

# AAPOORTI



6th Edition  
Annual Economics Journal

“The concept for the cover page of the journal is based upon the idea of the idea of the tribal communities and resource management and cooperative development of the community. The tree represents growth and equal sharing of resources being shared by the community”

**Cover By: Fatima Radiowala**

# Aapoorti

2016

**“Whenever you find yourself on the side of the majority, it is time  
to pause and reflect”**

**-Mark Twain**

**Arthashastra, The Economics Society of Miranda House**

## Head of Department's Note

The key to economic development for any country is economic growth, but growth at what expense? Are we in a position to extract and exploit our exhaustible resources limitlessly for satisfying our hunger for growth? Of course not. An ideal policy for sustainable development for any insightful country would be growth while nurturing its natural resources and protecting its environment. Moreover, sustainable development ought to be inclusive and should embrace even the poorest of all. Unfortunately, developing countries are more prone to damage their environment in the race of growing fast. And as a result the communities which are closely connected to nature and environment for their livelihood bear a huge cost of economic growth achieved by these countries. I am glad that Aapoorti through its current issue has raised its voice for community management of resources as a step towards inclusive development. The theme contribution acknowledges the role of indigenous practices for sustainable management of resources through wonderful examples from across the world and within India. It is a moment of immense pride for me that our young writers have taken a lead to sensitize the society and policy makers on such a relevant issue.

The current edition of Aapoorti presents variety of topics and issues relevant to Indian economy and countries abroad. The list of topics is varied and very comprehensive ranging from pure economics to current economic issues like poverty, education, gold prices and immigration. From environment to Greece's debt crisis, it has all the flavors for readers. It is very encouraging to see the way these issues are discussed and analyzed by our young scholars, shows a deep understanding of the subject and contributors' ability to apply the theoretical knowledge to the real world.

I am happy that our table of contents has a huge list of contributions from outside Miranda and this list is growing every year. Just like the previous issues this year also we have contributions from many colleges from in and outside Delhi University i.e. Presidency University, Kolkata; St. Xavier's Mumbai, Gargi college and Motilal Nehru College etc. Aapoorti interviewed three biggest names from the field of Economics this year- Prof. Jean Dreze (Development economist and policy maker) Prof. (Dr.) Rakesh Mohan (a great economist, Executive Director of IMF and the former Deputy Governor of the RBI), Prof. Jayati Ghosh (economist and former consultant of Planning commission). Having interaction with these three eminent personalities in itself is the greatest achievement of the editorial team, and will be a great source of inspiration and learning for the readers.

I congratulate the authors and the editors. It is time to celebrate the success of their industrious efforts and endeavor. It is indeed a privilege for me to introduce the current issue of Aapoorti to the readers. Hope it will inspire many of our readers to try their pen on the paper and we will experience a new literary revolution happening soon.

Bhupinder kaur

Head of the department, Economics

Miranda House

## Editor's note

On the eve of launching the sixth edition of Aapoorti, we realize that if anything, it can be described as an arduous labor of love; a testament to the passion for economics which binds us all, outliving the epoch whose aspirations and concerns it is meant to reflect. Aapoorti 2016 has also brought into conversation with Dr. Rakesh Mohan, Prof. Jayati Ghosh and Dr. Jean Dreze; we hope our readers feel as inspired by their optimism as with their thought. In its drive to provide a platform for research in the formative years of education in economics, Aapoorti, in collaboration with Vishleshana, also initiated an Economics Research Grant at Miranda House in 2015-16. The Grant has funded two empirical research projects on education and published in this edition.

This year, the Editorial Board explores the theme of institutions governing common resources, in light of an incessant debate on sustainable management of common resources. The conundrum of a resource stems from the simple fact that it belongs to all and yet none. Solutions to this famed problem- also termed as the tragedy of the commons- have been wide ranging in their approach. Many of these ideas encourage looking beyond the community, while others intend to look within. The inherent reason for the 'tragedy' to take place in the first place is due to poorly defined property rights. So clearly, a solution can be found by establishing these rights. This solution then amounts to privatization. The two solutions offered to the problem in mainstream economics are privatization and government regulation. Over the years however, in lieu of third party solutions, it is self-governed institutions that have stood out. Research from different disciplines has pointed to conclusive evidence of self-sustaining patterns in various communities. The role of tragedy of the commons rose in the decline of common grazing land in medieval Europe itself has been questioned.

Two approaches have been undertaken to identify organisational practices necessary for optimum common resource management: Expected Payoff analysis and Case Studies of successful resource management practices. The Expected Payoff analysis models the Expected Payoff of a consumer of common resources in a given institutional framework. The subsequent articles study the most successful practices for management of three common resources; fisheries, the digital common and forest resources.

Every year, we are overwhelmed by the entries received from universities across the country, as well as rest of South Asia; though we are constrained into publishing very selected works, we extend our sincere gratitude to all contributing authors. We would also like to thank our faculty, particularly Prof. Bhupinder Kaur and Prof. Meeta Kumar for their support and guidance in all our endeavors and to Arzoo Dalal, President of the Economics society, for her tireless efforts.

We would like to thank our readers for receiving the previous editions so well.

To others, without whom the journal wouldn't have materialized, we extend our sincere thanks.

Chief Editors

Ananya Goyal

Falak Arora

*Note: We assume full responsibility for any remaining errors.*

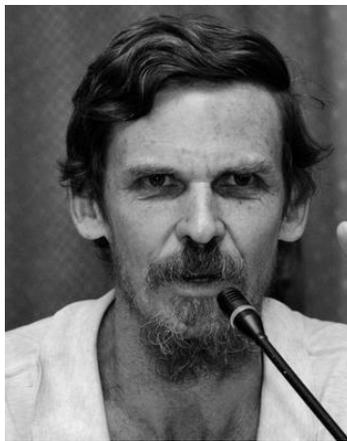


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## IN CONVERSATION WITH JEAN DREZE

*Jean Dreze is an internationally acclaimed development economist and an Honorary Professor at Delhi School of Economics. His works in India includes hunger, famine, gender inequality, child health and education and NREGA. His co-authors include many well-known economists like Amartya Sen, Nicholas Stern and Angus Deaton. Dreze is well known for his commitment to social justice and has been actively involved in major social movements including peace movements, RTI campaign, Right to Food campaign and many more.*



**Editorial Board:** In your experience, how has the policy-making scenario in India changed over the years? Has the increased voice of civil society brought any positive change?

**Jean Dreze:** I think that there has been some positive change at the state level. Poor people have always been on the margin of the democratic process in India, but over time, their ability to participate has grown, partly due to better education. In many states, public policy is now more responsive to people's demands and concerns than it used to be. The central government's policies, however, are still largely driven by privileged interests and the aspirations of the Indian elite. Prestige projects like the bullet train and so-called smart cities are a symptom of these distorted priorities.

**Editorial Board:** You have had a long experience working with the Indian tribal communities. What do you think are the effective approaches to policy-making in these regions, especially use of natural resources?

**Jean Dreze:** I am no expert on tribal development, but it seems to me that tribal communities should be given opportunities to develop on their own terms. In my experience, Adivasis aspire to a better standard of living including better nutrition, health care, education facilities and of course some economic security. At the same time, their culture and lifestyle have many valuable and valued features that are sometimes threatened by the dominant development model. There are ways of raising living standards without destroying the Adivasi way of life, and indeed, by building on it. To illustrate, tribal communities tend to be relatively egalitarian and to have a robust tradition of cooperative action. This can be a great strength for the purpose of building public amenities, protecting the environment, or fostering local democracy. Alas Adivasis tend to be regarded by the agents of the state as victims at best and enemies at worst. Their individual and collective abilities, and what we can learn from them, get devalued in the process.

**Editorial Board:** You, along with Dr. Khera, have been a strong advocate of increasing public expenditure in Social Welfare Schemes. In what way do you think we could, in fact, make our existing social welfare schemes more efficient?

**Jean Dreze:** Making good use of social spending requires, first and foremost, a better work culture in schools, health centres, Gram Panchayat offices, and the public sector in general. This may sound like a pipedream, but it can also be seen as a natural development in a country with a modicum of democracy. Public-sector absenteeism, exploitation and corruption thrive on the disempowerment of the public and the submissive acceptance of practices that are, in fact, totally unacceptable. As democratic engagement gains strength and the public becomes more articulate and vigilant, these practices often become harder to sustain, and the corresponding social norms tend to evolve. Of course, one should not rely on this process alone to achieve more responsibility in the public sector – better incentives and accountability measures are also required. But these measures are best seen as part of the larger need to change the public work culture through democratic practice.

**Editorial Board:** Your work involves quite a few social movements including the peace movements, the RTI campaign, the Right to Food campaign etc. Do you think there is any major inherent social or cultural barrier to the development of India?

**Jean Dreze:** No. There are obstacles, like the caste system, and social inequality in general, which tend to undermine development in the broad sense of the term, aside from being a concern in their own right. But there is nothing immutable about social inequality. The

treatment of Dalits in Indian society today is awful, but it is much better than a hundred years ago. The same applies to the condition of women, and there are vast possibilities of further elimination of caste and gender inequalities in the future. So there is nothing “inherent” in these social and cultural barriers. They are part of India’s historical legacy, but they can be removed.

**Editorial Board: What would be your advice for aspiring economists and young students like the readers of Aapoorti?**

**Jean Dreze:** Learn with a critical mind. Economics can be a very enlightening discipline if it is read intelligently. Unfortunately, the teaching of economics does not always encourage critical enquiry. Concepts and theories that ought to be received with the greatest skepticism are imparted to students as if they were a matter of common sense. In the process, studying economics can end up clouding our understanding of the world we live in, instead of enhancing it. Being a good economist requires not only a sound training in economic science but also engaging with its critics, with other disciplines, and with the real world.

# **Telluric Tales: Management of Common Resources and Institutions**

## **Governing Them**

*To identify suitable institutions for management of common resources, we undertake two approaches to determine the organisational practices necessary for optimum management: Expected Payoff analysis and Case Studies of successful resource management practices. The Expected Payoff analysis models the Expected Payoff of a consumer of common resources in a given institutional framework. The subsequent articles study the most successful practices for management of three common resources: fisheries, forest resources and, the digital common.*

## EXPECTED PAYOFF ANALYSIS

Ananya Goyal

Falak Arora

Expected Payoff Analysis:

A consumer chooses  $x$ , the quantity of common resource to be consumed, given the institutional factors. The rational consumer would seek to maximise the consumption of  $x$ ; however, her consumption of the common is not an independent choice variable. It is determined by the following parameters:

1. Allotted consumption of the common,  $x^*$
2. Probability of detection,  $p$ , of defection from allotted consumption
3. Sanctions imposed on defection,  $S(x-x^*)$
4. Administrative cost,  $C$

$$E(x) = p(x^* - S(x-x^*)) + (1-p)x - C$$

The consumer's expected payoff is a weighted average of her payoff in the case of detection and non-detection, minus the administrative costs. If she is caught defecting from the allotted consumption, she may only consume the allotted consumption with a deduction (amounting to the sanction imposed). If she is not caught, the consumer may consume  $x$ .

Each of these parameters are affected by Institutional factors, which are factors determined by the organisational principles of the Common Resource Management practice in place. The major Institutional factors, as identified by Ostrom (1990), Thomas Dietz (2003), Nives Dolsak (2002) pertinent to the analysis are:

1. **Cost of excluding non-members** from use of the common. This involves clearly defining user rights and their allotment, and preventing access of non-members. This also involves a **cost of collecting information** necessary for sustainable appropriation of the resource. These costs affect the administrative cost,  $C$  (denominated in real terms).
2. **Monitoring** of use of the Common, to keep a check on misappropriation of the resource by user-right holders. Effective monitoring of the resource increases  $p$ , the probability of detection when any user defects.
3. **Sanctions** imposed for misappropriation of the Common, including social costs of defection. The sanctions may be a fixed penalty ( $S$  is thus a constant) or they may vary with the amount of resource misappropriated ( $S$  is then a function of the difference between actual and allotted consumption).
4. **Conflict resolution mechanisms:** Maintaining long-term institutions requires quick and low-cost access to conflict resolution among participants and among enforcers and participants. In absence of this mechanism, the institution breaks down.

A comparative analysis of three broad systems for management of Commons is made, to determine the under which system do the institutional factors optimise the parameters of Expected Payoff function. The three empirically observed systems are command-and-control, private property rights and self-governed institutions based on user rights.

When the common is divided or **privatised**, property rights are allotted and the decision to appropriate user rights rests with the holder of property rights. Once privatized, the consumers find the incentive which was so far missing in their use of the resource that belonged to them just as much as it did to others. "If a resource can be privatized -- that is, owned by individuals -- we now see an alignment between an individual's interest and the long-term interest, because they don't want to destroy this resource; they want to keep it for the next year or for the next generation." (Tomkin, 2012) . With privatization in place, the amount used is self regulated by the owner and hence only the optimal quantity gets used up;  $x^*$  is consumed with probability equal to 1.

However, in cases where the resource cannot be divided and property rights cannot be clearly defined, the administrative costs are prohibitively high as cost of excluding non-members and other users rise substantially. At a level where  $C$  exceeds  $x^*$ , the expected payoff will be negative and the institution breaks down.

In a **command-and-control system**, an external agent appropriates user rights to the common among consumers, based on optimal consumption for sustainable use of the resource. Allocation thus takes the form of an upper limit on consumption of the Common. The monitoring of use and imposition of sanctions for violation is performed by the external agent or another agent on its behalf. The consumer of the resource again faces an incentive for rational usage as the penalty that the aforesaid law declares. The consumer is made to pay the price for overexploitation of the resource and as long as the cost is more than the benefit and the threat remains credible, degradation of resource from over consumption can be avoided. Hardin favored these regulations as long as they were democratically formed or what he termed –“mutual coercion mutually agreed upon”. Environmental agencies in many countries monitor the amount of pollutants released in the air and the failure to comply invites hefty fines.

Even so, government regulation still face major assessment hurdles “Effective regulation and taxes require that politicians and regulators have information not only about social costs and optimal levels of production, but also about the (often varying) private production and compliance costs of individual users. This is a requirement that few regulators can meet” (Libecap, 2009).  $C$  can be prohibitively high in this case.

Another empirically observed system of management of Commons is **self-governed institutions** with shared property rights. These institutions, which also take the form of community management, allow participants to make decisions regarding allotment of user rights, monitoring etc. and are typically observed when resource is shared among a group of limited participants. Flexibility is characteristic in this approach as it emphasises on only one rule of the game: that the rules be determined by participants and be allowed to differ depending on the context. The differences allow the institution to model their rules on local condition; take its advantage or avoiding potential pitfalls.

The involvement of participants may make information about the resource and its optimal appropriation for sustainable use more readily available and also reduce costs of excluding non-members in smaller, close-knit communities where participants recognise each other and thus can easily detect outsiders.  $C$  will be low in this case. Literature on self-governed institutions also point to an effective monitoring of resource by participants, because personal incentives are aligned with community interests;  $p$  would be high. Another notable feature about community management in particular is that sanctions are not only economic, but can also take the form of social costs imposed on defector which act as a major deterrent to defection. Conflict resolution is also administered locally while reducing time and costs incurred; however, the need for an impartial third party for adjudication is a concern that cannot be overlooked. Cumulatively, self-governed institutions optimize the parameters of Expected Payoff function and can be expected to deliver conformist behaviour.

Thus, the fundamental difference in authority which appropriates the common resource translates into how participants engage in monitoring and sanctioning of use of the common. In a command-and-control system where a central authority appropriates and monitors the common, participants' engagement in monitoring and sanctioning the use of the resource is very limited. With private ownership of the common, individuals appropriate the common for use and are singularly responsible for its monitoring. The system for imposing sanctions in these cases are generally centralised, but the imperative to see them lies with the property right holder. Self-governed institutions for managing the commons, on the other hand, are based on the principle that the participants themselves are appropriators and monitors of the common. This not only creates a sense of ownership among participants, due to shared user rights without demarcating property rights at all, but also precludes the cost of engaging an external agency to monitor the resource.

The aim of the analysis is to point out fallacies in the one-size-fits-all prescriptions to resource management policy made by proponents of both command-and-control policies as well as privatisation of resources. Each kind of common resource management institution has its benefits and shortcomings. The kind of institution which should be established is thus, largely context-based. If a resource like fishing waters which may not be effectively divided, property rights cannot be established and user rights should be precedence. At the same time, it should be noted that the assertions are about the institutional factors which should be optimised, each due to a specific parameter of the Expected Payoff function it affects. This analysis thus brings a fresh perspective to the literature on New Institutional Economics; by emphasising on optimisation of every *parameter* of a representative Expected Payoff function, it draws the focus away from principles of organisation of institutions managing commons. This approach not only allows a more precise evaluation of existing institutions by determining if the Expected Payoff from conformation to rules is greater than from defection, but it also allows a greater diversity of institutions, each with their unique combination of organisational principles, to be studied.

It should be noted that the evidence in favour of self-governed institutions seems less convincing in light of the fact that even privatisation of the commons may be successful if components of administrative cost can be provided efficiently by the property-right holder the common is divisible. In fact, depending on the context, even a central authority may provide the necessary coordinated action required to break out of a pareto-inferior equilibrium. Other contexts where the possibility of self-governed institutions may be limited would be the case where monitoring, conflict resolution and exclusion cannot be effectively organised by the

participants themselves. Such organisation may require economies of scale larger than may be delivered by the participants or involve complex issues of autonomy as in global commons. Recent research on global commons encourages putting an end to the principle of national sovereignty of a single country on a resource. The countries that claim such rights to the resource often shirk off their responsibility towards it. The governing of the global common rather asks for a world government with regulatory power

Empirically though, the most successful institutions are self-governed and managed by a community. Susan Jane Buck Cox, in her paper titled “No Tragedy of the Commons”, sought to refute the very idea of the tragedy of the commons rose from the decline of common grazing land in medieval Europe. She states that in medieval England, the decline of English commons was not due to overuse by the sheep herders rather due to reforms favouring a selected few and industrial revolution, thereby questioning the very basis of the paradox. Instead, the inbuilt community system was postulated to be stable and sustainable. The subsequent articles present case studies from communities around the world, who have long governed their common resource for sustained use.

## FOURTH WORLD

**Madhukari Mishra**

History sticks out its tongue at us as reports from around the world strikes major blow to our complacent world. Pollution levels rising five times above the safe amount, forest covers depleting at a blurring pace, and the gaping holes torn open in the ozone layer. Time is cyclical, says the Warlis, a tribe found in central India. Roughly translating, it just means that for all our conquests and triumphs, at the end we will all come back scourging for our origin. This article is homage to us, the human race, in its most primordial form, a celebration of they who hadn't yet learned the art of contempt and condescence. Warlis aren't particularly enthusiastic about forcing their children into the system of perfunctory rote learning; rather, they initiate them into a more profound system of time and experience weathered wisdom, of the spirit of co-operation, the ethics of equality or even the art of taking leisure and tricks to happiness. An *illiterate* Warli can identify over a hundred edible roots and tubers. Mine is an attempt, perhaps a feeble one, to undone the harms we have inflicted on them and which has boomeranged back on us through a process of the systematic marginalization of the indigenous communities across the world, because we were not mature enough to appreciate their true importance, by acknowledging them and more importantly, the role they can play in taking a u-turn from the impending doom we are headed towards. This article is divided into the following subparts: first, why it is important to acknowledge the role that indigenous practices play in sustainable management of resources like water and forest. The next section gives us a brief glimpse into various such practices from across the world, while the two that follow are on the area of my focus, forest and more importantly biodiversity as a resource and its management in tribal India, along with examples of their agricultural practices which is not contradictory to the resource but rather complimentary; the mechanisms, the underlying belief system and the ideological conflict between their and our version of progress (not development), especially in the context of agro forestry. The concluding part, in the spirit of the Warli belief of cyclic nature of time, returns once again to my earnest entreaty to stop denying the truth of our existence.

Jeffery D. Sachs once argued that there needn't really be a tradeoff between development and environment conservation. Because, a lot protecting the environment costs a lot less than remedying the damage inflicted by this tradeoff. And what better than roping in the traditional knowledge system for this purpose? To extract it from they who, culturally inherit a legacy of resource optimization and waste minimalisation? Knowledge is an outcome of model making on the functioning of the natural world, states Gadgil. A sustainable knowledge system, thus can best be devised in societies that are closely integrated into the nature. Because to establish a meaningful relationship with the natural resource base we need to think of human as a part of the environment that surrounds it and not superior to it and emphasize on an interaction based on reciprocal reverence. Self regulatory mechanisms evolve when confronted with resource scarcity and in the process, we realize the importance of the components of our surrounding landscape in it and thus the necessity to conserve them. This mostly is relevant for the semi-sedentary tribal folks from across the globe. But like, from them we learn the importance of preserving the relatively stable elements of air, soil and water, from the hunter gatherer aboriginal groups we learn the technicalities of fire. Above all, from them, we learn the art that's in vogue at the moment, the art of restraint.

The missionaries had brought mirrors to divorce the human from the nature, to make it recede into the background while you become the sole focus. They had denounced the forests as evil as they denounce the darkness. But you should never defy the shaman (the head of the clan council in certain tribes), as we saw in the Amazons, where for all the diktat of the missionaries, they just managed to silence them, drove some to suicide, but failed, in the process to suppress the truth or protect the legacies to be passed over. One immediate consequence of undermining the authority of the shaman and the local way of governing the land was the loss of wildlife around the missionary compound where without the laws and protection, the animals were overhunted to the point of scarcity. The pygmies of the Ituri forest, Congo sings accolades to the darkness of forests. The *sonadores* or dreamers are said to find wisdom in the viscous darkness of the Amazon's enigmatic trails, they say everything is initially nurtured by it, seeds, babies, starlight or love. The Amazonians have evolved a system of meaningful social interaction between them and their surrounding nature, characterized by reciprocity, restraint and respect. By incorporating into their folklores and chronicles the importance of the elements of the wilderness, they have managed to evolve (perhaps not always consciously) a robust culture of respecting, hence conserving these elements. While the ideas of democracy were said to infect America first, instances prove that it had been practiced in the primitive societies for centuries, even extending and developing it into ecocracy. In many parts of India, the communities maintain scared groves, colloquially known as sharnas, originating from the word *Sharana* meaning asylum where both plants and animals are given absolute protection. We will look into their importance in the next section of the article. Sometimes these practices of conserving the environment are legitimized through religious beliefs. The Karens of Thailand tie the umbilical cord of a new born baby to a tree, harming which, is said to inflict harm upon the child. The Malos in Bangladesh marry the girl to a tree and the boy to a river before marrying them to each other. Even democratic practices are endorsed through these systems. Some Indian Communities believe that acquiring surpluses over others leads the Satan to harm the family hence they should distribute the additional resource throughout the village. Employment of religious symbolism and sanctions often ensures conformity through its psychological appeal. If used as a taboo or an omen, it induces the participants themselves to ensure that it is being followed by the members of the clan. For the Amazonians, acquiring of resources is considered to be an ethical affair which should be devoid of greed. The Warli clan laws forbids the more resourceful from building larger houses for an ostentatious display of their wealth. Most indigenous societies are dependent on a consumption base spanning a few hundred kilometers. Since the scope of transforming the resources available through manufacturing or supplementing them with imports was limited, if any, at all, they have a strong incentive to both conserve and enhance (by manipulating the landscape) the local biodiversity. Works on the Runa Indian's swidden in Amazon by Irvin shows examples of agro forestry rather than just slash and burn. Compared to unmanaged fallows, Irvin show how their method actually increased the species diversity in five year old fallows. He characterized it by low intensity succession management (which in this case was planting and conserving secondary species) which alters the core compositing of the forest in the long run. Research from New Papua Guiana (PNG) show how clans consider it to be their social obligation to preserve the biodiversity of the area that falls under the clan jurisdiction. The Zaukave practicing shifting cultivation rotate crops to maintain soil fertility. By burning dry vegetation they release the trapped nutrients, which is vital for the soil, which is rooted in age old understanding of nutrient recycling and regrowth control. This recycling process helps prevents the need to frequently clear new areas hence preserving the forest. Also they are able to consistently use previously fallowing land in a cyclic process, further preserving the biodiversity by leaving it untouched in most parts.

The construction practices of the Kinene, PNG, shows methods that strongly advocate against wastage of resources as well as production of durable artifacts to prevent over harvesting of the resources. This is implemented by a tacit code of conduct amongst artisans that encourage minimal resource use.

Diversification of the resources used is an important tool for both reduction of the amount employed of each resource as well as for their sustainable management in the long run. Both these practices are in response to the local conditions of their area of habitat and since their ways of extracting and managing resource, are in sync with the surrounding environment they ensure sustainability. Certain aquacultures, like the once practiced by communities in Indonesia and China also have contributed towards not only preservation but also of augmentation of the ecosystem through practices of enhancement and controlled use of the existing resource. Studies from Sierra Leone shows how innovations rooted in indigenous knowledge comes to the aid of small scale farmers in resource scant regions to improve production. Polyculture ( the practice of producing multiple crops), traditionally promoted for diet diversity, risk reduction, maximizing production under low level of technology and optimum utilization of labor, et al has slowly started catch the attention of the modern day agronomists as well, given its multiple benefits, relevant not only in tiny parochial clusters but also in the macro level.

Often we perceive development to be a land quarantined by social myths and self conjured prejudices. An ostracization that makes no sense. In the process, we end up stigmatizing things that tend to ensure sustainable management of the core values that build the foundation of any society, only because we deem them to be unfit to co-exist with our version of progress. Maybe, sometimes, we are not strong enough to admit to the importance of certain things, like co-existence. Just like the patriarchy we live in, our inner self gradually moulds itself around a system of hierarchy and not diversity. The tribals believe in co-evolving with the nature, modifying it but also actively maintaining it in a diverse and productive state. Enshrined in their practices are human experiences spanning millenias and incorporating myriad cultures. Sometimes, its faith they employ. Not always is it opium, sometimes it inspires clarity. Maybe, like a psychedelic the immediate future looks a little, but more importantly, unlike it, these religious believes lay road to a distant future that doesn't look bleak, contrary to the way it does within our 'transience of time' framework. For instances, in parts of southern India, sacred groves couldn't be touched by axes under religious sanction unless it for the purpose of building sacred buildings. Sometimes these holistic approaches of cosmocentricism are manifested through lifestyle and mythologies as is seen by the Warli's use of marginal land or traditions of co-operation. In Sarguja district of Chhattisgarh, every village has a grove of about 20 hectors in which no animal can be hunted or tree cut down. The Bishnois of Rajasthan never uproot any Khejadi tree. The Warlis locate underground water by observing the small mounds made by the land crabs. Larger the number of the crab holes, more is the availability of water. Mostly, the traditional knowledge system works through rule of thumbs, simple and enriched by years of experiences. Often, the loss often commons and free food for the indigenous communities is a loss on much more fundamental level than the freedom of choice gained through diverse consumer products imported the inlands. Our 'progress' is depriving them of food, of a complete diet along with impoverishing our resource base in the long run. Anyways, without indulging in further unstructured meandering, let's gather up my argument through some examples from the Southern parts of India as to why we shall be allowing the employment of community based traditional knowledge and methods of governance in out endeavor to unmaking of a botched up history. It has been found that the *gurjan* tree has its northern limit in a couple of sacred groves in the Western Ghats. Similarly, several rare

and threatened species of floras have their limits in various such groves. A sacred grove near Katlekan, Uttar Kannada, has been observed to be the home to endangered primates like lion-tailed macaques.

An UNDP project from Jharkhand and Chhattisgarh talks of strengthening of decentralized people's institutions for sustainable management of natural resources and documentation of traditional knowledge about biological resources as their achievements, before enlisting instances of how this project has benefitted people from remote red infested belts like Khunti, Jharkhand. For the agriculture practicing tribes of Jharkhand, like the *Mundas*, *Oraons* and *Santhals*, the most important heirloom that they pass on to their posterity is the knowledge and management skills for resource conserving practices of agriculture, which testifies the continuing resilience of the agro-ecosystems, in the face of ever transient environmental and climate conditions and keeps providing them with food security. Low cost structures like grassed waterways are constructed to prevent soil and water erosion. Parsimony is a virtue, especially in the face of the fast depleting resources. An unique characteristic of plant utilization amongst the tribes of Southern India is that they use each plant for only a specific purpose, though its other parts might have other uses. It is also unique in its diverse choices, while normally we depend on at most 100-150 plants, they seem to rely on 1000-1500 plants. These approaches of diversification prevent the over utilization of any particular plant. They show prudence and ecological wisdom not only in utilizing the resource but also in its distribution, which is done to maximize the utility of both the community and its individual. Digressing a little from the topic, there's once instance of prudential distribution that I can't help but invoke, that of management of irrigation facilities in water scarce Ladakh, where villages assign water officers whose main purpose is to ensure that all the fields, till the brink of the territorial demarcation of the village get irrigated. A practice employed by the Kadars of Tamil Nadu to prevent wastage is to use a stone to hit the trunk of the tree while edible fruits. The weight of the stone is such that only the ripe fall down. This also ensures seed viability and further regeneration of the species. Indigenous practices of seed preservation, like in cloth covered earthen pots and traditional bamboo granaries has helped maintain, preserve and conserve genetic strains of various cereals from extinction. The Convention for the Safeguarding of the Intangible Cultural Heritage, adopted by the 32nd session of the General Conference of UNESCO in September 2003, had asked for the safeguarding of various such skills and knowledge, practiced by traditional communities and form a part of their cultural heritage. In India, the Biological Diversity Act contains a framework provision for the protection of these rare knowledge of indigenous communities, though they are hardly implemented in reality. Another example of the importance of this knowledge can be that of the village of Mendha in Gadchiroli, Maharashtra when they decided to revert back to their ancient techniques of biodiversity conservation by deciding on preventing commercialization of forests, collecting only non timber forest produce and also by regulating the amount of such resources to extracted as well as undertaking measures to soil erosion. This however didn't mean that they turned their back on the rest of the world, rather sought to harmonize the world of theirs and ours. But by giving cognition to their right to manage their own resources, it became easier for them to enforce the rules they created for the purpose, as even a tacit agreement of legitimizing them can make them in effect more easily employable. Conflict sometimes arise when the government tries to implement their policies without consulting the traditional communities whose lives are dependent on these resources. Social fencing, a practice of attaching socially sanctioned significance to a particular thing, is an important way to conserve biodiversity. In the Zimithang area of Arunachal Pradesh, where the ethnic groups of the Monpas and Shirdukpens live, the whole mountain area is considered sacred, hence extraction of any plant from them is

prevented. Social taboos attached to various faunas, such as the tiger amongst the Monpas, help protect these species. Thus when, a tiger is even mistakenly killed by a Monpa, the whole village has to go through a series of restricts and perform compensatory rituals. These sort of disincentives are highly effective in the face of the fact that in a society that is so close knit and almost insulated to the outer world, implications of violating the norm and thus attracting punishments imposable on the entire village can be felt rather strongly. This leads to a system of 'quasi-voluntary compliance' (Margaret Levi, 1983) ensured by the participants themselves. The Sherdukpen village councils allow a family to harvest bamboo after intervals of 4-5 years. These councils exercise considerable influence over the village community and are considered to be prime custodian of the inherited knowledge. This, somewhat like what Ostrom had said, creates a '*congruence between appropriation and provision rules and local conditions*', this helps preserve the resource and since it is enforced through an influential authority that can't be defied through both religious and social edict, it is made somewhat sacrosanct. *Thus* when they are defied, as we saw in the case of the Amazonian shamans, the results can be cataclysmic. Ignoring the conservation of cultural diversity and the associated traditional ecological knowledge is detrimental for the cause of conservation of biodiversity on which the entire world depends for its survival.

In conclusion, it's about time we do away with disregard and look to grow resources instead of mining them; conserving the little that we are left with. Because, if time indeed is linear, we can't keep freely floating in this leaden dimension for long, we progress and progress perhaps is not always about looking forward. Sometimes we need to look over our shoulders too. Not a quick glance. We need to gloat. Because *walking* forward doesn't always mean severing ties with our origin, sustainably, it means embracing it.

## DIGITAL COMMONS

**Aishwarya Joshi**

**Prerna Panda**

### **A new common?**

Commons, as the word suggests, are resources that do not belong to a particular individual or group of individuals. No one has an exclusive right to them, making them accessible everybody by definition. As Ostrom suggests, individuals are not always “trapped” in the tragedy of the commons, but are in-fact capable of creating their own institutions, rules and enforcement mechanisms which ensure the sustainable use of such resources with certain prerequisites.

There is a modern common that satisfies all the above criteria of being a common and is also managed by a community. Digital Commons, as defined by Mayo Fuster Morell are “as an information and knowledge resources that are collectively created and owned or shared among a community and that tend to be non-excludable, that is, be (generally freely) available to third parties. Thus, they are oriented to favor use and reuse, rather than to exchange as a commodity. Examples of digital commons are Wikipedia, a type of Free Software and Open-source hardware projects. It should be mentioned here that our common in this case is not governed by a local communities defined by geographical boundaries. However, this deviation from the theme adopted so far is justified as the software and the Internet that the digital commons are based on, transcend geographical boundaries.

Free and Open software and sources (FOS) can be better understood as commons, sharing characteristics with natural common resources, in their distinction from proprietary software such as Google documents, Microsoft office etc. Proprietary Software prevent the users from changing or sharing the software which results in a situation of Vendor-lock-in; a situation where the users have to rely on corporations (such as Microsoft) to provide updates, help, and support. For software to qualify as an FOS, however, its source code should be the public domain and it is vital that the users have the right to modify and use the content in any manner.

### **How is the Digital Common governed?**

#### **Case Study: Wikipedia**

There are a lot of restrictions, laws and policies that prevent the misuse of open source software. For instance, Wikipedia has restrictions on who can modify, edit or create a new article. Only registered users are allowed to edit the articles. Articles that are prone to controversy or vandalism are now protected or locked, that is, only certain editors or the administrators are allowed to make changes. In some cases, all editors are allowed to submit their modifications but review is required for some editors. Insertion of obscenities, crude humour, adding false information, irrelevant formatting, manipulating the underlying code of an article, or use images disruptively are some of the common types of vandalism found on Wikipedia. Vandalism is easy to

remove and takes a few minutes to be resolved but some take a long time to be repaired. Wikipedia's content is subject to the laws of United States and the US state of Virginia. Its editorial principles are embodied in the "five pillars", which is stored in the form of Wiki and can be revised by the editors. Even its editors can modify the guidelines and policies. According to Wikipedia's law, an article is not considered to be owned by its editor or any authority. Contributors avoid a tragedy of commons by internalizing benefits. 'Administrators' in Wikipedia are privileged to delete pages and see that the articles are not changed in case of editorial disputes and vandalism. But they are not supposed to enjoy special privilege in case of decision making. Wikipedians can sometimes dispute; in such a case, editors can initiate a request for comment. The Arbitration Committee is the head of the dispute resolution process. Anti-social behaviour and personation can lead to complete ban from Wikipedia. Anti- consensus or violation of the editing policies are limited to warnings.

## Deviations

Lessons in game theory tell us that a player deviates from a position when he has the required incentives to do so. Deviation in the present case would mean not abiding to the regulations that requires all Free and Open Source and Software users to share every modification in the original piece in the public domain. What can possibly act as incentives for players in the Free and Open Source-Software community are monetary benefits and recognition that brings brand-power along with it. However, the decision to deviate would rest upon two distinct factors. One is how the monitoring is done of the Common, which basically relates to the cost of monitoring. The other is the penalty that a potential deviator would incur, if caught. If the cost of monitoring are high and the penalties are negligent, there are more chances of a player from within the community deviating from his current position. One such case is of CyanogenMod (CM), which is an open-source operating system for smartphones based on the Android mobile platform. It developed as free and open source software based on the official releases of Android by Google, with added original and third-party code. In 2013, project founder Steve Kondik announced that Cyanogen Inc. would be established as a commercial enterprise to develop and market the firmware more widely. This has sparked controversy within the community as developers claim that rights and licensing issues such as acknowledging and compensating past developers and honoring the original ethos of the community project, are not being addressed adequately. These claims were rejected by Kondik as he stated that most CyanogenMod code, as with Android generally, is bound by a non-restrictive Apache license, the same license used by Google Inc. In his 2013 blog post on Cyanogen's funding, venture funder Mitch Lasky stated,

“ Benchmark has a long history of supporting open source projects intent on becoming successful enterprises. Our open source history includes Red Hat, MySQL, SpringSource, JBoss, Eucalyptus, Zimbra, Elasticsearch, HortonWorks and now Cyanogen. We've been behind many of the most successful open source software companies in the world. We have a deep respect for the special needs of these businesses, and how to build companies while preserving the transparency and vigor of the open source communities. ”

## **Limitations of a Digital Common**

Security in case of open source software is another big challenge. Firefox uses sandbox security model and limits its accessibility from other websites. Mozilla Foundation offers a “bug bounty” to those whose find severe security loopholes in the software. Official guidelines for securing vulnerabilities discourage early disclosure of vulnerabilities so as not to give potential advantage to attackers in creating exploits. Further reliability is another challenge as far as the Digital Commons in general are concerned. In the case of open sources for instance, in spite of various laws and regulations, Wikipedia is cited with inaccuracies and misrepresentation. It is seen that it has fared well in the science articles but not in the humanities and sampling articles. Critics argue that Wikipedia’s open nature makes it unreliable. The open structure of these sources and software makes it an easy target for spammers and internet trolls.

# COMMUNITY BASED NATURAL RESOURCE MANAGEMENT

## INLAND FISHERIES-BANGLADESH

Pallavi Wats

Nithya

### **Overview:**

Country: Bangladesh

Resource: Inland Fisheries

System: Community Based Resource Management System called Oxbow Lakes Small-Scale Fishermen Project initiated by the IFAD in 1989

Carried out in numerous small fisheries in South Bangladesh

### **Introduction:**

Bangladesh possesses the largest multi-species fisheries ecosystem in the world. With the network of 230 rivers and their tributaries with a total length of 24,000 km, Bangladesh practices sustainable Inland Fisheries Management. Thus, fish and fisheries constitute an integral part of lives and livelihoods of the millions of people in Bangladesh. Inland fisheries are critically important to sustain livelihood for almost 80 per cent of the rural households of Bangladesh.

### **Government Management before 1990s:**

The independence of Bangladesh in 1971 created hopes for genuine poor fishers, who claimed it through formation of cooperatives. These cooperatives were formed by both poor and rich members of the profession. The Government of Bangladesh managed the inland fisheries by leasing lakes to fishers' groups by auction on an annual basis. In order to participate in the auctions for lease of water bodies, people were required to obtain formal registration from the Department of cooperatives. The auctions were monopolised by the wealthy people in the community. Poor people remained where they were before independence, working as share-catchers, which limited their rights to 25 percent of their catch. Rich people started receiving more than they invested. This led to an unequal relationship between share-catchers and patrons. The condition of poor fishers worsened. The system of lake management did little to sustain and improve the livelihoods of poor people. Before 1980s, the Government control of the lakes didn't work well for poor people.

In mid 1980s, with the support of World Bank, the Government tried to improve the system by taking full control of some of the lakes in the 1980s. However, this approach proved to be unsustainable. It relied on

continual maintenance and fish-stocking using government funds, and the management system was open to corrupt practices. The productivity remained as it is. A long term strategy was needed to set within institutional framework with strong policies that would improve the livelihood of poor fishers.

After the failure of Government in maintaining balance between the rich and poor sections of fishers groups, IFAD initiated the Oxbow Lakes Small-Scale Fishermen Project in 1989, using a social fisheries approach at 23 lakes in South-Western Bangladesh. The project aimed to rehabilitate Lake Infrastructure and decentralise management of the resource by offering long term leases to groups of poor fishers. The further objective was to give the fisheries management in the hands of fishers themselves by creating appropriate institutions and mechanisms for guaranteeing security of tenure. Various fishers' groups were formed to assume the leases and manage the lakes based on equal sharing of costs and benefits among group members.

### **Community Management:**

The establishment of Common Property Regime in an oxbow lake fishery in Bangladesh depends on the co-management arrangements, where long term security of tenure is considered as a precondition. The sustainability of such CPR in an oxbow lake fishery depends on

- fostering cooperation between fishers by providing incentives;
- maintaining equity in benefits and cost sharing;
- ensuring democratic rotation of leadership;
- and monitoring of all operations by the fishers themselves.<sup>1</sup>

Fisheries enhancement and community participation both are necessary in order for inland fisheries management to be socially and environmentally successful. Fingerling stocking, fish sanctuaries and habitat restoration, arrangements for security of tenure and appropriate legislation concerning catches, gears and sanctuaries are activities included under fisheries enhancement while under community participation all the stakeholders share responsibility collectively in decision making and equitable distribution of benefits.

Governing levels can vary from government control to self-management by the fishers i.e the stakeholders. Under co-management fisheries participation increase with decreasing government control. Under this system it is important that the stakeholders be guaranteed security of tenure. This includes two aspects:

(a) Security for the long-term fishing rights is awarded to the fishers' group through lease arrangements in collaboration with the Government of Bangladesh, thus safeguarding exclusive access to the fisheries; and (b) security of the long-term membership of each individual fisher through annual licensing is also provided thereby safeguarding individual fishers from removal from the membership list by government or NGO officers.

### **Local governing body:**

An efficient well defined governing body is crucial to the success of any common property regime. The governing body in this system called the Lake Management Group (LMG) is also crucial in maintaining and monitoring the common. The entry criteria to become an LMG fisher shall be defined as a person who is a

fisher and rural poor who personally owns less than 0.5 acre (0.2 ha) of land or earns less than Tk 10000 yearly. Specifically their role included protecting the rights of the fishers, coordinating the activities of the fishers at a specific lake, Monitoring the efficient working of the system, organising group awareness and rules for the systematic management of the lake and increased fish production and deciding the annual budget and monetary requirement for the fishers. They were also responsible for preparing a stocking and harvesting plan and establishing and maintaining a savings account for maintaining funds and group expenses. Regular meetings were organised to discuss progress problems and trainings and seminars were held for the fishers for achieving the goals of general awareness and self-reliance. Lastly they had to maintain unity in the group and promote and establish self-respect and self-reliance in the community to make t free from exploitation.

Sustainability of CPR in the LFTs of OLP II depends on four policy decisions:

- (a) Fostering cooperation between LFT members, whether they be traditional Hindu fishers or unskilled Muslim landless labourers, coming from various villages around the lake;
- (b) Maintaining equity in labour inputs and benefits in order to maintain cooperation in the long run;
- (c) Institutionalizing rotation in leadership through annual democratic elections for office bearers of the LFT; and
- (d) Supporting the development of self-monitoring systems whereby the LFT members monitor all activities and deal with any irregularities themselves.<sup>2</sup>

#### **Incentives to cooperate:**

Traditionally cooperation was at low levels in the villages of Bangladesh. Thus it became increasingly important that as a part of implementation of CPR incentives must be provided to foster cooperation between the different embers of the newly formed Lake Management Groups so that they would forego short-term benefits fir common long-term benefits. Other incentives are the prospect of infrastructure work, and credit for stocking fingerlings.

#### **Equity in income and cost sharing:**

There are various ways of achieving equity besides dividing cost and income equally. Equity was thought of as equity of access to fishing. At present the sharing of income usually depends on actual participation in fishing: 50% of the total day's income of all fishing teams is deducted for costs to be paid out of the central fund, and the rest is equally distributed among all those who participated in that day's fishing as this is a more fair way of distribution Another technique was to divide the skilled fishers among the fishing teams, thereby minimizing differences in catch per unit of effort between teams. Rotation of days and places for fishing is also practised by the fishing groups.

#### **Rotation of LFT leadership through elections <sup>4</sup>:**

Leadership of each LFT and of the constituting fishing teams rotates because office bearers may not serve successive terms. Initially the election by-laws allowed individuals to stand only once for elections, but later

this rule was abolished. It is traditional in Bangladesh for local leaders to hold onto power as long as possible, so rotation was initially much resented. It helped, however, to create large group of people within each LFT who were experienced in handling LFT affairs with the outside world. It was further found that very few office bearers got themselves re-elected after having been out of office for years.

### **Monitoring by group members:**

Monitoring mechanism are a must for the success of any Common Property Regime. LFT (the local governing body) group members need to keep close watch on the office bearers of their LFT committees, who are responsible for stocking, harvesting, handling the LFT's accounts and distributing funds to the members. In the beginning, fingerlings were often released without notice and with no fishers present, and occasionally even at night. However, incidents of this type decreased after strong protests by some LFT members. Number of monitoring systems have been developed by the LFTs to circumvent the initial monopolization of fish sales by office bearers and few other important fishers. One method is to auction the catch at the landing site, in the presence of everyone. Another method is to rotate the groups taking the fish to market, which allows the members to gain from any benefits due to wholesale commission.

Thus various conclusions can be drawn for the above for successful management of community resources. Incentives for cooperation are required so that individuals forgo short. There are various methods of achieving equity besides equal distribution of cost and income. Self-monitoring is enhanced through democratic rotation of leadership. Monitoring is necessary for proper stock checking and marketing practices which would help maximise fishers income share.

### **Setting up fishers' groups:**

'Security was a key to forming the groups – the security of long-term leases increased the confidence of groups to invest in the lakes, and the security of individuals as members of a group, with equal rights and responsibilities, strengthened their confidence to participate. Transparent procedures enabled members to monitor key transactions, such as fish stocking and sales, and ensured that new knowledge was not monopolised by a few but was spread widely throughout each group'.<sup>3</sup> Membership was weighted in favour of poor fishers. There were many local elite who tried to obstruct this process. It took time but one of the lakes were successfully transferred to fishers' groups – a process that took over two years to complete. The project was successfully established over 2,000 fishers' groups of various sizes, involving some 45,000 fishers, as well as bringing major reforms in lake leasing arrangements. Still, several problems stood in the way of fishers. There were many difficulties and delays in leases and fees, solving social conflicts when forming groups, offering credit to groups without collateral, and providing adequate support for institutional and infrastructure development. The project did fail in providing fishers access to water bodies. Then, a second IFAD-funded project was initiated in 1998 to scale out the experience. Its main focus was on community participation in order to ensure empowerment and access to water bodies for the poor fishers. National and local NGOs were reappointed to form new groups for 740 hectares of lakes, and to work upon the links between groups, line agencies, the private sector and NGOs in order to enhance technology transfer and open access to markets.

### **Women assume more responsibility:**

Since the first project was predominantly occupied by men, user rights were very difficult to secure for single poor women. Though additional rules sought to encourage women's participation there weren't enough inputs and benefits provided. However in the second project women were specifically targeted thus almost half of the new groups were managed by women. Though this usually took place in communities where fishing was fish culture was not regularly a male activity it still represented an institutional shift in pond management. This resulted in greater income and influence over expenditure for the women pond managers. While families have benefited from this increased income and the new influences in the home, communities are benefiting from the improved productivity of scarce resources. Institutions like IUCN are helping women raise voices, by holding workshops and training sessions.

## **CONCLUSION:**

Although long-term leasing was a central feature of the first project, there are now doubts about pursuing leasing rather than user rights in subsequent activities<sup>2</sup>. The user rights need to be protected, else fishers might be subject to market pressures that would lead to takeovers by more powerful economic forces. If this happens, it would defeat the objectives of poverty reduction and improvement in productivity level through this project. Though, this pioneering experience in the fisheries sector has many lessons for the management of other common-pool resources for the world. 'In Bangladesh, multi-stakeholder platforms have brought together community members and local government officials. This has provided poor and excluded sectors of society with a real voice in local decision-making.'<sup>5</sup>This project shall provide global lessons on the transfer of common-pool resources to group management systems.

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**THE KARUK TRIBE**  
**Sumedha Mahajan**  
**Meghna**

Tribal Communities, have more often than not, been taken for granted and even ignored by the world. These communities that cling on to their customs and traditions that are sacred and unique to them have been left back, while the rest of the world gallops ahead. There is one such community that has faced more hardships over the last few centuries, but has still managed to come out strong and sustain itself the best it could.

The Karuk tribe is a federally recognised American Indian tribe. This second largest Native American tribe considers itself the major stakeholder of mother earth. Their activities have for long revolved around hunting, gathering, fishing and basket making. This fishing tribe has always been dependant on mainly the Klamath River for its main staple food - The Salmon. Over the years, they have survived using their various kinds of ceremony and harvesting.

The Karuk fishing culture is based on the Ishi Pishi falls where the Klamath River narrows for the quarter of a mile, and this then creates a natural barrier for the fish. The Karuk fishermen use traditional dinettes to fish migrating salmon, while standing on rocks. What they refer to as a “non lethal” practice makes sure that there is never a case of overharvesting. They couple their fishing with a lot of traditionally private prayers, spiritual and physical preparation, one of which also includes sprinkling herbs on the fishing water before doing so.

**Enforcement and Regulation**

The Karuk tribe promotes resource management and preservation in times of scarcity such as ours. They encourage tribal laws on apt resource usage within all aboriginal tribes. Tribal self governance, self dependence and self reliance have always been their priority

**Fire and fuel management**

The Karuk tribe practices controlled burning as a means to avoid uncharacteristic forest fires that usually end up destroying their resources and native lands. Controlled burning, they say, achieves multiple resource objectives, like allowing them to promote biodiversity and improve ecosystem functions.

The Karuk tribe works with agencies and tribal staff to implement cultural burning projects based on Karuk environmental management practices. In order to build capacity and infrastructure, the tribe works and coordinates with the Karuk Community Development Corporation

**Fisheries**

All of the Karuk tribe’s fishing practices have always kept in mind the need to preserve the same. From allowing the first of the lot to always pass by or to carefully avoid overfishing salmon. The tribe always encourages understanding the ecological process that will later amount in an abundance of salmon, and consequently allow it to form a part of their subsistent diet. They work on improving the quantity, quality and availability of correlating microhabitats on which the fishery resources depend.

The Karuk have issued tribal ordinances relating to traditional harvesting methods, time and area closures. They teach the same to interested youth and public. They work with organisations to develop projects relating to fish passage, habitat improvement and population augmentation and monitoring.

Lately, the Karuk tribe has been working with colleges like the University of California and University of Berkeley to come up with cost effective land management practices. These have been proven to be more cost effective than the ones which are currently being used by public agencies.

With the white settlers' entry to the area, commercial fishery developed. And hardly did anyone know then, the extent to which commercialisation will expand its hands across the natural bounties of the earth. Things thereafter changed so much so that, the Spring Chinook, once the largest run of salmon, is now on the brink of extinction. And many factors contribute to this decline but none was greater than the dams which stand between the salmon and their home spawning ground as a symbol of ownership that the non-tribal humans tend to claim over the natural resources.

A tribe that consumed salmon several times a day, now have to make do with less than 100 per year, says a 2005 report. This dramatic diet shift which leaves an average tribesman to consume less than 5 pounds of fish a year has been blamed for the recent high rates of diabetes, heart disease and decrease in life expectancy.

Environmental degradation has therefore left the Karuk's with a lack of healthy food. Not only the companies, but even the neighbouring farmers have been accused of using so much water for their irrigational purposes, that it leaves the rivers to run extremely dry and scanty, come summer.

Also, the ownership of land and location around the Klamath and Salmon rivers have been threatened due to the increased incidence of wildfires, which are caused through natural but more prominently human ignitions. The fire affects the plants, the water and the fish, the territorial plants and animals on which rely the Karuk for their cultural perpetuity.

The degradation caused to the environment has to be the outcome whenever many individuals use the scarce resources in common. Tribes like the Karuk are the hardest hit as they experience dramatic environmental shifts in their forest lands and fisheries despite their own low carbon lifestyle. Other damaging human influences to the Karuk include logging activities that have depleted the old growth forests and the fire suppression policies created by the U.S. Forest service that have limited the cultural burning practices. Forceful modification of the traditional practices to fit in the contemporary political context has made the situation worse for the indigenous people.

The department of natural resources of the Karuk tribe envisions for an "Eco Cultural Resource Management Plan" (ECRMP) to serve as the long term adaptive management strategy for the protection, enhancement and utilisation of natural and cultural resources. The plan tends to outline the cultural and environmental management practices through the use of Traditional Ecological Knowledge (TEK) and correlating western science. The plan provides over twenty such practices based on TEK and the "world renewal" philosophy, which highlights the interconnectedness of humans and the environment.

The plan aims to re-establish the traditional burning practices, decrease fuel loads and the risk of wildfires. It is meant to establish a framework considering the wide range of human and environmental stressors to the Karuk tribe. The principal goal of the ECRMP is restoring the landscape resilience through the TEK, thereby enabling a balance between ecological processes and human resource needs. The department of natural resources develops and implements strategies identified in the plan, works with the federal and state

agencies and the NGOs and collectively they take into account the traditional values and co-ordinate them with tribal programmatic activities in the current and future management strategies.

One of the main features of the plan is re-establishing the traditional burning practices in order to decrease the fuel loads and the risk for more severe wildfires. The traditional burning practices enabled the Karuk people to burn off specific type of vegetation and ensure continued diversity in the landscape.

Another crucial aspect of the plan is the life cycle of fish, most importantly the salmon that are central to the Karuk ecosystem and food traditions. Traditionally, the Karuk regulated fishing schedules allowing the first salmon to pass ensuring that those most likely to survive made it to the prime spawning grounds.

Now, the important point of concern is that if these indigenous people are taking the onus on their shoulders to protect their natural habitat and save the environment, everyone should undergo a renaissance too. There's a need to scale up the Eco Cultural Resource Management Plan on a much broader level, thereby helping the Karuks be a witness to their dreams and ensuring a better environment for each one of us as well.

In partnership with the TEK and Western Science, we can utilise cumulative information to make informed assessment that will enable us to better understand the loop holes and help in better implementation. There is a need to formulate strategic mitigations at the landscape level which can cooperatively be implemented based on established priorities. Also, answering the unanswered questions and monitoring real time results shall allow the plan to grab a stronger hold at the national level.

## IN CONVERSATION WITH DR.RAKESH MOHAN

*Rakesh Mohan is an eminent economist and former Deputy Governor of Reserve Bank of India. He was also the Executive Director at the IMF representing India, Bangladesh, Sri Lanka and Bhutan. Dr.Mohan started his career in urban economics. He remained an adviser to numerous ministries to the Government of India and later became an important part of Indian Economic reforms in the 1990s.*



**Editorial Board: Given the slow recovery of most advanced nations like the US, emerging nations like Brazil and Russia looking weak, what is your outlook for 2016?**

**Dr. Rakesh Mohan:** It is not very bright. The key character of 2016 is that different economies are showing divergent trends in growth. Unlike the past, where almost all countries were growing and after the crisis of 2008, most advanced countries were going down, now the situation is much more different. Starting with the US: it is expected to continue with its slow recovery. However, past experience shows that recovery after recession does not last more than 6-7 years. So some analysts feel that this recovery might not slow down. Europe is also expected to continue its slow recovery. Coming to emerging markets, Brazil and Russia are in significant difficulty; and there are issues with the Chinese economy slowing down. However it is still expected to grow at a rate of at least 6%. This is still high in terms of magnitude. There are also the oil and energy exporters, and commodity exporters such as Australia and Brazil who will have a tough time. That leaves only a few countries such as India which has experienced significant gains from trade. It could accelerate its growth rate. However, the global economy on the whole is not expected to do very well.

**Editorial Board: Should the devolution to the states in the 14<sup>th</sup> finance commission be increased in the budget in light of the 7<sup>th</sup> pay commission, in future?**

**Dr. Rakesh Mohan:** The special category states such as the north eastern states have often raised the issue that even though their absolute funds have increased, they are not able to meet the welfare scheme expenditure and so on. No there isn't much of a possibility of that. With the recommendations of the Pay Commission, the strain on the central govt will also increase significantly so they won't have any surplus to be able to increase devolution to the states beyond that stipulated by the 14th Finance Commission.

**Editorial Board: Though the IMF structure has changed post world war II and has begun to concentrate on the smaller countries affected by recession ,its internal structure still continues to remain the same i.e. the heads still continue to belong to the first world countries. But do you think that the first world countries would be able to empathise with the third world countries?**

**Dr. Rakesh Mohan:** First, the role of IMF has to be understood. The first role of IMF is the surveillance function wherein they prepare an economic report of their member countries .This is done annually for large countries and once every two years for smaller countries. Over the past ten years or so, these reports have become public and hence remain unaffected by who happens to be the head of the organisation is. The second function is the crisis resolution function, which is the most public function. Here, the IMF steps in to help if a country is facing severe balance of payments crisis. However, during the initial years of IMF's establishment most countries had fixed exchange rate systems and hence couldn't depreciate or change their exchange rate without the IMF's permission. Since the early to mid-seventies, when most countries changed to flexible exchange rate systems (such as floating, managed floating etc.) this function has also changed to some extent. Now when countries get into financial problems (most recently European countries, which got into severe banking and funding crises) the IMF plays a major role in providing financial assistance, accompanied by macroeconomic programmes that seek to bring back the borrowing country to macroeconomic and financial stability .In the case of European countries, IMF financial assistance was only a fraction of that collectively provided by the European Central Bank, the European Commission, European Stability Mechanism. Nonetheless, the IMF staff led the work that set up the macro program that these countries have to comply with as conditions for giving these funds. However, the question does arise that, in case larger countries like Brazil, India, Russia, which are also interconnected now with the international financial systems, does the IMF have enough resources to be able to deal with such a crisis? Especially, for the countries that do not have monetary assistance from other sources. It must be noticed that the US Congress finally ratified recently the long delayed IMF 2010 quota reform. This will lead to the doubling of IMF quotas from SDR 238 to SDR 476, i.e. around \$650 billion This constitutes a good progress, but there is need for increasing IMF quota resources further if the IMF is to retain its credibility as a and effective crisis fighting institution.. It is clearly the case that the IMF head should not be reserved for Europeans and the most capable person irrespective of his/her nationality should be selected. It really does not make much difference in practical terms i.e. according to the operation of the IMF.

**Editorial Board: Do you think that the New Development bank or the AIIB can provide a supplementary mechanism for the Asian economies?**

**Dr. Rakesh Mohan:** There is no overlap between the AIIB, the New Development bank and the IMF's functions. The AIIB, the NDB are just adding to the resources of the multi-national development banks and hence they are supplementing the resources available with institutions such as the World Bank, Asian Development Bank and other multilateral lending institutions. . However they have no impact as far as IMF's operations are concerned. IMF's operations are substituted by or complemented by the European Stability Mechanism for European countries, the Chiang Mai agreement for Asian countries, and the CRA with its currency arrangements for the BRICS countries. However the difference is that the CRA or the Chiang Mai agreements do not have standing secretariats with technical staff in the same way that the IMF does. The ESM is, however, building its own technical staff. They could, in principle, be more of a substitute for the IMF for European countries in the future.

**Editorial Board: With regard to the European Monetary Union, what is your view of countries that are a monetary union, but not a symmetrical fiscal union? Do you foresee such a union for Asia?**

**Dr. Rakesh Mohan:** First, the experience with EMU (the Euro zone) is being increasingly questioned. We can think of two large countries, India and the United States. The United States is like Europe in terms of income levels and size. And of course is a monetary union. A key reason that it works well is because it is a unified labour market. The exchange rate is same for every part of the Monetary Union. So, in case of US a) it's a very flexible labour market, so that its people can move between different parts of the country totally freely b) It is also very flexible in terms of differential wages prevailing in different parts of the country. What happens is that if you take an advanced part of the country, say like the North East, Boston, New York etc. and you take the less advanced part of the country, say New Mexico, you see that there's no difficulty for those in the backward parts of the country having lower nominal wages perform the same functions compared to those in Boston. Because of the flexible wages that prevail in different parts of the country, even with the same nominal exchange rate, the real exchange rate becomes different enough for all parts of the country to have the ability to be competitive enough.

Now, in case of Europe, first, even though theoretically people are allowed to move freely from one country to another in the European Community, because of different languages and other cultural barriers it is not easy to do so. It's not easy for a Greek worker to work in Germany. Second, because Europeans don't have the kind of wage flexibility that exists in US, you find that the real exchange rate does not vary as much for countries like Italy, Spain, and Greece etc, which thereby become less competitive relative to northern countries like Germany. So, suppose that there wasn't any Monetary Union then in all likelihood German exchange rates would have been much higher. Coming to Asia, the difference between countries here is much higher than the differences between countries in the European Union. I don't remember the data exactly, but I don't think that the ratio of per capita income between poorest European countries like Greece is more than 1.2 or 1.5 whereas in Asia, ratio is around 10 or 15.

## **Editorial Board: How important is fiscal prudence for a country like India?**

**Dr. Rakesh Mohan:** The steady maintenance of fiscal prudence is essential for a country like India for both external and internal confidence to be maintained in the economy. This has become more important at the current time due to the recent experience of fiscal excesses that prevailed between 2009-13, from which we suffered higher inflation and other problems. So it clearly not desirable for us to be seen to be giving upon fiscal prudence so soon after that episode. . So the question here needs to be posed differently. We clearly need to give ourselves the message that the government is going to maintain fiscal prudence. The next question that comes is how can we manage greater public investment and how do we finance it? It could mean raising the tax-GDP ratio, which is in my view a bit too low. We need to improve the compliance to pay income tax. For example, the number of taxpayers declaring annual incomes above Rs 5 lakh (only about Rs 40,000 a month) was only 3.6 million in 2011-12. In the same year more than 2.5 million passenger cars were sold. If we assume that most cars are replaced once every 5 years or so, the number of people with taxable incomes over Rs5 lakh should be at least 12.5 million or so. (The min no. of people declaring incomes above Rs5 lakh shouldn't be very different from the no. of cars sold per year times 5).So there needs to be a major income tax compliance drive to increase the tax GDP ratio in order to be able to do the kind of public investment necessary in both social and physical infrastructure.

**Editorial Board: In your experience as a policy maker with the Indian Government, do you think , like you talked about cars sale to detect potential tax payers, has there been an innovative index to measure GDP growth in China. So, are conventional measures being really used in policy making?**

**Dr. Rakesh Mohan:** When Yashwant Sinha was the finance minister, he had introduced a one by six scheme. Under the scheme, persons falling in any one of the six categories — mobile phone subscribers, credit card holders, owners or occupants of immovable property, motor vehicle owners, club members and foreign travelers — were required to file income tax returns. People need to be forced to file income tax returns and many of these things are now easier because of IT. Now, we are increasingly saying that for many activities you are required to have a pan card. If you have a pan card then you get registered with the tax authorities. So in my view you do need to have schemes where pan card is made increasingly compulsory. And also, exemption limit should be kept at a real constant value. Even if people are paying 100 or 200 hundred rupees as income tax, you essentially want to get people into the habit of paying tax on a regular voluntary basis. And because of the availability of IT, the compliance cost is no longer high. It used to be the case that they didn't want to mess with millions of people not paying taxes, because of compliance and bureaucratic costs of collecting the money which wasn't worth it. Now, that's not an issue anymore, as everything could be done online. It should be made easier to pay the tax, even if a small amount. So in the US, for example income from share dividends is taxed in the hands of the recipients, which is not so in our case. We do have a dividend distribution tax which the companies pay on the dividend distribution that they do. In

the US, even if you get \$2 of dividend, they automatically tax it at source. It is costless to collect since it is all electronic. When we abolished the dividend tax in 1998, it was very expensive to collect because people had to keep pieces of paper that they got as dividend warrants. And it was almost impossible for the government to monitor who the shareholders were, who got the dividends etc, so it wasn't worth collecting. Now it's easier to collect because all listed shares are dematted. I am giving this example to tell that you shouldn't be shy to collect even small amounts from every person because it's almost costless to collect. When you students start your first job, you should be used to paying tax, even if it is a very small amount of tax. In the US, when students work as research assistants, and they earn some amount, they have to pay tax. Even if it is just as much as \$100. So that it becomes a habit, a part of what you do when you earn money.

**Editorial Board:** In the light of the recent cases of deflation how do you think should the structure and role of the central banks change since deflation requires a collusion and cooperation between the monetary and the fiscal rather than collision. And also in the same context how long can the CBs avoid the political and ideological confrontations?

**Dr. Rakesh Mohan:** Let's look at a little bit of history of central banking. Many central banks have adopted inflation targeting as the guiding regime of monetary policy. It started almost 20 years ago and it was in response to the high inflation that western countries had in the '1960s and 1970s till the early 1980s. It was when Mr. Paul Volcker became the chairman of the Federal Reserve in the late 1970s that he really turned the screws on and killed inflation. Consequent to that, because of the previous 20-25 year experience of relatively high inflation around the world inflation targeting regimes came into being. Monetary policy needs to do inflation targeting so that people's expectations are affected and the central bank has greater credibility which reduces people's expectation of inflation.

Now the situation has changed. Inflation has been very low and because of the oil price fall and to some extent, commodity price fall, two things have happened which is making it difficult for central banks. One is that average inflation has come down tremendously and despite the quantitative easing programmes of the US Federal Reserve, the European Central Bank, the Bank of England and the Bank of Japan, inflation hasn't gone up. If you increase base money tremendously it was expected that inflation would go up. That was the fear everyone had. The second thing that has now happened because of the oil price fall and the commodity price fall is that it has affected the prices of all goods. Since the price of iron ore, copper, and other major commodities has come down, prices of all products made from them has also fallen. There also seems to be excess capacity in the world of manufacturing, especially in China. There is a downward pressure on all product prices. The consequence of this is that there is a large wedge between PPI and the CPI, in almost all countries. In India WPI is about -2 % and CPI is about 5%. So the question is, inflation targeting for whom? This kind of wedge between producer

prices and consumer prices is now worldwide so central banks will need to do new thinking on how to do inflation targeting. This is a conundrum for which thinking has not begun yet. I would predict that over the next few years we will see some changes in the monetary policy framework of the central banks. If you look at the history of central banks, they had to keep changing the monetary policies depending on grounds of economic development and in terms of economic thinking behind the theory of central banking.

**Editorial Board: As soon as inflation came down, there was a clamour from the finance ministry and corporate sector, for the RBI to cut interest rates. Should the central bank cut interest rate just because inflation has come down?**

**Dr. Rakesh Mohan:** In our country we don't have any significant social security and our experience of inflation was roughly 6-7% a year between the late 1950s to the mid 1990s. It has never been less than 5% on average for a period of 10 years. For the consumer, even if inflation is coming down, consumer's expectations can't be much below 6-7% since that has been the long term experience. From the consumer's point of view, they are not happy with less than 7-8 % deposit rates. Connected to this, we have administered saving rates for postal savings, provident funds and so on, where you get risk free savings and thus it is difficult for banks to reduce their interest rates for deposit below 6%. There has to be more complex thinking on how to tackle this.

**Editorial Board: Most global pacts put many countries on the same runway in spite of some being socially disadvantaged, having political agendas etc. So do you think these pacts should be more comprehensive and include these issues and if so how is it possible?**

**Dr. Rakesh Mohan:** One issue on which 90% economists agree on is free trade. For most countries thus, it would be good idea to be a part of a global future agreement where there are multi-lateral rules. What is complicating the situation now is the emergence of plurilateral pacts such as the new trans-pacific and trans-Atlantic trade agreements which are going beyond what we normally thought of as trade agreements. They are now going into issues like intellectual property and protection, labour standards, mutual recognition issues etc. These may not be in favour of the less well-off countries. Over the last fifty years or so because of WTO, tariff levels have really come down globally. Thus they have become less important. The developed countries are looking for newer kinds of trade agreements. A lot of problems have to be tackled for the less well-off countries. Therefore these countries have to give more attention to their own domestic regimes for product standards, mutual recognition standards etc. Thus we have to set up institutions in our own countries for upgrading our standards even for domestic consumption as we get better off. There is a trade-off faced between selling this appliance to a common person and the up gradation. Thus there are various complex issues that arise in

raising the standards of your labour, education etc, to then be able to compete in the world in a free trade situation.

**Editorial Board: Won't the socially backward regions be further disabled due to intellectual property rights as it prevents people from accessing some basic amenities like medicines?**

**Dr. Rakesh Mohan:** There are trade-offs. Being a backward country which does not have its own innovation we could suffer from some exclusion if intellectual property protocols do not permit differential pricing in products such as essential medicines. At the same time if developed country manufacturers try to sell the product at really high prices, they could get excluded from the trade as other countries might find it difficult to buy their products. Protocols are required along with protection before you invest in new research and development. Thus, such negotiations have to be done on a purposive basis. Many such negotiations are going on between drug companies. For example an Indian company made a breakthrough on the AIDS drug which helped Africa tremendously because it was more than one-tenth of the cost being provided by other countries. Thus ways and means of protecting intellectual property has to be found but not to the extent of getting excluded.

**Editorial Board: What would your advice be to the budding economists of today? What are the most pertinent skills that are required ten-fifteen years down the line?**

**Dr. Rakesh Mohan:** For students who wish to further delve into the subject matter of economics, it is important to get in-depth knowledge about the core economic subjects such as microeconomics, macroeconomics and econometrics at the undergraduate level .If you wish to do graduate courses make sure you do these courses properly before you go into applied work. Don't be in a hurry to do applied work. Really concentrate on your basics and get the basic principles under your hat if you want to be an economist. Also in the current and future scenario there is much more need for people to be multi-disciplinary whether in legal, energy, and IPR issues and so on. However, never disregard your core-economics in lieu of the multi-disciplinary subjects.

**Editorial Board: Do you think the discipline of economics would become much more quantitative?**

**Dr. Rakesh Mohan:** I hope not. Though it is very important to be competent in terms of quantitative economics in every area of economics but there is much more need for economists to be related to the economy. Mathematics is a tool and adequate tools are required to be able to understand the economic issues at hand whether they are micro or macro.

## ANATOMY OF POVERTY

Adrij Chakraborty

Sharan Banerjee

**Abstract:** *This article brings together various dimensions of poverty thereby providing the readers an original perspective on this ailment which is all-pervasive in the developing world. Based on a comprehensive understanding the article presents an in-depth analysis of the inception and spread of poverty.*

In the United States of America, every Presidential election campaign rests on the pillar of an Economic ideology whereby the candidates would try to woo the electorate en-masse with articulate expressions of their vision to take the American Economy to a newer height than ever before. We saw that in Barack Obama's emphasis on economic democracy and economic justice at almost every speech during his campaign. Again in the en core during the 2012 Presidential elections with a very emotional speech about Democracy, we have seen the will to fix this economy for the marginal voter; taxpayer, father, mother, child and so on. We saw a similar phenomenon recently in India, with the recently concluded general elections, where the debate on "Secular Development versus Secularism" dominated the mainstream media and captured the minds of the average Indian voter. What is common in the three strands of events that I just mentioned, is the bleeding economy that one could see in the backdrop; reeking with inequality and thirsty for growth.

The growth narratives that are being drawn by a lot of developing and emerging market economies today have in common the principle of predominant financialization of the economy, where the stock markets are more important to the policymakers than the real economy outside. The recent reactions of the global economy to chaos in the Chinese Stock Markets, with Sensex dropping from almost 29,000 points to 25,000 points within such a short period of time, have put policymakers on such alarm that the Prime Minister had to convene an ad hoc summit of "India Inc." to restore economic confidence in the business class and among investors in the fact that although all may not be well in the country's economy, the "ache din" are surely on their way. Paradoxically this addresses a prominent work among leftist-economic circles by Paul Sweezy (which was a result of one of his debates on Economic Policy with Keynes) on how Capital was redistributing the contours of growth among economies which were on the path. I used the word paradoxically because Sweezy very eloquently and lucidly opposes a lion's share of the indicators of Economic Growth in most capitalist economies such as the stock-market as a yardstick of the growth story, rebutting the fundamentals on which they rest.

What Sweezy does in his treatise is to point out the Marxist ideology of the base and superstructures and give it an economic twist by exploiting the dichotomy of the real and the financial sector of the economy. He points to the real (industrial, manufacturing etc.) sector as the base and the financial sector as the superstructure of the economy, and in doing so points out that most growth stories which occur in the world rest on a tiny base and an ever expanding super-structure, which makes this growth increasingly shaky and unstable as it goes on with time. Why I refer to Sweezy is because the Indian economic story of growth has come into a dangerous similarity with this brand of growth with financialization at the helm, seeming to pull the economy forward. The dichotomy takes a starkly ugly

form here when we incorporate the spectrum of poverty within this framework of growth that India is indulging itself in.

### **Poverty vis-à-vis India**

Who are the poor? Factors such as population density, ecological conditions and the availability of irrigation and transport account for some of these differences among India's states and even within them. Other conditions affecting the rural poor —gender, literacy, land ownership, employment status, and caste — create a more consistent pattern. Thus, an illiterate rural woman, a member of a scheduled tribe or caste, a person living in a landless household or dependent on wage earnings, all face a significantly higher than average risk of poverty.

The incidence of poverty was highest of all among the landless wage-earners who provide largely unskilled labor in markets where the prevalence of long-term contracts has been declining and wages remain too low to lift casual laborers from the bottom rungs of the ladder. Again, rural female laborers are more likely than men to depend on daily wages from manual employment.

[Case: For every hundred women thus employed, there are only 85 males earning their living in the same, marginal way, even though men outnumber women in India by a ratio of 1000 to 929. In terms of earning power, men are more than twice as likely as women to hold salaried jobs in the large and medium-sized towns that are increasingly important centers of economic life in the Indian countryside.]

India as an economy has never quite been able to come to terms with the rampant spread of poverty within its polity and no amount of plans have actually been able to impede this snowballing increase in poverty throughout the country. The dichotomy of the real and the financial sector have almost translated themselves into a debate on whether there are two versions of India that seem to now co-exist within a common territorial unit, which for an objective observer is nothing but shocking. The quintessence of growth and poverty lies in the observation of a city in India housing a structure in excess of twenty storeys for just a family of four, while the same city also houses the largest and most densely populated slum in the world. This may seem rhetoric but these are just facts to put to the forefront where the base and the superstructures of this economy have been divergent in the growth experience of this country. For such a shockingly disparate scene to exist at the heart of the financial system of our country, Mumbai shows where the rampant financialization has been taking our growth dream in sync with the policymakers at Lutyens. The problem with the current perspective of growth in India is reflected somewhat in the words of Nobel Laureate, Ronald Coase when he observed: "The entities whose decisions economists are engaged in analyzing have not been made the subject of study and in consequence lack any substance. The consumer is not a human being but a set of preferences... Exchange takes place without any specification of its institutional setting. We have consumers without humanity, firms without organizations, and even exchange without markets". These words essentially sum up the anatomy of the Indian story of growth and to any objective analyst of such a story, the scenes would not only be sordid but the reviews would also be shocking.

Theoretically speaking, poverty is generally associated with a low level of income. This income is primarily directed towards consumption thereby leaving very little for saving/investment. A low level of

savings obviates the need for a banking account thereby creating financial exclusion and lack of investment opportunities. This creates a barrier for financial inclusion from the demand perspective. Conversely, financial exclusion can deprive people of the benefits and the incentives offered by the financial system. Poverty can, therefore, be self-fuelling from generations to generations.

Thorstein Veblen departs from the conventional text-bookish economics taught to us, to examine the processes of capital utilization and accumulation in the economy from a rather refreshing angle. What

Veblen said almost a hundred and ten years back was that Capital, rather than being a produced means of production is rather a social phenomenon; a phenomenon where possessing Capital implied possessing power over the means of production in an economy. This is a classic departure from the neo- classical school of economics that we are taught in Economics 101 lessons of treating capital as a means of production, a variable which can be quantified and treated with a set of assumptions in a multitude of numerical problems that we solve in the classroom. One would, however, not want to sound heretical here but these again, are just plain observations that are made to develop the grounds of the reasoning in this nuanced debate growth and prosperity in the Indian Context.

When India is in question, S. S. Mundra, Deputy Governor, Reserve Bank of India asked for a two-fold question that needs to be answered in order to address the issue of poverty in all its essence:

“My question is whether such income levels across countries or states (even after adjusting for purchasing power parity) are comparable without taking into account the availability, quality and cost of such basic amenities as health care, education, transport, sanitation etc. Would not a composite index (if one can be devised) of these two elements would be a truer indicator of real poverty level? ...would it mean that there could be two ways to address the challenge of defeating poverty?”

Now what the Deputy-Governor of RBI alluded to was the question of how real poverty is. The aforementioned dichotomy which is addressed here as a dimension that needs to be accounted for, can be invigorated by taking note of mainly two factors:

- ❑ Feasible state ensured availability of quality amenities to all needy citizens,
- ❑ Empowerment and facilitation of all citizens to earn such levels of income which can afford these services from the free market, using as short a term as possible.

Veblen’s political economic treatment of capital opens up a whole new angle in this analysis if we are to look at how in the current scenarios, the Indian state is trying to engineer its growth to a globally competitive level. It is no secret that the policies of the yesteryears in the country post liberalization and 1991 have been to promote growth and an export-oriented approach to the same, through the promotion of private enterprises in the economy where the business environment in the country was created to cater to needs of the individuals and organizations who could take the mantle of the changed economy and create a new path towards sustained economic growth. The Bombay Stock Exchange and the National Stock Exchange became the beacons of privatization in the economy with new private corporations getting their shares traded for capitalization almost on a regular basis. Hence the power over these major productive processes in the economy created a nexus of the private entrepreneurs and the governmental officials which came together in sync to add up to the numbers and carry the growth story forward for this new emerging India. However what was left out of this nexus was the percolation of this power over productive resources in the economy to the people who were relatively not well off. The growth story of our country began to rest more on the financial superstructure than on the bases on which this economy was built. This structural change became visible in the redistribution of the GDP from agriculture and more toward manufacture and even more towards the service sector of the economy.

The anatomy of this growth, though the need for India to increase the rapidity of its growth is something which was required, I would cast my serious doubts over the question of whether it was desired. If we look back at Sweezy's analysis of economies we see that "monopoly capital" thrives in two ways –

- ② Capital deepening and
- ② Capital broadening

The former is when the core capital (or the people who possess the principal power over the productive resources of the economy) thrives to extend their grip over the resources possessed by others and capital broadening is when capital as a whole expands to take newer resources into its ambit. If a look is had at the context of the Indian economy and the growth it has undergone, it will be seen that this has given rise to a new group of super-rich who are being looked at to help carve out a niche for India on the global map. The second aspect is something rather similar to Baumol's analysis of entrepreneurial capitalism in the Philip that is now being given by the government and by the big corporations to the smaller corporations and startups to contribute to the growth story of India.

In this case, when the growth of the nation is being so heavily concentrated on this amalgam of capital in the hands of a minority when we consider these people in the spectrum of the total demographics of the country, we are increasingly led to the question of whether growth indeed is a zero sum game in the Indian context. In the Indian context of resource distribution the answer would be a shocking affirmative. Let us not mistake that the GDP pie has not been growing. It has been, but the share of the limited number of people who matter in the economy over the pie has been growing at a much faster rate than the norms of trickle-down economics would imagine it to be.

In such a case of zero sum growth, we can look at the case of poverty from two different spectrums. One view is that the poor are just like the non-poor in terms of their potential (that includes ability, preferences), and they simply operate in a more adverse environment, in terms of individual characteristics (e.g., factor endowments) or economy-wide characteristics (e.g., prices, infrastructure, various government policies). The best known statement of this view is Schultz's phrase "poor but rational." Modern development economics has extended this view to what Esther Duflo calls "poor but neoclassical" by studying various frictions that impede the smooth functioning of markets as well as technological non-convexities that make it disadvantageous to be poor or operating at very low scales. If we look at both these cases from an Indian perspective we see much social light being shed on both these strands of poverty to analyze a largely common afflicted mass. Premise of this view is that poverty is a consequence of individuals operating at very low scales. The implicit premise of this view is that poverty is a consequence of individuals operating with an unfavorable external environment. To the extent this can be fixed by placing a poor individual in a more favorable external environment, it will be a transient phenomenon but otherwise the poor may be trapped in poverty. In a sense, in this view the phenomenon of poverty, other than being inequitable, is also inefficient: a combination of individual rationality and market forces should work to utilize any potential gains (e.g., lost income from insufficient investment in human capital).

### **The profoundness of poverty**

Now one might debate on the fact that policy-making might just influence the profoundness and decision-making in the long run. The austerity measures and the external borrowing of the country will, in all probability, change the face of the economy as we know it. That is exactly where poverty is relevant in India or in any other country for that matter. But the combination of increases in growth and little systematic change in inequality in the globalizers has considerably boosted efforts to reduce poverty. In Malaysia, for example, the average income of the poorest fifth of the population grew at a robust 5.4 percent annually. Even in China, where inequality did increase sharply and the income growth rate of the poorest fifth lagged behind average income growth, incomes of the poorest fifth still grew at 3.8 percent annually. The fraction of the population of these countries living below the \$1 a day poverty threshold fell sharply between the 1980s and the 1990s: from 43 percent to 36 percent in Bangladesh, from 20 percent to 15 percent in China, and from 13 percent to 10 percent in Costa Rica, to name a few.

In the words of former Minister of Development of Norway, Heikki Eidsvoll Holmås, “1.2 billion people are living in extreme poverty in the world today. Despite many countries experiencing strong economic growth, poverty does not disappear on its own. Instead, the disparities between rich and poor within countries are increasing. This is unfair. The world needs a more fair distribution of power and resources,”

The target should not be to alleviate poverty as soon as possible so much as to narrow the gap between rich and poor, in the very short and the short run. Yet, it has already been seen that income inequality within countries is as likely to decrease as increase with increased trade. But is globalization leaving poor countries behind and widening the gap between the richest and poorest countries? The growth performance of the globalizers relative to the rich countries and the non-globalizing developing countries suggests otherwise. The rapid growth of the globalizers relative to the rich countries means that the globalizers are narrowing the per capita income gap. Moreover, because most of the globalizers—especially China, India, and Bangladesh—were among the poorest countries in the world twenty years ago, their growth has been a force for narrowing worldwide inequality.

## **Analysis of poverty**

The first strand of analysis ties in well with the earlier ideas of this essay on the rampant spread of monopoly capital throughout the Indian economy with little emphasis being given to the poor in terms of giving them an opportunity to move up the social ladder. Infrastructurally, in most parts of the country these sections of the population have been impoverished and left with not much to bank upon. The fact that the political jibe of Narendra Modi in the Lok Sabha about the poor still requiring the MGNREGA to dig up holes in almost 70 years of independence depicts a shocking reality about the state of affairs prevailing in this nation currently. Casual employment opportunities, lack of proper safety nets and misguided welfare schemes have been the norm of the day and the poor in our country are the ones to have paid the price. A major chunk of the growth in this country has taken place without their inclusion and the trend of the future growth process seems to be nothing less. Schemes such as “Make in India” may exist and flourish but will they be able to lift these poor people who really form a major

chunk of our economy, out of the entrapments of poverty? That remains the big policy debate on alo

schemes introduced by a lot of governments – whether this increasing GDP will ever have a wider base.

What we must realize as a body polity is our priorities between a solely growth perspective and one which incorporates Growth with distributive justice. Our nation seems to be in a mania of surpassing China in terms of the growth figures. However what we have ignored over the past is the distributive justice of the fruits of this growth that we must ensure. Even though people may say that the relative percentages of poverty have dropped over the years, India still houses a large share of the world's poor and it only seems that things are in no mood for improvement. What needs to be understood is that the plank on which this modus operandi of our growth is standing is nothing but temporary and we must find ourselves an opportunity as a nation to get out of this looming prospect of stagnation and chart a new way forward for ourselves.

The message across the sociopolitical sphere is overt enough. Poverty is that pocket in the fabric of the social structure which brings down the operational efficiency and the dynamics of the system through its mere existence. It has had a large share of the Indian economy (as it has had in other economies as well, given the obviousness in its reality), which affects the monetary and fiscal decision-making in the same.

### **Poverty and the Capability Approach**

Amartya Sen's approach towards poverty through the spectrum of capabilities plays a key role in this nuanced evaluation of the state of affairs in our economy. The capability approach focuses on what people are able to do and be, as opposed to what they have, or how they feel. Sen argues that, in analyzing well-being, we should shift our focus from 'the means of living', such as income, to the 'actual opportunities a person has', namely their 'Functionings' and capabilities. 'Functionings' refer to the various things a person succeeds in 'doing or being', such as participating in the life of society, being healthy, and so forth, while 'capabilities' refer to a person's real or substantive freedom to achieve such functionings; for example, the ability to take part in the life of society. Of crucial importance is the emphasis on real or substantive – as opposed to formal – freedom, since capabilities are opportunities that one could exercise if so desired. The capability approach places particular emphasis on the capabilities a person has, irrespective of whether they choose to exercise these or not. Hence from the spectrum of this capability perspective, if we now once again make a qualitative judgment of poverty, India presents a rather dismal picture which ties in with the earlier strands of poverty that I had spoken of. Most people in the country who are labeled under census qualifications as "poor" do not possess these capabilities and much of the economic thinking has been away from providing them with these capabilities to move out of this vicious circle of poverty that generations have found themselves in. For instance, much of the insistence on privatization has led to basic welfare facilities in the country being privatized such as education and healthcare with the government in an age of fiscal prudence being unable to logistically support this burgeoning population any further. Unsubsidized healthcare and extremely poor quality of subsidized healthcare has become a huge constraining factor on the poor, along with the lack of proper and quality education at subsidized rates. If we are to measure capacity formation in the economy, we must turn our attention to human capital and when we do turn our

attention to human capital, we should ideally be seeing a labor surplus economy such as India on a promising note, but what we do see is a shambolic state of affairs for a potentially rich resource for our country.

### **Measures against poverty: Deliberations on effectiveness**

Extending an argument based on how the gap between the different sectors of the economy is one of the reasons why poverty exists in the first place, it can be seen from data and statistics how the narrowing of gaps between the rich and the poor have indeed provided a much more promising picture as the inequalities in the society begins to flicker down. Now this being said, poverty imposes an oppressive weight on India, especially in the rural areas where almost three out of four Indians and 77 percent of the Indian poor live. Although poverty has been reduced during the past four decades, it remains painfully high.

In the half century since its independence, India has managed to reduce poverty in that period, only since 1975, when growth accelerated, has the decline been fairly steady. The pace, moreover, remains slow and uneven — faster in the southern states than the northern ones, and more likely to empower men than women. Government efforts to reduce poverty through direct anti-interventions have yielded mixed results. Many of those programs, in fact, have missed their supposed target — the poor — and delivered their benefits to the economically more advantaged. As India moves ahead with the economic liberalization that has yielded a higher platform for growth and therefore the potential for a higher level of welfare, it has an opportunity to reexamine its approach to reduce poverty.

Now while one toys with the idea of mitigating poverty, the skewness is considered. Therein lays the topic on the centrality of growth. The last five years have shown the rates of growth that India could achieve with market oriented development policies and a better integration into the world economy. This is a promising development because the last few decades have shown the extent to which the poor stand to gain from acceleration in growth. The latter widens opportunity, provides the resources needed to invest in human development, and creates the very foundation that will increase returns to human capital — and thus families' willingness to send their children, including girls, to school, have fewer of them, or in multiple other ways, invest in their future. Neighboring countries in Asia that have made a point of combining pro-growth development policies with investments in the health and education of their people have seen economic growth and poverty reduction follow. Youngsters are offered the opportunity to develop the skills needed for upward mobility. Along with the heed of primary education, goes that of gender bias, encouraging a much greater proportion of girls and women to literacy and to health facilities. Reducing the gender inequality among the poor requires a determined effort to focus on improved health care for the population, combined with basic education. India's health system needs to put a new emphasis on basic care. Doing so will improve not only the life span and well-being of poor women and their ability to determine what family size they want, but it will also contribute to the economic health of their families, and consequently of India's society.

To say that Government's PMJDY scheme has been a success would be a massive understatement. Lots of efforts have gone into opening the bank accounts and most households have been connected to the

formal financial system. However, it rests that the need of the hour now is to ensure that services are easily accessible to the account holders, are cost-effective and service efficient & most importantly the accounts remain active. The RBI has emphasized on this availability and the execution in short and medium terms of operation. The backing of the PMJDY might, through trans-sectoral linkage effects, be from the microfinance infrastructure set up in the economy to help extricating the mass out of their poverty. The role of MSME's shouldn't go unnoticed as they employ workforce, affecting the consumption-saving proportions with an accumulation of wealth (hence a heavy bias on saving). With the objective of furthering financial inclusion and supply of credit to small business units, small and marginal farmers, micro and small industries and other unorganized sector entities the license of a number of small finance banks have been made, to an effect of competent operation. Also, licensing of a few payments banks is envisaged to provide payments/remittance services to migrant labor workforce, low income households, small businesses, other unorganized sector entities and other users.

For the efficient functioning of the system, the users would need income and benefits to flow. Focus should also be placed on inculcating savings habit among the people. Once the saving habits take root, people would look for investments. Only then this massive exercise would be meaningful.

## The fortissimo coda

The story of growth carries with an accompanying story of convergence which we must address as well. If we do look at the statistics we see that the top 10% of our country now has almost 40% of the country's wealth and combined resources according to a credit-Suisse report which was recently published. Conventional growth theory does state that the farther you are from our steady state, the faster does the growth occur. If we however, do look at convergence from the angle of the Poor-Non- poor binary in the Indian context, we find that this convergence has somehow not been taking its optimal impact. The Growth has arrived and the convergence effect has also arrived for a section of the population which seems to be well on its way to achieving its optimum levels of growth. However for the larger section of the population which the latest Indian census recognizes as poor, this convergence seems to have tragically cast itself into a form of divergence where the farther they are from their steady state, the farther they keep progressing, other things remaining or not remaining constant. It is a cruel analogy to a sacrosanct theory of growth but that is exactly what has dominated the Indian economic contours in an age where Millennium Development Goals seem to be carrying the headlines at a lot of international conferences. What does this lack of convergence seem to reflect? In a recent paper published at the Jackson Hole Economic Policy Symposium held by the Federal Reserve Bank of Kansas City, Dani Rodrik suggested that the lack of convergence stems from misallocation of resources whereby resources are not allocated to the sections of the economy which would actually utilize or benefit

from these resources the most in carrying the vehicle of economic growth forward. Looking at our demographics, our allocation should be geared majorly towards eliminating poverty while ushering in the fruits of growth so that this tale of convergence does take its effect in the Indian system. A structural redistribution and re-evaluation of the economy in terms of governance, institutions and policies is a much needed prescription for the economy to improve the quality of its growth and to make growth actually sustainable in the long run.

## IMMIGRANTS:BOON OR BANE

Sanjana Sinha

**Abstract:** *The article talks about the influx of immigrants and its repercussions on the economy of the subsequent country.*

It is exceptionally hard, and rather foolish, to ignore how the events leading up to the American Presidential Election of 2016 are unfolding; after all, the United States has undoubtedly established itself as the global superpower and the end of this gigantic hegemon is anywhere near. Although the comments made by the Republican candidate, Donald Trump, have been ridiculed all over the world, his hard stance on immigrants has brought world attention to this very issue. With world furor building in support of Syrian refugees flooding into Europe, one must not forget a similar crisis brewing at the US-Mexican border where over 10,000 children were denied access into the States. These families are fleeing from scenes of gang violence, acute poverty and possibly, persecution. Heading East, we encounter another migration crisis looming over Europe. With over 13.5 million refugees making their way across European borders, it has become a matter of serious concern for not just Europe, but also America who will soon be facing an influx of similar nature. The fact that the problem of immigrants poses such a threat to America is in itself quite ironic, as America after all, was founded and built upon by immigrants.

With the humanitarian crisis unraveling at the US-Mexico border and the influx of Syrian refugees, the question of whether to accommodate these unfortunately displaced people or not, cannot be brushed under the carpet any longer. Trump boldly proposes that the children of refugees should be denied birthright citizenship and all undocumented people would be subject to mass deportations. However, even if the politics of immigration is exasperating, the economics of it is pretty straightforward.

It cannot be denied that America's labour force participation has been at a decline since the 70's. With its public debt mounting over \$16 trillion, and economic growth rate of just about 3%, an influx of immigrant labour would give a much-needed boost to its economy. The Population Division of the United Nations has estimated that without immigration, the population of the States will stop growing by 2042, with dire consequences on its economy of course. The dwindling labour force participation can in fact, be offset by the inundation of 'outsiders'.

The coming in of immigrants is profitable for the US on various fronts. The immediate demographic benefit is that immigrants tend to be younger, better educated than those nearing retirement and bring in higher levels of fertility. Even if they're not highly educated, low-skilled immigrant workers will be more willing and mobile to take up work than native-born American workers.

Another fear associated with accepting immigrants into the country is that it will lead to lower wages for the natives. However, this misconception needs to be addressed. In fact, immigrants boost wages and lower prices. Immigrants do not always compete for the same jobs; they, by accepting lowly paid jobs, open up opportunities for the natives to grab the better ones. Not only do they affect the supply side, they also increase the demand for goods and services stimulating the economy. Only when the skill sets of native's and immigrant's overlap could there be a conflict over jobs.

Many also believe that refugees are a drain on the welfare state; they are living off public coffers. However this argument can be contended on several grounds. The welfare reform bill of 1996, signed by the then President Bill Clinton, clearly states who is eligible for benefits. Temporary Assistance to Needy

Families (TANF) policies restricts most immigrants from receiving state help. Only immigrants with a 'qualified' status are eligible to receive welfare benefits, which excludes undocumented immigrants altogether. Additionally, qualified immigrants need to spend five years in the United States till they actually start receiving TANF benefits. The only exception to the law is asylees and refugees, who too like TANF recipients, need to wait five years. Interestingly, US has only admitted about 70,000 refugees in 2014. To top it all, the TANF benefits remain a tiny part of the budget, costing the government barely \$20 billion, or 1.5% of the national budget.

Moreover, immigrants bring with them their expertise and knowledge of foreign markets which for an economy is a gain in itself.

However, one cannot deny that letting refugees enter the Western countries in masses has led to a threat to national security as seen in the case of the Parisian attacks, where one of the terrorists had entered the country with a fake Syrian passport. Overall, unlike Mr. Trump, one should not shun those who are seeking refuge. They could, and in all likelihood, be exceptionally beneficial. What has started off as being a humanitarian crisis could soon turn into an acute economic crisis, if America does not reach a solution, and a solution fast.

## **SOCIAL CRISIS IN INDIA: IS EDUCATION A BURDEN ON THE URBAN POOR?**

**Arunima Chakraborty**

**Gunjita Gupta**

**Kanika Tomar**

**Abstract :** *This paper investigates the nature of expenditure on education by the urban poor using primary data. The paper seeks to establish that sizeable expenditures are incurred by poor households in their pursuit of quality education for their children. It delves into the dynamics of the relation between income and household expenditure on education; at the same time explores the functioning of the other determinants of per child expenditure on education, thus providing a holistic view of the current realities of private expenditure on education.*

In the first part of the paper we intend to study the relation between household expenditure on education and income of the household through an econometric analysis. The second part of the paper entails a critical analysis of the determinants of education expenditure per child. These include gender, female guardian's employment status, school type et cetera (The list is in no way exhaustive).

The paper is structured as follows: Section 2 contains an overview of the existing literature on private expenditure on education as well as factors affecting it. Section 3 explains the research methodology used in the paper. Section 4 comprises of the first regression relating household expenditure on education and income of the household, the result, and the attached interpretations. Section 5 contains the second regression with education expenditure per child and its determinants, the result, and the attached interpretations. Section 6 we discuss other findings, findings pertaining to the field visits and other qualitative findings. The final section discusses the conclusions of the paper.

### **Research Methodology**

The target community of this research is the Urban Poor of New Delhi. The Delhi Urban Shelter Improvement Board released a list of 675 Jhuggi Jhopri (JJ) Clusters in the National Capital Territory in 2015<sup>1</sup>. This list records all the slum clusters in Delhi including information regarding the number of households, overseeing authority and constituency. From this list, a random selection of 10 JJ Clusters

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<sup>1</sup> The list can be found at <http://delhishelterboard.in/main/wp-content/uploads/2015/09/List-of-JJ-675-Clusters1.pdf>

was made using a complex computer algorithm seeded by the computer's clock to randomize the data<sup>2</sup>. 10 households were covered from each JJ cluster, leading to a sample size of 100 households.

The focus of the research was on the expenditure incurred by households on the schooling of children. Thus, only households which had children belonging to the age group 4-20 years were covered, to account for drop-outs as well. The recall period for our survey was 1 year. Although the credibility of the income data is always questionable, confidence on its veracity can be drawn from the fact that the communities are found to be quite homogeneous in terms of employment and income. In fact, many communities were formed on the basis of employment i.e. majority of the people in a particular community were employed in similar jobs. For example, in Keshav Puram, most people were employed as 'mistri' or casual laborers and in Jhilmil, most were employed as industrial labor. The similarity of income as reported individually by the household in such communities indicates that the income data collected was to a large extent reliable.

In light of the fact that many households may underreport expenditure on education as they may not account for expenditure on books, notebooks, uniform etc, the education expenditure was categorized as amount spent on uniforms, transportation, books and stationary, private coaching and school fees. The expenditure was recorded separately for each child in a household. Data regarding the number of household members, gender of the child, employment status of female guardian, educational qualifications of guardians was also collected from 103 households, which had a total of 232 children of school going age.

It was observed that many households, which sent their children to Government schools, received grants from the government to cover expenses incurred on the education of their children. In order to account for the grant, the grant amount was foremost subtracted from the expenditure on school uniform and if the grant amount still remained then it was subtracted from the expenditure on books and stationery. In our experience, no household was encountered for which there was additional grant amount that remained unspent.

Household expenditure functions are regression equations that relate individual household regression to their determinants (Tilak 2002).

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<sup>2</sup> The online website used to do this is <https://www.randomizer.org/>

In this paper, we run two regressions; the first uses the collected data to study how household expenditure on education varies as income of and number of children in a household change. The model is very simplified, nevertheless it offers valuable insights. The second regression is more extensive and relates per child expenditure on education to its determinants such as income of the household, gender of the child, the status of employment of the female guardian, level of education (primary, secondary or senior secondary) and the type of school the child is enrolled in (government or private school). To account for intra-household variation in distribution of expenditure on education- specifically due to gender discrimination- we collected data for each child of the household *separately* rather than taking aggregate expenditure of household divided by number of children. Therefore, in the rest of this paper, we refer to this data as 'per child expenditure on education' rather than 'per capita expenditure on education'.

## **Results:**

**Income and expenditure on education:** We regress total household expenditure on education, on income of the household and number of school going children. We use a linear regression model (lin-lin) of the following form:

$$EXP = C_1INC + C_2NUM + cons$$

Where  $C_1$  is the regression coefficient for annual income of the household (INC) and  $C_2$  is the regression coefficient for number of school going children (NUM). We take household expenditure on education (EXP) to be dependent on income and number of school-going children. We expect a positive relation between total expenditure on education and income as well as with the number of school-going children in the household.

The results of the linear regression are depicted in the table below:

. reg EXP INC NUM

Source	SS	df	MS	Number of obs	=	102
Model	8.3984e+09	2	4.1992e+09	F(2, 99)	=	15.65
Residual	2.6562e+10	99	268301840	Prob > F	=	0.0000
Total	3.4960e+10	101	346141691	R-squared	=	0.2402
				Adj R-squared	=	0.2249
				Root MSE	=	16380

EXP	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
INC	.0612499	.0149167	4.11	0.000	.0316519 .090848
NUM	4468.953	1376.366	3.25	0.002	1737.944 7199.961
_cons	-1978.593	3819.266	-0.52	0.606	-9556.845 5599.658

We used Heteroscedasticity Consistent Standard Errors in our regression model in order to circumvent the possibility of heteroscedasticity and other violations of assumptions by the underlying data generating process.

We find that,  $C_1$  is positive with a value 0.0612 which means that with one point increase in income, mean household expenditure on education increases by 0.0612, given that the number of school going children is constant. That is, when the income increases by 1000 rupees the mean household expenditure on education increases by 61 rupees. The data corroborates our expectations of the sign of the coefficient to be positive. The coefficient is significant even at 1 percent level of significance, which proves that income is an important determinant of household expenditure on education.

$C_2$  is positive with a value of 4468 which means that with one point increase in the number of school-going children the mean household education expenditure increases by 4468. That is, mean household expenditure increases by 4468 rupees with an additional school going child. The sign of the coefficient is positive as expected. Also, the coefficient is significant even at 1 percent level of significance.

$R^2$  is 24.02 percent, which denotes that 24.02% of the variation in household education expenditure is explained collectively by the number of school going children and household income. The low value of  $R^2$  is fathomable due to the plethora of factors that might influence household expenditure on education. What is of importance to us is whether  $R^2$  is significant or not. The data shows that  $R^2$  is highly significant (even at 1 percent level of significance) with an F-value of 15.65 i.e we strongly reject the null hypothesis that states that the independent variables have no effect on the dependent variable.

**Determinants of per-child expenditure on education:** For this regression we take education expenditure per child (EXP) as the dependent variable and income, gender of the child, female guardian's employment status, level of schooling (primary, secondary, senior secondary), and school type (private, government) as independent variables. The regression equation takes the form:

$$EXP = C_1INC + C_2type2 + C_3lev3 + C_4lev2 + C_5 motheremp3 + C_6gen2 + C_7F\_EDU + cons$$

Where

EXP – Per child expenditure on education

INC – Annual Income of the household

type2 – Dummy variable for school type; Government = 1, Otherwise = 0

lev3 – Dummy variable for level of schooling that the child is enrolled in; Enrolled in Senior Secondary school = 1, Otherwise = 0

lev2 – Dummy variable for level of schooling that the child is enrolled in; Enrolled in Secondary school = 1, Otherwise = 0

motheremp3 – Dummy variable for female guardian's employment status; Female Employed = 0, Otherwise = 1

gen2 – Dummy variable for gender of the child; Male = 1, Female = 0

F\_EDU – Years of father's education

We again use a Linear regression model (lin-lin) to study the partial effect of individual independent variables on per child expenditure on education. This regression covers individual expenditure data of 221 children based in 103 households. The regression results have been discussed in the following page.

```
. reg EXP INC type2 lev3 lev2 motheremp3 gen2 F_EDU
```

Source	SS	df	MS	Number of obs	=	221
				F(7, 213)	=	12.66
Model	4.8576e+09	7	693944777	Prob > F	=	0.0000
Residual	1.1677e+10	213	54819961.2	R-squared	=	0.2938
				Adj R-squared	=	0.2706
Total	1.6534e+10	220	75155750.8	Root MSE	=	7404.1

EXP	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
INC	.0152551	.0043085	3.54	0.000	.0067624	.0237479
type2	-9961.87	1607.815	-6.20	0.000	-13131.14	-6792.604
lev3	7553.4	1721.318	4.39	0.000	4160.401	10946.4
lev2	3733.137	1069.973	3.49	0.001	1624.045	5842.228
motheremp3	-2458.663	1224.115	-2.01	0.046	-4871.594	-45.73167
gen2	595.7952	1038.123	0.57	0.567	-1450.516	2642.106
F_EDU	41.27081	75.06205	0.55	0.583	-106.6888	189.2304
_cons	13127.46	2072.698	6.33	0.000	9041.829	17213.08

C<sub>1</sub>, the partial regression coefficient for income is positive with a value of 0.015 which means that mean per child education expenditure goes up by 0.015 per unit increase in income. That is, if the income of the household increases by 1000 rupees then the mean education expenditure per child will go up 15 rupees. The difference between the coefficients given in regression 1 and here (regression 2) is mainly due to the fact that regression 1 takes household expenditure on education whereas regression 2 deals with education expenditure per child. The discrepancy may also arise because the income coefficient might capture the effects of variables influencing household expenditure on education other than income and number of school-going children. The coefficient is significant even at 1 percent level of significance.

C<sub>2</sub>, the coefficient for school type is negative which means that education expenditure per child decreases for government schools. This, too, follows intuitively since private schools involve huge expenditures. The coefficient is highly significant at 1 percent level of significance.

The regression coefficients for lev2 (secondary school) and lev3 (senior secondary school) are positive and the respective values increase as the level of schooling increases, implying that per child expenditure on education increases as the schooling level increases, which is logically coherent. Both coefficients are statistically significant at 1 percent level of significance.

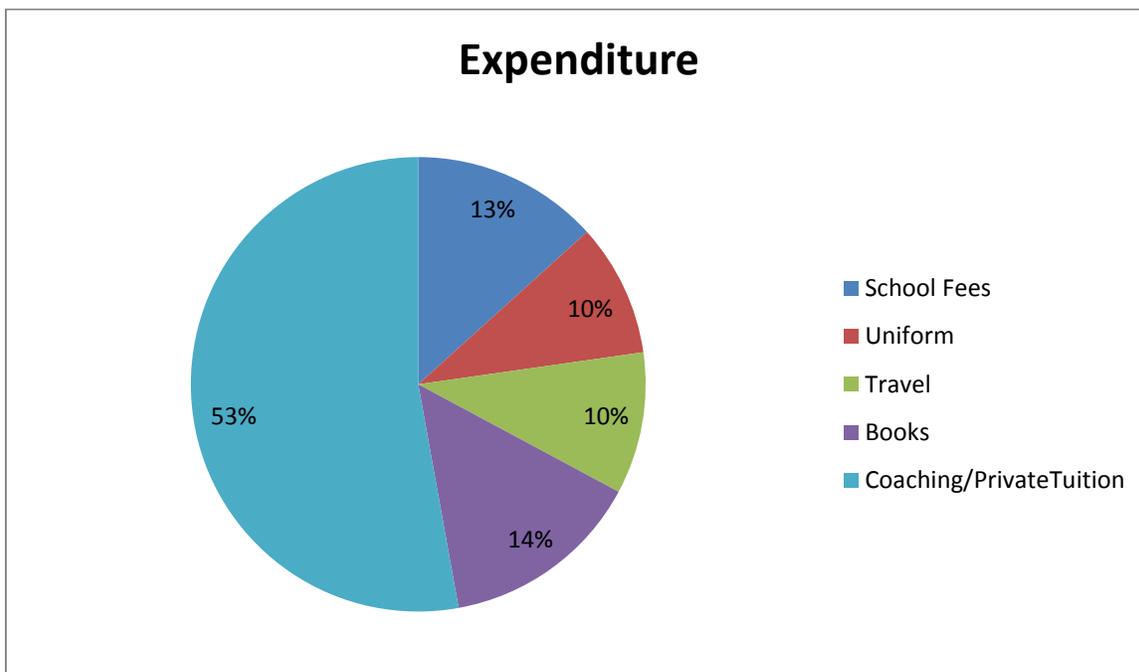
C<sub>5</sub>, the coefficient for female guardian's employment status, is negative. This implies that if the female guardian is employed then the per child expenditure on education increases. This may be indicative of both increased enrollment as well as increased participation of the children in their education. This variable was included to study whether employment of the female guardian leads to more emphasis on education in household decisions and the coefficient is significant with at 5 percent level of significance.

C<sub>6</sub>, the coefficient for gender of the child, is positive which means that there is a bias towards boys, i.e. higher expenditure on education for a male child. However, it is seen that the coefficient is statistically insignificant indicating that such a bias may not exist. Therefore, this sample challenges a deeply rooted view that claims the existence of such a bias. We see that households in our data do not discriminate significantly between the expenditure incurred on the education of girls and boys.

R<sup>2</sup>, which gives the explanatory power of our model, is 0.2938. This means that 29.38% of the variation in per child expenditure is explained by our model. The high F value and its corresponding low p value prove that the explanatory power of our model is indeed significant.

Other Observations: While a quantitative analysis of the data is necessary, studies on socio-economic factors are inconclusive without considering some interesting qualitative data which may not have been represented well in numbers. There are several such observations from the field as well as inferences from the data. First, consider the heads under which expenditure on education is divided. Of the components of expenditure on education, the expenditure on private tuition/coaching forms the major portion, forming 53% of the total expenditure. This is consistent with the field experience, where it was observed that parents were eager to send their children to private tuition centers located in the slums, often run by girls and boys who had completed their senior secondary education. It is worth noting that Tilak (2007) found that the proportion of expenditure on private tuitions by rural households was 7% in all schools. However, we believe that this difference is representative of the variation in the system and framework of provision of education in rural and urban areas. Specifically, in urban areas, there exists a divide between teachers and community members that may not exist in close-knit village communities. This can make parents unsure about their children's performance in school, prompting them to send children to private tuitions. A strong peer effect is also expected, if some parents send their children to such tuitions, more parents are induced to do so. Finally, there is a significant supply of such services in JJ clusters as it provides educated young girls and boys an ideal profession. The success of such private

tutions remains to be examined. We also observed the provision of free tuition by the government in one of the communities (Peera Garhi). We speculate that given that about half the expenditure on education is spent on private tuitions, such initiatives have the potential to significantly lower the household expenditure on education. On the following page, we have presented a pie chart depicting the distribution of expenditure under different heads.



Second, it is worthwhile to note that a lot of households, covered in our study, received grants from the government. These grants, meant to cover the expenditure of stationery and uniform, were only available to children going to government schools. However, the grant provided to cover the books and uniform expenses are inadequate in most, and inaccessible or unavailable to some in the urban poor. There was no uniform way of distributing grants across the communities. Some schools deposited the grant directly into the bank accounts of the children, which can be withdrawn only after the child becomes 21 years or older. This made the grant inaccessible to parents when required and they had to shell out a portion of their current income in order to purchase the required material. In some communities, the grant was awarded before the expenditure was made, while in others it was provided after. Some schools handed over the grant money only to parents, others gave them to students directly and still others did not transfer it to households at all. Such variations across schools raise serious concern about the efficiency of government policies to encourage education.

Third, enrollment across school types can be seen by the following table:

School Type	Frequency	Percentage
Government	199	88.44
Private	26	11.56

We see that households have to spend a considerable amount on education, with those enrolled in government school spending as much as an average of Rs. 6100 per year. Out of this, an average of Rs. 600 is spent on school fees. Households sending their children to government schools spend an average of Rs. 3360 on private tuitions. On the other hand, those enrolled in private schools spend an average of Rs. 15775 annually as expenditure on education. Such households spend an average of Rs. 8215 on private tuitions. It might be argued that according to the general perception that quality of education is better in private schools; the expenditure on private tuitions by this group should be lesser. However, there is little evidence of the quality of education being significantly better in low-income private schools as compared to government schools. Parents able to afford private schools generally have higher income and thus, are also able to afford higher private tuition fees. It is worth noting that the main reason given for not sending their children to private tuitions was financial constraint. Thus, enrollment in schools is relatively inelastic with respect to income, while availing private tuition services is more elastic.

Another interesting observation is regarding the scheme started by Delhi Government under which all private schools are obligated to reserve 25% of their seats for children from economically weaker section. These seats would be 'free' i.e. no school fee can be charged on such seats. In our field survey, we encountered 5 children enrolled in private schools under EWS scheme. Such students had to bear heavy financial burden. Though they were exempted from paying school fee, they had to spend a lot on books, stationary and uniform which, according to school rules, could only be bought from shops within the school premises. Such expenditure threatens the perceived gains of this scheme. We suggest that this problem be looked into and policies strengthened so as to benefit the poor.

Fourth, in our study, we encountered very few dropouts. This can be seen in the following table:

Enrollment	Frequency	Percentage
No	18	7.4

Yes	225	92.6
Total	243	100

We encountered only one case where the dropouts were necessitated by financial constraints. In all other cases the children dropped out after 9<sup>th</sup> grade or above i.e. having completed elementary education as guaranteed by RTE. The primary reason stated for dropping out was that the child was uninterested in studies. While much can be said about the quality of education which fails to cater to the needs of the students, it is clear that the reason for discontinued education is in most cases not the costs of education as borne by the households.

### **Policy Implications**

Huge amounts of funds are allocated to the provision of free textbooks and uniforms for children studying in Government Schools; yet, their utilization leaves a lot to be desired. The plight of Government Schools is well known. During our field work we observed the presence of huge disparities in the manner in which grants for uniforms were made available to the households. Many parents were unaware of the presence of a grant, while some complained about it being a ‘token move’ of the government which didn’t actually help them since they were unable to access it. However, a common complaint across both cases was the insufficient amount of money given as grants. Most households end up shelling out money over and above the grant sum to cover the expenses incurred. There is a need for **transparent guidelines with regard to the distribution of grants**. This information should be readily made available to the households that send their children to government schools, as they are the intended beneficiaries of this scheme.

Section 12 of the Right to Education Act states that “Private unaided institutions and special category schools shall provide free and compulsory education to at least 25% children belonging to disadvantaged groups and weaker sections admitted to class I or pre-primary classes”, this is popularly referred to as the EWS Scheme. These students are randomly selected from a lot of applications. During our field visits, we encountered several households which had one (or more) child enrolled in a private school via the EWS scheme. These households are exempted from paying the school fee; however they receive no grants for the other expenditures incurred. It comes as no surprise that the required expenditures on uniforms, stationery and co-curricular activities are humongous in Private schools and this imposes a burden on poor households. Parents complained of the numerous projects and frequent

changes in uniform designs, amongst other things. A PIL was filed recently, seeking the grant of free books and uniforms to students admitted to Private unaided schools under this scheme. The creation of a grant of this sort will be very beneficial given that it is implemented properly, it will help placate the high cost of private education and will bridge the 'class divide' between the EWS and general students.

## **Conclusion**

The findings of this paper question some of our deeply rooted beliefs. It is seen that the provision of free education in government schools is merely a myth. The existence of 'free' education is not noticed in our sample as household expenditures on education are sizeable. While grants were introduced to cover these expenditures, in most cases these were not in tune with the level of high prices seen in a metropolitan city like New Delhi. It should also be noted that households aren't hesitant in spending on the education of children and try to spend as much as their income permits. This can be seen from the average expenditure on education incurred by households in our data, which stands at Rs.16275 per annum. This is a positive sign as it implies that poor households are increasingly attaching more value to the importance of education.

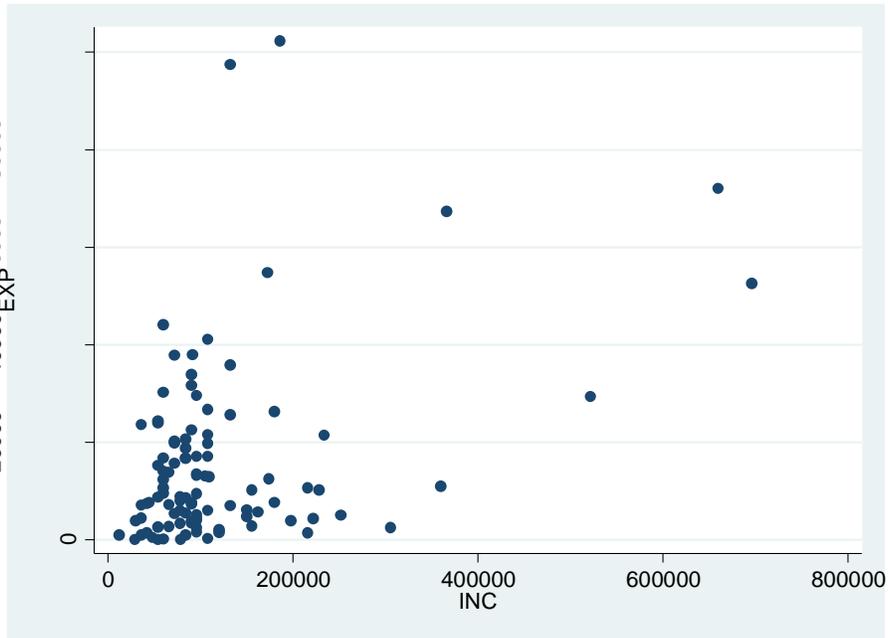
Through the first regression, we see how income is a significant factor in determining the affordability and quality of education. We encountered many households which would prefer to send their children for tuitions or to private schools but were not able to do so due to financial constraints. The skyrocketing cost of attending private schools has kept them out of reach of the urban poor, and we see that close to 88% of our sample of 225 enrolled students, were being educated in government schools. We find amongst our target group the will to educate their children, but unfortunately there is no way and burdened by the myriad of constraints that they face they are forced to settle for the cheapest option.

The second regression lends valuable insight into the importance of various factors in determining how much is spent on the education of a child. We see that as the level of education increases, the expenditure rises. The type of school is an important determinant of per child expenditure on education. As noted above, this amount is significantly higher for private schools than government schools. This study debunks the existence of a bias towards boys when it comes to expenditure on education, as we see through the second regression that such a bias is highly insignificant. Families want their daughters to be educated as much as their sons and the severity of discrimination is now falling. Such findings have been corroborated by similar studies carried across rural India (Tilak 2002).

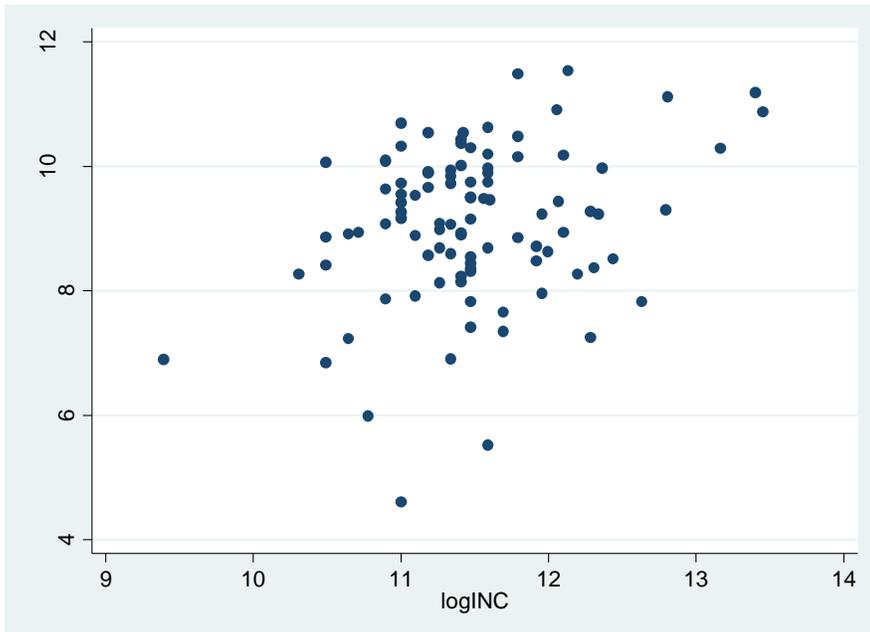
Lastly, it is not claimed that the models attempted here are complete. There is scope for improvement with the inclusion of several other household and contextual variables.

**Appendix: Summary of regression variables and descriptive statistics**

- Scatter Plot of Income and Household Expenditure on Education



- Scatter Plot of log of Income and Household Expenditure on Education



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# **ENVIRONMENT AND ECONOMIC DEVELOPMENT – COMPROMISE OR CONCURRENCE?**

**Manasa Acharya**

**Abstract:** *Ecological economics views the economic system as a subset of the ecosystem, and environmental economics uses the environment as a means of fulfilling economic gains and thus, sees the economy as larger than the environment. The world today is growing more and more concerned with the problem of climate change and degradation of natural resources caused by economic activities of man. This is because, as ecological economics suggests, the economy is but a subset of the ecosystem which means that its welfare or the lack of it, directly affects or limits human's capacity of utilizing resources for their survival, needs or greed. There exists a disagreement between countries in different stages of growth on this issue. This is due to the differences in the ecological footprints of different countries as well as in the opportunity costs paid by them.*

## **HYPOTHESIS AND OBJECTIVES:**

### **Hypothesis:**

Environmental degradation is directly proportional to socioeconomic development

### **Objectives:**

1. To observe the importance of environmental economics through different stages of development
2. To understand the reasons for the hypothesized relationship between the two on the basis of the results observed
3. To understand the impact of environmental regulations on countries in different stages of development
4. To find the most effective way of promotion of environmental economics in the least environmentally-evolved economy

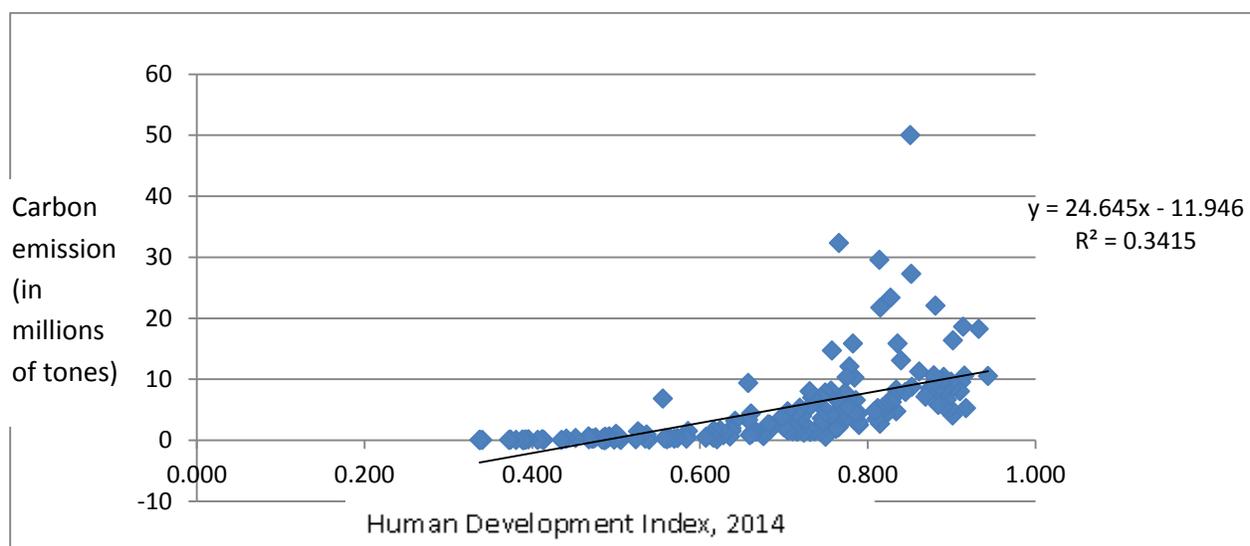
## **METHODOLOGY:**

Quantitative i.e. regression analysis as well as qualitative analysis i.e. literature review and analysis has been used simultaneously to meet the objectives specified above. The paper uses regression analysis of Environmental Performance Index (EPI) on Human Development Index (HDI). "The Environmental Performance Index ranks how well countries perform on high priority environmental issues in two policy areas: protection of human health from environmental harm and protection of ecosystems." (Yale University) It ranks countries on the basis of their environmental policies and their proximity to global goals. HDI given by Amartya Sen and Mahboob Al Haq, is a composite measure as well, of average achievement in attainment of a long and healthy life, literacy and standard of living.

These indicators have been used in this paper in order to observe environmental welfare in different types of economies. Since the evolution here doesn't refer to evolution over a period of time, but one over different economic stages using multiple case studies, time series regression has not been used; rather, the data of a particular year (2014) for multiple economies in different stages of evolution have been used for linear regression.

## ANALYSIS

**The faster growing economies have always believed to be the fastest polluters in the world.** Just as growth and pollution have a positive relationship (Growth and Pollution Convergence hypothesis), the emission of carbon dioxide per capita also increases as people of a nation develop, that is increase in HDI (refer graph).

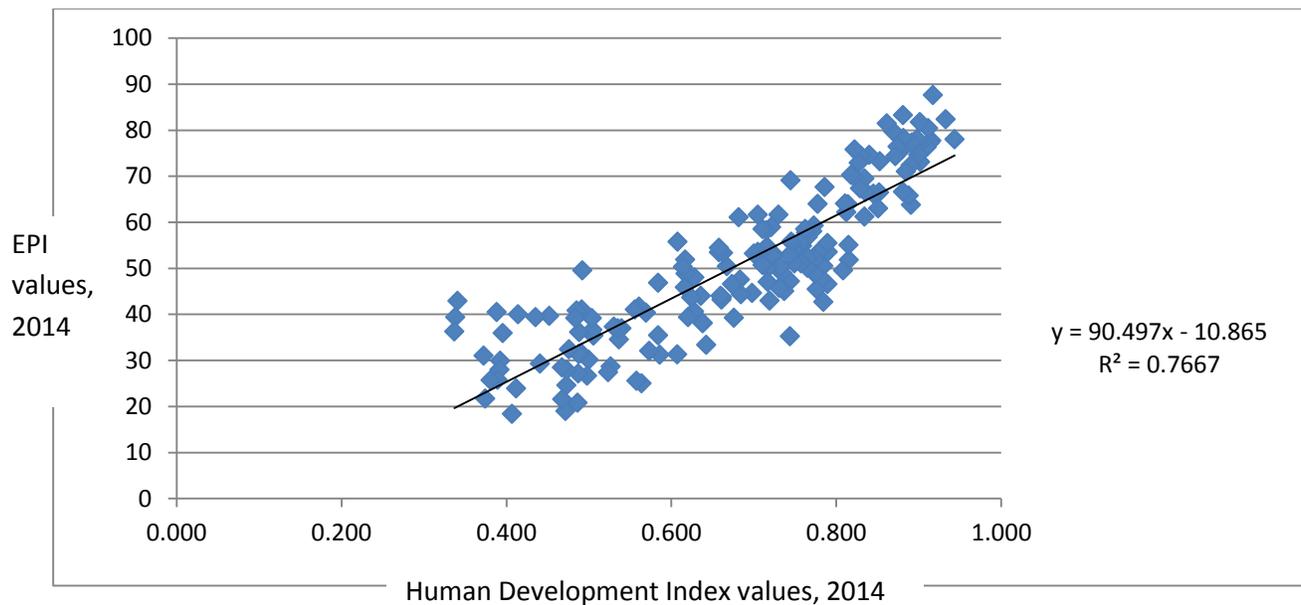


This is due to higher level of industrialization in developed nations (Refer appendix A) and thus the existence of more polluting manufacturing units than in countries that haven't reached the 'take-off' stage as illustrated by Rostow, post which the economy is characterized by mass consumption and boom of secondary and tertiary sectors. (Refer appendix B)

However, using CO<sub>2</sub> emissions as a proxy for measurement of environmental degradation level of a country is insufficient. Though it gives us an idea of the air pollution levels, it does not take into account various other environmental factors such as deforestation, pollution of rivers, marine life sustainability, effluents, waste disposal and a plethora of factors that shape our surroundings due to human actions. The Environmental Performance Indicator (given by Yale University as a substitute for Environmental Sustainability Index) is a comparatively comprehensive index as it takes into account 20 proxy indicators (Child Mortality, Particulate Matter, Indoor Air Pollution, Access to Sanitation, Access to Drinking Water, SO<sub>2</sub> per Capita, SO<sub>2</sub> per \$ GDP, Biome Protection, Change in Water Quantity, Critical Habitat Protection, Marine Protected Areas, Agricultural Subsidies, Pesticide Regulation, Forest Growing Stock, Change in

Forest Cover, Forest Loss, Coastal Shelf Fishing Pressure, Fish Stocks Overexploited, CO<sub>2</sub>per Capita, CO<sub>2</sub>per \$ GDP, CO<sub>2</sub>per KWH, Renewable Electricity) in order to measure ecosystem vitality and environmental public health (health of the citizens that depends on environment quality). The EPI has been chosen as a proxy to determine the performance of countries in their efforts to control environmental degradation.

The regression of EPI on HDI and corresponding high r squared (Refer graph) illustrates the strong positive impact of development on the quality of the environment with a variation of only 24% (refer graph), implying that 76% of a country's ecological state was determined by its level of human development, thus proving the hypothesis.



This implies that a highly developed country performs better in framing, implementing and reaching the targets of environmental policies aimed towards the betterment of the environment than a country with lower levels of human development. A similar phenomenon can be explained by the Environmental Kuznets Curve (EKC) as well. The EKC is a hypothesised relationship between income per capita and various indicators of environmental degradation. In the early stages of economic growth degradation and pollution increase, but beyond some level of income per capita (which will vary for different indicators) the trend reverses, so that at high-income levels economic growth leads to environmental improvement. This implies that the environmental impact indicator is an inverted U-shaped function of income per capita. Though the EKC has been termed as obsolete by most researchers, Shafik and Bandyopadhyay's study in World Development Report, 1992 estimated EKC for 10 indicators and found empirical data that proves that the state of clean water and urban sanitation and air pollution follow EKC (though waste production, carbon emission, deforestation do not).

**A few possible causes for the positive relationship between HDI and EPI can be enumerated as follows:**

1. Environmental development targets may be a low-priority area of concern as compared to human development goals for less developed countries, whereas developed countries, by virtue of their abundance of resources and human development are able to give the required 'big push' to environmental factors i.e make the critical minimum effort as defined by Leibenstein in environmental research and conservation that poorer countries cannot afford i.e. the income elasticity for a better environment is lower for countries with lower HDI.
2. Also, since high HDI are countries that are already industrialized in the past, and are mainly in the third stage of growth, they have undergone structural change and entered the next cleaner stage of service-led industries (structural change hypothesis). This is also explained through the Environmental Kuznets Curve. Thus, LDCs pollution levels are continuously rising till they reach an inflection point, if not peak (the EKC has been criticized for its extreme fall stage), where the rate of pollution changes due to affordability or usability for better technology at a larger scale of production.
3. The poorer EPI of poor countries can be blamed on the act of outsourcing of 'dirty' industries (through Foreign Direct Investment in poorer, populated nations), effluents and hazardous waste products to these countries by the ones at the top. While developed countries ensure clean environment in their own space, they have no qualms in harming the ecology of other countries For example, the United Nations confirmed that millions of tonnes of hazardous e-waste is dumped in landfills of poor countries in Africa and Asia under false pretenses of 'used goods' by Europe and USA (The Guardian, Dec 14, 2013). This creates dangerous and almost in humane living conditions for the people living around the dumping grounds and this not only deters human development but is also a case of human right violation.
4. Some goals of HDI are secured by the presence of a cleaner environment. Better performance in environmental measures of EPI like access to drinking water and sanitation, clean air devoid of particulate matter and green house gases, infant mortality levels are indicative of better life expectancy as well. Thus, the higher HDI might be a result of high EPI, and vice versa.

## **APPLICATION**

A problem that follows the differences in the performance of developed and developing is that of framing international laws, limits and conventions.

During the period 1965-1988, World Bank researchers Low and Yeats found that for pollution intensive industries, the Revealed Comparative Advantage (=the share of an industry in a country's total exports, relative to the industry's share of total world exports of manufactures) of developing countries grows relatively faster than those of industrial countries (1992). Similar results were obtained by Lucas et al. Mani and Wheeler (1998). Thus, the opportunity cost of regulating emissions, which affects inversely manufacturing productivity, is higher for those which are yet to expand the manufacturing sector, depriving them of reaching the level of the developed nations. This can be summed up in the following model:

Regulations	Developed Countries Do Not Agree	Developing Countries Do Not Agree
Developed Countries Agree	-	(0,2)
Developing Countries Agree	(-1, 2)	-

Where

-1 = Fall in NIGR

0 = Status quo maintained

1 = Improvement in NIGR

2 = Greater improvement in NIGR

Thus, the paper proposes that the regulation elasticity of growth (proportional decrease in GDP growth rate to an increase in regulation) for nations with an undeveloped manufacturing sector is extremely high as compared to that of industrialized nations. Thus, for primary sector economies,

$$E = \frac{\Delta NIGR}{NIGR} \times \frac{\Delta Regulation}{Regulation} > 1$$

(Inverse relationship; thus will have minus sign.)

The argument of the LDCs is that they, too, should be allowed to evolve and develop their economy as the developed countries have. It is on this principle of equality of opportunity that the much disputed policy of 'Common but Differentiated Responsibilities' in terms of cutting down on carbon emissions of most authoritative environmental regulatory bodies, mainly the UNFCCC is based. This regulation abides by the Pigouvian principle of 'Polluter Pays', as emissions by industrialized nations are higher and it is but logical to penalize them.

However, the rates of carbon dioxide emissions are fast increasing in developing countries due to rapid urbanization and industrialization. Thus there exists some opposition on the grounds that domestic industries in the developed world will take a hit on the international competitiveness level. Likewise, there are apprehensions among them that the less developed countries, with more emphasis on economic development than environmental protection will develop a competitive advantage- shift economic and political power or forces in pollution intensive industries where the developed countries have regulations to follow (i.e. the manifestation of pollution haven hypothesis: trade amongst nations, having stringent and lax environmental regulations respectively may lead to stronger development of pollution intensive industries creating greater environmental externalities in other country) and thus they do not abide by them (The Guardian, Dec 13, 2011).

Moreover, the developing countries are unregulated and are not obligated to improve in spite of their poorer performance. Though this might be logical in the case of carbon emissions, the EPI values reflect

their indifference toward usage of all natural resources by virtue of their need for opportunity to develop. Thus, they must be held responsible for their actions that have adverse impacts on the environment.

## **CONCLUSION**

It cannot be ignored that there exists an impactful effect of environmental performance, and particularly sanitation and natural resource pollution on human development. Thus, it is a two way relationship and choosing one at the cost of the other is unwise. Moreover, overall development in living standards leads to relatively higher demand for cleaner environment due to its high income elasticity. This in turn encourages people to devise strategies for betterment of their surroundings (Dinda, 2004).

The justice of regulating poorer countries is much debated upon. Stringency resulting in the creation of pollution-havens in less regulated countries would only create further problems for countries in all stages and ultimately, fail to curb degradation. In other words, forceful regulations can hamper the economy and slow down the emergence of green economy. Policy makers and academics (Pethig, 1976; McGuire, 1982; Jenkins, 1998) recognize the weaker competitiveness of dirty industries in developed nations (higher abatement costs > higher costs of production) in the presence of these regulations and the 'resource curse' that befalls the developing ones.

However, Porter and Van derLinde (1995), Poppetal (2010) and Jaffe et al (2002) suggest that a country with relatively stringent environmental regulations can benefit from developing new production process in the environmentally sensitive industries with the required resourcefulness. It encourages technological advancements and process innovations that lower the cost of regulation abidance. Regression of Research and Development expenditures on perceived environmental stringency from 1974-1991 indicated a positive relationship that was statistically significant ( $r^2 = 0.878$ ) (Jaffe and Palmer, 1997).

Changes in three parameters affect the environment – scale, composition and technique (Gen Grossman and Alan Krueger). In the case of developing countries, interference in scale or composition of industries might have adverse effects on the economy. Thus, technique transformations should be attempted. For one, increasing costs of polluting factors of production can induce companies and entire industries to shift to other cost-effective means of production (Hicks, 1932). This shift can easily be done by nations that have reached high levels of human development, but might have serious repercussions on livelihoods in primary and secondary sector economies. The worldwide solution to this can be furthered by developed nations themselves by providing LDC economies with less polluting and cleaner technologies, developed by the better-off nations, in order to reduce their environmental degradation without negatively impacting their opportunities (technology transfer). Thus, even though certain industries may be eliminated or regulated in the process, simultaneously, emphasis must be placed on creation and sharing of newer, cleaner, more responsive ones with equal levels of employment creation. Countries that are successful in reducing their ecological footprint (of the country as a whole, and not

just the aggregate of its peoples') can be rewarded by way of subsidies on better technology by bodies like the United Nations.

#### LIMITATIONS OF THE PAPER AND SCOPE FOR FURTHER RESEARCH:

1. The Environmental Public Health component of EPI is directly related to the development of human health and hence, life expectancy. This might lead to multi-collinearity, and thus result in bias. The extent of multi-collinearity between EPI and HDI can be found to estimate whether their relation is unbiased or not.
2. The Game theory model is extremely intuitive and only skims the surface. It does not explore real historical consequences. Thus, a detailed model of Game Theory can be developed in order to explain empirical consequences of decisions of countries in acceptance of regulations.
3. The reason for different results shown by carbon dioxide levels and EPI in different economies can be examined.

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## **EFFECT OF INCOME ON EDUCATION GRADE POINTS OF THEIR CHILDREN**

**Jitya Gottipati**

**Vyshali Kottam**

**Kriti**

***Abstract:** Modern education in India is often criticized for being based on rote learning rather than problem solving and logical reasoning. Preschool for Child Rights states that almost 99% of preschools do not have any curriculum at all. Even though many children attend schools, they remain ill-equipped. Children often don't receive support from their parents. Parents seem to be indifferent to their child's learning and only see them as additional hands for work and hence lesser priority is given to education which is central to a child's life. The paper tends to focus on causal relationship between income and education.*

### **IMPACT OF INCOME ON EDUCATION**

There are many routes by which children from low income families can end up doing less well in the education system. These can be broadly classified into two groups, causal and non-causal.

The non-causal relationships occur when factors that are correlated with low income result in low levels of education. For example, we might think that low income families have characteristics that leave children more prone to low educational achievement. Such characteristics include innate (genetic) ability, low parental education and other less easily observed measures of adult heterogeneity which lead to lower home based child development. This may also produce a lower emphasis on educational achievement in parenting or a reduced ability to translate parenting time into educational development. A further example would be a shock that leads to both low attainment and low income, such as family break-up. Note that in all these scenarios it is not low income in itself that causes reduced attainment.

Causal effects of income on educational attainment can be direct and indirect. Direct routes may occur through reduced investments in educational development outside the school (i.e. resources for high quality childcare, after school coaching (of good quality), educational materials in the home, money for educational trips to zoos, museums, days out, holidays etc.). Later on in the educational process the direct effects of low income are even more obvious, as poorer parents may lack the resources to fund their children through further and higher education.

Indirect routes include purchase of housing in a good neighbourhood that leads to a better peer group or access to a better school. For example, Gibbons and Machin (2001), highlight that parents seem prepared to pay a lot more for housing located near to better achieving primary schools. We are interested in the extent to which one can uncover a causal relationship between income and education.

### **THE EXTENT OF THE CAUSAL RELATIONSHIP BETWEEN INCOME AND EDUCATION**

Existing research tends to show that children from poorer backgrounds do less well in a number of dimensions than the rest of the society. But, the extent to which this follows from a causal relationship from low incomes to adverse outcomes is less clear. If income matters then increasing inequality of

family incomes will translate into inequalities in children's educational outcomes. However, if the key determinants of educational outcomes are factors like innate ability, parental education and parenting styles then increased income inequality should not matter for children's educational attainment.

## **METHODOLOGY, DATA COLLECTION AND LIMITATIONS**

### **I. DATA COLLECTION**

As income data is hard to obtain and is unreliable, expenditure data has been chosen as a proxy for income data. For expenditure, a range of the costs incurred in obtaining an education were considered, such as the school fee, tuition fee and costs of transportation, uniforms and stationery.

For marks, since primary data is most reliable, the students of 7<sup>th</sup> standard were given a personal assessment test comprising of questions on basic mathematics, English, logical reasoning and general knowledge.

The data collection was carried out across 5 schools in North Delhi which comprised of 2 boys' schools, 2 co-education schools and a girls' school. A total of 127 students were surveyed. The data collection was carried out over a span of 2 months .i.e., in September and October, 2015 for the academic session 2014-15.

### **II. METHODOLOGY**

From the previous literature on educational spending, the following regression model was adopted to estimate the impact of educational expenditure on educational achievement:

$$Y = \beta_0 + \beta_1 \text{exp}$$

where **Y** is an educational outcome .i.e., marks in the personal assessment test and **exp** is expenditure per student in the year 2014-15.

Educational expenditure per student reflects the costs associated with education. It covers a range of expenses, including school fees, cost of school uniform, transportation cost, expenditure on stationery and tuition fees.

An alternate way of approaching this is that, if the inequalities in expenditure data translate into the inequalities in their educational achievements, income and education grade points are correlated.

### **III. DATA LIMITATIONS**

There are some data constraints in this study.

Collection of income data has numerous problems as it is inadequate, unreliable and time-consuming. Income data generally suffers from the under-reporting bias. Also, income distribution for children in households with differing number of members is tough to determine. Hence, it is more plausible to look at the expenditure data which is proportional to the income data, as it addresses the above problems.

One limitation with using expenditure data is the absence of concrete accuracy and comprehensiveness when considering stationery, transportation, uniform and tuition costs. Another limitation that the expenditure data faces is that it does not take into account the expenses of healthcare and nutrition of the child which affects education. Due to time, administrative and financial constraints, this study is limited to 127 students across 5 schools in Delhi.

### SUMMARY OF STATISTICS

% of boys = 57.48%

Number of those who scored above 40% marks = 37%

Number of those who scored above 60% marks = 4.1%

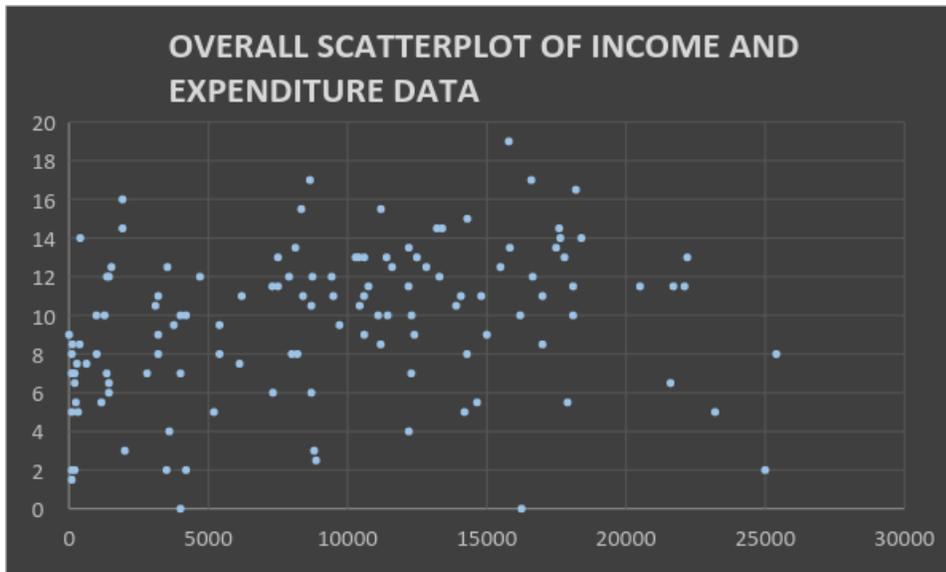
% of girls = 42.5%

Number of those who scored above 40% marks = 59%

Number of those who scored above 60% marks = 7.4%

% of students attending tuitions = 59.84%

EXPENDITURE CLASSES (per capita per year)	NO.OF DATA POINTS	r <sup>2</sup>	R	NATURE OF CORRELATION	STRENGTH OF CORRELATION
0-1500	26	0.131	0.362	Positive	Weak
1500-5000	19	0.158	0.398	Positive	Weak
5000-10,000	24	0.033	0.182	Positive	Weak
10,000-15,000	32	0.043	0.206	Positive	Weak
15,000-20,000	18	0.014	0.119	Positive	Weak
20,000 and above	8	0.379	0.616	Positive	Moderate
<b>Total (0-20,000+)</b>	127	0.00235	0.048	Positive	Weak



Therefore, only a 0.23 % of variation in marks is due to variation in expenditure as explained by regression.

Most expenditure classes show no strong correlation to their marks.

- 59% of the girls scored more than 40% which are the passing marks, whereas among boys it is only 37% which reflects the bad quality of education in our country. Also, only 7.4% of the girls scored more than 60% marks whereas among boys, it is just 4.1%. This shows that there has been an expansion in the numbers of girls being educated and also that the system is able to extract more out of them in comparison to the boys.
- Approximately 60% of the students were found to attend tuitions after schools. This is an indication that the quality of education in government schools is unsatisfactory.
- More than 50% of the students couldn't solve simple arithmetic questions, such as division by 5 and fractions and approximately 48% of the students couldn't understand a simple comprehension passage.
- Most of the students couldn't score at all in the general knowledge and logical reasoning section which indicates the poor quality of the education.
- 4 of the 5 schools that were surveyed didn't have proper scheduled classes along with ill-maintained classrooms which made it really difficult for them to study.

## CONCLUSION

Therefore, low income may be one of the reasons contributing to low grade points along with a few other reasons, some of which are mentioned above, but it in itself has no causation. Other than financial problems, other reasons causing this outcome can be lack of innate ability, proper parenting, parental education, conducive environment at home and in the neighbourhood etc

Also, the inequalities in expenditure data do not translate into the inequalities in their educational achievements. Hence income and education grade points are not strongly correlated .i.e., there is no causal relationship between them.

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## **IN CONVERSATION WITH JAYATI GHOSH**

*Jayati Ghosh is a professor of Economics at the Centre for Economic Studies and Planning, School of Social Sciences at Jawaharlal Nehru University. She has authored several books and more than one hundred scholarly articles and has been the the winner of many prestigious awards. She is also closely involved in working with progressive organisations and social movements*



**Editorial Board:** After graduating in Sociology from Miranda House, what drove you towards Economics?

**Jayati Ghosh:** The thing is you're studying society in Sociology and then when you look at it and realise that many of these are happening because of economics. So to understand why many of these things are happening, you really need to understand the economy. So I was feeling like I was on the surface rather than understanding the underlying things. That's when I decided I wanted to do economics. And fortunately in those days it was much easier; now it's quite rigid. But I did spend a while studying maths. So I decided in my third year, so I basically took to textbooks of mathematical economics to just catch up on that.

**Editorial Board:** So had your background in Sociology given you a different perspective in economics?

**Jayati Ghosh:** I think so, yeah. Because I'm much more interested in the wider interlink of how the economy works with the society. I would say that what I do is Political economy, rather than mainstream economics. In fact the mainstream economics doesn't really interest me at all. I would say in a sense I'm still interested in society, and how it changes. But then I'm looking at economy as one of the ways in which that has happened.

**Editorial Board:** So, in your opinion, has political economy moved away from mainstream economics?

**Jayati Ghosh:** well, Let me put it this way, mainstream Economics has moved away from the richness of Political economy because early economists were all political economist. You know, Adam Smith, Ricardo, Karl Marx, Marshall, practically everybody was a political economist. In the 20<sup>th</sup> century I would say, in the second half of the twentieth century, particularly with the glorification of Micro economics, you got a focus on basing your work on abstractions that were not necessarily very relevant for the society or economy that you are considering. So you got the emergence of a whole new school of economics that would set up the market model, and it doesn't matter if the market model wasn't actually relevant. But you had these assumptions; all the textbooks still do this, they create an ideal world, which is fine in the beginning but then you have

to break down those assumptions and try to understand what's really going on. i think that there are strands, called heterodox economics which are definitely doing that, the post Keynesian economics, you know, etc. But alot of mainstream economics still is very obsessed with its own little world, and thats because many of us thought that the global financial crisis would shake that, but for some bizarre reason it hasn't!

**Editorial Board: Do you think it will take time though?**

**Jayati Ghosh:** i think it will take time but its also interesting that you know people who look at the real economies in many institutions across the world, they aren't in the economics department anymore. They are in cinema, they are in business, they are in sociology. Even though they're economists, they're looking at the real world and breaking down these assumptions, they're saying, okay, let us now look at the messy side of the world and try and understand, and that's not seen as the posh thing to do as an economist.

**Editorial Board: So ma'am in relation to this, you've spoken against the one-size-fit-all prescriptions to policy we have; so how do you think we can incorporate political and social context into models? Particularly as students of economics we're all very curious about how they can be incorporated into maybe modules or even policy making?**

**Jayati Ghosh:** Very simple. In standard theories, the underlying assumptions are perfect competition, constant returns of scale etc. When you drop the assumption, what do you get? Think about developing a model without the full employment. Of course it's messier, because you can't have Pareto Optimality or say you are moving on a new PPF but definitely you will have to then think through that. It's not that you cant do it, It makes models more complicated, less easy and tractable. More and more economists are now doing things along that track, but I would say not enough. And when people realise that makes the real world messier, I think the tendency has been to switch to micro theoretical answers or look at the miniature.

A lot of experimental economics today is focused on the miniatures, like does an economic agent behave rationally? And the idea is to do these experiments and to see whether they are behaving rationally in this context. And of course it's interesting in the sense that you're breaking down the assumptions, but often it's such a miniature that it doesn't take account of the wider courses. For example, Banerjee and Duflo, who are very much flavour of the month right now, for the kind of randomised control trials they do, they find what they see as 'counter-intuitive' results. If people are given money for X, they don't actually spend it on X, but spend it on Y. But it's not counter intuitive if you are looking at the bigger context. So you know you come to, let's say, a city of India and forget about the vast gender discrimination, linguistic issues, caste etc. and then expect them to behave in a certain way. They will not. Because we know if you are aware of the social context you will know that a person will not approach a person of another caste, particularly a woman, to get something done. It will not be a surprise if you had the wider knowledge; it's a surprise only if you go with a very fixed notion of rationality. So a lot of Micro stuff is very startled by things which, frankly, are very commonsensical. It's just that Economics has moved so far from common sense .

**Editorial Board: Do you think the curriculum of our economics courses draws too heavily from these 'standard' notions?**

**Jayati Ghosh:** Definitely. I think we're too slavish about what happens in the North Atlantic. If we see they are into micro finance, we are into micro finance. They say cash transfers is the solution, we say cash transfers is the solution, they like RCTs, we like RCTs. Frankly I feel it's a little pathetic; we don't have self confidence.

**Editorial Board:** You've talked about how the academia is prone to influences like these. Is it true in the Indian context as well?

**Jayati Ghosh:** Oh yes. Look at the numbers of young people rushing to do RCTs today. Ten years ago everyone was rushing to do auction theory. Before that everybody was rushing to do game theory. And none of these is wrong or bad; it's just that the true things get missed out. Even in the way we teach I think. The basic sense of reality; it doesn't have to be Indian reality, it could be global too. So don't talk about perfect competition if it doesn't exist. Build a model based on the imperfect, the presence of oligopoly, the presence of market power. The second point is the implicit notion that it is better to be a B or C grade academic recognised by the north, than first grade academic doing something relevant. Doing something relevant with your own solution. I mean this is just my feeling, I hope you will not go beyond that. It's a lot of pressure.

**Editorial Board:** One specific example that our Editorial Board is looking into with the current issue is the management of the common natural resources. So the prescription is generally either the division of property rights or command-and-control policies. Do you think there is any way in which the social context can be incorporated here?

**Jayati Ghosh:** Yes, indeed there is. And again you see it's an example of how the North influences the way we look at things. So there have been environmentalists and others who have been talking a lot about precisely what you are saying, the social context and recognising for example traditional ways of managing properties, whether it was groundwater resources or is it the fodder areas, etc. And we've had excellent work done by various people in India as well and the basic insights are the same.

**Editorial Board:** Ma'am, what would be real development according to you? Is it trickle-down economics, i.e. create employment so that it percolates, or is it trickle-up economics?

**Jayati Ghosh:** Well, trickle-down doesn't work; it hasn't worked anywhere. The only place where you could argue that there was a kind of trickle-down is China, where you have dramatic growth and more and more people being drawn to higher wage activities. But it hasn't really been a trickle down because there was also a lot of state intervention along with it; it wasn't purely market driven. There is no other country, in the developed or developing world, where you have found pure trickledown market without state intervention. I would say there are two things. First, what is development? Like Sen talks about capabilities and freedom; but these are better ways to talk about it. Suppose you take the simplest indicator like diversifying from low income activities to high income activities, which is reflected in per capita GDP, but not entirely. It is how much of your workforce has moved to higher income activities. So in India, our development project is really incomplete because we still have 85% of our workers stuck in low productivity agriculture and low productivity services. That's our big failure. So suppose you take that indicator, moving people out to higher value-added activities, and then you find that you need state intervention of different

kinds. It doesn't have to be exactly the same thing in every place, and the political economy matters. You need to know what is required in every place and the class configuration matters too. So there is a big failure in India of this basic thing and I would argue that is both a reflection of and contributes to our failure in so many other things like nutrition, health, lack of education. All of these come out of that basic inability to shift people into higher value-added activities. And it requires state intervention which is a necessary, but not a sufficient condition. So if the state intervention is of a particular kind, which encourages the small middle class to emerge along with elite, like we had in the 60s and 70s, then that doesn't do it either. What you need to do is push the majority of your workers into higher income activities.

**Editorial Board: Then what kind of state intervention do you think would work?**

**Jayati Ghosh:** Well, if you look the examples of that have done it, first of all, it means you have to do industrialisation. But that doesn't happen through just Make in India type announcements; it happens through public investments that encourage industrialisation at the base. Minimum transport infrastructure, education; all the South East Asian countries put a lot of resources into education, slightly more equitable distribution of property, industrialised goods, and public spending on what we call the basic goods. So if you look at the combination of basic infrastructure, transport facilities, minimum nutrition, and health facilities and if you are providing these, say universally, then it does two things. One is that it creates more demand, because people then have money to spend on other things, so it's creating more local demand and there is a multiplier effect of public spending on these things. So that generates more employment and all that. But the thing that is usually missed is that this is like subsidizing private employers. If you have workers, like in South East Asia who are living in subsidised houses, have subsidised food, get good public transport that is subsidised, send their children to subsidised schools, then you don't have to pay them such high wages. The East Asian Miracle was also driven by the fact that all this spending actually subsidises private employers. They can be globally competitive with the so-called lower wages. You look at China's workers, who are called low-wage workers. Chinese workers (the ones in urban areas) get subsidised housing, transport, healthcare. It actually makes the wage components for the employers much less.

**Editorial Board: So do you support subsidies as a way of public investment?**

**Jayati Ghosh:** Yes, absolutely. Let me put it this way; providing public provision of basic goods and services. I won't call it subsidising; the public sector is doing the provision of basic goods and services almost as a social and economic right of the citizen. One by-product of this is that private employers also benefit. Public spending on goods and services is good from the welfare point of view; it improves all our terrible indicators: nutrition, food, everything, infant mortality. At least we can bring them up to acceptable civilised standards. Also, as you need public services to deliver all this, they spend in the rural areas and that has multiplier effects, that generates more employment, it lowers costs overall if you have a healthy educated workforce. And best of all, it lowers costs for private employers also. So, I mean this is a strategy that has worked in very different political regimes; in Scandinavian with democracy and East Asia with dictatorships.

**Editorial Board: But Ma'am, most of the public projects are marred by leakages; NREGA, etc. So do you appreciate the idea of JAM trinity?**

**Jayati Ghosh:** So two things. One, everybody loves to pick up NAREGA leakages. They are relatively low considering because this is one act that had a lot of embedded accountability. It's true in some states there are still leakages. But you look at the extent of the leakages relative to the programme, it's actually very small. I have actually studied NREGA in several states and in some states like Andhra Pradesh, Tripura and Tamil Nadu, it is functioning very well. There are some problems in others but if we say that there are leakages in UP, there are leakages in everything in UP. Nothing works in UP; why just point out NREGA. Second, if you're going to have a transfer and you're worried about the wrong people getting it; how much easier to just misappropriate cash? Third, one of the points about NREGA was that you use labour to do socially useful work, and where it's been done properly like Tripura or Andhra Pradesh, you actually find that they're doing useful things. They are clearing groundwater resources, doing natural pesticides, improving soil quality. So if you design the projects well, you'll actually ease the supply side in agriculture, which is huge. Or you improve the conditions of the life of the people, which is also huge. It can work on both demand and supply sides. Finally, a lot of NREGA work is horrible; very difficult and very arduous, 45 degrees and you are out the hot sun. They do not provide shades and crèches that they are supposed to. But it is work not a handout. I have talked to a lot of women on these sites and they appreciate the fact that it is work and it is difficult work for sure, but it gives dignity in a way that handouts don't. Even the people who are giving it to you recognize that it's not a handout.

,which is very important for people. So I think if it is done properly, it will have much broader social implication and then really a kind of social revolution if you implement it properly and that's one of the reasons why they don't want to implement it properly.

**Editorial Board: So in states where it has worked, why do you think it has worked?**

**Jayati Ghosh:** Well it needs a committed state government for sure and you need local mobilisation amongst people, to hold them to account. Because it's much more work for the bureaucrats involved, for the panchayats involved and people always try and avoid work, so they need to be held to account.

I think it is places that have active civil societies have worked more; Andhra, Kerala, Tripura. I have friends like Jean Dreze, who are out there in Jharkhand fighting, struggling, but there are few in a large sea of relatively less socially active. So, you really need a combination of a receptive state government which is willing to spend that money, and strong social mobilisation since in lot of states, the life of activists is under threat.

**Editorial Board: That's interesting. Has the civil society been able to impact the policy-making scenario in India more effectively over the years?**

**Jayati Ghosh:** It's a very tough one to answer. I think right now, the policy making scenario is quite closed. Right now it has become much centralised and it's not very centralised outside, for the civil society; but it's very centralised within the government itself and many ministers and bureaucrats are complaining but they don't have any say. So, right now it's a specific situation but maybe up to 2014, there was a sense that it's much more open and it's true that there was civil society in the National Advisory Council. But it's complicated

because it was a bit like pressure cooker letting out steam, and I think UPA I was like the apex of civil society having the voice. During UPA I, there was RTI, NREGA, the beginning of the Forests Rights Act and so yes, there was a lot more activity. I think UPA 2 there was already a clampdown. Already Mr. Chidambaram was doing all those things against NGOs you know etc. It was already a beginning to silence, quieten, and there was much less willingness to hear. My husband was in the Planning Commission and in UPA I, they developed a plan to go around and get hearings in different states for the draft plan, which is an excellent idea; you get NGOs and the civil society together to comment on it. By UPA 2, those were such cosmetic exercises, just a little choreographed show everybody talks and they are not even taking notes. They just don't care. I think there was a phase when the civil society was very active and to some extent had a voice. I think already by UPA 2 that was being suppressed, and now as we know it's completely muzzled. Now there is active repression. The strategy now is to starve people of funds or get them involved in court cases. But suddenly this starving of funds is widespread and major NGOs, including research NGOs, are being told even by private donors that the government has sent them a signal that they are not supposed to fund them.

**Editorial Board: Do you think there is any way around this?**

**Jayati Ghosh:** Well, I mean, the ways around are political. They may take time, but it's India, it always surprises you. I am still optimistic and then there are young people like you around.

**Editorial Board: In the past, we have followed prescriptions of models like Harrod-Domar and Mahalanobis plan. Is there any model which we have in mind now?**

**Jayati Ghosh :** Look what terrifies me now, is the death of planning. It's true that now it's been officially buried, but it had died before that. It had died, in the sense that, the planning commission had become more like a coordinating agency, which is also an important role and I think that the loss of that coordination is also very bad in the current government. But it was not an agency with vision, like 25 years ago. So medium term planning or even 5 years planning in terms of priorities, integration within the economy etc. had already been lost for a while, because we had heads of institutions who didn't believe in planning. We had Prime Ministers who, sadly, didn't believe in planning. Now that we have got a government which is explicitly anti-planning which, frankly, is a disaster. Everybody plans; France, US, everybody out there is planning. Imagine if they need it, then developing countries, where the development project is still incomplete, cannot do without it. You cannot have a smart city programme without a plan. You can't simply say, okay now you have these cities, and they are going to be smart. You need an urbanisation plan, which will then bring in different kinds of infrastructure plans. It has to be a part of the cohesive whole. You couldn't have done Industrial Revolution without some medium term planning because it requires infrastructure, it requires other resources. You have to think about that allocation. You can't do agriculture when the soil quality is falling in so many parts of the country, water tables are falling. You know, you have to have a vision for the next 10- 15 years; what are you going to do to change, to stop bad things happening, to let good things happen. So, I think it's a total disaster that we don't have planning. Actually the worst

effects will be sent by ----- . When you are at your peak, that's when you are going to feel the fact that basically we didn't do justice to you. When you were young, we should have been planning to create the context for a viable society and economy for you and its after you.

**Editorial Board: Do you think there will be a revival of planning?**

**Jayati Ghosh:** There has to be. You can't be a vibrant sustainable, powerful economy without it. So call it some other name, whatever it is they will have to be. The point is they make a big mess before that and the fallout will be felt by you. But yes, eventually.

**Editorial Board: So Ma'am, what is your approach to analysis in economics?**

**Jayati Ghosh:** Let me answer it differently. What would I like my students when they finish here and go out in the world? I would like them to have a framework, a broad framework, which they can use to try and understand realities. In other words, which assumptions you can afford to drop, which assumptions must you retain when you are building your analytical model. Whatever you do, you obviously have to have some analytical model. And then, I would like that analytical model to be always conscious of the impact on the bottom half of the population. So, don't just go by GDP, if that GDP is entirely skyscrapers, service sector and finance.

**Editorial Board: So ma'am, what is your advice to the aspiring economists?**

**Jayati Ghosh:** To people like you, you know, it's a fabulous subject. It is fascinating; it never loses its fascination. And to be fascinating, it has to be based on reality. So, just keep your head on the shoulders and your feet on the ground.



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