

IN CONVERSATION WITH DR E. SOMANATHAN

Professor E. Somanathan received his Ph.D. in economics from Harvard in 1995 and taught at Emory University and the University of Michigan at Ann Arbor before joining the Indian Statistical Institute, Delhi where he is a Professor in the Planning Unit. His current research is in environmental and development economics and ongoing research projects include the impact of global warming and aerosols on Indian agriculture and the distribution of income, and game-theoretic modelling of climate policies.



EB: Do you think there is a trade-off between environment and development?

There is usually a trade-off if you want to do something about an environmental issue, but it is also often worth making. For example, if you want to control pollution from cars in the Delhi area, it is going to cost something, because then you have to make some investment for pollution control equipments, people have to buy fuel efficient cars etc. On the other hand, the reason why it may make sense to carry out these actions is because these externalities can have effects which reduce your ability to produce and consume. For example, if pollution affects your health, then it decreases your productivity and consequently your income falls. We might also want to undergo the costs if the savings that we get are larger than the costs. Ultimately, the question is of a cost benefit analysis.

EB: Market economics fails to put a value to the ecological and cultural loss that is entailed in the name of development and industrial progress, such as in the case of dams in the country. How do you view this lack of any valuation system?

There is a misconception when it comes to monetary valuation and green accounting of environmental objects, say a river. You don't value the river. What you value is the particular changes in the attributes of the river. So for example, the current oxygen demand might be 100 units rather than the current 50 units. An increase in 1 unit per ml can be valued as a Re 1 or Rs 2 benefit. So what you are valuing is changes in some attributes, say some pollutant level for example, so you might value the quantity of change in the flow. But you don't usually value the

river in full because it's not a meaningful thing to say. What do you mean by the value of the Yamuna? Say if you value it at Rs 4000 crores, what do you mean by that? That we would have been Rs 4000 crores poorer if the Yamuna didn't exist? It's not a meaningful thing to say because the choice isn't about whether to have the Yamuna or not. You can say there is 1 unit more of x, y or z in the Yamuna or some amount of pollutant in the air of Delhi. What you are valuing is 1 more unit of that. But it is not the same thing as valuing the whole thing.

The reason why it's important to know that you are valuing changes is because demand curves slope downwards. So right now I may be willing to pay Rs 10 per bottle of water, but if I have no water to drink for two days, then I might be willing to pay probably everything that I have for that bottle of water because the value implied is higher. The point is that since I already have plenty of water to drink, the additional bottle is not worth much. So if you go from there and value all the water on earth, you can take that price, which is Rs 10 per one litre and multiply it with all the water on earth, then the number that you get is what economists usually call a serious underestimation of infinity. The reason behind it is that when are setting that price, what you're getting is the marginal value given the fact that you already have a lot of water. You are ignoring the fact that as the quantities go towards zero, the prices will move towards infinity. So your valuation will not show that at zero, your willingness to pay will be infinity. That's the fallacy that has unfortunately been committed by a lot of people. So that is what I mean when I say you can't value the whole Yamuna, because that's not a meaningful thing to say. Hence, you value in changes in particular things. You can value the pollution level in the Yamuna, but that doesn't mean that you are valuing the river.

The question now is: because of monetary valuation and green accounting, are we somehow devaluing things because we attach a monetary value to them? But what we are valuing is the current position, and all that we care about is then expressed in one number. Hence, the issue basically reduces to whether we are capturing all the things that people truly care about.

EB: Talking about pollution controls, what do you think is more effective - market based economic instruments such as pollution taxes and marketable permits, or command and control policy options such as mandate caps on pollution and pollution reduction targets which are applied across polluters by government decree?

These economic valuations are subjective and should be used with a great deal of caution because there is a lot of unpredictability. Economists have developed methods to do the valuation, but they are highly imperfect since they leave out certain aspects and involve a lot of uncertainty. Therefore, you should treat those estimates modestly. The important thing that the valuation can point out is that at least this much damage has been caused and one aspect of the harm caused by pollution is determined. Then it can be compared with the costs of cleaning up that pollution and it is useful regardless of all these other values which only add to the ultimate.

I don't particularly like market based economic instruments. However, there are two basic market based economic instruments- price based economic instruments and quantity based economic instruments. Price based economic instruments would imply taxes and subsidies, because they change the prices of the final goods. Quantity based economic instruments are tradable permits of some kind, i.e. you set an aggregate quota and then you allow people to trade based on the total quota. Both these instruments can, however, be used only in limited situations. One reason is that is we often cannot monitor the situation. For example, we want to

have tradable permits for automobile emissions, but it's difficult to monitor them. Hence, we can have a tax on diesel or petrol, which is a partial incentive based instrument. And it has partial effects in the sense that if we have higher prices of diesel, people will want more fuel efficient cars, so companies will produce more fuel efficient cars and if they do that, fuel emissions will go down. Generally, people will drive less because driving is more costly, and so there will be less emission. The advantage of that kind of instrument is it has an action on various kinds of markets. People drive less and the cars that they do drive are less polluting. Adjustments are made by various agents in the economy: the drivers, the owners and the producers of cars. So there are various changes occurring to accommodate the change. Now imagine that we are instead going to regulate the quality of fuel. Say there will be no more than 10% of sulphur in the fuel. If more sulphur content fuels were used previously, then there has to be a switch to lesser sulphur ones, leading to lesser sulphur dioxide emissions. So air pollution is reduced. But this effect is happening by just one agent, which is the refinery on whom the regulation is imposed. They have to make some investments to reduce the sulphur content in fuel. All the other agents don't make any adjustments. But that doesn't mean it is less effective. Therefore, the big advantage of market based economic instruments is that they tend to give incentives to everyone in the economy to make the adjustment. But the disadvantage of this is the narrowing of the effect, i.e. you can have a tax on diesel, but it will not change the quality of the diesel, only the quantity. It doesn't change the fact that when you drive your car, there will still be pollution.

EB: But sometimes a cap on pollution levels on industries is effective.

Yes, limiting the amount of polluting levels is effective, but it's not as effective as setting up a maximum level of pollution and allowing the industries to trade. In addition to this, there will be additional costs involved in monitoring each factory's pollution level. We will need a trading system and an institutional set up to check the permits and to know how many each one is holding, and then to make sure he doesn't violate that amount.

EB: Which one is better?

Well, trading permits do not work, except for pollutants that can be mixed. For example, if I set an aggregate cap for the brick kilns in western UP in terms of how much smoke they can produce, then if it is cheaper to import bricks from eastern UP instead of producing in western UP, there will be huge amounts of pollution in eastern UP. Hence, the problem here is that the pollutant is not uniformly mixed. So trading doesn't reduce pollution and you cannot let western and eastern UP to trade. So if a pollutant has local effects, then trading has a limited scope. Carbon dioxide is the only universally mixable pollutant which leads to global warming and therefore, there is trading for carbon permits.

EB: How significant do you think has been the impact of social movements that attempt to conserve the environment?

I think that the impact has been very significant. The *Chipko* movement, for example, was hugely successful and stopped the felling of trees in the Himalayas. People today are much more aware than they were in the past. Nevertheless, there is still a lot more environmental knowledge and awareness that is needed.

EB: What is your view on the higher education system in India? What are its problems and how those can be solved?

Well, the fundamental problem in Indian higher education is that we don't have enough colleges to cater to the existing demand. And even lesser colleges of good quality. There is a demand-supply mismatch. We also have a problem of access. People from privileged backgrounds generally have much better access to quality education than people from poorer backgrounds. The main reason why this is so because the government has a terribly broken system of funding education. For example, the college fee of Delhi University students is Rs. 8,000 per year. But what is the actual cost per student? It is probably, I would guess, 20 times higher! The average all-India cost per student seven to eight years ago was Rs. 85,000 and in a college like Miranda House, which is much better than the average quality, it would be even higher than that. By now, it would be Rs.1,00,000 i.e. you're paying only around five per cent of the cost! The effect of this is a drain on the government resources. To make sure that its budget is not drained even further, the government regulates the expenses of the colleges, mainly the salary of the teachers.

How would you fix the system? You need to realize that a lot of those who go to the university can easily afford to pay the full cost. How would you know that? Because parents of those children who are deciding to send their wards to a college in India are also deciding at the same time whether to send them to America. And how much is the cost in a college in America? Say, around \$60,000 a year, which is roughly Rs. 40 lakhs a year. Hence, it is better if you subsidize only those who really need the subsidy, and not everyone. These savings can help the government build many more colleges and universities.

The second issue is the problem of centralization in universities, i.e. bureaucrats telling the universities that you can't spend more on this, or you can't promote this teacher because if you promote him/her, then his/her salary will go up, which will have to be paid by the government. The government needs to change the process of funding. Instead of giving out money to universities, what if it gives money directly to students? Say, it pays the tuition fee for a student below some threshold income level. Above that level, government may either just partially subsidise or not subsidise at all. Here, although a lot of students don't get the subsidy, but you have a lot of money that can be used to fund say, education of students who never went to school. Secondly, you take away all these regulations from the universities. The university can then set up an incentive system for teachers, which will improve the teaching standards too.

EB: You have been to Harvard as a student. How would you contrast it with the Indian education system?

Well, it's not a fair comparison because Harvard has a lot more money. Yet, in India, we can greatly improve things with the money we already have. It can happen if we decentralize the system, and if we give the money out to only those who actually need it. Another problem is that the government regulates the fee structure by keeping fees low. But with low fees, you get poor quality colleges because then you're not attracting good people into the teaching profession. In terms of the quality, overall the state of higher education is really pathetic in India. There are very few colleges of comparable quality.

EB: How relevant do you think is the existing reservation policy in elite educational institutions in the context of job creation, and has it been successful in equalizing career outcomes for the backward classes?

No, it hasn't. This is because the problem starts right after you go to nursery school. People from Scheduled Castes are more likely to be poor. They have greater probability of mothers being anaemic, children being underweight, infant mortality rates being high etc. Inequality starts from there itself. These children usually go to government schools because their parents can't afford private schools, and, as you know, government's schools are very badly run. Dropout rates at every stage are very high. So by the time you get to the college level, the proportion of SC people coming out of school is very small. By the time they graduate, only 5 or 6 of them are left. Thus, if you want to solve the problem, you have to tackle it from the start.

EB: Do you think that the view of investors with regard to India has suffered a setback, given the policy paralysis that we have witnessed, and what, if anything, can we do to rectify it? Since we have elections every five years, there is a possibility of the policy paralysis continuing for a long period of time. Further, politicians undo the policies that their predecessors undertook, and this may send out conflicting signals.

I don't think that policy paralysis is the whole story. It's certainly present, but you shouldn't overestimate it. 99% of the things that get done stay that way. It's only 1% of the things that get changed. And out of these, about 50% of the time they should be reversed. It's also true that the things that work well are going to be the things that are not reversed. A lot of laws are passed that are uncontroversial; they don't even make the news, but its policy nonetheless. "The law didn't get reversed", this is not a headline. The headline is when something is reversed. So yes, policy paralysis is an issue, but the economy is still functioning, which means that work is being done. Further, it's not at all clear whether elections improve or worsen the quality of governance.

EB: What would be your advice to prospective economists and young students like the readers of *Aapoorti*?

I guess the most important thing is to try and verify the facts for yourself. So if somebody says something or you read that this went up and this went down, just Google around a little bit and find the data. Did it really go up? By how much did it go up? Or did it really go down? By how much did it go down? Try to be aware of the main facts. Look at the data. It's not hard to get data nowadays. It's easily available on the internet. So check facts. Do not let opinion pass by you. Don't quote unquote because somebody said it. So check things. Check the data and get a realistic picture of the event, and you'll have a much better understanding of economics and the way the world works. You will also soon be easily able to tell whether this is a plausible statement and likely to be correct or an implausible statement, likely to be incorrect.