demanded government to intervene but government didn’t. This proves that failure of a market system is not a sufficient condition for government intervention.

Invoking Paul Samuelson’s “Theory of public goods”, a major characteristic of goods which can lead to its overuse or under-payment is non-rivalry. That is, when the goods are *given to a person for consumption, then that might be consumed by someone else at zero marginal cost*. Under the “Standard Price Theory”, such articles ought to have nil prices. However, if such goods have zero prices then why would someone provide them? Take air, for example. If it’s used by someone then that can be de-facto used by another, without affecting the consumption of the previous person.

The another feature of theory of Samuelson regarding public goods, can make it difficult to practice, is that “It is impossible to exclude” i.e. the futility of exclusion. This theory says, any public good once provided, it is almost impossible to deny any single person from consuming. In several scenarios, though, excluding someone is only a technological problem and not a logical problem. Considering the current status of technology, excluding a large number of people might be quite expensive therefore it is advisable that the governments should provide many goods so as to ward off the costs of exclusion.

### What happens when Exclusion mechanism is not available?

A unique phenomenon has been studied by Wolfgang Laux-Meiselbach, and published in the Journal of Public Economics, that what can happen if exclusion technology or services are not installed? He concluded that "Private goods transform to public goods" (Wolfgang L, 1988). It is obvious to indicate the reason of this as the problem of free-riders.

Evidently, few goods, which are a combination of both i.e. supply and non-excludable also exist, for example, national defense, is for all practical purposes, a good which possesses the above features. Thereby, the best method to compensate for providing public goods to everyone is finding the ways to ensure everyone's contribution thereby keeping the free-riders away. Considering an example that if people can form a group through a political process and group takes a unanimous decision on how much quantity of public goods should be provided, then they can conquer the free riding problem by legally making it compulsory for everyone to contribute.

In some cases, this problem can be handled through social constructs like awareness campaigns and pressure groups, who can discourage free riding, thereby producing results for benefit of the society. One more solution which has emerged for information goods is by introducing mechanism for exclusions which can transform public goods into club goods. The best example of this exclusion mechanism is Copyright and Patent Laws. The only downside of this measure is that they encourage individual monopolistic control and are therefore, not optimal.

Having looked at the free riding problem from a markets' perspective let us understand this problem through a logic of collective action and try to explain it using a "Prisoner's dilemma construct". In philosophical terms, in the second book 'Republic' written by Plato (Plato, Glaucon, Book-2, Pg.360 b-c) Glaucon had observed logic in his arguments vis-à-vis obedience to law, until someone

can skip the penalty for violations. Instead, Socrates insists that it is one's own desire to follow the rules which is independent of benefits from its sanctions.

### **Hardin on Free riding & the logic of collective action**

Garret Hardin mentioned in "The tragedy of the commons", that individuals acting in their own self-interest, may not lead to an optimal conclusion. Hardin's this viewpoint contradicts Adam Smith's popular idea of 'Invisible hand'. The functional structure of the logic of collective action (Udén, L.1993), can be understood with the help of n-prisoner's dilemma and iterated single move simulation from Game theory. Suppose if there are two participants i.e.  $n=2$ , and if both the participants can communicate with each other, there can not be any free riding person until one participant is truly selfless. However, if  $n \gg 2$ , then collective action becomes merely an exchange of large-numbers. Because the difference can be spotted as follows: "X" can betray in the exchange of large-numbers by freely riding over the other's contributions. However, in the case of two persons such betrayal would be illegal. Because this would mean that 'X' has taken something from 'Y', without giving 'Y' something 'Y' desires!

### **Free-riders from the institution's perspective- A game theory approach**

Consider a case if two people Patricia and Sylvester, are planning to contribute towards a public good e.g. health department, the personal cost incurred is Rs.4 and the community benefit/Profit, to that person is Rs.6.

Since the return is more than the investment, therefore the investment is highly recommended for the whole society. But one problem arises here and that is, although Patricia and Sylvester are paying the full as per their share for public benefit but they will get

back the half of actual benefit, since the benefit is distributed equally among other members in the society (assuming a two-member society).

|                               | Sylvester (S) contributes                         | Sylvester (S) not contributing                     |
|-------------------------------|---------------------------------------------------|----------------------------------------------------|
| Patricia (P) contributing     | P gives Rs.4, gets back Rs.6, net profit is +Rs.2 | P gives Rs.4, gets back Rs.3, net benefit is -Rs.1 |
|                               | S gives Rs.4, gets back Rs.6, net profit is +Rs.2 | S gives Rs.0, gets back Rs.3, net benefit is +Rs.3 |
| Patricia (P) not contributing | P gives Rs.0, gets back Rs.3, net profit is +Rs.3 | P gives Rs.0, gets back Rs.0                       |
|                               | S gives Rs.4, gets back Rs.3, net profit is -Rs.1 | S gives Rs.0, gets back Rs.0                       |

If either Patricia or Sylvester do not contribute towards public benefit, then it has nil cost and nil benefits from the public goods.

Assume that only Patricia contributes and Sylvester doesn't contribute. Patricia bears a cost of Rs.4, but gets back only Rs.3 as benefit, which is half of the total Rs.6 of societal benefits. Sylvester bears nil cost, but he also gets back benefit of Rs.3. In this outcome, in reality Patricia is losing Rs.1 while Sylvester is gaining Rs.3. Same results can be observed if the roles are interchanged i.e. if Sylvester contributes and Patricia doesn't.

However, if both of them contribute, then each has to bear the cost of Rs.4, and everyone gets back Rs.6 from the benefit, which is half of total benefit of the society.

Here the prisoner's dilemma comes into existence because each one of them thinks from his or her self-interest preferences. It can be understood as follows...

1. Patricia reasons that if Sylvester is not contributing, then it would be foolish for her to contribute. While if Sylvester contributes, then she will feel smarter by evading her contribution.

2. By either ways, she chooses not to give her contribution and rather hopes to be a free-rider, so that she can enjoy public good which Sylvester has paid for.

3. Sylvester gives the same logic about Patricia.

4. When Patricia and Sylvester come to the conclusion it would be unwise to contribute, the public good hardly ever build. Then there is almost no environment where everyone cooperates, which is truly beneficial to all the parties involved.

### Moral issues and the perspective of ethics

One of the major hurdles with decision making lobbies in taking collective action is the state of moral hazard. In various situations of interest in political science and economics, people come together into groups which share common goals. Environmental action groups constitute one of the major canonical examples. Every group member has an opportunity to benefit from the effort made by other members while making inadequate contributions by themselves. As the opportunity to shirk increases with the size of the group, large groups are likely to be the most impacted by the issue of free riders. This conclusion parallels

with the conclusion derived from the consideration of the problem of free-riding from a Prisoner's Dilemma perspective.

Under the just discussed *Mancur Olson's theory about moral hazard* in the simultaneous actions of different lobbies, the stage of the formation of lobbies is not considered. The problem then becomes as follows:

In a situation, when lobby formation is taken into consideration, whether moral hazards in groups, hamper collective actions? To solve this problem, let's analyze the problem in a twin stage perspective, in which groups firstly arrange in one lobby, then race to advance their motives.

Now, with respect to the classical structure of the explanation of the problem as per the logic of collective action, a difference in the understanding of the problem occurs. In the beginning, many members of a given group may choose to remain outside the group at the forming stage, which represents the interests of the community. If we want to understand free riding, then we must therefore differentiate between the conduct of people who don't enter the lobby in the first stage of the formation and the conduct of those who join the lobby at the first stage but avoid in the second stage.

.Multiple examples verify the above hypothesis. Among the most conspicuous of these are environmental lobbies, the members of which involve in such acts through which many non-members also gain. However, many among such activities (demos, letter correspondence, tele-calls etc) are especially prone to moral hazards.

However, this simultaneous occurring of situations like free-riding and moral pitfalls, is not only visible in lobbying, but also in various treaties pertaining to international environment protection. Where few countries don't join and some join the treaty but later on involve themselves in cheating. This kind of

immoral atmosphere does not stem from evil intentions, but rather it is based on real virtues of individuals and intensified by other members of the organization. Few members of unit might not contribute up to a high level, while simultaneously they may fake a good behavior, along with an extraordinary technical knowledge based performance.

It may not be possible to motivate them to align with the common ethereal objectives which create a sense of belongingness in a community. Although they understand the need of sense integrating with transcendental goals but not for them. They keep enjoying the fruits of other's efforts, with a focus on fulfillment of their own self-interest, while visualizing no immediate loss to the unit/group/organization.

Under considerations of individual consequentialism, one might be able to justify his free-riding tendency in the sense that the more the experts contribute, the better could be the results, devoid of the interference of ordinary plans of action provided by the to-become free rider. However, the other ethical theories would be in a position to staunchly criticize and ultimately reject this conscience. Because those schools of thought aren't interested in the consequences of an action rather the action itself.

### **Free riding and perspective of political economy**

Depending on an instrumental origination of sanity, as per which sane people select from the decisions that they trust, will deliver the results, they like most.

It may be argued that there's very little incentive for someone to contribute for producing a public good, considering the cost they would bear, as they would also get advantage from a public good, whether they contribute or they don't contribute at all. For example, consider trade unions. Their activities affect all employees, whether they're a part of the trade union or not.



Though the advantages may be very small or even missing if most employees had behaved “justifiably” by being free riders (i.e. don’t join union and therefore don’t pay union’s charges), every employee encompasses an obvious and logical incentive for riding free. This difficulty can be tackled by offering incentives selectively, advantages that may solely be obtainable by the union members.

From the perspective of political economy, it might be logical for companies to free ride, considering the price of someone’s action, having an effect on profits and ability to fight in a competitive political economy around the world.

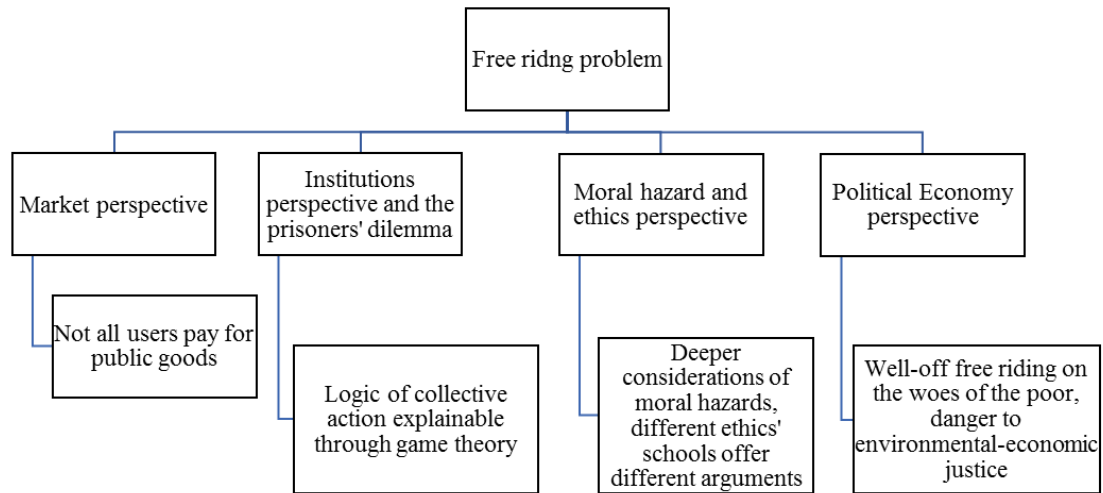
The government has to bear personal burden related to controlling and spending in managing environmental issues. Hence, there's very little motivation for the governments or firms to try and do something else than to free ride. Although jointly, this can be the worst potential outcome in political/ world economy.

Therefore, even when the individual considerations are rational in nature (i.e., free riding), the final collective could become irrational. Approaching the problem from a political economy perspective, it is clear that the tendency to increase environmental pressure and degradation without regards to the welfare of the ecosystem will ultimately lead to a collapse of the socio-economic structure under the capitalist production regime (Second inherent contradiction of capitalism). The free-riders would then shirk off the responsibility of damaging the biomes while excessively extracting resources and incessantly exploiting the environment. Another aspect of these considerations would be from an environmental justice point of view. For example, if

we consider a Multinational giant which intends to procure a piece of land in the lesser developed regions of the town for waste collection and hazardous disposal activities. This would require them having a permit from the state, which allows them to act with their agreed disposition. The products which the company is making would be benefitting the rich and well-off who are sitting hundreds or thousands of kilometers away without suffering the ill-impacts of the wastes. The people who will be affected through these disposal practices would be the economically weaker sections who are living around those areas, either due to cheaper land prices or traditional inheritance and are unable to relocate to safer and pensive surroundings.

Political economy perspective explains this under the consideration of economic inequity and unequal distribution of wealth due to the capitalistic political economy constructs which govern the production hubs. This issue then leads to ponder over a graver and deeper concern. Is it correct to have those people live in the hazardous areas? After all the workers who work there would also have to live nearby. Due to the toxic nature and indiscriminate disposal of the waste, workers’ health is likely to be affected. If the workforce is affected, the production output will also reduce, leading to surplus losses for the corporation. So, is it really worth to neglect a sense of environment-economic justice and recklessly pillage the precious resources of mother earth, only to later find that the snake comes back to bite us?

On the basis of above all discussion following model figure has been prepared, which shows the inter connectivity of various scenarios and their chief characteristic:



*Conceptual model depicting the pervasiveness of free riding under different perspectives*

## Conclusion

Free riding is primarily considered an economic issue whose solutions have been traditionally economic as well, for example, *taxation and carbon credits*.

We have diverged from the stereotypic representations of the free-riding problem from an economic perspective. Instead, we have analyzed it from the lens of game theory by invoking the prisoner's dilemma. Considering trade unions and workers' rights, free-riding has also played a pivotal role in the emergence of unionist-only benefits. Free-riding is extensively pervasive in institutions and organizations. Free riders are always in a state of moral hazard, as seen in one of the earlier sections. Free-riding can also be analyzed as a subject of ethics and political economy. We have explained how the problem permeates, not only in the markets but even in consumer behavior and their seemingly rational actions. Environmental justice and workers' welfare are two such noteworthy contexts, which are severely implicated due to free-riders who do not experience its direct consequences.

The conviction in the inevitability of problem of free riding, is gaining wider acceptability among

management experts and economists. The marrow of this problem is that the individuals don't reveal their cup of tea on sharing of public good. This hinders the efforts in achieving a pareto-optimal solution. However, since every person consumes the maximum amount of public good provided, it is a personal choice to minimize the elaboration of satisfaction he is getting from enjoying a public good. This way he would have to reduce very little quantity of public good used but his tax liability would reduce significantly. Everybody applies this type of logic and consequently public goods remain under supply. Therefore, a paradox arises: individual rational actions ends up in an output that is jointly irrational.

This research article collectively demonstrates the illegitimacy of assumption that free riders problem won't ever occur, but rather it shouldn't be presumed to occur all the time. There are many methods to maintain a pareto optimal availability of public good.

The problem of free riders comes into that class of issues which are concerned with the question of how each individual can be motivated to work in a manner which is jointly optimal. Since the time of Adam smith. The solution to the problem of free riders has been known to economists.

However, in a private good economy the “Price” acts as a control mechanism to check the problem of free riders. Because after fixing a price of any product, it is obviously not available to free riders and therefore not subjected to misuse and consequently not working as a drain on resources. But in a public good economy, when there are free products available in the framework, the issue progressively troublesome, yet not insoluble.

The free-rider argument, as expressed by Samuelson and Musgrave and reinforced in the books of public finance, says that the public goods would ultimately fall short of supply. But the numerous researches indicate at least a notion, that an assumption about free-riders problem to occur consistently, is wrong. Therefore a conclusion may be drawn that something is missing from the standard theory of free riders. Even if there exists an efficient system of providing public goods to the people, it doesn't mean that public goods can always be optimally supplied.

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