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It is not what you don't know that gets you into trouble. It's what you know for sure that just is not so.

Richard Thaler

Arthashastra, the Economics Society of Miranda House

Faculty Advisor's Note

When I look back to the years of being a teacher and being in the midst of students, I can only feel a deep sense of satisfaction for the years of learning that I had. It is this world of ideas and their exchange that keeps us alive and going. I was remembering Bertolt Brecht's words when he said what use is a life of learning and scientific understanding if we cannot use it for humanity and larger good. So it is also true for the subject of Economics. Economics is not just "An enquirer into the nature and causes of the Wealth of Nations" but what is this wealth worth if we cannot address the problems of everyday life for the struggling masses of people. It is this 'everydayness' of the problems at hand and a quest for their solutions that should drive our students to get the best out of their education.

Our departmental annual magazine Aapoorti is a small effort in that direction. It is an entirely student driven site for exchange of ideas. The contributions from our students and others in the Campus beat with the zeal to conceptualize a better society. The interviews from experts that our students conduct are done with the desire to enrich ideas and refresh our thought processes by reflecting on what experts say. We are living through difficult times but all difficulties also open doors to possibilities. So in Dickens' words we are possibly living through the worst of times and also the best of times. The time is like the playful clay in a sculptor's hand. What we make of it depends on what we dream of and what we believe in. Our students have it in them to hold our hands and tell us that we will now walk you through to a better world. Economics is that much a science and that much life itself.

I take this opportunity to congratulate our students and the editorial team for successfully bringing out another edition of Aapoorti 2018. All the heated debates of what to keep and what to exclude from the contents, the many days spent chasing a prospective writer for a piece, the many discussions on the theme and format of the magazine, are all useful ways of learning to negotiate and deliver. It gives me immense pleasure to realise how happily the young shoulders took up the responsibility of gifting us this collection of pages filled up with new ideas and excitement of life. I wish we continue with successful editions of Aapoorti for many more years to come and promise to stand with you in all your endeavors. I shall sign off with a few lines from Hannah Arendt's thoughts on education because it says all.
"Education is the point at which we decide whether we love the world enough to assume responsibility for it, and by the same token save it from that ruin which except for renewal, except for the coming of the new and the young, would be inevitable. And education, too, is where we decide whether we love our children enough not to expel them from our world and leave them to their own devices, nor to strike from their hands their chance of undertaking something new, something unforeseen by us, but to prepare them in advance for the task of renewing a common world."

Nandini Dutta
26 March, 2018.

Teacher-In-Charge's Note

Behavioral economics is a relatively new field that combines insights from psychology, judgment, and decision making, and economics to generate a more accurate understanding of human behavior. It helps us to challenge the standard economic theory that does not explain anomalies in people's behavior. I am delighted to know that this edition of Aapoorti deals with various aspects and issues concerning behavioral economics and related fields It presents a wide variety of topics ranging from role of behavioral economics in environment policy, behavioral finance, role of expectations in economic outcomes, artificial intelligence and critique of behavioral economics, policy making, game theory, Indian economy and global issues in development.

The journal includes contributions not only from Miranda House but also external contributions from colleges across Delhi University and University of Mumbai. Besides this, there is an international entry from Amsterdam. The current edition of Aapoorti is quite comprehensive and unique as it has inclusions on creative interpretations of economic theory in the form of photo interpretations and poems and book review. The Aapoorti team has interviewed four eminent economists for the journal ranging from Dr. Isher Ahluwalia, Prof Arun Kumar, Dr. Devaki Jain and Mr. Bibek Debroy.

I congratulate the editorial team of Aapoorti for their hard work and yearlong efforts for mobilizing and collating resources to bring out this issue. I wish them all the luck in their future endeavors.

Neetu Chopra

Teacher-in-Charge, Economics Department,

Miranda House

Acknowledgement

Several people's time and effort has resulted in the creation of Aapoorti 2018.

Our special thanks to Ms. Neetu Chopra, Teacher-In-Charge, and Ms. Nandini Dutta, the Faculty Advisor for the immense support provided by them in the making of the journal. We are also thankful to all other Faculty members, particularly Ms. Meeta Kumar and Ms. Malabika Pal, for their constant advice and encouragement throughout the year. We extend our heartfelt gratitude to all other members of Arthashastra, the Economics Society, who have helped us in promoting the journal. We extend our sincere thanks to all the Economists and writers who made this journal possible with their inputs and contributions. We are immensely indebted to our pillar of support, Routhu Santhoshi Srilaya, the Design and Marketing Manager of Aapoorti for her indispensible contribution to the design of the journal.

Lastly, we would like to thank our readers for consistently supporting us in our endeavors.

To others without whom the journal may not have materialized, we extend our sincere gratitude.

The Editorial Team
Aapoorti

Chief Editor's Note

As another version of Aapoorti goes into print, we can't help but look back and be overwhelmed by the journey. From the first version in 2011 to the eighth version in 2018, Aapoorti is truly representative of the ideas and conviction of the young minds of the department. We are grateful for all the experiences and opportunities that have come our way and hope that the readers have as much fun reading it as we had in putting it together.

The editorial board begins its work early in the year with regular write-ups on its blog 'Ecotalker'. Twice a week articles are published on a wide range of topics comprising economic theory to fiction economics and finance. These themes are decided after lengthy brainstorming sessions and each time the aim is to come up with out of the box ideas that provide an enriching and enjoyable experience for our readers. The journey culminates with the release of the department journal, which brings together articles from the Editorial board, Guest Articles from various universities and Interviews with eminent personalities and Research papers.

This year the theme of the journal is Behavioural Economics: A new lens for examining the economics around us. As writers, we always seek avenues that intrigue us. After several rounds of enthused discussions, we decided to take up Behavioural Economics as the theme of this year's Aapoorti. At a time when the economy is preening of its unpredictability, we realise how crucial it is to understand what goes on in the minds of its players in order to gauge expectations of and from the future, changes in financial markets, macroeconomic policies and to safeguard ourselves from destabilizing surges by keeping a critical eye on all the developments. The Editorial Board delved into this domain with immense curiosity and has explored with success the nooks and corners of it. We are also very proud to have received some stellar contributions from around the country on various themes and topics and have had the utmost fortune of being able to interview experts and scholars who have been pioneers in their respective fields.
When we commenced our work for Aapoorti, we were determined to live up to its legacy and today, we couldn't have been more satisfied and proud with the way it has turned out. We also would like to extend our heartfelt congratulations to our entire team each of whose brilliance and hard work has helped us at every step along the away.
We hope that our readers enjoy Aapoorti 2018 and find it a refreshing experience.

Chief Editors
Nithya Srinivasan, Ayesha Ahmed

INDEX

S.No.	Article	Author	Page No.
A)	***FROM THE EDITOR'S DESK***		
1)	NUDGE NEETI: DECODING BEHAVIOURAL POLICY MAKING IN INDIA	SIMRAN KILLAMSETTY, C. K. PUSHYAMI	15
2)	BURSTING THE BIT-COIN BUBBLE	PRAGTI RATHORE, SIMRAN PANESAR	19
3)	GREEN NUDGES	NITHYA SRINIVASAN	25
4)	PREDICTABLY IRRATIONAL	AYESHA AHMED, RITIKA AGARWAL	29
5)	TO B.E OR NOT TO B.E	DIKSHITA JHA, AHALYA P. RAJESH	35
B)	*IN CONVERSATION WITH DEVAKI JAIN*		41
C)	*BOOK REVIEW*		44
D)	***CONTRIBUTOR'S COLUMN***		
1)	OUT OF SIGHT, OUT OF MIND	VARSHA REDDY, SHRUTHI RAMESH	54
2)	READ MY LIPSTICK	MITA CHATURVEDI	58
3)	IS STOCK MARKET STILL AN EXAMPLE OF PERFECT COMPETITION	DEEPAK PATHAK	61
4)	THE RECIPE TO LARGER FDIS	MEGHNA NAIR	62
5)	MATHS IN ECO	AAYUSH MALIK	63

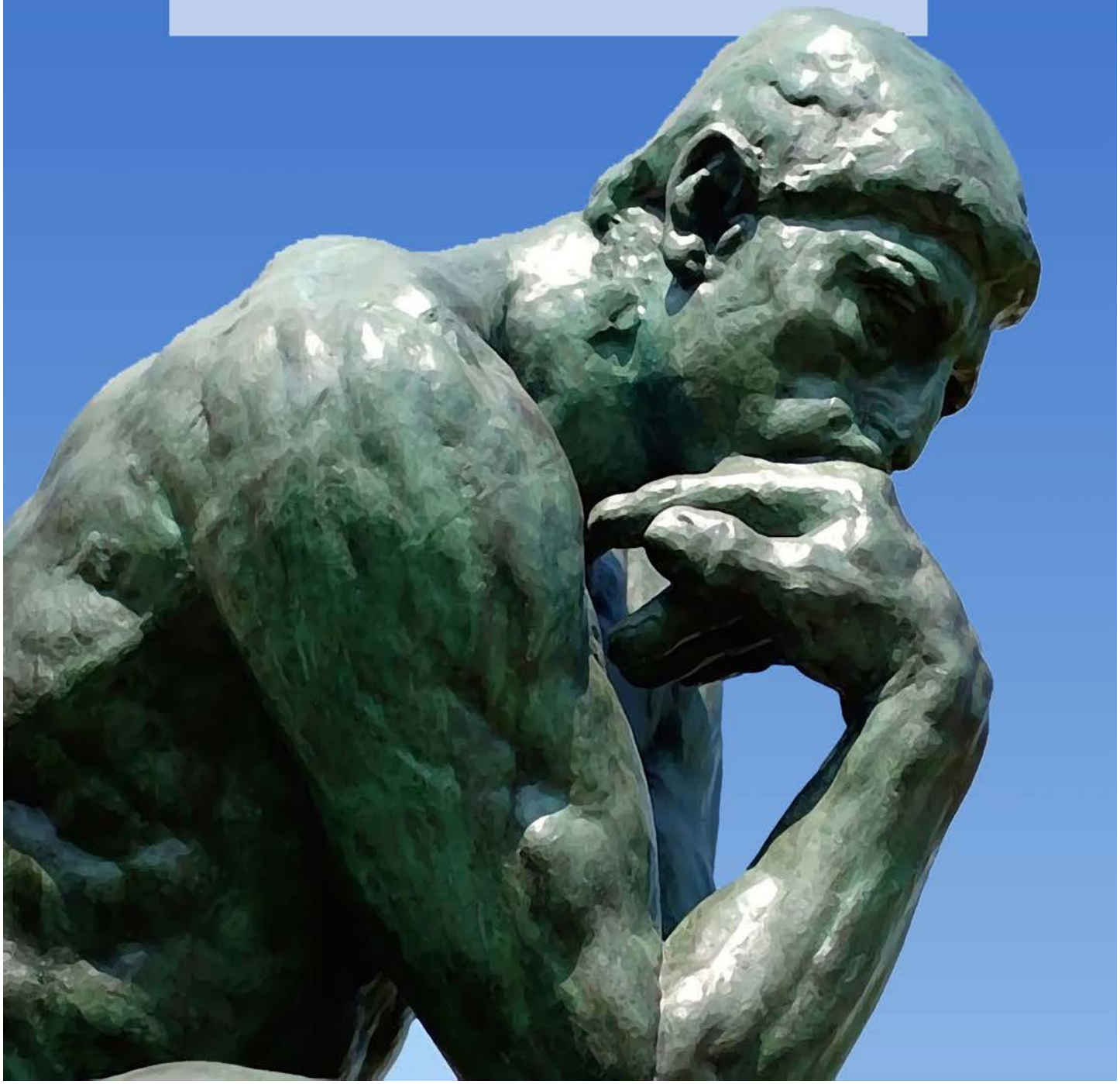
INDEX

S.No.	Article	Author	Page No.
E)	PERSPECTIVES		66
6)	CRITICAL LENS- UIDAI	KHUSHBOO CHATTREE	68
7)	HISTORY OF ECONOMICS	MAAJID MEHABOOB CHAKKARATHODI	70
8)	BHAVANTAR BHUGTAN YOJANA	TEJENDRA PRATAP SINGH	73
9)	AMAZON: HOW TAPPING INTO THE ATTENTION ECONOMY BENEFITTED THE E-COMMERCE GIANT	SUKHNIDH KAUR	75
10)	MICROFINANCE: MORE THAN JUST CREDIT	NIKITA SHARMA	77
11)	INDIA'S MISSING MIDDLE: A BIG QUESTION?	AARTI GUPTA	80
F)	*IN CONVERSATION WITH BIBEK DEBROY*		84
G)	*IN CONVERSATION WITH ARUN KUMAR*		87
H)	*ARE YOU GAME*		90
I)	*RESEARCH PAPERS*		
1)	ECONOMICS OF CRIME	SHIVANI MOHAN, KHUSHBOO GOYAL, R. RISHITHA	92

INDEX

S.No.	Article	Author	Page No.
2)	PRODUCTIVITY AND FINANCIAL WEALTH IN POLAND	STUTI OBEROI	104
3)	A STUDY INTO THE RATIONALE BEHIND REMAINING UNINSURED	NAOMI SATAM	110
4)	IN PURSUIT OF EDUCATION	MEGHNA NAIR, NIKITA SHARMA, NITHYA SRINIVASAN, STUTI AGARWALLA	119
5)	MOVING ON UP? A LOOK INTO INTERGENERATIONAL EDUCATION MOBILITY IN INDIA SINCE INDEPENDENCE	RITUPARNA SANYAL	131
6)	THE CASE OF MISSING WOMEN	SHRESHTHA MISHRA	142
J)	*IN CONVERSATION WITH ISHER AHLUWALIA*		154

EDITOR'S DESK



Nudge Neeti

Decoding Behavioural Policy Making in India

Simran K. and C.K.Pushyami

The onset of 2017 brought with it many policy changes made by the Modi government. For the first few months, much of the economy was paralyzed as an after-effect of the much celebrated 'Surgical Strike' on black money, ergo demonetization. This and other policies rolled out by the Modi government during the course of its tenure prompt us to think about the correlations between these policies and the theories proposed by behavioral economists, one of whom, Richard Thaler, won the Nobel Memorial Prize for his work on nudge theory. Thaler's win made 'nudge' the buzzword in the world of economics. And so, it can hardly be, that the Indian government remains isolated from it. Among the many policies that were rolled out, there are some that clearly reflect the ideas of behavioral economists. Demonetisation was a 'nudge' not so much for the removal of black money from the economy, but for people to transition into a 'digital economy'. It facilitated the rise of many e-wallets, and helped in moving towards a cashless economy. The Modi government also appealed to the economically better off households to consider giving up LPG subsidies, which would in exchange be used to bring LPG connections to BPL families. Such an appeal is a direct application of behavioral economics. Reforms in governance; making it more accessible to the public and more participatory in nature, easing access to information for businesses and investors; show that the Modi government has caught on to the trend that is taking the world by storm.

The paradigm shift in the approach to policy-making, and implementation, has definitely bore fruit. Though the UPA Regime were the introducers of as many as 23 schemes and policies that have been revamped by Modi, which they still lay their claim to, their ideas did have the potential to bring changes but lacked understanding of the context in which to be applied, and carefully thought-out analysis and planning. Consolidation of similar schemes under one, a sector-specific approach, addition of attractive features; take for example the issuance of RuPay debit cards under PMJDY that has often been regarded equivalent to the Basic Savings Bank Deposit Account (BSBDA) scheme, went a long way in building efficacy and popularity among people.

The economic decision-making of individuals is what composes or shapes nationwide implications in terms of how stock prices react, to how much annual growth an industry encounters, even to the extent of macroeconomic policy-implications. Traditionally, and even today, predictions about these are made on the basis of certain implausible assumptions, which render them pointless, if not inaccurate. Human beings are constantly subject to memory failures, cognitive fallacies, and even altruistic tendencies, in the simplest of monetary transactions. This is where psychological and behavioral insights take center-stage.

Insights and Applications of Behavioral economics:

It is seen that economic agents show defiance of the assumption of infinite self-interestedness. Human beings feel the emotions of sympathy, and empathy when they witness "suffering" of individuals like themselves. Feelings of guilt, on being a silent spectator may arise, leading to "irrational" behaviour. This has been built into the contemporary political developments by first giving birth to a foundational narrative. This narrative could be as broad as a nation-wide crisis, or as specific as the problems faced by a particular section of society. An identity is constructed, for example, the identity of being an "Indian" over merely being a normal individual, and it is a part of this identity which appeals one to look beyond one's own self-interestedness. The employment of the "Give up Subsidy" scheme seeks to invoke empathy among common citizens by drawing attention to the lesser privileged households of India that do not have access to LPG connections, giving up subsidies and allowing the government to use that money instead to reach out to the poor. Nearly 1.13 crore people gave up subsidies, as a result of which the government saves Rs. 1080 crores each year. Similarly, such a framework has been employed in concessional schemes, like the railway concessions under which senior citizens have the option to choose the degree of concession, as against automatic 100% concession. These gentle nudges that appeal to moral sentiments, are testimony to the practicality and usefulness of behavioural insights.

Status-Quo bias, or procrastination, is the tendency of all decision making agents to evade cumbersome action that involves a considerable amount of focused thinking. Individuals end up making choices that may not be the welfare-maximising selection of goods and services.This a clear violation of the revealed preference choice theory. It implies that observed choice making may not be perceived welfare maxima. Complexity and volume of information to be analysed leads to a passive behaviour. Simplification in bureaucratic processes, through the launch of websites and mobile-operated apps, effectively consolidates relevant data. The Make in India scheme, launch of numerous websites like mygov.in, the "Narendra Modi" App, specific databases like "NAARI" simplifies of data for the general public. "Mann ki Baat", broadcasting of an audio message from the prime minister himself is an excellent tool to communicate information. The Maternity Benefits Programme gives women subtle monetary nudges over the course of their pregnancy, and for some time afterwards, to seek professional medical help, register the birth of their child with the government and for the administration of the first cycle of vaccination.

Human beings are highly influenced by actions of fellows, in a defined community. "What others do", and therefore, "How our actions will be perceived" by others, play a vital role in determining individualistic actions. Norms are often built in society, which could be due to geographical, cultural, social, political, economic considerations. Choices are made suited to these norms, in

order to be accepted and appreciated. This implies that a change in behaviour that is associated to norms can be easily achieved by an appropriate intervention. A negative connotation attached to a certain type of behaviour is likely to be more effective, as it is undesirable to be shunned by society. The campaigning against open defecation involves a televised advertisement where a man who practices the same, is looked down upon by fellow villagers and asked by his wife to use a closed bathroom. Another advertisement consists of young children teaching their parents and elders to make sure that unutilised appliances are switched off. This calls for a shift from existing norms to new norms that consist of the desired behavioural changes.

Simply put, behavioral economics is the study of human behavior and using the insights so gained to make better socio-economic policies. Policies are always either directly or indirectly impacted by the interaction and decision making of economic agents, hence implying **wide scope for applicability**. These insights can be easily utilised to tackle challenges that India faces, in areas like education, health, sanitation and gender. Low hanging fruit that can bitten off by changing people's attitudes through the creation of a conducive social environment.

The effects of micro-incentives are universal in nature. For instance, taking a child to the doctor is a short term inconvenience for parents, but it was found that handing out a half kg bag of lentils effectively increased the fraction of children vaccinated from 18 to 29%. Similarly, absenteeism is a major problem in health and educational institutions. Empirical data shows that incentive payment can help remedy this.

Going forward, there are two inherent problems that worry most behavioral economists. First, it is a field with several important empirical results, but little overarching theory. Second, new research in this field is being produced at a rapid rate. Due to both these problems, communication of its findings to non-expert policymakers can be difficult. For this very purpose, a report called 'MINDSPACE' was published in the UK by the Institute for Government and the Cabinet Office. The purpose of MINDSPACE is to present to policymakers the insights of behavioral economics in a concise, understandable form. It is, certainly, the most sophisticated attempt yet to make insights from behavioral economics available to policymakers, with the aim to influence policy design.

Table 1: *The MINDSPACE Acronym, from Dolan et al. (2010)*

MESSENGER	*We are heavily influenced by who communicates information*
INCENTIVES	*Our responses to incentives are shaped by predictable mental shortcuts such as strongly avoiding losses*
NORMS	*We are strongly influenced by what others do*
DEFAULTS	*We 'go with the flow' of pre-set options*
SALIENCE	*Our attention is drawn to what is novel and seems relevant*
PRIMI	*Our acts are often influenced*

NG	*by subconscious cues*
AFFECT	*Our emotional associations can powerfully shape our actions*
COMMITMENTS	*We seek to be consistent with our public promises and reciprocate acts*
EGO	*We act in ways that make us feel better about ourselves*

Behavioral economics, however, is not without its faults. The definition of a nudge is not entirely clear. Some nudges can be better described as traditional economic approaches. For instance, simplification of information, alteration of marginal costs or marginal profits. And so, it is not a comprehensive alternative to neoclassical economics, it is more ad hoc. Secondly, behavioral economics internalizes paternalism which could often lead to a slippery slope. It argues that it may, after all, be in people's interest to have their choices limited by the government. It makes the assumption that policymakers know better than individuals what is in the individuals' own interest. Behavioral economists like to call this 'libertarian paternalism' and not just paternalism as the former comes without the hint of arrogance. Thirdly, by setting up defaults, the government essentially takes away choice from a citizen. Lastly, it can be hard to identify when these interventions become coercive, that is, when a nudge becomes a shove. Thus, it gives policymakers the opportunity to roll out authoritarian policies in the garb of behavioral economics. But these are only the faults inherent within the field of behavioral economics. When applied in the context of a culturally diverse country like India, the problems only get compounded. Because behavior is a product of social and cultural construct, any attempt to universalise behavioral outcomes would always lead to a dead end.

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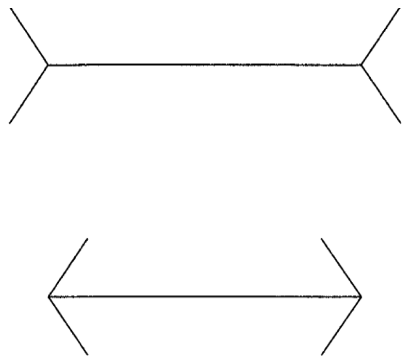
Bursting The Bitcoin Bubble

An Analysis Through Behavioral Finance

Pragti Rathore, Simran Panesar

Take a look at the figure given below. An extremely common optical illusion, it begs the question: Of the two horizontal lines, which looks longer?



Many would say, the top line. In fact, both the lines are of exactly the same length. Look again. Although you now know that both the horizontal lines are of equal length, the top line still 'looks' longer. The purpose of this exercise was to prove the fact that merely knowing about the illusion does not dilute its effect. However, if you had to make a decision based on these lines, the knowledge that this is an illusion would help you avoid a mistake.

Unfortunately, the brain cannot work like a computer. Although the human mind is equipped to be rational, it cannot match the unfiltered logic of a machine. The brain frequently processes information through shortcuts and emotional filters to shorten the analysis time. The decision arrived at through these shortcuts is very different from the choices you would make without them. These filters and shortcuts are called psychological biases, which form the very foundation of Behavioral Finance.

The aim of this paper is to explain the concept of 'Market Bubbles' by analyzing 'Bubble', a current phenomenon, and try to understand its rise and predict its fall.

Speculative bubbles have had a long and continuous history in the world markets. The progression of time or the changing economic scenario have not prevented their arrival or reduced their frequency. A bubble is a spike in the value of a particular asset caused by exaggerated expectations of future growth. The over-optimism drives trading volumes higher, and as more investors herd around these heightened expectations, buyers outnumber sellers, pushing prices beyond what an objective analysis of intrinsic value would suggest. Although every speculative bubble has its own driving factors and determinants, most involve a combination of fundamental and psychological forces. In simple terms, a bubble is an overheated market which has too many buyers who are too keen to buy. As a result, prices rise exponentially and the situation soon becomes unsustainable. Eventually, some people realize that this euphoria cannot last too long and start to withdraw from the market. The whole process goes into reverse, even more rapidly, a selling frenzy sets in, prices crash and the bubble bursts.

The Bitcoin has all the hallmarks of a classic speculative bubble and the cryptocurrency's volatility has alarmed regulators worldwide.

Anchoring

One of the major heuristics affecting the rise of the Bitcoin bubble is what behavioral economists define as the anchoring and adjustment effect. Kahneman and Tversky in their seminal paper first defined anchoring as a cognitive heuristic by saying that people make estimates by starting from an initial value that is adjusted to yield the final answer. They implied that human beings make decisions based on an "anchor" The anchor, or starting point, may be suggested by the formulation of the problem, or it may be the result of a partial computation. In either case, adjustments are typically insufficient. That is, different starting points yield different estimates, which are biased toward the initial values. You would expect the estimates to be closer to the actual values, but the variance in the different estimates is very high to suggest a close correlation. To sum it up, human beings make mistakes while predicting the value of a quantity, or the answer to a question, simply due to an initial "anchor" formed by them.

The use of anchors is ripe in the world of economics, business, finance and even everyday life. In our undergraduate courses, we are taught time and again, about prices being sticky. Couldn't anchoring explain the sticky prices so talked about by economists? So long as past prices are taken as suggestions of new prices, new prices will remain very close to old prices as people will "anchor" their expectations of new prices on previous ones.

So how does anchoring play a role in financial markets? What aspect of the mechanism by which stock values are determined is infiltrated by the anchoring bias? The answer, is the most important part of the stock markets. As Shiller says, values in the speculative market, like the stock markets are inherently ambiguous. Does anyone actually know what the value of Dow Jones will be next week, tomorrow or even the next hour? Is it really "worth" 6,000 today? Or 5,000 or 7,000? There's nothing elementally physical about the stock market. People usually anchor their valuations of stock prices on past prices, or what they've heard the price of stocks to be. In a lot of cases today, the expected value of stock is estimated for the future by certain experts, and influences the expectations of amateurs. This value, or the past value of a stock, acts as an anchor to which people base their value of stocks, or even commodities. This is the simple way through which bubbles are formed and keep rising and rising.

Overconfidence

In a book by a well-known mystery writer (the name rhymes with Ban Drown), I came across a trick used by scientists, and mathematicians and scholars in numerous other fields. When faced with a confounding problem, they trick their minds onto believing they know the answer, and alas, many a times their brain comes up with a solution that solves the problem. The trick is good when it works, but sometimes the belief that we know the answer to all problems, and the answer found by us is better than any other answer found by any other person can lead to some disastrous results. The tendency to over-estimate our intelligence and capabilities relative to others is a common human trait, defined as over-confidence.

In a 2006 study entitled "Behaving Badly", researcher James Montier found that 74% of the 300 professional fund managers surveyed believed that they had delivered above-average job performance. A majority out of the remaining 26% viewed themselves as average. Incredibly, almost 100% of the survey group believed that their job performance was average or better. Clearly, only 50% of the sample can be above average, suggesting the irrationally high level of overconfidence these fund managers exhibited.

It's simple how overconfidence leads to the growth of speculative bubbles, investors, speculators, even common people believe in the accuracy of their preferred investments much more than the actual probability of these investments. This leads them to invest in a commodity, even though it seems too good to be true, from tulip-purchases in 1600s to dot-com shares in the 90s, to the very recent and ongoing Bitcoin bubble. They invest in cryptocurrencies

believing they will yield higher returns, therefore pushing the price of these cryptocurrencies or their stock value higher and higher. Prices keep going higher, people who bought the currency sells it for more, earn a profit, and by selling the currency more than it was maybe worth, contribute to the growth of the bubble. Overconfidence is a common heuristic faced by each one of us in our everyday life, and just like anchoring, a knowledge of the boas doesn't mean you're immune to it, just see the studies on fund managers mentioned above.

Hindsight Bias

Shiller defines hindsight bias as 'a tendency to think that one would have known actual events were coming before they happened, had one been present then or had reason to pay attention. Hindsight bias encourages a view of the world as more predictable than it really is.' This is also known as the 'I-knew-it-all-along' effect, reflecting a common response to surprise.

The Hindsight Bias effect is explained in a formative work by Fischhoff and Beyth. Their model gave participants a detailed description of an event that could have had various outcomes. Judges who had estimated the likelihood of various outcomes of President Nixon's visit to Peking and Moscow were asked to remember, or reconstruct in case they had forgotten, their own predictions sometime after the visit was completed. Remembered-reconstructed probabilities turned out to be higher than the original ones for events which were believed to have occurred and on the other hand, lower for those which had not. To summarize, they increased the likelihood of the 'actual' outcome, suggesting a clear "I knew it all along" effect.

Due to the hindsight effect, We overestimate our ability to predict the future based on the recent past. With results from the recent past in hand, we feel we predicted it all along or as our brain forces us to think, know it all along. We look at returns in the Bitcoin stock, see our colleagues and friends making superb profits on their investment, and find in ourselves an uncanny ability to have predicted the outcome. We tend to over-emphasize recent performance in our thinking. We see a short-term trend in Bitcoin, and we extend that forward in the future with higher confidence than the data would mathematically support. And so on, the bubble keeps rising.

Confirmation Bias

Confirmation bias is a cognitive bias whereby one tends to notice and look for information that confirms one's existing beliefs, whilst ignoring anything that contradicts those beliefs. It is a type of selective thinking. It's no surprise that people ignore highly pertinent information about the problems involved in investing in Bitcoins. They look over the fact that there's no regulating body like the government of a country backing it, the various possibilities as well as past cases of hacking, theft of personal information and several cybercrimes associated with the crypto currencies.

Herd Behaviour

As people learn what others think about certain stocks, the general consensus forms. As people base their investing actions on this consensus, a herd forms. Investor herding is similar to deer. Deer stay together in herds for protection against predators. A deer always has its eyes and ears open to see what the other deer are doing. As the herd gallops, the deer gallops. As the herd grazes, every individual deer grazes. Similarly, investors also keep their eyes and ears open to what other investors are doing. Many people watch Zee Business every day or keep themselves updated on business websites. They like to act according to the investor sentiment since no one wants to be left behind. The problem with following the herd is that it magnifies and intensifies psychological biases. It causes investors to base their decisions on the 'feel' and 'mood' of the crowd

rather than on logical analyses. Investors also find it attractive to move with the herd, because the feeling of regret on picking a bad stock is lower, since everyone has suffered in the same manner. When a large number of people are affected by their psychological biases in a similar manner, a herd forms and this has the potential to affect market prices. frenzy.

The Bitcoin has become a buzzword overnight, especially among investors. An enigma in the online community, it frequently finds mention in headlines, media debates and is supposedly the next Tulip Bulb. In the age of crytocurrencies, Bitcoin can be used to purchase anything from a motorbike to tickets for a music concert. Yet there is widespread confusion about what the Bitcoin truly is, and many question its legitimacy.

Why has Bitcoin recorded such a rally in prices?

Remember your high school Economic lessons. When did the price of a commodity rise? When its demand rose. Simple demand and supply mechanism, excess demand for a good causes its price to rise. Though not so simple, but this basic mechanism is the thought with which I'd like to introduce the discussion on a huge rise in prices that Bitcoins and other digital currencies have witnessed. The method to create or mine Bitcoins is inherently complex, it involves complex computational problems, the difficulty of which is pegged to the amount of people trading in Bitcoins. So as the no. Of transactions increase, the difficulty scale of the problems also records a rise. On the one hand, this means a definite advantage for those who hopped on the Bitcoin bandwagon in the initial years of it's birth, as they minted Bitcoins easily, selling them off to earn high returns. But this also means, that the no. Of new bitcoin to be created can be considered limited, if not entirely limited. There are only a finite number of Bitcoins on the interest right now. This is in direct contrast to standard government-issued currencies, which governments can always print more of. If the supply of Bitcoins remains finite, this should theoretically eliminate inflation, which is one of the biggest drawbacks of paper money. Because the number of Bitcoins is limited, their value increases rapidly when more people want them. And when the value of something increases rapidly, even more people want them. So the initial price increases fuel future price increases which fuel more future price increases. But there are numerous other questions to be asked as well. Is this increase in price actually an increase in the value of Bitcoins, or is it simply a result of price speculation. This begs us to the question that we aim to answer with certain theories at hand, is the Bitcoin Bubble only a Price Bubble and on the other hand, is it really a Price Bubble at all?

Now, reason would say that the market price of the Bitcoin is composed of two estimates. First, the speculative 'bubbling' price estimate, and second, the intrinsic value of the Bitcoin. Whether Bitcoin is more of a currency or merely a Price Bubble relies on the trading incentives of the participants at a particular moment. In other words, it depends on the number of market participants who want to trade it as a medium of exchange as against speculative participants who want to hold Bitcoins until prices surge. Hence, it is important to estimate the different types of trading incentives to be able to decompose the Bitcoin price into a utility driven component and a speculative component. The first type of trader, namely the 'Utility Trader' purchases and saves Bitcoin as a means of payment. In doing this, he reinstates the function of Bitcoin as a medium of exchange, and ultimately defines its intrinsic value. The second type of trader is 'The Speculator', who aims to buy at a low price and sell at the highest possible price in order to make maximum profit. The speculator, instead of trading frequently, might also make big bets with the incentive to brew, ride the bubble and later cash out. There is also a third, slightly less important market participant, 'The Exchange', which facilitates trade and makes the market more liquid, making profit by charging fees for their services of bridging interested parties. Their services smoothen transactions and reduce friction in the Bitcoin market.

What affects the Prices of Bitcoins?

Jakob Bartos, in his paper analysing whether Bitcoins follow the Efficient Market Hypothesis given by Fama(1970) confirm that prices of cryptocurrencies namely Bitcoin react on publicly announced information and it follows hypothesis of efficient markets. They found that price of Bitcoin is higher during days of positive events and lower during days of negative events than during other days without any events. The detailed analysis confirmed the importance of events on prices of cryptocurrencies. According to the hypothesis of efficient markets, prices of cryptocurrencies reflect all known information and no one could outperform the market by using the same information that is already available to all speculators, except through luck or some insider information.

Secondly, analyses confirm that Bitcoin market determinants have an important effect on Bitcoin price. In the other words, supply and demand factors have crucial impact on the price of Bitcoin and it follows a standard economic model of currency price formation. Particularly, demand side factors are more important, because supply side is given exogenously and it will be fixed in future.

Let us analyse how information drove various components of trading incentives in the Bitcoin market. The Bitcoin started to have a positive price in relation to USD since August 26, 2010. Surprisingly, the Friction component dominated over the Utility and Speculative components of Bitcoin price during early circulation. The first piece of market information was the leave of Bitcoin founder, Satoshi Nakamoto, which ended up negatively affecting the utility driven as well as speculative traders. However, these negative trends reversed soon as the Silk Road, a famous underground market came into existence. Another dramatic event occurred in May 2011 as there was a large influx of Chinese investors in the Bitcoin market. This caused all three components of Bitcoin price to rise sharply, hence increasing the overall price of Bitcoin. During this climb, the speculative component dominated the other two components. This phenomenon clearly illustrates the role of capital influx in the creation and development of price bubbles. A month later in June 2011, an attack occurred targeting an anonymous user and a famous Bitcoin Exchange. This fear and insecurity triggered doubt in the function of the Bitcoin exchange and this was reflected in the effect on the Friction component. This led to a series of events, with Bitcoin exchanges facing increasingly intense attacks every second. During the same time, however, the use of Bitcoin in transactions started becoming more widely accepted. Some countries such as Cyprus and Spain started recognizing it as a substitute to their national currencies. This increasingly wide acceptance can be validated by the sharp increase in the utility as well as speculative components of Bitcoin price. Online giants such as Baidu also started accepting Bitcoin as a mode of payment. On the contrary, the US government and the Chinese government to some extent worked to calm down the heated Bitcoin market. However, the Chinese Bitcoin market bounced back as soon as this news turned out to be fake, the speculative component reaching a historic high. This set into motion a chain of events, each inflating the price of Bitcoin, resulting in a vicious cycle where inflated demand led to inflated prices which fueled further price increases, reinstating the status of Bitcoin as a 'Price Bubble'.

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Green Nudges:

A New Way Of Looking At Environment Policy

Nithya Srinivasan

Effectiveness of environment policies widely depends on the underlying model of individual behaviour. Traditional environment policy has largely focussed on neoclassical economic models that emphasize the rational, self-interested behaviour of human beings and their stable preferences. In recent years however, behavioural economics has generated considerable evidence that individuals work in a 'bounded rationality' framework .i.e. deviate from full rationality and pure self-interest. It is important to include alternative models that take into account bounded rationality and cognitive biases of individuals while designing policy instruments.

This line of thinking emphasizes the fact that human beings may not always be the rational, profit maximising individuals we assume them to be. Issues such as perception of fairness, social status, and conditional cooperation, imperfect information etc. greatly affect their decision making process and having such a complex set of motivations can have many implications for environment policy making. Green nudges are fast gaining popularity amongst policy makers and more and more of these behavioural traits are getting incorporated into environment policymaking. For e.g., in the United Kingdom, the Behavioural Insights Team has been active across a variety of policy fields. In the European Commission, the Directorate-General for Health and Consumers has launched a framework programme to support behavioural economics work in the Commission as a

Management and Budget has drawn inspiration from behavioural economics in the areas of health-care provision and financial regulation. It's time that such interventions are taken actively in the context of India, especially with the advent of schemes such as the Swachh Bharat Abhiyan etc.

Behavioural economics brings to light important characteristic of distributive preferences such as accountability, efficiency, need and equality. For e.g., Fairness concerns appear to be particularly relevant as distributional implications differ dramatically between different instruments ranging from environmental taxes, fuel economy standards and tradable emission permits. Though conventional theory establishes that people free ride for higher material payoffs, considerable evidence has been found to support that people care about perceived fairness and conditional cooperation i.e. are willing to choose the cooperative alternative if others do too. This has been noted with regard to siting nuclear waste on Switzerland, climate change negotiations between countries as well as contributions for establishing natural parks etc. People care about social norms such as norms to conserve and recycle energy as well. The way information is conveyed has significant effects too. For e.g., information about the negative effects of water consumption on the environment and information about self-water consumption in relation to that of others has powerful effects on water conservation. Environment labelling or

willingness to behave (voluntarily or in the presence of peer pressure) in an eco-friendly manner.

Consumption is socially conditioned. Certain types of consumption is conspicuous and sensitive to social status. A survey in Norway revealed that 73% of the population would like to recycle waste as they would like to be seen as responsible citizens (Brekke et al. 2003). Besides self-image, peer image seems to be an important consideration in social responsibility. List et al. (2004) indicate that respondents are much more likely to choose a costly environmental practise if others are informed about their choices.

Social failure is as serious a matter as market failure. Application of behavioural science can be used to make smarter policies and nowhere is this as true as in the domain of environment and resource economics. Subtle inexpensive changes can be brought about by simple changes in the way information is conveyed and/or social environment is designed. For e.g., open defecation is a huge problem in India which programmes such as Swachh Bharat Abhiyan aim to tackle. In spite of building toilets, less than 50% are in use. World Bank has proposed communicating the negative effects of this behaviour as opposed to the benefits received. This suggests the usage of a significant finding of behavioural science, the principle of 'loss aversion' which states people value potential losses twice as much as potential gains. Sense of ownership also brings about significant improvements, as now someone is held accountable for the situations.

Governments and policy makers in many ways are architects as they design the 'choices' that condition the social environments we live in. Choice architecture that leverages the fundamental truth that all actors and agents in the economy are less than perfectly rational can be extremely successful in nudging us to take choices that are environmental friendly. This idea of Nudging was presented by Cass Sustein and Richard Thaler in their 2008 book called 'Nudge'. It is a concept in behavioural economics which proposes that positive reinforcements and indirect suggestion are ways to influence behaviour of individuals to derive socially optimal outcomes.

In their book, Sunstein and Thaler promulgate the philosophy of "libertarian paternalism". They establish that people are subject to cognitive biases and prone to predictable irrationality. Thus, if the social environment can be appropriately designed, people can be nudged into making more optimal choices. This affects everything from designing the voter ballot to designing employee healthcare forms. Nudges are favoured for their simplicity and cost effectiveness, though they have potential drawbacks as well.

Green Nudges in action

The strategy to offer the most environment friendly option as the default choice has proven to be quite effective in a number of contexts. This method relies on the individual's inertia to change and the relative laziness of people with approaches that do not naturally come to them. For e.g., in the US, energy suppliers and telephone operators now send bills in electronic formats as the default option. If the candidate wishes to receive the bill in hard copy, they must specifically ask and would be charged for this service. This strategy has helped in saving a lot of paper in the country. This is in contrast to the practice

adopted in France by majority of the service providers which requires clients to themselves take actions to make sure they no longer require bills in paper form.

Another well-known example is the fact that not providing customers with plastic bags at checkouts obliges them to ask for or even pay for them, as has been the case in China since 2008 and in Italy since January 1st, 2011. This dual obligation constitutes a powerful restriction on overconsumption and encourages people to favour alternative options, such as reusable bags. This policy has recently been adopted in a large number of super markets and shops in India and the success of this policy indicates more large scale implementation of this nudge.

Interventions based on spontaneous adherence to social norms have been launched for various environmental purposes. This uses principles of informational feedback and comparison with peers to generate desirable eco-friendly behaviour.

In an experiment on waste recycling in in California, every day for four weeks, a note was placed on the door of 120 homes informing the occupants of their neighbours' achievements and contributions to recycling. The volume of recycled material rose by 19% and besides, this effect was durable, as it continued for four weeks after the campaign was discontinued. The strength of this strategy lay in providing informational feedback on the behaviour of the neighbourhood, and thus of the social norm applicable in the district.

The area of energy consumption can also benefit from this type of strategy. An experiment carried out in California compared the effectiveness of various forms of informational feedback. In comparison to methods that relied on explaining the harm caused on wasting energy and those which propagated ideal behaviour, the ones that were the most successful was the one that displayed neighbours' preferences. Similar practices have also been adopted by hotels for the process of water saving. These make use of an important component of human behaviour i.e. humans tend to compare themselves with their peers and would choose the 'right' option if it would result in greater social acceptance.

Being conscious of social norms can be based on a simple perception of surroundings and doesn't necessarily have to be based on comparative statistics. A person living in an urban environment with a large amount of rubbish is likely to litter too, while one who lives in a cleaner environment will undertake more responsible behaviour. In addition, campaigns that promote positive behaviour rather than condemn negative behaviour have also been proved to be more successful.

Limitations

Though Nudge theory and behavioural economics is very interesting, it is criticised for a variety of reasons as well.

Firstly, serious questions are raised in relation to ethical concerns. Often, the idea of architecting choices is scorned upon as it can lead to a paternalistic state. Further, there is potential for misuse of data of the people. It is important to note that governments themselves are not immune to these kind of behavioural shortcomings.

Secondly, there are limitations to the usage of nudge theory. Behavioural scientists can use these to develop more effective social programmes but as such, it has limited uses in solving the chaotic challenges of economic growth and stability. Further, some behavioural changes happen faster than others and it is advisable for policy makers to target the low hanging fruits first. Thirdly, what may work in one district/state may not work in another. Hence, testing practices specific to contexts is crucial. Further, many nudges may not be sustainable solutions as long term responses of individuals may differ from short term responses.

Conclusion

In spite of the temporary nature of nudges, it can have a significant impact on policy outcomes in India. As a developing nation, India faces a number of social issues and government must develop innovative policy solutions for the country. Thus, behavioural economics can be a great start but it must be accompanied with consistent well defined environment policy measures.

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Predictably Irrational

Ayesha Ahmed and Ritika Agarwal

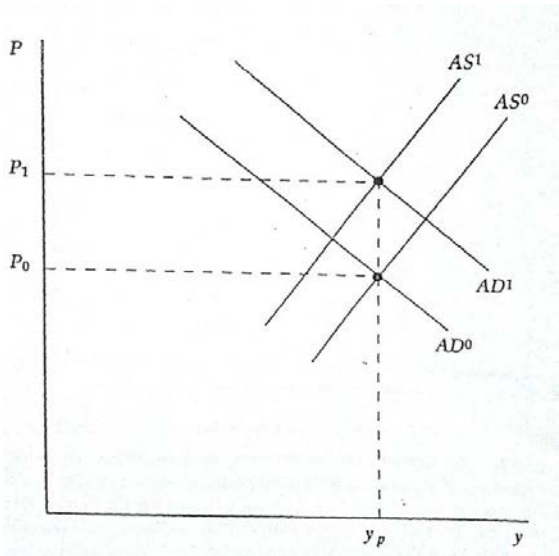
'We have to learn to live with uncertainty'- Gerd Gigerenzer

It is incredible to be living in an era where the economy is pullulating; spilling over its horizons and preening its opulence more fervently than ever. The limpid realization of a profit centric impetus has become nearly irrevocable and only indelible with the passing years. To strengthen it, economists worldwide have been trying, incessantly, to remove the vagaries by comprehending the minutiae. But something that infamously has invisible hands, how do you lead it towards a path of your choice? Its volition is its only ruling will. The leit motif of running an economy has undergone several changes- profits to growth to sustainable development- and is still being chaperoned by new ideas and approaches which attempt to not only understand it in a better way but also enhance the lives of the people living in it. One such remarkable contribution has been by Milton Friedman and Edmund Phelps through their natural rate hypothesis. This hypothesis – which is no longer controversial and is now supported by a large body of empirical evidence – challenged the belief underlying the so-called Keynesian policies that policy-makers could permanently and systematically exploit a trade-off between inflation and unemployment. Expectations lie not only at the heart of this hypothesis but also form the core of modern day economics. Economists define "expectations" as the set of assumptions people make about what will occur in the future. These assumptions guide individuals, businesses and governments through their decision-making processes, making the study of expectations central to the study of economics. A restaurant manager's prediction about how many customers he can expect over summer may prompt him to hire more staff, or reduce orders for fresh produce. A bond trader's expectation of how the Federal Reserve will change interest rates will alter her trading strategy. A CEO of a publicly traded company's guess about how regulators in Washington will behave may change his expansion plans. In a very real sense, economics is the study of how people make decisions. Expectations about what will happen in the future lie at heart of every choice, so they are the heart of economics as a discipline.

Post the financial crisis of 2008, the economic advisers assured everyone that recovery would be quick and there was real revival until 2010, when the economy stalled again. A lot of economic attention and discourse turned to the relationship between fiscal deficit and the economic expansion. The governments were faced with a twofold dilemma- whether to deliberately incur spending to offset the fall in household and investment demand or to cut down spending to free money for private spending- and depending on the

macroeconomic view one held, both are pro-growth policies. Keynes propagated the first kind of policy; the governments unanimously put their faith in the second. The effect of their decision was that developed countries witnessed a drop off 5 to 8 percentage point in their GDP. Cutting public spending, it turned out, was not the same as cutting the deficit, because it cut the economy at the same time. Some economists also claimed that the governments faced risk in 2010; cutting deficit but not committing to cut it was problematic. The Keynesian remedy, the argument went, ignored the effect of fiscal policy on expectations. If public opinion believed that cutting the deficit was the right thing to do, then allowing the deficit to grow would annul any of its hoped-for stimulatory effect. Expecting that taxes would have to rise to "pay for" the extra spending, households and companies would increase their saving. Fearing sovereign defaults, bond markets would charge governments punitive interest rates on their borrowing. And here was the clincher: By committing themselves to fiscal tightening, finance ministers gave themselves scope for some fiscal loosening. Proclaiming fiscal virtue enabled them to practice fiscal vice. They could create a fiscal illusion by cutting less than they promised. Most finance ministers did exactly that. This is part of the mess into which macroeconomics has gotten itself. Once beliefs and expectations are introduced into economics, as is surely reasonable, the results of fiscal policy become indeterminate. Too much depends on what people think the results of the policy will be. In the economists' lingo, policy results are "model-dependent." The Nobel laureate economist Paul Krugman has poured scorn on what he calls the "confidence fairy," the claim that fiscal policy must command the support of the bond markets. But to show that policy made things worse does not mean that a better policy was actually available. The right policy's success may depend on the public's expectations of its effects.

The rational expectations theory and the adaptive expectations theory both are intriguing in the sense that they explore the idea of expectations. The former professes that on an average, expectations are zero while the latter makes expectations dependent on past experiences. But the one that has garnered the most attention is Lucas's critique which has transformed post 1970's, the macroeconomic theory. Lucas argues that any monetary policy can only be effective if people aren't expecting the outcome of the policy.



If the money supply is increased to AD1, and people were expecting prices to raise, the AS curve shifts to AS1 and thereby the output remains at the original level. Quoting Sheffrin, any anticipated change in the stock of money will affect only nominal magnitudes but not real variables such as output. In the absence of any surprise in the price level, the economy will remain at the full employment level. One of the possible factors that drive this analysis is cited by Lucas as that people do not possess economy wide or global information but only local information.

As participants of a growing economy, we all take very consequential, important, economic decisions as we go about making trade-offs and maximizing our satisfaction and benefits. Wherever trade takes place, we're told that human beings behave rationally, efficiently. Therefore, the concept of homo economicus, or the rational consumer has widely been used in economic models, theories and studies.

However, as discussed by economists for decades now, we seem to fall prey to pre-existing "biases" and employ certain short cuts while processing information, known as "heuristics" (Tversky & Kahneman, 1974). Over the years, the working of these biases and heuristics has gained structure - the concept of making effective approximations by using a representative case instead of a specific one i.e. representativeness, making us work with whatever first comes to mind i.e. availability; and based on our first thoughts, the limitation of the subsequent mental search process, known as adjustment and anchoring. Our mind, a result of biological evolution, does not strive for theoretical optimization, but simply for a competitive degree of "fitness" in a specific environment (Hilbert, 2011). Therefore, when humans make decisions, they essentially make a choice among several (yet limited) alternatives (Edwards, 1954). These choices that humans make turn out to be "predictably irrational" (Ariely, 2008). The pattern of consistency of biased decisions is useful for predicting individual behavior and can also have disastrous consequences for the society as a whole (Hilbert, 2011). The consistency of leaning towards one side say, over-estimating or under-estimating risks by majority of investors has been concretely evidenced by the worldwide economic crisis of 2008 (Ariely, 2008). Therefore, one can effectively conclude that complete rationality of market participants is quite uncommon.

As mentioned above, it is nearly impossible for humans to analyse big data which is large, complicated, unstructured and widely inaccessible and come up with decisions that are devoid of biases and heuristics.

What can help us attain "rationality" then?

Impressively, research in computer science and statistics has enabled computers to obtain insights from large disparate data sets, recognizing patterns & images, predicting and learning from experience; thus leveraging the ability of computers. This application of computational tools to address tasks traditionally requiring human sophistication is broadly termed as "Artificial Intelligence" (AI) (Financial Stability Board, 2017)

However it's the process of Machine Learning (ML) under AI that carries this out. ML is the method of designing algorithms, or sequence of actions, to optimize through experience with bare minimum human intervention. It consists of techniques such as statistical tools, probability, and linear algebra which work to optimize, predict, categorize and search for patterns or "correlations" which might go unnoticed to the human eye.

Real world processes, like trading at the stock exchange, might seem random to the untrained eye, but are rather chaotic processes. Chaotic processes are generally, and specifically in stock markets, controlled by 3 paradigms: stability, which is increase or decrease in stock trend; memory, the experience of past events and drastic changes, characterized by the reversal of trends without warning.

These properties of financial time series like stock markets make it possible to make informed decisions, using machine learning algorithms selected on the basis of desired task; time available and precision required in achieving relevant results.

"I Know First", a FinTech company, uses genetic algorithms (local search algorithms using simulated annealing*), which track current market data and add it to the database of historical time series data. Based on their database of 15 years of stock share prices, the algorithms make predictions over six different time horizons. As the input data increases, the algorithm is able to learn from its successes and failures and improve subsequent results. The algorithm identifies waves in the stock market, analyses raw data and generates updated forecasts for each market.

The forecast is narrowed down to 2 indicators - signal and predictability. Signal conveys the predicted movement and direction for each asset, the strength of which shows the level of deviation from the "fair price". Predictability shows the historical correlation between past algorithmic predictions and the actual market movement for each asset, in which more weight is given to more recent performances.

The algorithm tracks various assets like Gold, Stocks, World Indices, Interest Rates, Currencies and Billionaire's portfolios. It predicts the flow of money between 7,000 markets from 3-days to a year, where longer the time period, more accurate the prediction. The behavior of traders (individual, non-specialized and specialized institutions) is affected as the predicted number influences their entry and exit in the market hence helping them make more rational decisions with near-accurate results. The accuracy of the predictions can be ascertained by facts. I Know First's 2015 portfolio outperformed the S&P 500 picks by 96.4%. The overall returns in the period of Jan 2016-Jan 2017 range between 20.1 % and 77.3% while the S&P 500 has increased by a mere 12.5%.

Speaking at the Deep Learning Financial Summit 2017 Singapore, the founders stated that the future can see AI actively being used in Health Care.

Nudging, the idea of influencing one's compliance with indirect suggestions has

direct relations with machine learning and prediction. The idea of nudging through e-commerce websites rests primarily on the idea of the machine learning one's preferences, previous purchases, behavior of similar consumers etc. and then predicting what the consumer wants. This is further customized and shown as recommendations on every user's account adding a variety of choice for the product. The consumer ends up choosing one of the many alternatives which contribute in providing him more knowledge and also analyses what he truly wants by eliminating the choices, making a more "rational" decision than he would without these recommendations.

The total sales of Amazon have risen by 34% which amounts to $43.7 billion (as of Oct 26 2017). This comes with their recommendation system becoming exceedingly more accurate, proving to be extremely beneficial for the profits of the company. Understandably, the e-commerce giant has an investment of $227.8 million (as in 2016-17) in Artificial Intelligence.

"Rationality" can be argued in various contexts, but the fact that technology can improve this aspect of human decision-making cannot be challenged. The future of Behavioral Economics is intricately tied with Artificial Intelligence, and together, it can help the individual, the company, the government, the society and the economy towards levels of efficiency previously unheard of.

*Simulated Annealing: A technique based on probability theory for approximating the global
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TO B.E. OR NOT TO B.E.?

Dikshita Jha & Ahalya P. Rajesh

Abstract

Starting with defining behavioral economics, we address the rise of its concept. We talk about premise behind the subject along with why and how people have it came into the spotlight.

We bring into notice that although support for the basic concept of behavioural economics does exist, criticism of it does as well.

By mentioning the major criticisms that have been raised till now - rationality of economic agents, experiment based research and lack of foundational theory - we try and answer some of the questions that arise. The theory of nudge is discussed the role it plays in behavioral economics and how it has failed to instigate what it was supposed to. All this leads us to conclude that we need changes in the concept of behavioral economics for it to be part of the future of economics. The concept of behavioral economics needs to be more generalised rather than looking at it from the partial equilibrium outlook.

Introduction

People living in this world have wants and needs. Their behaviour represents the way they act in different situations and environments to fulfill these.

The theory of behavioural economics deals with the effects of psychology in the world of economics to develop theories of how a consumer will make its various choices. It is the mechanism that drives public choices. In other words it is the integration of ideas of psychology with those of economics.

The 2017 Nobel laureate for Economics, Richard Thaler along with the 2002 Economics Nobel prize winner Daniel Kahneman and Jack Knetsch, took the world by storm with their research on the concept of behavioral economics. They initiated a new way of looking at economics by drawing insights from psychology and psychological experiments. Thaler, being the protagonist of the behavioral economics revolution, challenged some of the standard assumptions, concepts and theories of economics.

Now, any novice entering the world of economics comes across the assumption of rationality i.e., consumers would want to maximize their utility. If the goods are economically feasible, they would always prefer more of at least one commodity. A consumer on their given IC map would always prefer to be on the highest possible IC.

But when it comes to the theory of Behavioral Economics, the economists do not follow the rule of rationality, rather the term ‘bounded rationality’ meaning, the rationality of consumers are limited, comes into play. These limitations are set because

of the time constraints or lack of resources or sometimes because a consumer is not able to draw a logical conclusion thus dealing with the cognitive aspect of mind in. Due to the bounds of rationality, a consumer does not seek to maximise their wants and reach an optimal solution. Instead, they try seeking a satisfactory one. As economists, we always try to reach an optimal point, thus, consumers' rationality has become a strong point of criticism of behavioral economics. This is because even though the theory follows the assumption of bounded rationality, with research and looking at the market, the critics of behavioral economics have found that consumers are actually rational. Apart from the rationality of consumers being one of the most discussed criticisms, the critics have also paid attention to the point of experiment based research. The theory of behavioral economics uses the technique of experiment based research extensively. The critics of this theory typically favour the concept of revealed preferences over stated preferences (which are found through experiments and surveys).

Lastly, critics argue that the behavioural economics has a lack of foundational theory. The theory is formed with very loose strands of concepts and experiments which fail to show a consistency. Despite a great deal of grandiloquence, behavioral theory is not consistent. All in all, one can criticise the concept of behavioral economics by saying that this theory is still quite young in comparison to theories of micro and macroeconomics and lot of research and experiments have to be done on it through different and continuous time periods to actually use it as a dictum of economics.

Explaining behavioral economics

Behavioral economics is a subset of economics that takes into account the psychological, social and emotional factors that influence decision making. Although most believe the field to be a recent addition to economics, however it might predate macroeconomics - Adam Smith in 'The Theory of Moral Sentiments' does explore concepts very similar to current day Behavioral Economics.

Behavioral economists are interested in exactly the same things as other economists - how people make decisions- but they choose a different approach. While most neoclassical economists use the standard assumption that all individuals are rational, behavioral economists choose to embrace reality - individuals are not always rational. They believe that by not presuming the rationality of the individual, they get closer to understanding how people actually make decisions.

It's crucial to understand that behavioral economists assume that other laws of economics hold because they choose to negate the rationality of individuals and although in people do act rational allowing the laws of demand to hold true, there are situations when they don't. In certain situations where rationality is bounded, a **limit on time**, **information or abilities** might keep individuals from choosing the best possible outcome, that is, the outcome

that works in their self-interest. So, behavioral economics doesn't seek to disprove classical economic theory. It seeks to understand why individuals behave differently than classic economic models might suggest.

1. Rationality of economic agents

In relation to the traditional- neoclassical and Keynesian economics, behavioral economics is quite new. The economists, who follow the theories of traditional economics, follow the assumption of rationality. But the concept of behavioral economics does not follow the same. The supporters of behavioral economics say that even though the consumers are rational, their rationality is bounded by there thinking capacity, time and knowledge. It was Herbert A. Simon who introduced the concept of bounded rationality in 1950s. This concept is similar to the social-psychological concept that describes people as "cognitive misers" (Fiske & Taylor, 1991) and represents a fundamental idea about human psychology that underlies behavioral economics.

Economics is about how an individual or an economy functions. The concept of behavioral economics fails to take into account the generalized economic behaviour. The cognitive theories, like prospect theory, don't follow the generalized economic behaviour but are models of decision making and face the problem of time inconsistency.

According to prospect theory, preferences are liable to change. *"The individual in economics is captured by a preference relation over states of the world. By contrast, the individual in psychology is a complex of processes that might be subject to any number of influences that are sometimes summarized by a concept of framing. Consistency such as transitivity does not follow from psychological theory. Individuals can order things if asked to do so, but the ordering is labile and may bear no relationship to choices"* This shows that even though we assume people to have consistent behaviour and thus transitive; the concept of behavioral economics states otherwise.

According to the economics' critics, even though economics is about how people behave in an economic environment, a huge gap lies between psychological theories and economic theories. In case of prospect theory, every time a person has to take a decision, we form a series of steps to arrive at that particular result. Also, the result that we arrive at may not be consistent since individual's behaviour and preference can change with time. Whereas generally in Economics, we say that preferences of a person or any free economic agent is consistent i.e., within a time period, if he prefers a bundle over the other, then he'll continue to do so within that time frame.

Also, the methods used for the prospect theories can't be used to make a model that would capture the data in pure economic context. Thus the economists have come up with the 'extended prospect theory-theory of preferences'.

Now coming to people's utility, let's talk about the indifference curves of an individual. According to the pursuers of the behavioral economics, the ICs are concave in the loss domain whereas convex in the

profit domain. In terms of risk, in the exchange economy, the IC of a risk averse person is convex and that of a risk seeking person is concave.

In general, a rational consumer will have a convex IC, but according to the behavioral economics, people in the exchange economy are risk seeking people since they are mostly in the loss domain. But empirical studies state that ICs of the people are convex to the origin as stated above.

According to the critics of behavioral economics, it's because with time and experience, the risk seeking behaviour turns into risk averseness behaviour. When people don't have experience, they act on impulse and take risks. With the time passing and experience they start taking decisions that moves them away from being risk seeker to risk averse. This leads to the fact that people are generally risk averse and thus have a convex IC. Even though the prospect theorystates that people will mostly have concave IC, which is generally against the assumption of rationality- since convex ICs are considered to be well-behaved preferences having the property of monotonicity. Any rational consumer would prefer more above less. In case of a convex IC, the averages would give us higher utility thus agreeing with the rule of monotonicity. Also a rational consumer would have an IC with diminishing marginal rate of substitution in case of economic good. He would want to give less and less of a good that he has less in number and thus have a convex IC. All these facts lead us to believe that in general, people in the market are rational most of the time.

2. Experiment based research

In general, neoclassical economists use sophisticated methods and tools to gather data for research purposes. They use both quantitative and qualitative methods, microeconomic & macroeconomic modeling and programming, statistical analysis, general trade models in certain cases and econometric analysis. Whereas in behavioral economics, experts resort to using experiments and surveys.

Economics is a social science but it would be nothing without mathematical support and this mathematical support comes in the form of data. We place so much emphasis on the research methods and tools because using or misusing the wrong the tool could easily skew the data and lead to inaccurate conclusions. Behavioral economists, more often than not, tend to use experiments in controlled environments. By performing any experiment in a controlled environment, the researcher will have to prove the external validity of the outcome in uncontrolled and more general conditions.

There are two types of data - nomothetic and idiographic. Nomothetic data has a tendency to generalise; it is used in the natural sciences to describe laws that explain types of objective phenomenon. Idiographic data on the other hand is used by fields like psychology and primarily focuses on the individual. It follows the belief that as everyone is unique they should be studied in a unique manner and due to this, general laws aren't possible.

Behavioral economists primarily use idiographic data in the form of surveys- for example, questions about their happiness

and well-being in household surveys. But how does a researcher distinguish between a biased answer and an unbiased one? How does a researcher find the representative survey? This is where behavioral economics finds itself facing a roadblock. The problem lies in the data itself. With traditional economics, economists can rely heavily on quantitative data in the form of statistics, data collected by governments and international agencies, various indices and historical data all of which are far less likely to have any untruthful or ill-informed answers.

3. Lack of foundational theory

Why is a foundational theory important? To understand the answer to this, you must also understand what a foundational or unified theory is - it is a theory that is based on certain models, takes relevant assumptions and most importantly, *predicts what will happen in a given situation*. In economics, we have no dearth of undisputed theories - demand-and-supply theory, theory of rational choice, partial equilibrium theory and general equilibrium theory to name a few. These theories have withstood the test of time; their models have been able to give the world a clear indication of what could possibly come.

So, where is the unifying theory in behavioral economics? What is the bedrock of this sub-field? Which theory do most behavioral economists believe to be faultless in every sense? How does behavioral economics predict the future?

The famed and popular 'Nudge' theory developed by Cass Sunstein and recent Nobel Prize winner, Richard Thaler is indelibly one of the most marvelous contributions of behavioral economics to the world but what does it predict? Nothing.

An important insight into why we don't see many models from behavioral economics is the fact that economic models are mathematical in nature and representing human behaviour through mathematics could prove to be a near impossible task. Along with this, economists are afraid of over fitting. Over fitting is a concept wherein economic models are so malleable that they take into account every assumption and are able to explain most outcomes but predict nothing. So, for example, an economist wants to create an economic model predicting whether the value of domestic currency goes up and takes one input - the volume of production in the country (for reference, when the production levels are very high, exports increase and demand for domestic currency increases in the market). The economist might find that his/her model is flawed, so he/she adds another data point - the rise and fall in stock exchange. Now, the model is able to match past values of domestic currency with more precision. To improve accuracy, the economist adds another data point: the government's policies. Perhaps, after the last addition, the model can accurately predict the values of the currency in the last decade. And soon enough, the economist is trying to add more data points so that the model's outcomes exactly match the past values of the currency and in doing so, he/she has

created a model that *explains previous outcomes but remains unable to accurately predict future outcomes.*

Behavioral economics faces a conundrum: it needs a unified theory to give it more credence and reliability but in order to do so, it will have to create a mathematical model of human behaviour, the two of which rarely associated together, that clearly explains past outcomes and has the ability to predict future ones without indulging in over fitting.

But fact of the matter remains that until and unless behavioral economics produces a unified theory, it remains a loosely bound collection of observed anomalies.

Conclusion

To sum this up, the authors of this paper believe that behavioral economics is a subfield of economics that does show considerable potential in terms of influencing individual decision. But the lack of any foundational or unifying theory and the inaccurate methods of data collection show us that regardless of the few decades that behavioral economics has been around, it hasn't been able to plant its feet firmly in the world of economics. The data that is present till now has not been able to give us any particular conclusion which would lead the economists to string the results together and make it a definite theory. In order for the behavioral economics to make its presence, *it will have to give us not just a mere explanation for what has already happened but a concrete prediction for what awaits us*. Behavioral economics does have a lot of potential in explaining the drawbacks or exceptions of the existing theories, but the tools and the foundation will have to be developed and modified in order to reach that level.

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In conversation with:

Devaki Jain

Pioneering Statistician.

Feminist Economist.

Legend.

Q: At a time when girls hardly received formal education, you fought tooth and nail and went all the way to Oxford. What was it like and what made you choose PPE? And what kind of lessons did you learn along the way?

A: That's a question that I haven't been able to figure out really because if I said that it was easy, it would not be truthful. I did my B.A. in 1953. My family was not very supportive of my education. However, I went on to do my B.A. and got three gold medals. Subsequently, I was stopped from doing post-graduation because the only college available in Bangalore for doing Ph. D was co-ed, and that was out of question. So I stayed at home for two years. But I was restless and I think my father could see I wanted to do something. He said I should get married. I insisted that I wanted to work, so he got me a job with one of his friends and like that, I spiraled out. I could have easily not got here. It all seems to have happened without any conscious thinking, planning or anything of that sort.

Q: Ma'am, you have worked extensively in the field of statistics and analysis. In Economics in general, there is a lot of focus on evidence based research for finding out the most appropriate policy intervention. But in spite of all of that, the people who are supposed to implement these policies don't do so. So how do we bridge that gap and make sure that action is actually taken?

A: Yes, that is a challenge. The fact that we haven't been able to clear the air of this is a failure but sometimes the implementation machinery of the government is clogged. I was on the planning commission in Karnataka for ten years. The implementation line which runs from the Taluk officer to numerous extension offices is full of bureaucratic controls. That's why a previous government stated that if you put power in the local people's hands and give the money directly to the Gram Panchayat, then this pipeline can be avoided. The gram panchayat can, in fact, change the system.

Q: The way our curriculum is structured, we are first taught principles of economics, which are called out by the feminist economics, and only later are we taught developmental issues like income inequality, sustainable development, etc. What's your take on that?

A: If you start with Feminist Economics, you won't pass any exams. Secondly, you can list for yourself what you think are the five ideas that feminist economics has put forward which is not there in orthodox economics. You will find that there are not too many. The core of feminist economics is heterodox economics, showing that economics should be inclusive of social norms, politics and doesn't allow itself to become too mathematically narrowed in its logic. Feminist economics would also say that economics should not be only about bread and income but also about justice, in which case, we are stratifying the inequality between the rich and the poor by saying that within that rich and poor, there are scheduled castes, LGBTs, mentally and physically challenged; all the various characteristics of the human population.

Q: There are certain pockets within India which firmly believe in the patriarchal line of thought, that men and women are unequal. When there are pockets like these that exist within our country, can equality uniformly be achieved?

A: These embedded attitudes are indeed difficult to budge. There are a lot of NGOs who try to nudge patriarchal attitudes. There are people who have transformed villages where there is child marriage. There are three Indias within India. There is Dalit India, there is the India which is traditionally bound and then there are you, the new India. All three are running together but it is the new India that is budging the old India out.

Q: This definitely exists in rural India, but a lot of it also boils over into the corporate sector very subtly. There is a sort of sexism and discrimination against women that exists within the sector. They put on a

facade of letting women in, but after a certain point they too have a glass ceiling. How do we 'nudge' our way into the sector, in such a case?
A: That's true. It is indeed a big barrier. I have a counter argument about the glass ceiling- while what you are saying is true, it need not be our aspiration to go where men have gone. Shouldn't the women's movement be considering other ways of penetrating the glass ceiling? Women who are bright and want to enter the corporate sector are creating another culture of leadership and management which is a little more inclusive. Women in leadership often break stratification, the rigid boundaries of structures which show hierarchies of power. But it's a teasing question in my mind. When people ask me how to break the glass ceiling, I tell them, "Don't. Find another road."

Q: What do you think are some of the qualities we should inculcate amongst ourselves from this point of time so that we can overcome the challenges that we will eventually face within the field of economics?
A: Thinking about your question I would say that you have it already in you to change the system. One thing to do is to look for a gendered aspect that you can handle within the technical jobs that will be assigned to you. There are women and men who have other jobs like engineers, who take trouble to go to a proximate slum and enable women and children there to access schools. There are so many ways in which our neighbourhood can be improved by our own social activism. And of course, if you're in a structure, then you could be a person who mobilises the women in the structure to fight for their rights.

Q: When you have to have things like self-confidence and determination, you need to know what your true calling is in life. How did you know that economics was your calling?
A: I didn't. In this aspect, my story is not a good story for you. Because I didn't know; I did not want to be an economist. I wanted to be a dancer, and then I wanted to be brain surgeon. I landed into economics by sheer accident. Whatever I did happened in an unplanned fashion. But it led me to being a free person.

BOOK REVIEW

AJC Bose, Associate Proffessor, SRCC

Amit Goswami (2015), Quantum Economics: Unleashing the Power of an Economics of Consciousness, Rainbow Ridge Books, Virginia. Paperback. Price: $ 17.95
and
Jim Alvino and Amit Goswami (2015), The Business Person's Guide to Demystifying and Implementing Quantum Economics in the Workplace, Quantum Economics Business CoachingTM, USA. Unpriced.

I am dealing here with two non-economists who have very confidently ventured into writing about a new branch of economics that also revolutionizes the field of commerce and changes the methods by which business is conducted in the 21st century. Jim Alvino is a philosopher with Kantian leanings, and Amit Goswami, a quantum physicist. These writers do an amazing interdisciplinary work that draws on old as also cutting edge research in quantum mechanics or physics, philosophy and ethics, medicine, biology (morphogenesis), money and finance and economic theories, psychology, politics, literature and poetry, religion and spirituality and guru business, ecology/environmentalism, the chakra points and ayurveda and other non-allopathic medical systems, vedas and upanishads, neuroscience, behaviourism, management, technology, measurement of intangibles, etc.

Quantum economics or economics within consciousness as the new economics promises to solve the big-time economic items that plague us today and give us frequent crisis conditions. The new economics, according to the writers under review here, is good for

(a) the remedies of business cycles and for preventing economic meltdowns;
(b) creating the new arenas of economic activities that will bring meaningful jobs to humans;
(c) creating new capital in the form of human capital;
(d) solving the problem of government interventions via supply side economics or demand-side economics and how to keep the free market as free as possible;
(e) dealing with globalization and its discontents;
(f) achieving an economy of sustainability; and
(g) eliminating wealth disparity between classes, poverty and hunger.

The authors exude exuberant optimism that we will never again have economic problems that require more than a little tinkering for their s olutions; we will never have meltdowns like the great depression of the 1930s and the recent great recession of late 2000s. They do poke at the mainstream as well as heterodox economists thus: "It took World War II, not economic theories, to get out of the great depression. How we can rest assured that we will not need another similar catastrophe to keep out of future great recessions?"

Professional economists have not reacted or responded to these writers to whom this is not surprising because economists are still unable to get rid of their worldviews based on scientific materialsm/Newtonian physics. All that is required now is to say no to scientific materialism based variegated intellectual pursuits and say yes to quantum physics based

based quantum worldview based variegated intellectual pursuits. In chapters 13 and 14, Amit Goswami gives a very cogent as also rigorous critique of scientific materialism and how economics can be reinvented on the basis of quantum physics instead.

While many still think that despite its 100 years history, quantum physics is still really "just mumbo jumbo, nonsense, poppycock, B.S., hogwash, and drivel", there are those who think that it has got very little hogwash and that it is difficult for the average person to understand, and that honestly a lot of it does not make sense until one studies it for years, but that does not make it invalid. I have read these writings many a time just like a foodie is repeatedly drawn to "enchiladas and burritos", but they have not yet sunk into me. All the same I give a concrete flavour of some snippets of their confident argumentation and assertions as follows, without using the technical terminology of quantum mechanics, from the viewpoint of the role of a new business person in the new economy based on quantum worldview.

Quantum economics takes the bold view that the current economic paradigm based on scientific materialism, is unsustainable and built on the false premises of unlimited material resources, on the one hand, and a crippled model of human capital, on the other, one which denies or ignores a person's vital energies and "subtle bodies" as described by Carl Jung and one's inherent "hierarchy of needs" as delineated by Abraham Maslow. Businesses which fail to find a way to genuinely incorporate such metaphysical frameworks into their business models will progressively lose market share to those that do, and will hasten the timeframe for closing their doors.

The very foundation on which one's business is based—that of scientific materialism—is flawed to the core. The notion that matter alone defines what is real, to the exclusion of other more subtle realities that we acknowledge and experience every day, simply belies the truth of human reality as well as that of Consciousness itself.

Consciousness is the facility by which we know; it is our awareness that illumines reality and makes knowledge and experience possible. Further, it is the creative power of the individual which is embedded in a higher Consciousness from which the individual derives life force, sustenance, and creativity. Consciousness is both the highest and deepest agency of creation. Whether one chooses to spiritualise or secularise Consciousness, quantum physics provides the only inclusive model for comprehending the laws that govern the totality of the universe as currently know it.

A quantum activist business leader is one who converts the relationship between buyer and seller from one that is merely transactional to that which is transformational. The latter seeks to balance the variables in the economic equation between statistical predictability of costs and margins, with innovations on behalf of the consumer, where buyers can explore and sellers monetize feelings, meanings and values that enrich both parties energetically as well as their pockets.

If one's business model falls under "alternative" wellness, Eastern therapies, nutritional supplements, anti-aging products, law of attraction or related energetic practices, or any procedure or approach purporting to address the development of the whole person, subjective (inside) as well as objective (outside), one may not be taken fully seriously by the mainstream, although such fields and methods represent growing,

multi-million dollar industries that have been gaining awareness, respect and use worldwide by lay persons and professionals alike. In the US, for instance, not even massive lobbies like the American Medical Association, American Dairy Association, North American Meat Institute, the pharmaceutical industry, and other behemoth forces of the status quo can quell the unfoldment of Consciousness in these domains.

The reason is this. The purposeful evolution of Consciousness brings to fruition with greater and greater clarity the multi-world dimensionality of the human experience. Moreover, the marketplace has been changing radically over the last 20 years reflecting greater accessibility to knowledge, information and e-commerce via the internet and social media. This is a double-edged sword as, on the one hand, the increased demands of information processing on us are having a stifling effect on our capacity to process meaning—e.g. "Who am I?, Why am I here?, What is life about?". On the other hand, once the genie of self-awareness and personal development is let out of the bottle, people long for meaning and want more and more to fulfill their higher needs and highest potential.

As pointed out earlier, Maslow had catalogued a progression of needs moving from satisfying basic physiological and safety needs to love, self-esteem and self-actualisation, which is the pinnacle of fulfillment and authenticity as a human being. This developmental progression parallels the gradual growth in an individual, and societal populations at large, from greater to lesser degrees of homogeneity, to greater degrees of heterogeneity. This means, as we move up Maslow's pyramid from its base of survival, then ascend as it reflects the higher needs of love, self-esteem and fulfillment, we become more differentiated through authenticity and distinctness as an individual.

But today's statistical models, which are based on the deeply entrenched tenets of scientific materialism and treat everyone as a set of predictable numbers, reduce one's natural and inherent heterogeneity to a de-contextualised and sterile homogeneity. The quantum activist business leader is one who escapes this "sea of sameness" and crafts a Unique Value Proposition that caters to people's heterogeneity, to their authenticity and individuality. Quantum economics thus illustrates the critical importance of putting value on and giving attention to the subtle, "internal environment" of the person—i.e. to Maslow's higher needs—as well as the external environment. This implies an expansion of capitalism to include exploring the vital domain of feeling, mental domain of thinking, and supramental domain of intuiting and creating innovative products and services to address these domains. Unlike physical resources, which are limited and finite, these subtle domains are unlimited and infinite and provide additional opportunities for the business person to profit by engaging their customers and clients in transformational exchange that extens "lifetime relationship" (LTR) and "lifetime value" (LTV).

This is not all. Quantum economics takes the view that today's common business practices of production, manufacturing and operational efficiencies do violence to the development of higher human needs and, in the long run, to a soceity's bank of human capital. In contrast to this resultant wasteland of human potential, quantum econ asserts that infusing meaning and purpose back into labour will lead to greater profit and allround satisfaction. The challenge for a successful business is to provide meaningful jobs. Furthermore, quantum economics postulates that any decision to "go green" in terms of reduce, reuse and recycle is an acknowledgement of the finiteness of material resources and an understanding that environmental pollution reduces access to vital energy.

As such, the quantuam activist business person is one who will also cultivate a deeper ecology, one which places value on the inner, subtle, worlds or environments as well as the external.

Quantum econ predicts that social contribution will eventually be integrated into the very fabric of every business model in recognition and acknowledgement that "giving back" is really "paying it forward" to a shared and collective future, so much so that "maximize profit, do social good, and build a living legacy" is not an empty slogan. New capitalism on these lines thrives on continuous infusion of subtle energy through

(a) intentionality of purpose, to be in alignment with the purposeful evolution of Consciousness, and to educate the consumer on the implications of their buying decisions;

(b) deliberate and explicit promotion, commoditization, and supporting of development of human capital through delivery of products/services and social contribution; and by providing opportunities for others to participate as well;

(c) incorporation into one's specific customer service model, attentiveness, directly and/or indirectly, to subtle body and vital energy needs reflected in the higher chakras or in Maslow's sense; and

(d) engagement of all stakeholders in one's business in a "visceral feedback loop" whereby positive brain circuitry (i.e. the range of wellness emotions) is consistently cultivated in every facet of one's enterprise: identification, acquisition, retention of one's ideal client, staff development, sales and marketing, strategic alliances, product development, customer service, etc.

Finally, quantum economics maintains that concurrent with the redefinition and expansion of capitalism to include the subtle domains and vital energies, are a redefinition and expansion of a country's Gross Domestic Product. Doing so will permit the infinite realm of subjectivity to be factored into the equation; establish criteria by which to measure a nation's net gain or loss of subtle energy, which equates to "spiritual currency"; and enable estimates/assessment of a country's overall contribution to vital (feeling), mental (meaning) and supramental (intuitive) "wealth". This we may call our Gross Domestic Wellness of Being. This is a possibility based on the quantum worldview and quantum activism based on quantum physics as a physics of possibilities!

Are these writers acting as peddlers of dreams or utopia by smoking pot as it were? I do not think so. Can there ever be "problem-free capitalism" by the implementation of their ideas? This is a daunting 100 million dollar question indeed. All the same, I salute the writers for at least changing the definition of economics. The definition of new economics now implies management of ALL the places we live—not just our physical reality but equally so our more subtle domains of the heart, mind and spirit or soul. In so doing, the writers transcend Adam Smith's capitalism that recognizes only our material needs and arrive at quantum economics that includes our subtle and spiritual needs as well. I also salute them for asserting boldly that quantum physics based quantum worldview helps us develop a science of the whole human experience.

I am happy to bring to the notice of the readers these writings by way of this brief book reviewing in this journal of a multi-disciplinary college I hold in esteem. I shall be happy if the readers are induced to review our state of affairs in light of these writings with an open mind, i.e. by becoming ideology-free.

Contributor's Column

Out of Sight, Out of Mind:

The Story of Solid Waste Management in India

Varsha Reddy and Shruthi Ramesh

Here are three major threats to the environment:

1. CO2 emissions from the combustion of fossil fuels
2. Oil spilt into the ocean by huge tankers and
3. The jugaadu, judgemental, intrusive aunty next door (whom you secretly hate)

The third one might seem a little off-track but before you wave us off as wannabe populists who put fiction before facts, read on about the 99 ways she, and countless others like her, are destroying the environment.

Together, all of us Indians who live in 7,935 towns and cities generate 62 million tonnes of municipal solid waste per annum. Out of that, only 43 million tonnes (MT) of the waste is collected, 11.9 MT is treated and 31 MT is dumped in landfill sites. Over half the public places in 16 Indian states do not manage wastewater and litter. While countries like Sweden are close to becoming 100% waste-free by 2020, we in India are still dumping 90% of recyclable and reusable waste in "landfills". However, with numerous controversies over garbage dumps and mounting pressure on land resources, India can no longer afford to recklessly exploit the environment in the delusion that it will soon transit from the increasing to the decreasing segment of the environmental Kuznets curve as conclusive data about whether this hypothesis holds in our country does not exist. Moreover, the "first-exploit-and-then-clean" attitude has been proven to be a failure. We have to act now, especially because every single step of the waste management process is poorly implemented, shoddily coordinated and irresponsibly ignored. Not only do we think that our duty ends with throwing the trash in the trash can but we stubbornly refuse to discuss the problem staring at us square in the face. Waste management, undoubtedly, is the elephant in the room. Environmental Kuznets curve: The application of Kuznets curve in environmental studies Studies have shown that with our current institutional set-up, waste pickers in 6 major Indian cities have been able to recover just over 20% of recyclable waste from 80,000 people, amounting to 3 million tonnes. Every tonne of recyclable material collected has saved urban local bodies approximately INR 24,500 per annum and has avoided the emission of 721 kg CO2 per annum. To put this into perspective, upto 99% of waste can be potentially recycled and 80,000 is only 0.006% of our population. India, thus, is also missing out on lucrative money-making prospects- *money saved, after all, is money earned.*The present state of waste management practices in India is the predominant result of our reluctance to act. Though we are fully conscious of the consequence of our actions (or inactions, rather), we choose to be willfully ignorant, conveniently limboing between scientific facts and empirical evidence. This is where Adam Smith's invisible hand fails. We as individuals are acting in our own self-

interest, collectively damaging the environment. Thus, at every level-right from sorting the waste to dumping it in landfills- the entire process of waste management is festering with inefficiencies and implementation lags, which we've sought to delineate.

The reluctance to act can be seen as the Dominant Strategy Nash Equilibrium of a normal game. Consider two agents in the society, the jugaadu aunty and the inquisitive uncle further down the street who always wants to know if you scored more than the infamous *Sharmaji ka beta* . They have two choices - to act or not to act. It is logical to assume that the cost of acting (say, 15) is more than the immediate perceived benefit from acting (say, 12), as waste management involves perseverant action, but does not give tangible and quick benefits in most cases. Clearly, as seen in the following table, both aunty and uncle choose not to act. Neither of them thinks it's worth their while to take actions to save the environment: they look for all possible ways to freeride, and don't contribute anything from their side. As the outcome, no waste management happens, as is seen in our imperfect world today.

Cost: 15 Benefit: 12		Jugaadu Aunty	
		Acts	Does Not Act
Inquisitive Uncle	Acts	(-3, -3)	(12,-3)
	Does Not Act	(-3,12)	(0,0)

This example, although fundamental, portrays the pressing issues regarding waste management: perceived cost is much more than perceived benefit from each individual's point of view. It also highlights the effectiveness of working together as a community. If aunty took the efforts and acted, while uncle gave aunty some money (say, 4), that would have led to a better outcome: (1, 8). This is clearly better for each of them than the paradigm where none of them act. Thus, we need to reduce costs and increase immediate benefits; or, we need to encourage and motivate people to work together.

TALKING TRASH

The process of waste management begins, of course, with the segregation of waste into various categories like wet and dry or biodegradable and non-biodegradable. A small town in Japan, Kamikatsu, with 1700 inhabitants classifies its trash into 34 different, watertight categories such as aluminium cans and paper cartons. In India, not only is waste segregation poorly organised and unscientifically planned but is rarely practised. Replicating Kamikatsu's waste management breakthrough may be a chimera for India, but efforts in this direction could go a long way. The main, if not the only, obstacle concerning segregation in India is the status quo bias: an inherent cognitive flaw that prevents us from deviating from the prevailing state of affairs. Much like waste, people can also be segregated into three categories: the sluggard (those who are unwilling to act), the bystander (those who want to act but don't know how to), and the defeatist (who acts but gives up very soon). The 'sluggard' is the product of social loafing; being a part of a larger community (group), he thinks that him not performing the action diligently will not impact the overall outcome as he assumes that others in the community are doing it with diligence. This kind of behaviour is induced by lethargy. A solution to this could be adopting a *No Segregation No Collection* policy as has been done in Cebu, a town in the Philippines.

Although a paternalistic approach, dealing with these people with a firm hand can produce quicker results. The downside however, is that the collection process is by itself flawed in our country (ways to improve waste collection are discussed later). The bystander knows what should be done, but does not know *how* to do it. This behaviour can be attributed to a phenomenon called "intention-action gap". The bystander is cognisant of the importance of segregation and wants to practice it, but is unable to act on his intentions due to individual and contextual constraints. Thus, there is a huge gap between what he would *like* to do and what he *actually* does. This gap can be addressed through improvements in the choice architecture. Two kinds of interventions or "nudges" can be employed to enable behavioural change: Informational nudges to educate and system nudges to improve convenience. A nudge through the dissemination of information has weaker effect as the gap between information and awareness cannot be entirely bridged due to the various psychological barriers that persist (denial, dissonance etc). Thus, rather than intrinsically motivating, external motivation can be internalised through small yet tangible benefits, say, cashbacks for depositing plastic containers/bags with retailers. The defeatist is characterised by depleted ego. He is unable to see the immediate impacts of his action and thus eventually gives up. This can be overcome by establishing a mechanism to appraise individual performance. This will make him feel personally accountable, and incentivise him to take initiatives. A randomised control trial in the Kristiansand region of Norway used personal information and social comparative feedback to motivate households to reduce waste and increase recycling. The experiment consisted of personal letters to households in the region evaluating their waste management practices. This worked wonders. Individual initiatives shot up, and recycling grew.

Segregation is only the gateway to gain from this process. There are multiple avenues to maximise returns from "waste", right at the household and community levels. The D-I-Y wave can be harnessed to induce people to couple their creativity and enthusiasm for beautifying their homes for almost free of cost (say, old clothes to doormats or old tyres to flower pots). Additionally, old consumer durables like furniture or even books and music albums with no takers on OLX can be left in the lobby of the apartment or on the curbside so someone who *actually needs it* can take it.The cultural stigma that prevents us from using second-hand goods can be corrected through social facilitation (enhancement of one's response by the behaviour of other people). Further, technology to make composting of kitchen discard viable is rapidly emerging. Trust bins are a breakthrough in this direction: they give you all the benefits of composting minus the odour and the efforts. Also, for those looking to make some cash, *garage sales* (which are rarely hosted in India) will be a good bang for the buck. These solutions are based on the premise that the human tendency to imitate will motivate others to follow suit.

Having recovered value from most of the refuse generated, the entire process of collection and disposal is now simplified. The need for multiple transfer sites- where segregation formerly took place- is eliminated. The many rag pickers who were employed at these sites, risking their lives and earning meagre amounts can go door-to-door collecting recyclable,

Newspaperwalas do. This will encourage startups in this area, which will give it self-sustainability. We need to look beyond the rudimentary model of “buy, use and dispose” and turn towards a more restorative and regenerative system where resources are retained in the economy for as long as possible. The end-user should become the supplier, setting in motion a reverse supply chain. Reverse logistics, as the new business mantra, can extract maximum value from the existing resources. A combination of traditional regulatory approaches that set specific standards, or economic incentive or market-based policies that rely on market forces to correct producer and consumer behavior, complemented by the right nudges at the right places is what we need right now. Every policy that aims at inculcating waste management practices must necessarily play into the mindset of each individual. Perhaps waste management is the arena for our neighbour aunty to master the art of jugaad.

Read My Lipstick

Mita Chaturvedi

Imagine the following scenario - people refusing to purchase luxurious items, workspaces getting emptier each day, individuals not being able to afford much and the basic quality of life diminishing. Gloomy is the word used most often to describe an economic recession, and how could it not be considering that most individuals dread the inevitable state of slump befalling upon their families. Now think of the worst state of economic downturn the world has had to face. During the epoch of the Great Depression, industrial production in the United States of America reduced to half of what it was in the years preceding 1929. However, between 1929 and 1933, cosmetic sales decided not to join the bandwagon. In fact, these sales hiked by more than 20 percent in spite of the convulsing economy.

During an economic slump, times get tough and consumers cut down on their usual spending. As a result, sales of sofas, sports cars, vacations abroad and housing fall with the market. However, many economists believe that this spending habit instilled in the consumer does not completely disappear during a recession. It is just that while reducing consumption of extravagant luxuries, people substitute it with spending on smaller indulgences such as fancy coffee, perfumes, skin creams and most common of all- lipsticks.

Think of it this way- when wishing for something luxurious under a tightened budget- it is easier to spend on cosmetics and a nice dinner than it is to fly off to another part of the world. For instance, during a long stagnation in Japan in 1997, Japanese spending on accessories had increased by 10 percent.

In 2001, when the world faced an eight-month economic downturn, lipstick sales in the United States went up by 11%. As this downturn further aggravated due to the tragic September 11 terrorist attacks in Manhattan, executives at Estée Lauder- a renowned cosmetics business- noticed further increases in their lipstick sales. US lipstick sales during the aftermath of the 9/11 attacks actually doubled. This link was then termed **'The Lipstick Effect'** by Leonard Lauder, Chairman of Estée Lauder, at the beginning of the 2001 recession when he first observed that lipstick sales tend to be have an inverse or negative correlation to economic prosperity. This prompted him to coin the **'Lipstick Index'-**an indicator which uses lipstick sales to depict an economic recession.

This link was again seen by Estée Lauder in the global recession faced in 2008. During this era, while the rest of the world faced a terrible economic slowdown, some of the world's cosmetic giants (namely, L'Oréal, Beiersdorf and Shiseido) decided to pave a different way through the financial crisis. L'Oréal even boasted a 5.3 percent boost in sales in the beginning of the year.

Another very significant by-product of any recession is the inevitable increase in unemployment. During the Great Depression, the unemployment toll in Germany had reached to 6 million, which was 25% of the country's population. Notwithstanding this statistic, Beiersdorf, a German cosmetic company, was able to boast about how it did not have to lay-off a single worker. It's true: those working at the cosmetic firm did not suffer. Moreover, during the recessions of 1990 and 2001, while jobs in other sectors were falling apart, employment in the US cosmetics sector sharply rose.

Source – Wall Street Journal

Lipsticks dominated stock market performance as well- as per Dhaval Joshi, an analyst with RAB capital. According to the analyst, the 'lipstick effect' was further highlighted with the personal products sector outdoing as per the overall market by an average of 100% in past recessions (namely, the recessions of the early 1980s, early 1990s and early 2000s). This brilliant performance was then reflected in the global cosmetics sector solely because its European sub-sector was dominated by giants such as L'Oréal and Beiersdorf, whose outstanding performance and growth was able to affect cosmetic sectors everywhere else.

It is not only lipsticks that saw this odd trend but a few other beauty-related items as well. Beauty- or in broader terms, appearance- seems to be an excellent means by which individuals could treat themselves to luxuries without 'breaking the bank.' This is because since consumer confidence in the economy reaches a low level, individuals are not very keen on using up a lot of their funds. As per Toby Clark, at Mintel (a market research firm), people try to save on regular luxuries and opt for cheaper shampoos, discounted food and old machinery. Thus, they choose to spend their money on smaller luxuries such as lipsticks, perfumes and baked goods, etc. In fact, amidst the aforementioned 2008 economic setback, headlines were bustling with the suddenly trending nail-art phase. The years 2008 and 2009 made way for new and innovative manicures comprising of metallic colours and nail art. This nail-obsession was further deepened by the invention of the social media platform Instagram where the trending nail-art 'hashtag' revived this love for creative manicures.

An extremely recent example of this phenomenon was displayed in the United Kingdom in 2016- The year of the infamous 'Brexit' movement. The repercussions following Brexit saw an upsurge in the number of Brits going to spas- citing this as 'momentary respite from the chaos.' Ruuby- a London-based concierge app even stated a 30 percent increase in bookings for scrubs, facials and what not. Using the same logic behind the lipstick effect, this novel interest in spas helps citizens of the UK to not only distract themselves from the stress of the controversial bill but also helps provide a

confidence boost in one aspect of their lives.

In spite of these trends, however, many individuals remain unimpressed and unconvinced by this theory. They claim the available data supporting the effect as 'isolated and anecdotal' which does not point to the larger phenomenon. For instance, despite a variety of data suggesting the hike in lipstick sales during a recession, Kline & Company, a market-research group, has pointed out that this hike in lipstick sales has also been prevalent during periods of prosperity or economic 'boom'. The Economist then attempted to test the theory using statistical analysis and came to the conclusion that the lipstick effect may have been overstated. Due to this lack of a proper correlation, some experts have started to question the viability of the lipstick index as an economic indicator.

People also started to notice how the lipstick effect was seen in non-lipstick items, which further reduced the credibility of lipstick sales as valid indicators of economic growth. Also, lipsticks were sometimes underperforming as compared to other standard beauty items. Due to this, Karen Grant- a market analyst at the NPD group- argued in favour of a broader version of the lipstick index which could perhaps consider 'beauty' as a whole as something that survives a recession rather than doing the same for sub-categories such as lipstick. The newfound 'beauty index' was favoured by a lot of other people who strongly believed that one economy's lipstick could very well be another's nail polish, or hair colorant? In fact, nail polish sales actually outperformed lipstick sales in many parts of the world in 2009.

Nonetheless, Karen Grant's argument was also countered when many examples from non-beauty categories began to fit the logic behind her generalised 'beauty index'- instances of this are- ice cream in France- which saw an 11% boost in sales in 2009- and confectionary in the UK, which served as comfort food for many during the economic setback in 2009.

Ergo, the lipstick effect is essentially all about what the consumer can afford during a recession and not something solely limited to lipsticks. While this does not place Estée's 'Lipstick Index' in a favourable light, it does certainly have a few perks of its own. For one, the index could help firms choose what to produce during periods of depression in order to maintain profits. Also, the index could help governments determine which industry would be safest during a recession and therefore aid in decisions made for government spending. In short, it wouldn't really hurt to remember Audrey Hepburn's famous words- 'on a bad day, there is always lipstick.'

Is Stock Market Still An Example Of Perfect Competition?

Deepak Pathak

Earlier when the concept of stock market was introduced, only major businessmen and rich people used to invest. Since, the participation size and platform was small with equal clarity to all, stock market was stated as nearly perfect competition market. As market evolved, large number of corporate groups, buyers and sellers came into the scene and of course there was & there is homogeneity of goods i.e. stocks. From the beginning it was all about Demand & Supply.

But an important property of perfect competition is that that nobody has the capability to change the market equilibrium price or simply the prices. This was true with the market for a period of time, but then as small traders, brokers and individual started showing interest and started making money out of this, the bigger players – be it business tycoons, large MNC's, financial institutions and hedge funds started to gain power to exploit comparatively small traders by taking up huge market share, stock split/ reverse stock split.
After such manipulations and the 2008 financial crisis, people started framing the stock market as 'gambling'. This is no more a normal market where you, an individual has all the information and can predict and book their profits however this is a game of psychology, whoever reads it first and acts, gains the most. So, this is definitely not gambling but a well planned and analyzed industry to work in.

"If you have been playing poker for half an hour and you still don't know who the patsy is, you're the patsy."
- Warren Buffet

That is what the harsh reality of today's stock market is.

Manipulations are legal but sometimes they are not which includes insider trading, official rumours and many more. In a broader sense this whole industry has turned out to be an oligopoly, where bigger players enjoy their profits and many smaller players turn out to be in debt and bankrupt as well. No doubt smaller players also gain profit but only those who can study and understand the whole scenario beyond others.In fact 85% of the participants in the market own 5-10% of shares and the other 15% own the rest. Clearly there's no perfect competition and this is the reason why the world has seen huge stock market bubbles burst.

A bubble originates when investors put so much artificial demand that the price goes beyond its rational reflection of its worth. It's just like the soap bubble a child likes to blow, these bubbles often appear as though they will rise forever, but since they are not formed of anything substantial, they eventually pop. And when they do, the money that was invested into them dissipates into the wind. Thus, the evolution of stock market from perfect competition to imperfect competition has led to a fear of economy crashes.

The Recipe to a Larger FDI

Meghna Nair

As a student of Economics, I'm often left wondering how a country that proudly liberalized itself nearly three decades ago can still be a poor performer in the global investment market. Why Indian companies still struggle to compete with their globally established counterparts and whether this investment failure should be credited to strong anti-global sentiments among our policy makers or an unfavorable market environment in general?

In the first week of 2018, the Government in a landmark policy decision allowed 100% FDI in *Single Brand Retail* through the Automatic route. This was previously 49% and 51% through the Government route (on approvals by the FIPB, DEA and the MoF). In its second landmark decision, the local sourcing cap of 30% was eased allowing investors a pass for the first five years. Further, the need to introduce "cutting edge technology"to be allowed 100% investment has been relaxed, too.

Due credit has been given to the NDA for its many implications on the domestic market. It is predicted to boost consumption, particularly given our rising population, disposable income and middle income families.

However analysts aren't considering the flip side to this hasty move. High initial costs and large promotional spending by the newly induced brands will reduce profit margins inspite of a large consumer base. But more importantly the domestic markets will suffer and fail to create jobs because of the unequal playing field. This "survival of the fittest"scenario might ultimately lead to local brands being wiped out.

Tariffs and FDI limits, when it comes to a company's interest in India aren't the main barriers. Border relations and internal causes prove to be the primary hindrances. A large consumer base can only spark so much interest when pitted against the poor infrastructure our country has, high transactional costs and inefficient logistics.

The overall business environment although better with our rise to the 103rd position from 133rd in the Ease of doing Business ranking, is still abysmal. Therefore as a country and as policy makers of the world's biggest democracy there are a number of things we can do to improve the same, such as:

a) Establishing a market environment attractive to FDI. It is interesting to note that inspite government efforts, India still has a Trade-Openness ranking of 145, behind even Kyrgyzstan.
b) Implementing a taxation system that is much more effective and transparent with encouraging taxation rates. This, I think, is one of the most important aspects to improving low investor confidence and the ongoing GST policy fluctuations only worsen that as demonstrated by the SENSEX and NIFTY.
c) To try and lower transactional costs that investors deal with, should they choose to enter the Indian market.

Thus, alongside opening up the economy, our policymakers need to ensure that the Indian market is one that is favorable to invest in. Internalizing the needed change with better infrastructure and lower promised costs will only enhance investor confidence and attract the large flow of FDI we desire.

MATH IN ECON: A NECESSARY EVIL?

Aayush Malik

'THE END'. The movie just finished. This was the fifth movie we'd watched, in a row! We discussed the latest movie for quite some time, only to realise, we were clueless what to do next.We decided to step out, because we really needed a little fresh air after all that binging. We stepped out, adjusting our eyes to all that harsh sunlight, when my friend points to this woman. We looked at her, intently staring at this handbag, she was probably just window shopping, like any other person there, but there was something weird and different about her. She looked the same as the others, but still managed to stick out like a sore thumb, but both of us couldn't really make out what was wrong with her. After a few minutes of scratching our heads about this woman, we realised what was wrong, and both of us exclaimed, "SHE HAS CONCAVE PREFERENCES!"

I'm sure anyone will seldom encounter such a situation ever in their lives (not the binging), let alone brand a person different and call her out for having concave preferences. But considering all the microeconomics we study, we spend a considerable time talking about consumer behaviour and branding their preferences. All this has only been possible because of a tool that we so often use, but quite often, are scared to use - Mathematics.

As a school student, whenever I studied economics, I never realised why everyone said that economics can get extremely mathematical, and be quite a burden, if I decide to study it further. I paid no heed to this advice, because at that point, I really couldn't think of economics being extremely mathematical apart from a derivative here or there. I don't think I've ever been this mistaken in my life.

One of the biggest misconceptions that I held about social sciences is that they can never be mathematical. They are just all about theory, and the math is left for the sciences. But after about spending a year in an arts college, I started to understand the importance of math in social sciences, although, I did not understand to what extent is the use of mathematics justified, especially in economics?

To start with, let's talk about Adam Smith. He's known as the Father of Economics, for the remarkable work in his book, *The Wealth of Nations.* If you know who Adam Smith is, I'm sure you'll also know that he wasn't an economist. He studied philosophy all his life, and yet could write on the working of a free market and successfully characterise it for the world.

The only point of bringing up Adam Smith here was that the foundation of modern economics was laid down by a moral philosopher. This should not surprise us, considering economics is nothing but a social and ethical exercise, and at its very basic, it will always stay the same. The origin of modern economics did not show any signs of the use of mathematics, and yet, mathematical economists revere Adam Smith till date for his work.

Let's try to draw a parallel with another subject that sees a frequent use of

mathematics - physics. Although physics is a natural science and economics a social science, both extensively depend on math to explain various happenings in their surroundings. Although we do apply math to both these subjects, we fail to realise the shortcoming that economics has with the application of math. Physics being a natural science, has universal laws that are irrefutable and have been proven with the help of math. Economics, on the other hand, has no such laws, and heavily runs on assumptions. With changing surroundings, consumer behaviour can easily vary, and always quantifying it with the help of mathematics is not possible. A consumer isn't always going to stay rational , some might never be the perfect rational consumer we expect to see.

Consumer theory is something we spend a lot of time trying to understand. We try to deduce the behaviour of a rational consumer by looking at her consumption habits, trends and patterns, and try to depict it by an indifference curve, which shows the different combinations of two goods that a consumer will be indifferent to, from the point of view of consumption, for a given utility level. This makes the preference of a consumer presentable in the form of a mathematical equation, and using that equation, we can easily map the indifference curve. All this seems so good, because thereis a general conception that quantifying any theory will solidify the belief that people have in that theory. A theory proposed with appropriate mathematical proof does show a lot of credibility, and that's exactly what all of us believe in too.

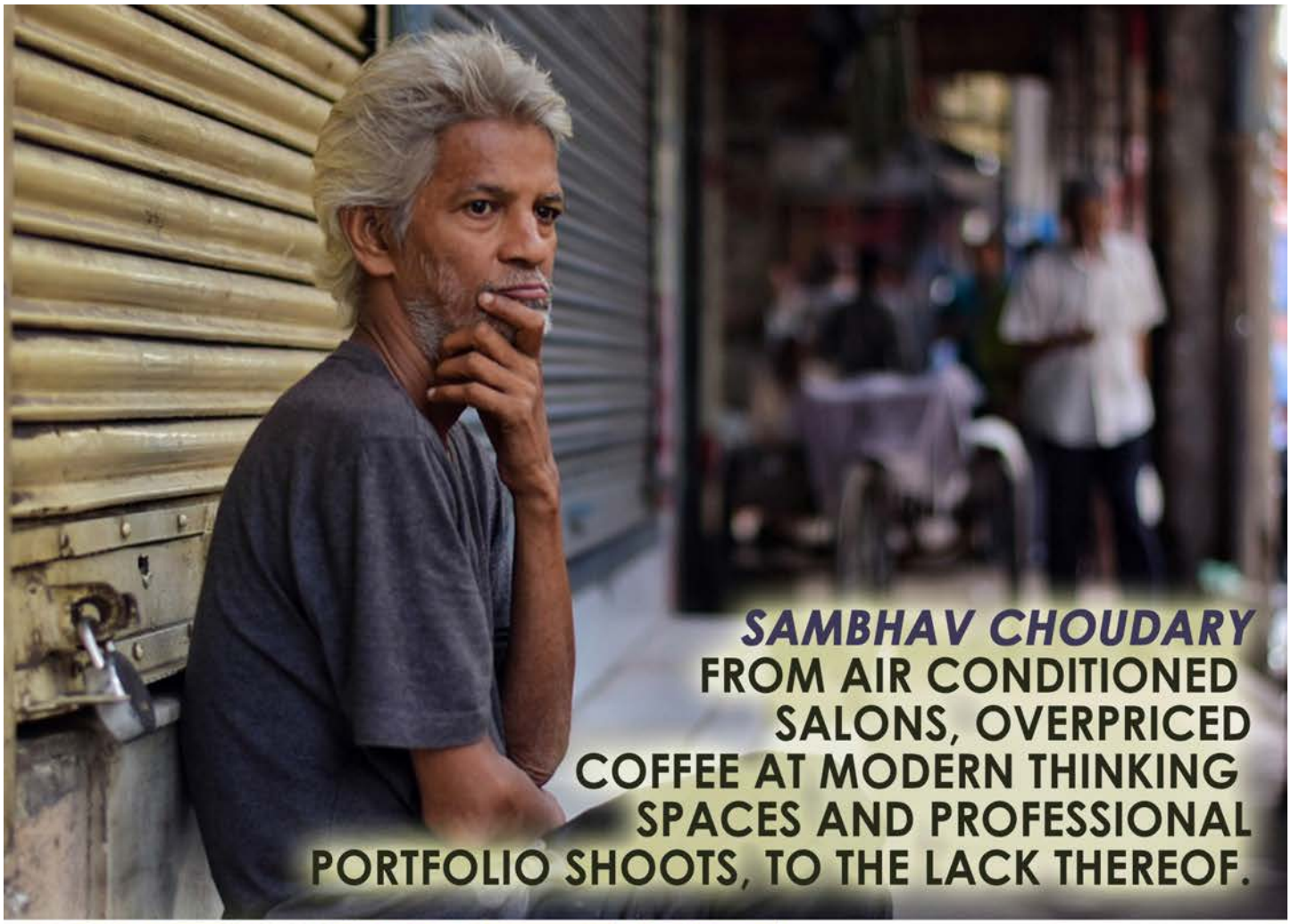
Here's where the problem lies.Generally, in economics, a model or theory proposed starts with a list of assumptions made that need to be kept in mind. For example, in the indifference curve theory, we blatantly assume that a consumer consumes only two commodities. All of us do realise that this assumption is something you will never observe, the lady who was intently interested in the handbag, must be interested in a thousand more things apart from that handbag. The reason that we make this assumption is to quantify our model! Think about it, if we did consider anything more than 2 commodities, how would we ever represent it on an x-y cartesian plane? Anything more than 2 commodities would make it a little too complicated to quantify.This makes our job, as aspiring economists, so much more difficult. We realise that all this math that we're breaking our heads over, might actually not even help us in the real world. I'm sure no consumer is going to have a perfect Cobb-Douglas utility function, and that too for every combination of 2 goods she chooses to consume! If our handbag lady even consumes 99 more essential commodities, and is the ideal rational consumer according to economic theory (so many assumptions right here!), and we sit down to plot indifference curves for every possible combination, it will be nearly 5,000 indifference curves of different combinations that we end up plotting, and she's just one of the million consumers that probably more than just window shop.

Source - https://www.shutterstock.com/image-vector/lady-window-shopping-retro-clipart-illustration-65795599

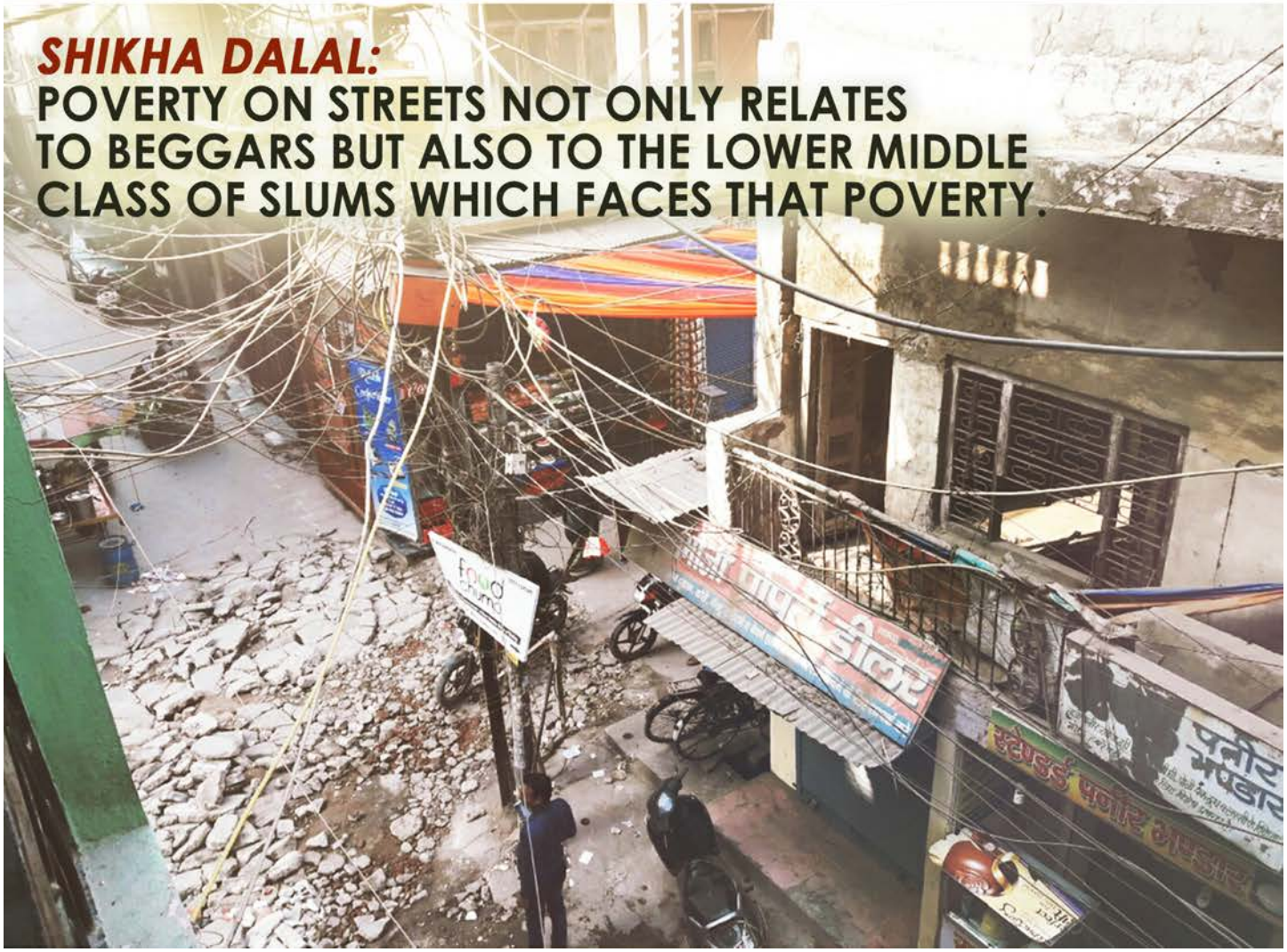
Then here comes the question, why quantify anything in economics? Why not just study economics independently, and brush away the mathematics? Here's why mathematics is important to economics, it has given the required push to economics as a subject. Progress in understanding economics is only because of the tool that we use is flawless, and has absolutely no limitations.The limitations lie in our subject, which can never explain the behaviour of any economic unit perfectly. Mathematics has made it possible for us to dive deeper into consumer theory, the utility function of a consumer helps us calculate an equilibrium state for that consumer, with respect to the prices prevailing, such that the economy functions at a point which is best for all the economic units which are a part of the economy, and there is no resource wastage.

That's exactly what economics is all about - the optimum allocation of scarce resources. If math is helping us achieve this goal, why abandon the poor soul who's working to help us out? And, if not math, then what?

So, here's what I feel. Math is the necessary evil in economics. It gives the push to explore different aspects of economics in greater depth, but this push can be a little too feeble. We get stuck with all this mathematics and fail to realise that math is just the tool - we consider it part of the subject matter itself. Math can certainly help us understand the basics behind any theory, but it is our job to look past all the math, and concentrate on the economic interpretation that it provides us with. I've seen people opt out of studying economics just because they are too intimidated by all the 'x' and 'y' being differentiated and integrated, but again, this math is just a means to understanding the economic happenings and explain a pattern, and this explanation is right beneath all the math that we consider so difficult. After all, economics is always going to be more about the 'social' than the 'science'!



SAMBHAV CHOUDARY
FROM AIR CONDITIONED SALONS, OVERPRICED COFFEE AT MODERN THINKING SPACES AND PROFESSIONAL PORTFOLIO SHOOTS, TO THE LACK THEREOF.



SHIKHA DALAL:
POVERTY ON STREETS NOT ONLY RELATES TO BEGGARS BUT ALSO TO THE LOWER MIDDLE CLASS OF SLUMS WHICH FACES THAT POVERTY.

SHIVANI SINHA:
THE REAL TRAGEDY OF THE POOR IS THE POVERTY OF THEIR ASPIRATIONS.

ADITYA SRINIVASAN SINGH
RURAL WOMAN WORKING FROM THEIR HOUSEHOLD ONLY, EARNING INCOME BY SELLING THEIR WARES.

Through a Critical Lens-Unique Identification Authority of India

Khushboo

Aadhar--possibly the world's largest biometric identity system has been a contentious issue in India for many years now. Many believe that the system is helpful in weeding out ghost-identities and hence aids in the reduction of corruption and tax evasion and smoothens direct benefit transfer. However, concerns over data-protection and identity theft have been rising steadily with about 30 petitions having been filed since 2012 challenging various aspects of the Aadhar framework and the Aadhar (Targeted delivery of financial and other Subsidies benefits and services) Act 2016.

The government has recently made linking of bank accounts, mobile numbers and PAN cards to Aadhar a binding requirement. This has invited both positive and negative traction. The government argues that linking Aadhar to one's bank account will help eliminate fraud accounts and thus prevent benefit transfer to bogus beneficiaries. It will also reduce tax leakages and money laundering. The Aadhar Enabled Payment System (AEPS) gives the user instant access to his or her account via micro ATM or a cell phone.

The problem with this, however, are manifold. Firstly, this implies that individuals not enrolled in the program are devoid of the benefit of social welfare schemes. Given that the Aadhar program is voluntary and not mandatory, as has also been emphasized by the Supreme Court, the very legitimacy of the idea comes under question.

Additionally, with the 'Right To Privacy' having been recognized as a fundamental right, upholding personal integrity has become an important part of the Aadhar debate. This further underscores the importance of the voluntary nature of the program as one must recognize the difference between willingly sharing personal information and being forced to do the same.

Further, it has been claimed that linking Aadhar to welfare schemes will help spread their benefit to the maximum number of people and potential beneficiaries will not remain devoid of these benefits due to lack of information. However, in stark contrast to this claim, it appears that these schemes are being used to popularise the Aadhar program by making enrolment a necessary condition for availing any scheme.

Furthermore, as defenders jump on the

linking of mobile numbers and bank accounts to Aadhar will help curb corruption by eliminating identity theft, Aadhar poses as much risk of creation of false identities through parting information to third-party organization as of prevention. While UIDAI claims that the data is encrypted with the security of the highest level, recent reports suggest otherwise.

Beyond the issues of privacy and surveillance, the use of biometrics as an identity for Aadhar is also contestable. Biometrics of an individual are subject to changes due to aging, manual labour or illness. The uniqueness of Aadhar hinges on the uniqueness of biometrics of an individual and hence updating biometrics need to be dealt with due importance in the framework. However, the Aadhar Act does not lay any pointed emphasis on the same. Thus, Aadhar is highly susceptible to identity theft. If one fakes the biometric authentication, Aadhar enabled identity theft can be committed as the security of the database itself is not a factor to consider at all.

The issues surrounding Aadhar pose a much deeper question of an inadequate legal framework for personal data protection in India. The Aadhar Act cannot assume the role of a comprehensive law on personal data; technology-centric data protection norms need to be established before increasing the ambit of the Aadhar program any further. The problem of a weak legal structure on data protection is further exacerbated by the fact that India houses a user base with high digital illiteracy, which without protection makes them a likely target for exploitation by third party service providers.

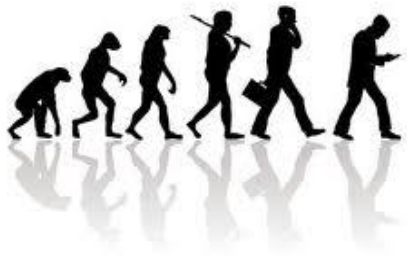
Recent changes adopted by the UIDAI include incorporating face identification along with fingerprint scanning and creation of a tokenized security system that claims to make linking of Aadhar a strictly one-way process. These changes while welcome also come across as an admission of fallacies in the system by UIDAI and further validate apprehensions surrounding the program. The fact that UIDAI is finding it difficult to defend the Aadhar framework is blatantly apparent. Its unwillingness to engage with stakeholders and lack of clarity about data security norms further accentuate the problem and weaken its position.

Although rubbished as ‘paranoia’ by defenders of the ambitious project, the fear of creation of a surveillance state is not without reason.

History of Economics – Methodological concerns

Maajid Mehaboob Chakkarathodi

The history of economics is about the history of attempts to understand economic phenomena. It is essential to cover the stories of the economists. It is also necessary to look at the larger picture – the histories of philosophy, religion, mathematics and science. This is because economics is always interdisciplinary, therefore never independent from other disciplines. The ideas posited by an economist are always affected by his/her preconceptions and ways of thinking – which are formed by the culture in which they are writing. While looking at history we can see that this is true for all disciplines ranging from art to literature. This implies that there are certain assumptions and axioms of a certain era upon which different economic ideas are built. For instance, the economics of Europe in the middle ages is heavily influenced by the ethical principles from the Bible, while the economics of modern ages is influenced by the Enlightenment thought. Therefore, one must analyse economics with all those other factors in the background for an unbiased analysis.



Two questions naturally arise: What comes within the purview of economics; and when does its history begin?

It is not easy to draw a line between what constitutes 'proper' or 'real' economics and what does not. The economic discussions of the medieval period vastly contains theological arguments about ethics in commercial activities and also about just-price theories. These arguments may seem obscure by the present-day standards – but they certainly cannot be discarded. This is because those ideas are still relevant in trying to locate the origins of modern economics. Furthermore, much of the economic analysis we do today may seem to us as 'positive analysis', but they certainly contain inherent assumptions which are seldom explicitly pointed out in textbooks of economics.

For example, the concepts of consumer surplus and producer surplus are seen as an ideologically neutral analysis (positive analysis). But through a closer look, we can realise that the market demand curve used in this analysis is derived by summing up the utilities of all the individuals – from the person who has the highest willingness to pay to the person with the lowest. Note that we are giving same value to the richest and poorest individual's utility. This is essentially 'utilitarianism'. Therefore when economists opine that a particular policy "ought" to be implemented, the debates that follow is essentially about conflicting

worldviews – and this was exactly the nature of discussions in the medieval period. We can sum up by saying that economics does not have a beginning or a 'founder'; people have always thought about the questions that we now consider part of economics.

In a postmodern worldview, the emphasis is to stress on the historical relativity of ideas and to never look at the past through the lens of the present. How much ever this may be desirable, it is almost impossible to completely escape out of our preconceptions while looking at history. Therefore it is better to state these preconceptions as explicitly as possible. Here lies the importance of the tools of liberal arts – which liberates the individual from his/her faulty thinking. But unfortunately the diversification of disciplines in the modern era has obstructed this necessary component. On the other hand, to approach the past from the present may result in faulty histories. There are attempts by certain economists to view history of economics as a progression of ideas, and that now we have finally arrived at the 'truth'. The path for arriving at the present-day economic ideas involve historical accidents, vested interests and prejudices. On the other hand, there are economists who glorify the ideas of the past by belittling the ideas of their own generation – which is again problematic.

So what methodological nuances should be looked at? As opposed to the conventional canon of organizing economic history around 'great figures' of the past, discussions should start with a historical context and proceed to economic ideas. The emphasis on economic, political and intellectual history should vary as required. The historical context is very important when we discuss about the periods before the 19th century when economics was not made into an academic subject; and thus was less distinguishable from other disciplines. In the periods that followed, discussions were mostly happening inside the discipline – therefore little emphasis is required about such peripheral aspects. Therefore, the necessary amount of emphasis on communities and circumstances is required for different time periods.

When we look at economic history in such a way, it is possible to place people in an appropriate position – which may result in giving emphasis to individuals and ideas that are not conventionally regarded as 'great'. For instance, the role of the Islamic civilization in the medieval period, the Hobbesian challenge to 17th century economics, viewing Adam Smith and Malthus not only as economists, but primarily as moral philosophers. The list could be continued.

But why does methodology matter at all?
In an interesting paper, Peter Temin points out the decline of economic history as a research topic at universities. While this is true in many cases, there has been a minor revival since the financial crisis. Most scholars now believe that a better understanding of economic history would have helped to avoid the worst of the recent crisis. However, in the present world of proliferating economic schools of thought, appraising the past from the perspective of the present becomes much more difficult. This is because economists often try to create biased and partially correct histories in order to justify and explain what they and their colleagues are doing. Here, the role of a professional historian becomes much more important. Amidst improvements in mathematical rigour, data and statistical techniques

available to economists, there have also been fundamental changes to the meanings that have been attached to certain central concepts. For example, the word 'competition' for Adam Smith and his contemporaries were vastly different than its present meaning. This again shows the importance of proper methodology to be followed by the historian.

In order to investigate the different historical claims of economists over various issues, the active contribution of historians is desperately needed. Economic history, thus must be alive, armed with a rigorous methodology in order to face its complex challenges.

BBY *(Bhavantar Bhugtan Yojana*)

Tejendra Pratap Singh

Last year, Madhya Pradesh witnessed violent protests when the crop prices tumbled to extremely low levels for the Rabi crops. Alarmed by the media coverage and negative publicity, the Madhya Pradesh government launched BBY (*Bhavantar Bhugtan Yojana*) scheme or the Price Deficiency Scheme keeping in mind that state will go to polls this year and any non-action will not make farmers-a significant vote share, happy. While the scheme was designed with good intention it suffers from serious deficiencies.

What the government aims to do through scheme is to give farmers a fair compensation. Farmers have to register on a government portal to be eligible for deficiency payment. Farmers then sell their produce at a time fixed by government and are paid the difference between the weighted average of modal prices in regulated *mandis* of Madhya Pradesh and neighboring states on the produce that is eligible for the deficiency payment where produce eligible for deficiency payment is determined by the government based on average productivity of the crop in the relevant district and area cultivated by the farmer. The difference is received by farmers in their bank accounts.

Government has tried to reduce its procurement from farmers by making use of this scheme given the problem it faces in storing this procurement. Also Government has tried to signal to the farming community that it cares for them and will not leave them alone in the case of farm distress.

There have been mixed reviews of the scheme by the farmers. For farmers who have sold their produce in installments, the payment is not all at once. For farmers who need seeds for the next season and have some other pressing issues, this delay could be very painful and hence force them to borrow from other sources, which can be very costly.

Farmers are happy that they are getting something from government and that the government is serious towards their concern. One serious problem highlighted by many commentators is that traders in the *mandi* artificially lower the price of the produce because they know that the difference between the MSP announced and the modal will be covered by the government and they will not be shelling out anything for this. This can be clearly seen from the fact that soon after the scheme period expired prices in the *mandi* were above MSP as compared to the period when scheme was on when the prices were below the MSP amount by the government. This has led to wasteful expenditure by the government which could have been easily avoided had the scheme been designed properly. This is equivalent to collusion among traders in the *mandi* which has led to artificial lowering of the price. One more issue that needs to be addressed is that of farmers having to visit banks many times to get the promised payment as there is time lag in the information received and the disposition of payments due by the government This can seriously harm the amount of sowing which will lead to lower produce and higher prices in future season

and have inflationary tendencies, a possibility which the government cannot afford to risk. Moreover there is serious bureaucratic discretion resulting in red tape and corruption. Farmers can bribe the government official regarding the area that is declared by him to be eligible for the deficiency payment.

While the intention of the government are well understood there is a need to have more nuanced and informed policy-making by the government.

Amazon:

How Tapping into the Attention Economy Benefited the E-commerce Giant

Sukhnidh Kaur

Amazon works on the lines of a simple but game-changing strategy: Its sales make more sales.

Whether the e-commerce giant is creating an ever-expanding network of buyers and sellers, using efficient algorithmic coding to create a real-time personalized experience for every individual user, or relying on user-based and item-based collaborative filtering systems for a more enhanced and convenient online shopping experience, Amazon has consistently managed to remain one step ahead of its competitors by capitalizing on what makes today's "attention economy" tick.

Content on the World Wide Web is growing in abundance and immediacy of availability, and today, human attention has become a limiting factor in the consumption of information. Where there is an overload of information, there is a dearth of whatever it is that information consumes, which is in this case, the limited capability of our attention. This is the attention economy – where consumers agree to receive services in exchange for their attention. Amazon's developers have their fingers on the pulse of this economy, and have made strides in understanding the behavior of its consumers, its primary driving force.

According to Kevin Kelly, to combat the problem of our low attention spans, suppliers must provide valuable intangibles that cannot be reproduced. These intangibles include personalization or a 'tailored for you' experience, authenticity of the product or service, ease of accessibility to the portal and its avenues, and importantly, findability of what the consumer is looking for. Amazon has modeled and remodeled itself to cater to these demands, thereby leading to its global success.

The key to capturing and maintaining the attention of consumers is filtering out unimportant and irrelevant information. Amazon ensures consumer attention and loyalty with the use of straight-forward and easy-to-use content filters. One can 'sort by' relevance of the product, price (range, high-to-low, low-to-high), average customer reviews, and newest arrivals, and choose the department, category, and sub-category of

the exact product required. Customers can narrow down on qualitative specifications like the brand, color and type of product, and further explore discount offers and ratings. Even at the back-end, sellers can enter keywords and categorize their products according to their target audience and where and how they wish to be found. Amazon's search system is extremely product and category specific, allowing its customers to filter out unneeded information and use the website in a manner most suitable for them.

Amazon also uses algorithmically generated tracking to change its output and make it more relevant to consumers, as can be seen in its 'frequently bought together' and 'customers who bought this also bought' sections. This allows it to connect brands and sellers to their target consumer demographics and vice versa. Its search engine is optimized to show product listings in ways that not only put Amazon on the path to achieving maximum sales conversion, but also benefit the wide range of sellers and buyers using the platform. These algorithms, using past user activity, determine what a user could purchase during an active buying session, and have a subconscious if not always subtle influence on the consumer's behavior. Amazon can hence provide a personalized experience for the user, and not just an illusion of the same – these recommendations have a demonstrated history of being beneficial for the sellers and buyers as well, creating a win-win situation for those involved in the growth and usage of the platform.

Whether it is Amazon's pioneering act in 5-second YouTube advertisements, flash-sales, Amazon Prime and free shipping services, internal competitive pricing, algorithmic models, search engine optimization or efficient categorization – its on their feet. An enhanced online shopping experience and increased convenience for its users has successfully managed to capture consumer attention across demographics, and it has seen several ups and booms since its conception. The attention economy is more prevalent than ever today, and Amazon caters to the need of the hour in the e-commerce industry – a tailor-made online shopping experience abundant with recommendations and consumer guidance at every step, yet devoid of 'information pollution' such as spam e-mails and unnecessary/avoidable schemes.

Human attention is a scarce commodity. Amazon, having understood this, tackles the economic problem of a possible information overload in an efficient manner, garnering invaluable attention from those willing and able to sell and buy. It seems to have, at this stage, mastered the traditional AIDA marketing model – Attention, Interest, Desire and Action, leading it to be the ever-growing e-commerce giant that it is today. This is not to say that there is no scope for improvement. As competition arises, it will have to remodel yet again and develop novel ways to cater to its target audience, but in the moment today, it has successfully set an example of how to understand the psychology driving its consumers' behavior, and their short-lived attention spans.

Microfinance: More Than Just Credit

Nikita Sharma

Poverty is not only multidimensional but also gendered. In light of this reality, Microfinance has often been compared to a 'magic bullet' for poverty reduction and alleviation in the existing literature. It has been lauded for nurturing micro-entrepreneurship and women empowerment. However, some of the recent criticisms deem it as ineffectual on both the counts, if not exacerbating. The essay endeavors to make the case that microfinance holds manifold benefits apart from the intended economic spillovers (whose existence has mixed empirical evidence) for women.

Most microfinance institutions in South Asia target women. The motive behind this is to create gender equality by empowering women through economic assets. It is believed that possession of economic assets, such as microcredit, would grant women greater say in household matters in light of their increased contribution to household wages. Moreover, this microcredit is expected to enable them to undertake income-generating small-scale entrepreneurial ventures which would lead to their upliftment.

Critics have faulted microfinance for failing in this core objective of empowering women. According to them, the patriarchal setup comes in the way of its goal. They cite anecdotal evidence which suggests that women after receiving the borrowed amount from microfinance institutions ultimately hand it over to their husbands. To them, women in this way were not getting empowered but merely manipulated. They further argued that women, owing to the unfair transfer of accountability, also had to face the social consequences and deal with the staff at the microfinance institutions in relation to the repayment of the loan over which they did not have much control in the first place. It has been pointed out that "when they seek access to bank credit, women's groups are in a dependent relationship, and are subject to, and tarnished by, the institutional imperatives, systemic corruption and political compulsions that shape the behavior of rural development bureaucracies and banks" (Kalpana, 2008).

However, the claims pertaining to the improvements in the economic standing of women have been faced with mixed empirical evidence. While some argue that microfinance has had an empowering impact on women (Hulme & Arun, 2011) (Karmakar, 2009), other studies claim that the effect albeit positive is not significant or particularly transformative (Banerjee, Duflo,

Glennester, & Kinnon, 2010). However, one needs to look at empowerment beyond the economic sense. Microfinance has positive social spillovers for women as well.

Most commonly stated positive social impact is on health and education. It has been widely researched and revealed that women tend to spend more on the health and education of their children. However, the most crucial outcome of microfinance activities is towards increasing the physical mobility across public spaces of women (Hulme & Arun, 2011). Perhaps it might not be as 'transformative' as economic empowerment is thought to be but it is still significant for women who after having married and leaving their friends and family have little real support outside of their husband's home or even within it. Going to the meetings of groups created to avail microcredit gives them an opportunity to bond with other women going through a similar stage in life and share their experiences. The support system that these women forge during their meetings assuages not only psychological troubles but has also been reported to extend at the time of difficulties in repayment (Pande & Field, 2017). These groups also cultivate a sense of community by getting credit as a collective entity, something which could not have been got at the individual level. Thus, microfinance can enable women to generate income and livelihood options, bestow them with greater agency and say in financial decisions of the household, spend in the health and education of their children and forge a sense of community outside their marital homes. In this way, they can even overcome any mistreatment on part of the social and economic institutions by standing in support of each other. These positive externalities for women make microfinance a worthwhile option for empowering them.

A remarkable example of a successful microfinance undertaking that has resulted in the social and economic empowerment of women is Kudumbashree. Launched in 1998, Kudumbashree is a community network working alongside local self-government institutions towards poverty eradication and women empowerment. The Government of Kerala and the National Bank for Agriculture and Rural Development (NABARD) came together for this programme whose name in Malayalam language means 'prosperity of the family'. This programme evolved from a microfinance-led financial security model to focus on local economic development and encourage participation of women for empowering them. Kudumbashree works at three levels: Neighbourhood Groups (NHGs) at the grass-root level, Area Development Societies (ADS) at the middle level, and Community Development Societies (CDS) at the local government level. The NHG is the primary level and has groups constituting of 10-20 women, one from each household who meet weekly and contribute a stipulated savings amount (usually the amount capable of being saved by the weakest member). After three months of thrift collection, the group proceeds with internal lending and small loans are given on collectively decided interest rates to the neediest member, based on a majority voting. The decision regarding the various aspects of the repayment of this loan such as assistance in repayment, penalty or legal action is all in the hands of the group members. Such a system spurs the group members to evaluate choices individually, take decisions collectively and govern themselves independently. It brings out their potential to lead and run operations independently. Moreover, since the payments are collected by fellow group members only who are, as the name suggests, neighbours, there is little chance of

coercion as alleged in other microfinance institution projects. With the membership being limited to only one woman from the household, it also prevents from the multiplicity of borrowings per household. Following six months of the group's operations and favourable grading to qualify for bank linkage, it becomes eligible to apply for a loan at a bank. While microfinance is at the core of its operations, Kudumbashree also holds the objectives of improving the incomes of the self-identified poor through the provision of skill enhancement and vocational training; creation of venues for self and wage employment through setting up of micro-entrepreneurial ventures as diverse as plastic recycling, poultry farming, wellness centres and coir processing among many others; ensuring access to better health and nutrition for poor households; ensuring the provision of basic civic amenities such as safe drinking water, sanitation and shelter; promoting continual of education and rehabilitation of destitute. The holistic approach of Kudambashree is cognizant with the multidimensional problem of poverty and focuses on its alleviation similarly. This, and especially the focus on saving, has made Kudambashree by far the most successful microfinance experience in India (Ghosh, 2013). Kudumbashree's efforts in local economic development, social and women empowerment have led to the mobilisation of 43,06,976 members, 31,261 microenterprises, 1,78,898 NHGs linked to banks and a total thrift amount of 372.2 billion rupees (Home: Kudumbashree).

The immense success of the Kudumbashree model sets a definitive example of the potential achievements of microfinance. It exemplifies how microfinance can be used to create economic opportunities for women while also generating access with the gradual erasure of restrictions on their social mobility. This reaffirms the belief that microfinance is more than just credit for women.

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India's Missing Middle: A big question?

Aarti Gupta

Today, India's growth and prosperity depend mainly on its ability to populate its missing middle—the medium-sized producers and the middle class of consumers. 'Can India Grow?'- A study by Carnegie provides empirical evidence over how the Indian economy lacks the middle in manufacturing and farm production and in consumption and market fragmentation. The greatest number of Indian businesses is in the form of small or micro enterprises many of which are in the informal sector and do not contribute to the tax base. Even agriculture in India is marked by tiny and decreasing farm sizes. The causes of these missing mid-sized industries can be government policies like the regulatory environment which hampers growth, India's large and poor population and poor HDI performance.

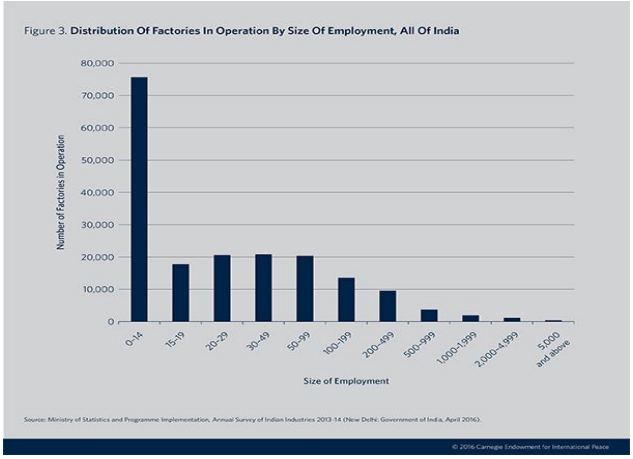
A mismatch between demand and supply for labour

Lack of education, proper health care and low women participation in the workforce are three important factors which have led to a mismatch between demand for and supply of labour. The poor state of India's primary education system has been captured in several learning outcomes assessments including ASER Report. If this problem of a poor education system is not tackled soon, India's much-vaunted demographic dividend-an increase in economic productivity resulting from a shift in the population structure to more working-age adults with fewer dependents—could turn into a demographic disaster. Another important dimension of human resource development is affordable preventive and primary care. Unfortunately, India's existing is characterized by dysfunctional primary care, deficient secondary care, overburdened tertiary care, a corrupt medical education system, and a largely unregulated private system.

India has a shockingly low female workforce participation rate. It was 24 percent in 2014 which is comparable to levels in the Middle East and North Africa, and just half that in Indonesia. A 2015 report from the McKinsey Global Institute showed that the female contribution to India's GDP, at 17 percent, is the lowest in the world.

Mid-sized manufacturing- alarming revelations

Historically, the mid-sized manufacturing units played a key role in the capitalist transformation and rapid expansion of economies like the US or Asian economies such as Japan, South Korea and Taiwan. They drive productivity growth through innovation and efficient resource allocation. They also create new jobs and sustain a strong pool of middle-class consumers. In contrast, India's manufacturing is marked by a limited number of large-sized firms and a multitude of small, household enterprises, with a gaping hole in the middle. According to the National Sample Surveys, about 50% of manufacturing jobs are in firms that employ less than 50 employees and a quarter is in firms with 500 or more workers. These small firms represent low-productivity, low-skilled manufacturing, which constrains the economy from growing faster, while the extremely large ones tend to lean on capital-intensive techniques and create fewer jobs.



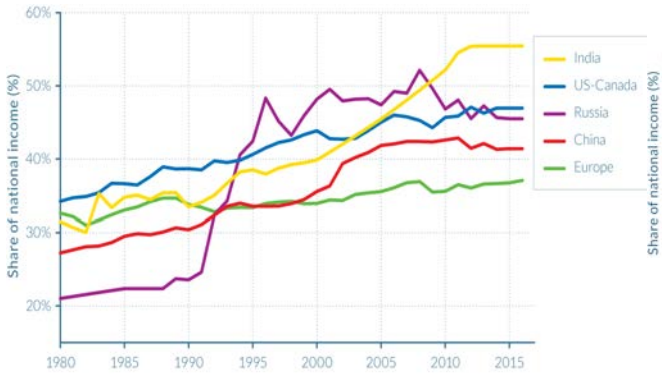
The picture revealed by these figures is alarming. The number and proportion of small and micro-enterprises are staggeringly high whereas their contribution to output and employment is infinitely small. The capital and labour locked up in these unproductive enterprises represent lost economic opportunities.

Thus, it is very important for India to address its missing agricultural and industrial middle if it is to avoid sudden stops and economic crises and to make headway in manufacturing and farming. Without these sectors, there will be lack of jobs. Millions of young people seeking entry into the workplace each year will remain unemployed. If the demographic bulge becomes a bulge of the underemployed and unemployed, it will have drastic implications for social stability and national security. Even the liberalization of the labour laws is only a partial answer to this problem and more aggressive solutions are needed.

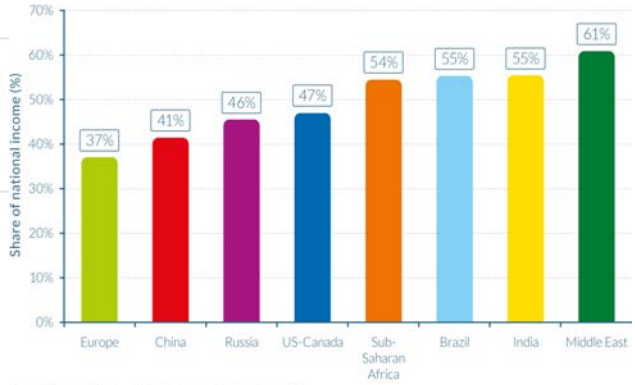
A lacking middle class of consumers

Without a middle class of producers, there cannot be a middle class of consumers. India's population show a great deal of variation with the top 1% of Indians making at least $20,000 a year, which equates to roughly Hong Kong in terms of population and average income. The next 9% is akin to central Europe, in the middle of the global wealth pack. The next 40% of India's population mirrors its South Asian poor neighbours, Bangladesh and Pakistan. The remaining half-billion is on a par with the poorest nations of Africa.

A recent study by Thomas Piketty has shown that the well-off in India are ten times richer now than in 1980 and those at the median have not even doubled their income. India has done a good job in getting those earning below $2 to earn $3 but it has not been able to help those earning $3 to earn $5 and $10 and so on. According to the World Inequality Report 2018, Income inequality in India has reached historically high levels with the share of national income accruing to India's top 1 percent earners touching 22 percent in 2014 and the share of the top 10 percent around 56 percent. Inequality in India has risen substantially from the 1980s onwards, following profound changes in the economy due to the implementation of deregulation, liberalisation and opening-up reforms. The first graph below depicts top 10% income shares across the world from 1980 to 2016 and the second one depicts the same in 2016. They show rising inequalities everywhere but at different speeds.



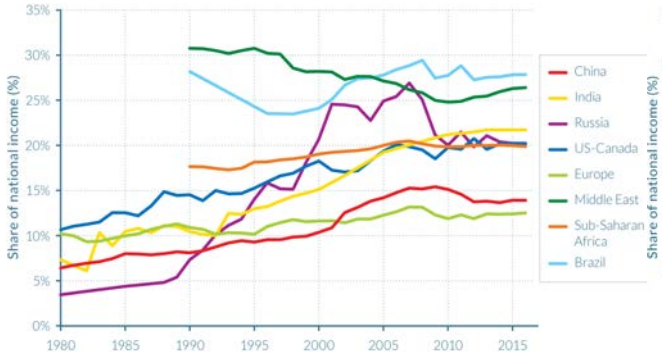
Source: WID.world (2017). See wir2018.wid.world/methodology.html for data series and notes.
In 2016, 47% of national income was received by the top 10% in US-Canada, compared to 34% in 1980.



Source: WID.world (2017). See wir2018.wid.world/methodology.html for data
In 2016, 37% of national income was received by the Top 10% in Europe against 61% in the Middle-East.

"Since the beginning of deregulation policies in the 1980s, the top 0.1 percent earners have captured more growth than all of those in the bottom 50 percent combined, while the middle 40 percent have seen relatively little growth in their incomes. This rising inequality trend is in contrast to the 30 years that followed the country's independence in 1947, when income inequality was widely reduced and the incomes of the bottom 50 percent grew at a faster rate than the national average", said Lucas Chancel, Co-Director of the World Inequality Lab at the Paris School of Economics.

The graphs below show the top 1% and 50% income shares across the world from 1980 to 2016. India's yellow line can be seen standing on the graph with the share of top 1 percent continuously rising and that of the bottom 50 percent continuously falling.



Source: WID.world (2017). See wir2018.wid.world/methodology.html for data series and notes.
In 2016, 14% of national income was received by the Top 1% in China.

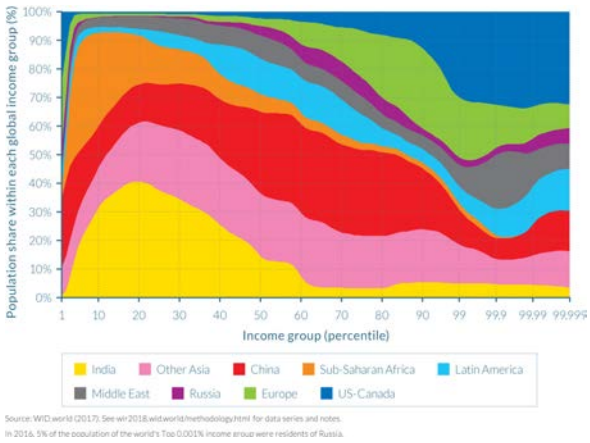
Top 1% income shares across the world

Source: WID.world (2017). See wir2018.wid.world/methodology.html for data series and notes.
In 2016, 12% of national income was received by the Bottom 50% in Sub-Saharan Africa.

Bottom 50% income shares across the world

Comparing India with China

When we compare China and India, we observe that one of the major reasons as to why inequalities rose at a moderate level in China and extreme level in India is China's investment in health, education, infrastructure for its bottom 50% population. In India, the structural changes to the economy along with changes in tax regulation appear to have had a significant impact on income inequality since the 1980s. In 1983, the share of national income accruing to top earners was the lowest. The top 1 percent captured approximately 6 percent of national income, the top 10 percent earned 30 percent of national income, and the bottom 50 percent earned approximately 24 percent of national income and the middle 40 percent just over 46 percent. But by 1990, these shares had changed notably with the share of the top 10 percent growing approximately 4 percentage points to 34 percent from 1983, while the shares of the middle 40 percent and bottom 50 percent both fell by 2 percentage points to around 44 percent and 22 percent, respectively. The graph below shows the geographic breakdown of global income groups in 2016. As we look at the yellow and red portion depicting India and China, we can easily analyse the difference between two nations and a large data from various sources is available to support what we see here.



Even before the World Inequality Report, there have been various studies showing the lacking middle in India's consumer class. A 2014 report by *Mckinsey Global Institute* defined an empowerment line as the per capita minimum basic needs for a decent standard of living and showed that 56% of Indian population lacked the means to meet their basic needs and 90% could afford a per capita monthly consumption expenditure of INR 2800 per month. A *Pew Research Center* income survey found that in 2011, less than 3 percent of the total population, or 37 million people, had incomes above $10 per day, or enough to be classified as middle class.

Comparing India and China, Data from *BMI Research* show that in 2014, per capita spending by those in the middle 60 percent of the income distribution in China was 5.5 times to that of India. In 2012 an estimated 192 million Chinese households had an annual income above $10,000, a rough measure of the middle-class threshold, compared to just 24.5 million Indian households, and again, China had reached that figure well before the turn of the millennium. *Credit Suisse's Global Wealth Databook* for 2015 found similar patterns. It found that India's middle class numbered just 24 million households which is less than one-fourth of China's 109 million. In addition, it found that 95.4 percent of Indians had wealth below $10,000. The share of the population with higher incomes was essentially negligible.

The Wall Street Journal reports that the leading global food chains have started exiting Indian markets due to declining sales growth. Their entry was based on their expectations of India's decade-long high growth rates which in turn were based on a Chinese type massive middle-class model, which India could not provide them with. All these studies and cases hereby convey that it is high time that India focuses on its missing middle if it has to experience a booming economy and attract greater foreign investment in its country.

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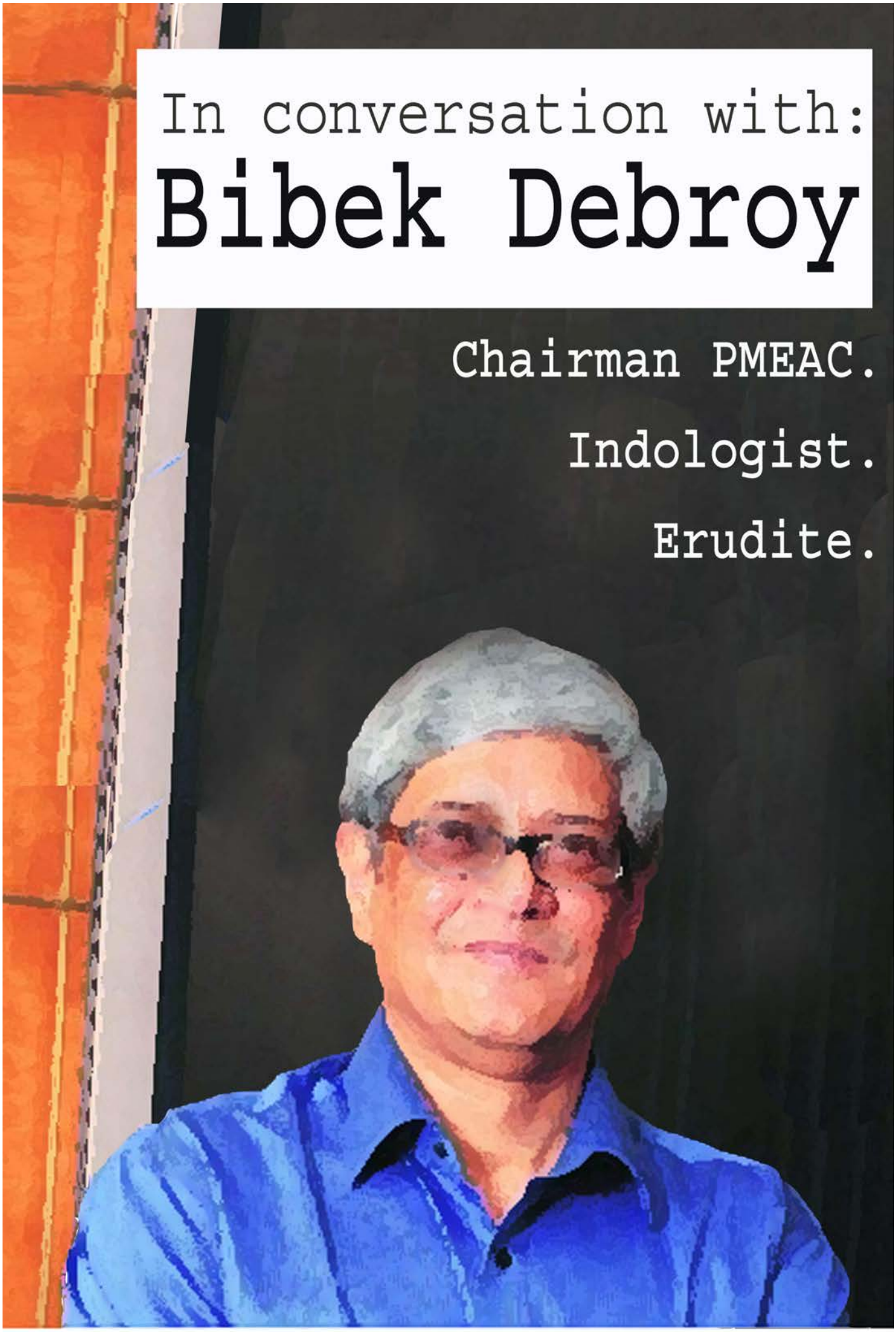
In conversation with:

Bibek Debroy

Chairman PMEAC.

Indologist.

Erudite.



Q: What insights would you share with current students of economics that you gained while studying at Presidency College, Trinity College and Delhi School of Economics?

A: The use of your economics depends entirely on the field in which you work. My test of any good educational institution is the threshold it has- every institution goes through ups and downs- but it never drops below a threshold. Economics doesn't provide answers to every problem under the sun; it provides you with a certain approach with which to look at things. It provides you with a bag of tools and then depending on the context, you make use of it. Good teaching of economics amounts to good teaching of theoretical principles. The rest of it will follow if you have that structure deeply ingrained in you. I think it's teaching the tools that are important. There are things you have learnt which in your subsequent career have been thoroughly useless. The person who revises the syllabus doesn't really know what you're going to do with it for the rest of your life. It's no different for the undergraduate economics syllabus. If I had known I wanted to go into government policy making, I'd say a vital part of any economics course would be to understand the Constitution, administrative structures. But for someone wanting to take up PhD at Harvard or some other university, it might prove completely irrelevant.

Q: As the chairman of PMEAC, how does the body agree on which issues are of primary importance in the national economy?

A: In the earlier government, PMEAC was formed from day one but in this case, it was assumed that NITI Aayog would do some of the work. The PM decided that NITI was unable to do the work so the PMEAC was created in September. Since its creation, my role 24x7 is actually as Chairman to PMEAC. NITI is still there purely for administrative convenience and they don't decide things together as their respective mandates are different. The PMEAC has four part time members who have meetings, we decide issues ourselves or through suggestions by the PM. We debate on them, arrive at a common point and advise the PM. NITI doesn't advise the PM, not directly, although the PM is the chairperson of NITI, NITI advises the ministries also. So far as NITI's functioning is concerned, it functions similarly.

Q: So, what is NITI Aayog's involvement in the framing of flagship government schemes now that it isn't involved in formulating central plans?

A: Initially, finance commission was meant to devolve finance from Union to State governments. But down the years, a distinction was created between planned expenditure and non-planned expenditure. Planned expenditure used to be routed through the planning commission and the non-planned expenditure through the finance commission. The mandate of the finance commission was diluted in the 1970s when the planned and non-planned distinction became important. Because of this artificial distinction, there used to be a five yearly planning session. One plan is the five yearly planning cycle and the other is perspective planning -this is the kind of public expenditure I want to know, this is how I want to measure its efficiency. All of that, NITI still does. All that happened was that perspective planning replaced five yearly planning. Hypothetically, the planning commission was also supposed to do that. But because of that obsession with the discretionary flow, they never did that. In addition, NITI sorts out administerial issues between states. It is also the voice of the social sector because understandably, every finance ministry has compulsions to reduce the deficit, and what is easy is to slash the social sector expenditures. NITI gets into policy in two ways that run parallel. One is if someone is proposing something, it gets referred to us or we decided to take it up of our own accord.

Q: After Richard Thaler's Nobel win, how have the principles from behavioral economics being used in Policy Making?

A: Fundamentally, it is telling me that people are not rational. The basic principles of rationality that we assume when economic agents take decisions, they don't hold. There is an ex-ante and ex-post. Behavioural economics provides one with the ex-post but for policy formulation, ex-ante is needed. So ex-post, the behavioral economist will come along and tell me you should have done this and you should have done that. My problem is ex-ante. Can you tell me what I should do? And the answer is no.

Q: You've translated the Ramayana, and Mahabharata, did you find anything related to economics in these epics?

A: Most of the English translations are abridged translations. They gloss over a lot of the interesting governance material- saying that Hinduism is not about wealth creation; it's about going off to the forests and meditating. Obviously, if I arrive at this deduction on the basis of the Upanishads, it's wrong. It's like saying I came across some economics textbooks from Miranda House, and I conclude there is no physics taught there. In exactly the same sense, if I look at the Upanishad literature and deduce that Hinduism was not about Artha, or creating wealth, is completely unwarranted as a deduction. The vast majority of the Indian population then, used to do exactly what we are doing today, namely creating wealth. In creating this wealth, there was a template of governance, or Dharma in the sense of the spiritual and metaphysical noun, of what holds a society up. All of these texts were meant to depict, what normal human beings would do in their day to day life. There was a structure of Dharma, which said what the king was supposed to do, the counterpart of the government today. Today, we all expect too many things from the government. Back then, the only thing that the government, or the king was supposed to do was- defence, internal security, dispute resolution, upholding property rights. Below that, there was a structure of what the community was supposed to do. So there was this template that we have lost. So, this template is about "We the People", not "We, the government". Now that needs to be rediscovered.

Q: What advice would you give to our generation, considering the plethora of problems we seem to be plagued with?

A: Firstly, there is a reluctance to check the origin of various information given in textbooks or on the internet. Secondly, there seems to be initial reluctance to speak up and disagree with teachers or policy makers like me. Thirdly, there is a singular inability to write amongst the present generation. These problems should be remedied at the earliest for success in government or research space. Also, we are dumping too many fancy theories on the students. If I as a teacher am able to explain the Original Samuelson to my class, I would have done my job. Unnecessary inclusion of mathematics in economics takes away focus from the theories.

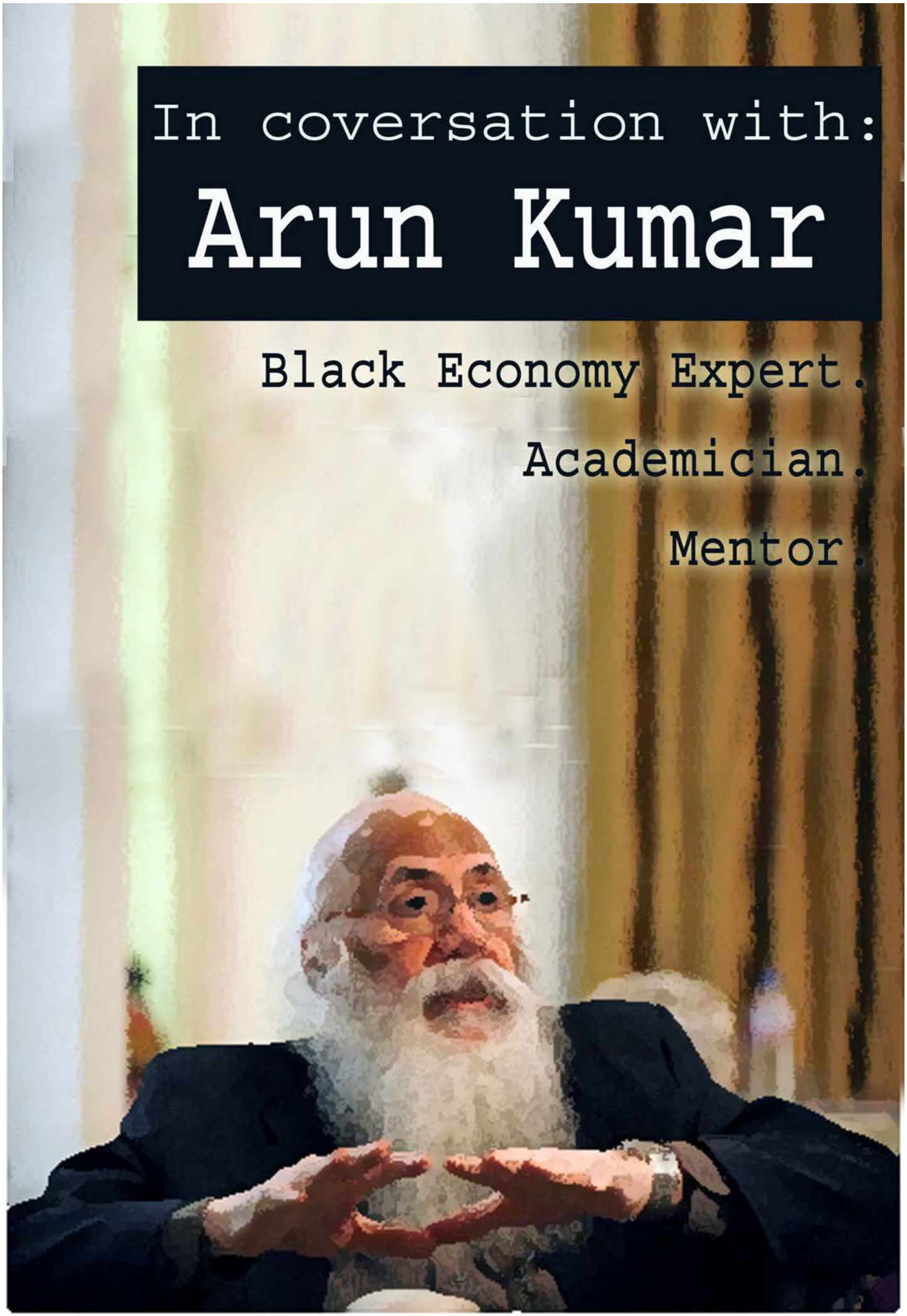
In coversation with:

Arun Kumar

Black Economy Expert.

Academician.

Mentor.



Q: Sir, what can you tell us about your transition from Physics to Economics, especially when you were pursuing your post-graduation from Princeton?
A: While in the US, I had made up my mind that I didn't want to settle there; which I would have to, if I continued my journey in Physics. From my past experience I had gathered that there was a lot of demoralisation amongst physicists in India. When I came to India, I joined Kishore Bharati, an organisation which deals with rural development. There, I realised that to interact with the rural society, we need to have a social and economic understanding and thus, how crucial economics is. Instances related to minimum wages and unemployment kept coming up and the scientists there did not know how to handle the situation. So that is when I decided to pursue economics so I could help those people.

Q: Economics and physics being totally two different fields, what problems did you face?
A: Indeed they are two different fields. But they have similarities too. Economics has a lot of mathematics and statistics. Being from physics background, I had an advantage in understanding the equations, graphs, etc. But in economics, we have different school of thoughts. Not everyone accepts the same assumptions whereas in physics, everyone follows the same theory. Economics is a very open subject unlike Physics.
On switching to economics, I was suggested to follow its history. In economics, different people have different ideologies- Marxist view, Keynesian view, Neo-Keynesian view, Monetarist view, etc. Different facts are interpreted differently in various schools of thoughts on the basis of a different core. For instance, both Keynes and Kaletsky suggested state intervention to take the economy to full employment in 1935-36 but both were coming from different points of view. Keynes talks about the Golden Period where everything is harmonious but Kaletsky says that conflict exists which will turn into a business cycle and thus there will not be a golden period. So even though, mathematically the result was same, the political and the social interpretation are different. Therefore, your core interpretations determine what will be your final understanding, and that changes depending on what kind of philosophy you are coming from.

Q: Sir, economics nowadays has become quite mathematical. Do you think that the teachers should concentrate more on its economic aspect rather than mathematical?
A: Mathematics is very deterministic whereas economics is not. So for anyone who presents a mathematical model, they need to have a proper economic understanding and a proper economic theory to back it up. In my view, mathematics by itself doesn't let us understand the economics behind a scenario. So even for a statistical testing, at the end the most important part is its economic interpretation.

Q: Sir, what is your opinion about the Modi Government's step regarding the betterment in the pay divide in favour of the farmers. Has it helped to bridge the gap between the rich and the poor?
A: For political reasons, the farmers in India have been paid lip-services from the starting to remove poverty. But the main flaw in this is that we have followed the trickle down policy which is based on the Lewis model- a policy that was developed in Europe in the 1800s. The situation of Europe in 1800s was quite different from that of in India after the independence and thus we were not able to get similar results. So even though the government provides lip-services to the poor people, adequate resources are not provided when it comes to budget. The policies of the government of India should change to talk about development from below.
In agriculture, there are different prices- farmers receive the farm-gate price, consumers pay the consumer price, and in-between we have the arthiya price and the wholesale price. Because of this, the consumers pay a very high price, but till the time this chain reaches farmers, they receive a very low payment. So till the time we don't solve this problem, keeping in mind both the political and economic aspect, farmers won't be able to receive any benefit and the gap will keep on increasing.

Q: Political funding is one of the major sources of unaccounted wealth. Do you think introducing electoral bonds will help with the political funding process? Also, what is your say about the black money in the private sector?

A: In my view, it is a myth to say that black economy exists only because of political funding. According to my findings, only about 0.2% of GDP is used in elections. Bulk of the black money is used in Businesses. During elections, a nexus is formed between the politicians, businessmen and the corrupt executive builds thus making the electoral funding important. Therefore, what is needed is the transparency of funding. And the electoral bonds cannot bring in transparency. While using electoral bonds, there is no guarantee that the political parties will not take additional funds in black. So the electoral bonds isn't going to solve the problem and in fact, it might lead to bribe in white through the electoral bond system and the opposition will always be at a disadvantage, so they will continue to have black (money). Black money also causes inefficiency. It leads to activity without productivity. In India both the public and private sector are inefficient because of the black economy. So if the black economy is kept in check, the efficiency of the country will go up, the growth rate will rise, leading to the development of our country in terms of education, health, etc.

Black money today, is a large part of our economy only because it is systematic, and the instrumentality of the state is a part of it. So I say that the black economy is run by a triad which consists of the corrupt businessman, the corrupt political powers and the corrupt executive. Here is where the crony capitalism comes into the picture. All the people involved in the triad take each other's help to increase their power and wealth. Because of this illegality, it distorts the policy making in the country. So the illegality and this system of black economy can only be broken if we break this triad. And to break this triad, we need to bring movements. The businessmen, the politicians, the judiciary and the executives will have to be accountable.

Q: Sir, with regards to the importance of the people and media in the emergence of a movement, what is your opinion about people rebelling against the government without being informed about the issue? How does one ensure sustenance of a movement? And in this objective, can the people trust media?

A: The opinion of the public is very important. Everyone should have their own opinion. That's what democracy is all about. There should be dialogue, not assertion or impositions. Today, the youth has information, but not knowledge, with the wider view missing. Good quality education and discourse in the country can change this. Creation of a consciousness and connect with country-wide issues among even 0.1% of our citizens has the potential to bring change. Coming to media, which is very crucial in today's day and age, but in the last twenty years, it has come to be deeply affiliated with the corporate sector and political parties with increasing paid news. The Right to Information and whistleblowers has a huge role to play in this context. But nowadays the government is trying to dilute their role. Social media has come to be increasingly in the hands of very large corporations that can misuse it and completely divert from the issue at hand. One would come across trollers who keep meaninglessly attacking and creating diversions. So, social media can be used, but only with a great deal of caution.

Are you Game?

Dikshita Jha

The strategies of the mind
Preferences of a person
The number of players
Let us take them together.
The origin of theories of the game
In the time before us
But still existing
Still being played
And it will be asked
Whether or not
Are you game?
A perfect game or an imperfect one
Forward we will move from there.
The dilemma of prisoners
Or the battle of sexes
The game of rock paper scissors
Or matching the pennies
Task as mundane.
Everything is a game
Everyone is a pawn
Everything has a payoff
Consequence of move each

For the equilibrium you have to reach.
Will it be Nash? Will it be rash?
A decision being state of balance
And still Pareto efficiency's absence.
Will you fink? Will you stay quite?
The ballet or the boxing
Where will you go?
Heads and tail
Or the pennies matched?
Out with the scissors
Or paper or rock?
Many more
And we could go on
From pure to mixed
Actions together
Strategies changing
What will be your best response?

RESEARCH PAPERS

ECONOMICS OF CRIME

TOPIC

What is the nature and extent of relationship between the economic and social factorsand crime rate in India?

AUTHORS

Shivani Mohan, KhusbooGoyal, R Rishitha

INTRODUCTION

For any nation, crime is one of the most important social issues and interest in public safety has only grown stronger in recent years.

The existing literature shows that several factors, social and economic, have an effect on the crime rates, such as unemployment rate, inflation rate, etc.

Since such factors have an effect on the crime rate, these factors can be used in order to control and reduce crime rate. For this purpose, it is essential to understand the nature and the extent of the relationship between crime rates and these variables. While several factors have been identified which are responsible for the trend in crime rates but there is no consensus on the actual causes of crimes. However, it is generally accepted that crimes have caused different implications relating to economic and social costs to the society.

Economic models, not only predict and explain the behaviour of criminals, but can also be used to describe the causes of crime and the dynamic interaction between criminals and anti-crime measures.

LITERATURE REVIEW

Initial theories of crime emphasized on the effect of poverty and social deprivation on crime rates (Shaw and McKay, 1942, Cloward and Ohlin, 1960). Fleisher (1966) talks about the role income plays in committing of crimes by people. He argued that crime rates are positively associated with unemployment and low income levels. His study stresses that low income and low expected cost of committing crimes leads to an increase in the inclination of committing crimes. Furthermore, the legal lifetime earnings are viewed as very less by low income people and they assume to lose comparatively small earnings if they have a criminal record, the opportunity cost of time spent in jail is low.

However, Gary Becker viewed criminals not as poverty stricken oppressed groups but as rational economic agents. Like any other person he said a potential criminal weighs the costs/risks and benefits when deciding whether or not to commit a crime. He, however, wrote that ”some individuals become criminals because of the financial and other rewards from crime compared to legal work, taking account of the likelihood of apprehension and conviction, and the severity of punishment.”

Among the other issues examined some important ones were the effects of police presence, convictions, and the severity of punishment on the level of criminal activity (Becker, 1968, Ehrlich, 1973,1975,1996). This led to the development of deterrence theory which argues that potential criminals evaluate both the risk of being caught and the punishment associated. This is confirmed that both factors have a negative effect on crime rates through the empirical evidence obtained from developed countries.

Similarly, Ehrlich (1973) models the participation of individuals in non-market, legal and illegal activities, and predicts an unspecified effect of crime on economic development. Moreover, it finds that inequalities increase the level of crime and the probability of trepidation discourages the crime.

Fajnzylber, Lederman and Loayza (2000) conducted cross country comparisons and have found that across countries crime rate differentials are linked to growth and poverty and, to some extent, by demographic factors.

Tang and Lean (2007) tried to determine the effect of inflation and unemployment on crimes in Malaysian economy for the period 1970-2006. Their study concludes that inflation and unemployment have positive and significant impact on crimes in Malaysia.

Dutta and Husain (2009) investigated the determinants of crimes in India using state level data set for the period 1999-2005. The study considered urbanization, poverty, education, load on police force, economic growthC impact on crimes in India.

DATA METHODOLOGY

We employ quantitative research analysis to study our variables and conduct hypothesis testing for the purpose of finding out the significance of each of the variables in our model. First the crime rate trend is analysed. We use multi regression analysis model which is a set of statistical processes for estimating the relationships among other variables. We then assume hypotheses and proceed with the regression analysis, finding out whether the hypotheses assumed are correct or not.This study uses data of unemployment rate, conviction rate, income inequalities (gini), poverty and education index for the years 1990 to 2016 for India extracted from government of India's websites like National Crime Records Bureau, Open Government Data, National Sample Survey and United Nations Development Programme, etc.

THEORETICAL FRAMEWORK

One of the most important underlying assumptions used in economics is that of the rational behaviour. Economists extend this assumption to criminal studies also, as we have done in thispaper. Criminals, are treated as rational agents, that participate in criminal behaviour in order to enhance their utility and respond to psychological and economic incentives. In other words, it is assumed that a rational criminal weighs the costs and benefits of committing a crime, and commit the crime only if the benefits exceed the costs. Hence, if it were too costly to commit a crime, less crimes would be committed.

Rational crime analysis does not require that all criminals are rational, as long as some of the criminals do take into account the expected punishment they will face. Individuals who commit spontaneous crimes of passion, or individuals who are intoxicated, or individuals who are poorly informed about the expected punishment may not adequately weigh in the costs and benefits of committing a crime. There also may be they face and possibly grossly underestimate it. There may even be individuals who, perversely, do not consider the expected punishment to be a cost. For example, in some violent street gangs, "serving time" may be considered a badge of honor, or part of an initiation process. It is easy to imagine that many criminals may not respond to changes in the expected punishment.

But if some criminals do take into account the consequences, a social policy can affect crime rate by affecting components that make up expected punishment. In making of such a social policy, there are two fundamental issues,the first involves identifying all the relevant trade-offs, and the second involves weighing the importance of each trade-off.

Becker considers crime to be a type of work, i.e., an activity that takes time and yields economic

benefits. The theoretical model is foremost applicable to property crime. In this model, we consider an individual n's choice. He can either work to earn an income or commit a crime for the same income.

Let,

W - the individual's wage from honest work

W(b) - Return from commiting a crime

A - unemployment benefits

u - the unemployment rate

p - the probability that he/she is caught

S - the cost of punishment.

c(n) - Psychological cost of committing a crime

The individual chooses crime if the expected return from crime minus psychological cost of committing a crime is higher than the expected return from work, i.e., if the following is fulfilled -

$$E(W(b)) - c(n) > E(W) \qquad (1)$$

E(W(b)) can further be broken down into probability of not getting caught and expected benefit plus probability of getting caught and the cost of punishment, written as follows-

$$E(W(b)) = (1 - p)W(b) + pS \qquad (2)$$

The expected return from work is affected by the unemployment the unemployment benefit. The unemployment rate affects the possibilities of becoming employed and, hence, also the expected E(W). If the individual is employed during the period, he/she W, while if unemployed, he/she receives the unemployment benefits. This can be written as follows-

$$E(W) = (1 - u)W + uA. \qquad (3)$$

The restriction in equation (1) for individual n written as:

$$c(n) < ((1 - p)(Wb) + p(S)) - ((1 - u)W + uA), \qquad (4)$$

i.e., the psychological cost of committing a crime should be strictly less than the difference in expected return from crime and expected return from honest work. Equation (4) hence states that an individual chooses crime as long as the expected income premium of choosing crime instead of honest work is above the individual-specific threshold value, c(n).

Social policy, thus here can intervene in by affecting c(n). Psychological cost, i.e., c(n), further can depend on several factors such as conviction rates, total police strength, unemployment rate, inequality level in society, inflation rate and so on.

In our paper we use the model stated below to find the relation between crime rates and other given variables.

Crime = f (Conviction rates, Unemployment, Inflation, Inequality, Education, Total Police Strength)

In the above model both pure economic and socioeconomic determinants of crimes have been considered.

Why should Unemployment increase Crime?

The rational choice model of crime predicts that an individual chooses to commit crime when the expected net gain from crime is greater than that from staying out of crime. If one cannot find a well-paying job in the legitimate labor market, he may be more inclined to look for a job in the "criminal industry". This crime-as-an-alternative-job explanation works the best for financially motivated crimes, but it can be applied to other types of crime as well. If you already have a well-paying and respectable job, you have more to lose when committing a crime and may think twice before actually carrying out the crime. This reasoning

suggests that crime should fall during economic booms (when more well-paying legitimate jobs are available), and increase during recessions.

One of the fundamental principles of rational crime analysis is that the rationalcriminal's choice to commit crime reveals a preference toward illegal activitiesover legal ones, such as choosing to enter the legitimate labor market. This principlelends itself well to a simple prediction: in periods of high unemployment, the crimerate will be higher than in periods of low unemployment.

How are Income inequalities and Crime related ?

Certain crimes are motivated by economic considerations. According to Kelley (2000), "In the economic theory of crime, areas of high inequality place poor individuals who have low returns from market activity next to high-income individuals who have goods worth taking, thereby increasing the returns to time allocated to criminal activity" and such motivations may be created by a sense of frustration, or an "envy effect". Worsening income gaps can have adverse impact on genuine and legal income generating opportunities and thereby carries with itself the possibility of rise in crime. A growing body of evidence has also demonstrated that economic inequality is associated with a range of health and social problems, such as mental illness and violent crime. This is true across both rich and poor countries. Inequality hurts everyone. The division of resources, as well as wealth, is very uneven in India. This disparity creates different poverty ratios for different states.

On the one hand, some theories suggest that inequality generates a sense of injustice among disadvantaged people, which leads them to seek compensation by other means, including criminal activity. On the other hand, crime can be explained by a cost-benefit analysis: when the poorest citizens have few economic opportunities and there are greater income gaps between rich and poor, the economic benefits of crimes such as robberies or kidnappings – which often end in homicide – tend to be greater.

Why would Inflation increase Crime ?

Long and Witte documented that crime rate increases as inflation rate rises because hard times motivate criminal behaviours and inflation inhibits the capacity of communities to deter crime. Inflation causes the purchasing power to reduce and cost of living to increase. As a result crime rate may increase because an individual is unable to maintain his/her standard of living as before.When prices are rising fast, the demand for black-market goods goes up, which increases the incentive to steal stuff that you can resell to underground street markets. So it might well be inflation that causes crime.

How are Crime rates and Education related ?

One of the most dominant ideas under the umbrella concept of education's impact on crime is the belief that a reduction in crime can most often be achieved by increased crime prevention and that the most effective form of crime prevention is achieved through education. Most people would argue that education can be an important element in preventing individuals from engaging in criminal behaviour. Lochner (2004) emphasizes the role of education as human capital investment that increases future legitimate work opportunities, which discourages participation in crime. If human capital raises the marginal returns from work more than crime, then human capital investment and schooling should reduce crime Many trends have been supported by contemporary research that has examined possible connections between education and criminal behaviour. That levels of education (higher and lower) are significant in the manifestation of criminal behaviour has received empirical support, as has the notion that individuals with learning disabilities (and thus with lower education, intelligence, and coping skills) are more prone to violent behaviour.

How does increase in Police strength decrease Crime ?

Empirical studies that use reported crime data to evaluate policies for reducing crime will understate

the true effectiveness of these policies if crime reporting/recording is also affected by the policies. For instance, when the size of police force increases, changes in the perceived likelihood that a crime will be solved may lead a higher fraction of victimisations to be reported to the police.

Sherman and Eck (2002) concluded that while there is consistent evidence that having no police (like during police strikes) significantly increases crime, the evidence of a marginal effect of increasing police numbers on crime is weak indeed. Adding more police officers, adopting strong, proven management techniques, can actually reduce the rate of crime. Even their combined impact, though, accounts only for a fraction of the documented reduction.

How are Crime and Conviction rates related ?

The conviction rate of a prosecutor or government is the number of convictions divided by the number of criminal cases brought. Whereas a crime rate is calculated by dividing the number of reported crimes by the total population. The criminal justice plays an important role, an increase in the effectiveness and probability of punishment, if high, might decrease the crime rate. It is naturally assumed that if the conviction rates are high then the chance of getting punished for a crime is also high which makes a criminal weigh his choices before committing a crime.

Historical Trends - Analysis of crime rate: (1973-2016)

Indian Penal code the following broad classification of crimes-

i) Crimes against body: Murder, Attempt to commit murder, Culpable homicide not amounting to murder,Kidnapping and Abduction, Hurt,Causing death by negligence;

ii) Crimes against property: Dacoity, Preparation and assembly to commit Dacoity, Robbery, Burglary and Theft;

iii) Crimes against public order: Riots and Arson;

iv) Economic crimes: Criminal breach of trust, Cheating & Counterfeiting;

v) Crimes against women: Rape, Dowry death, Cruelty by husband or his relatives, Assault on women with intent to outrage her modesty, Insult to the modesty of women and Importation of girl from foreign country;

vi) Crimes against children: Child rape, Kidnapping & abduction of children, Procuration of minor girls, Selling and buying of girls for prostitution, Abetment of suicide, Exposure and Abandonment, Infanticide and foeticide

Further, crime can be classified into-

(I) Cognizable Crime : A cognizable offence or case is defined as the one which an officer in-charge of a police station may investigate without the order of a magistrate and effect arrest without warrant. Cognizable crimes are broadly categorised as those falling either under the `Indian Penal Code (IPC)' or under the `Special and Local Laws (SLL)'

(II) Non Cognizable Crime : Non-Cognizable crimes are defined as those which can not be investigated by police without the order of a competent magistrate. Police do not initiate investigation in non-cognizable crimes except with magisterial permission.

There is a noticeable pattern observed in the crime against property (which includes dacoity, burglary, robbery, theft).

Dacoit was 10627 in the year 1973 and 3795 in the year 2016. Though there was an initial rise but after few years, the rate of dacoit started to fall. This shows an improvement in reducing crime in the society.

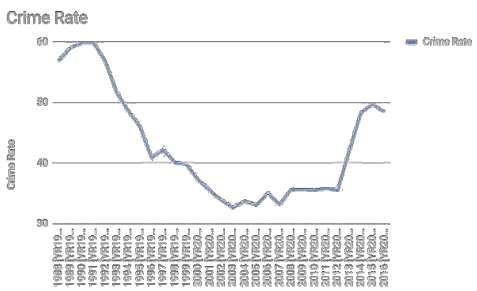
Robbery was 18857 in the year 1973. It has increased from 1973 till 1992. There was a downfall since 1992 to 2007 but there is not a big reduction in

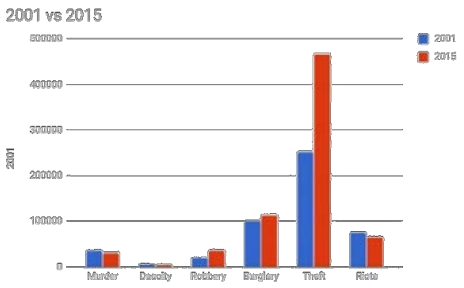
the number.Post 1992 there was a continuous increase in the number and the number rose to 38071 in the year 2014.

Burglary in the year 1973 was recorded to be 181433. This too has seen a downfall. 91218 is the recorded burglary in the year 2007. This shows that burglary has reduced by 2 times.But post 2007 it has been increasing and has reached to a number of 111746.

Theft has experienced a decline in its number from 379412 in 1973 to 285043 in the year 2007. The scenario changed after 2007 and from then India is experiencing continuous rise in the number of theft every year and in 2016 it has reached to 494404 ,greater than that of 1973.

Therefore, the number of crimes against property as analyzed above shows that the crime against property has reduced subsequently till 2007 but has increased after that.The recent phenomenon like the financial crisis and the current political standoff seem to have contributed to this increase in crime rate.Thus, in order to have an improvement of the crime condition in India, these factors needs to be stabilized.





Model Specification And Hypothesis

The general form of the models for political, economic and social factors affecting crimes may be written as -

Crime Rate t = a 0 +a 1 (Lagged Inflation Rate) +a 2 (Lagged Unemployment rate) + a 3 (Education Index)+ a 4 (Log Police force) +a 5 (StandardisedGini) +u t

Hypothesis 1- Economic Model

Crime Rate t = a 0 + a 1 (Unemployment rate) + a 2 (Inflation Rate) + u t1

Hypothesis 2 - Political Model

Crime Rate t = b 0 + b 1 (total police force)+ b 1 (conviction rate) + u t2

Hypothesis 3 - Social Model

Crime Rate t = c 0 + c 1 (Education Index) + c 2 (Inequality) + u t3

Description of variables

Variable	Description	Source
Crime Rate	This is the dependent variable. We have used property crime rates, specifically in our study	The data was collected from reports published by the National Crime Records Bureau
Conviction rate	The conviction rate of aprosecutor or governmentis the number of convictions divided by thenumber of criminal cases brought.	The data was collected from reports published by the National Crime Records Bureau
Total Police strength	The actual total police strength at the all India level.	The data was collected from reports published bythe National Crime RecordsBureau and from
Inflation Rate	Inflation as measured by the consumer price index reflects the annualpercentage change in thecost to the averageconsumer of acquiring a basket of goods andservices that may be fixedor changed at specifiedintervals, such as yearly.The Laspeyres formula isgenerally used.	InternationalMonetaryFund, International Financial Statistics andpolice research data files.
Unemployment Rate (ILO estimates)	Unemployment refers to the share of the labor force that is	International Labour Organization, ILOSTAT database.

	without work but available for and seeking employment.	
Inequality And Poverty We have used standardized Gini index for the purpose of estimating inequality level in India	We have used standardized Gini index for the purpose of estimating inequality level in India	Solt, Frederick. 2016. "The Standardized World Income Inequality Database." *Social Science Quarterly* 97. SWIID Version 6.1, October 2017
Education Index	The Education Index is calculated from the Meanyears of schooling index and the Expected years ofschooling index	Human Development Report, UNDP

Description of variables

	Mean	Max	Min	SD	Mean
Total Crime Rate	457096.2	641851	360879	74482.2	457096.2
Crime Rate	42.82966	59.9	32.57	9.18334	42.82966
Inflation index	7.632273	13.87025	3.26256	3.173964	7.632273
Unemployment Rate	3.948276	4.4	3.5	0.278543	3.948276
Education Index	0.4034524	0.535	0.3	0.0734318	0.4034524
Total police Force	1388992	1926247	1065874	220402.4	1388992
Gini Standard	45.4444	8	43.1	1.80025	45.444

Regression Results-

General Model-

The multiple variable regression analysis that includes all the selected variables in the model, has an erratic result, giving opposite signs for several variables, even though squared R and adjusted R squared have an high value.

Crime Rate $_t$ = a $_0$ +a $_1$ (Lagged Inflation Rate) +a $_2$ (Lagged Unemployment rate) + a $_3$ (Education Index)+ a $_4$ (Log Police force) +a $_5$ (StandardisedGini) +u $_t$

The table gives us the result of Multivariable analysis-

Crime= 1406.804+0.6502826(Inflation Rate)-4.701525(Unemployment

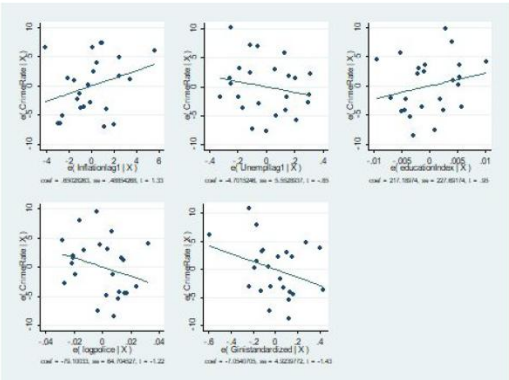
Rate)+217.1897(Education Index)-79.10033(Log Police strength)-7.054071(GiniStandardised)

	Coefficient	Standard Error	**T**	**p>|t|**	[95% Confidence Interval]
Inflation Rate	0.6502826	.4885427	1.33	0.200	-.3761075, 1.676673
Unemployment Rate	-4.701525	5.552894	-0.85	0.408	-16.36772, 6.964672
Education Index	217.1897	227.6917	0.95	0.353	-261.1728, 695.5523
Log police strength	-79.10033	64.70453	-1.22	0.237	-215.0395, 56.83884
Gini standardized	-7.054071	4.923977	-1.43	0.169	-17.39896, 3.290822
Constant	1406.804	970.834	1.45	0.165	-632.843, 3446.45

We get an R 2 value of .7539. But variables have wrong sign, most probably due to model specification error and presence of a high degree of correlation between

variables, also indicating that the model chosen might be inappropriate.

Hence, we reject the first model and use our further specified model, instead of the combined variables model.

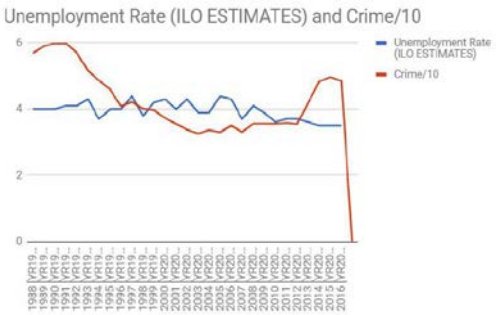


Hypothesis 1-

Crime Rate t = a 0 + a 1 (Unemployment) + a 2 (Inflation Rate) + u t1

In this model, we regress crime against the unemployment and lagged value of inflation rate.

We use lagged value of inflation rate since we assume that rise in prices takes some amount of time to have an impact on crime rates. The graph below shows the relationship betweenUnemployment rate and inflation.



The multiple variable regression analysis yields the following results -

Crime t = 36.0712+0.8364859(Inflation Rate)+4.255483(Difference in Unemployment Rate)

Crime Rate	Coefficient	Standard Error	T	p>|t|	[95% Confidence Interval]
Inflation Rate	0.8364859	0.5467136	1.53	0.139	-.2894918, 1.962464
Difference in Unemployment Rate	4.255483	5.819907	0.73	0.471	-7.73084, 16.24181
Constant	36.0712	4.442043	8.12	0.000	26.92264, 45.21976

We have an R-squared of .09 and an F value of .91. The F test shows that the variables are not jointly significant. The individual t tests also show that the variables are not significant.

We form a Correlation Matrix to check for Multicollinearity

e (V)	Inflation Rate	Unemployment Rate
Inflation Rate	1.0000	
Difference in Unemployment Rate	0.2422	1.0000

As the correlation coefficient between the variables is low, we suspect a low level of multicollinearity in data.

We also perform a test for autocorrelation, and find high level of autocorrelation in the data. To correct this, we use Robust Standard Errors, as shown below-

R-Squared= 0.0902

Crime Rate	Inflation Rate	Unemployment	Constant
Coefficient	0.8364859	4.255483	36.0712
Standard Error	.6634489	4.971406	5.262198
T	1.26	0.86	6.85
p>|t|	0.219	0.400	0.000
[95% Confidence Interval]	-.5299127, 2.202885	-5.983318, 14.49429	25.2335, 46.9089

The individual t tests show that the variables are still insignificant. We use F test for their joint significance and find that they are not jointly significant, also.

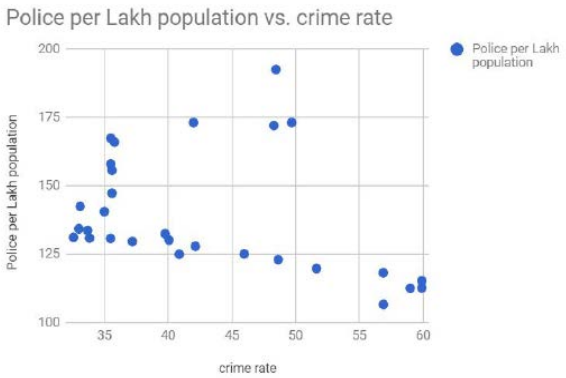
Hence, we reject the first model

Hypothesis 2 -Political Model

Crime t = b 0 + b 1 (total police force)+ b 1 (conviction rate) + u t2

Relation between Police strength and crime rate

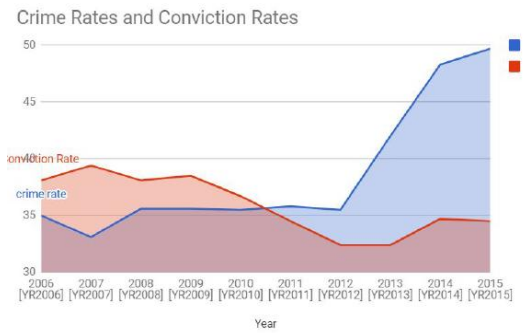
As can be seen in the scatterplot below, there seems to be a negative relation between crime rate and police force per lakh of population, i.e. as police force increases, there is a coincident fall in the rate of crime.



Relation between Crime Rates and Conviction Rates

A high level of conviction rate between 2006-2010, seems to have coincided with a low level of crime rate. Further, a low level of conviction rate seems to be coincident with a much higher level of crime between 2006-2015. Thus, this proves our initial assumption between the relation between crime rates and conviction rates to be correct to some extent.

Lack of data on conviction rate poses a severe limitation to this result.



The multiple regression model gives us the following results-

Crime t = 1091.63 -76.62349 log (police force) +0 .8936695 (conviction rate)

Crime Rate	Log Police	Conviction Rate
Coefficient	-76.62349	0.8936695
Standard Error	40.90241	0.9258669
T	-1.87	0.97
p>|t|	0.103	0.367
[95% Confidence Interval]	-173.3423,20.09533	-1.295658,3.082997

Constant Rate	1091.63	599.7471	1.82	0.112	-326.5465,2509.807

The adjusted R-squared of this model is about 70%, which is quite high. The F test gives value of 11.62 and a p value of .006, thus indicating that the variables are jointly significant, even though they might not be individually significant.

Therefore, we suspect presence of Multicollinearity between the variables and hence calculate the correlation matrix.

Correlation Matrix of variables of regression model

e (V)	Log Police	Conviction Rate
Log Police	1.0000	
Conviction Rate	0.8250	1.0000

As suspected, there is a high degree of positive correlation between the variables.

We also perform Breusch-Godfrey LM test for autocorrelation, even though the test might be susceptible to error due to low number of observations.

Breusch-Godfrey LM test for autocorrelation-

Lags (p)	Chi 2	Df	Prob>chi2
1	2.136	1	0.1439

H0- There is No serial correlation

P value is high, which shows that there might be presence of Autocorrelation in our model.

To correct this, we use a model with robust standard errors.

Crime Rate	Coefficient	Standard Error	**T**	**p>|t|**	[95% Confidence Interval]
Log Police	-76.62349	53.42856	-1.43	0.195	-202.962, 49.71499
Conviction Rate	0.8936695	0.8589099	1.04	0.333	-1.13733, 2.924669
Constant	1091.63	775.5313	1.41	0.202	-742.2102 2925.47

-Hypothesis 3

Social Model- Crime Rate t = c 0 + c 1 (Education Index) + c 2 (Inequality Index) + u_t

The graph shown below, shows the relationship between Crime Rates and standardized GiniIndex, that was used to measure income inequality.

The multiple regression model gives us the following results-

Crime t = -73.52632 -45.089(Education Index)+1.983181(GiniStandardised)

R-Squared - 0.2007

Difference(Crime Rate)	Coefficient	Standard Error	t	**p>|t|**	[95% Confidence Interval]
Education Index	-45.0489	26.1576	-1.72	0.100	-99.4466, 9.348799
Gini standardized	1.983181	0.9045116	2.19	0.040	0.1021465, 3.864216
Constant	-73.52632	31.47263	-2.34	0.029	-138.9772, -8.075402

High R-squared shows us that about 20% of the variation in the model can be explained by Inequality Index and Education Index. The F value is 3.43, while its P value is .05, showing that the model is jointly significant. We suspect high multicollinearity in data, because of which we suggest performing the principal component analysis. But, since such analysis does not lead to unique relationship between the variables, we do not use it here. Thus, we see that 1 unit change in StandardisedGini, leads to change in crime rate, to increase by 1.983 units, ceteris paribus. While, 1 unit change in Education Index, leads to change in crime rate, to decrease by 45.04 units, ceteris paribus.

Conclusion

From our research, it is evident that certain social and economic factors do have correlation with the crime rates. The results of our findings have been summarized in the table below –

Model	Results
Economic Model - Crime Rate t = a 0 +a 1 (Unemployment rate) + a 2 (Inflation Rate) + u t1	We find presence of low degree Multicollinearity and autocorrelation in the data. We use Robust Standard eroors to correct this. Since the F tests and t tests, both show the variables to be insignificant, we reject this model.
Political Model - Crime Rate t = b 0 + b 1 (total police force)+ b 1 (conviction rate) + u t2	76% of the variation in the model can be explained by total police force and conviction rate. Since the F test shows the variables to be jointly significant, we fail to reject this model.
Social Model- Crime Rate t = c 0 + c 1 (Education Index) + c 2 (Inequality Index) + u t	20% of the variation in crime rate can be explained by Education Index and Inequality Index. The F value is 3.43, while its P value is .05, showing that the model is jointly significant. We fail to reject this model.

Thus, policy measures that affect social and economic variables can have a significant impacton the crime rates, and thus, economic and social policy options can be successfully used inorder to reduce the rates of crime, significantly. The study is conducted on only property crimedata, but we do believe that similar analysis could be constructed for other rational crime fields.

Our study suffered from serious limitation of lack of available data, because of which severallarge sample tests could not be conducted. Since the data is time series, we have sufficientreason to believe that there is existence of autocorrelation.

Limitation

This research work is carefully prepared, still we are aware of its limitations and shortcomings.

The limitations of this study present some space for further improvement in investigating the effect of property crime rate on economic variables. The first limitation is the number of the units of analysis that we used in our study is very small as we took a small range of years (1988-2016) to investigate this subject .Because of this it is difficult to find significant relationships from the data, as statistical tests normally require a larger sample size. Therefore enlarging the dataset is desirable.

The second limitation is that the data prior to 1988 had a different definition for property crimes and this further limited the scope of the analysis. The size of the sample had created a significant obstacle in finding a trend and a meaningful relationship.

The third limitation is the type of crime analysed(property crimes in our model). By investigating a broader set of types of crime, a more accurate analysis of magnitude of the relationship between the crime rate and economic variables might be done.

The data on Gini Index is collected from various sources as one source does not have the Gini Index for all the years for which we are conducting our research. So this is also a limitation that we encountered.

Apart from these problem we saw that there is a lack of prior research studies on this topic although various researches has been conducted for the total crime rate and not specifically for

the property crime rates. As prior research studies forms the basis of the literature review and helps in laying a foundation for understanding the research but due to the lack of this, it created a limitation.

Discovering these limitation can serve as an important opportunity to identify gaps in the research and to describe the need for further research.

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Productivity and Financial Wealth in Poland

Stuti Oberoi

Productivity is considered an important determinant of a country's long-term economic growth potential. It determines the competitiveness of an economy with respect to the rest of the world. This helps in allocating available resources to productive activities, thereby facilitating well-functioning markets and inclusive economic growth. A lot of studies suggest ways to improve productivity in order to facilitate a higher economic growth and greater welfare. However, it is essential to recognize the fact that the financial wealth of individuals in a country also plays a major role in determining its prosperity. So, specific policies to encourage asset accumulation should be put in place alongside those targeting productivity. This report analyses the productivity and financial wealth in Poland to consider a more holistic way of improving national welfare.

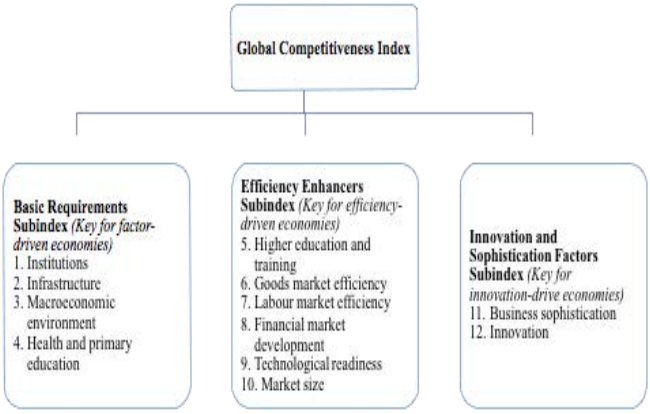
Productivity and Competitiveness in Poland

According to the Global Competitiveness Report, 2014, 'competitiveness' has been defined as the set of institutions, policies, and factors that determine the level of productivity of a country. The level of productivity, in turn, sets the level of prosperity that can be reached by an economy. It also determines the rates of return obtained by investments in an economy, which in turn are the fundamental drivers of its growth rates. So, a more competitive economy is one that is likely to grow faster over time.

Stages of Growth

12 pillars of competitiveness have been identified, for three stages of growth: factor-driven, efficiency-driven, and innovation-driven growth, as shown in Figure 1.

Figure 1: The Global Competitiveness Index Framework



Although all pillars matter to a certain extent for every country, the relative importance of each one depends on a country's particular stage of development. Detailed pictures of the Global Competitiveness Index (GCI) rankings and scores for the pillars in Poland have been depicted in Figure 2 and Figure 3. At present, Poland is in the stage of transition from an efficiency-driven to an innovation-driven economy. It ranked 52nd with respect to the other countries in terms of

GDP per capita, which was $13,394 in 2013. It has already developed efficient production processes with a high product quality. At this point, the driving forces of competitiveness in the country are higher education and training, efficient goods market, the ability to harness the benefits of existing technologies, and a large domestic or foreign market. But with the high wage levels associated with the second stage, the corresponding standard of living and growth can be sustained only with continued structural reforms geared toward strengthening its innovation and knowledge- driven economy. To progress further and to transit to the final stage of growth, companies must compete by producing new and unique goods using the most sophisticated production processes and by innovating new ones. The country can build on a fairly well educated population, well- developed financial markets, and a market that is by far the largest in Eastern Europe. Transport infrastructure, however, despite notable improvements, remains weak by European standards. Some aspects of institutions, such as the burden of its regulations, its rather inefficient legal framework for settling business disputes, and difficulties in obtaining information on government decisions for business also need to be addressed on a priority basis. And as the country slowly emerges from the economic slowdown of 2012 and 2013, Poland should focus on further improving labor market efficiency and strengthening business sophistication as well as on its business sector's capacity for innovation.

Figure 2: GCI Rankings for the Pillars in Poland

Figure 3: Scores for the Pillars in Poland (1-7)

Global Competitiveness Index (GCI)

Many countries in Eastern Europe, including Poland, score relatively low in the GCI. However, Poland has been adopting and implementing the reforms necessary to become more productive and its overall ranking improved from 48 (scoring 4.3) in 2005-06 to 43 (scoring 4.48) in 2014-15. A more detailed picture of the rankings and scores has been presented in Figure 2 and Figure 3.

Figure 4: GCI Rankings for Poland

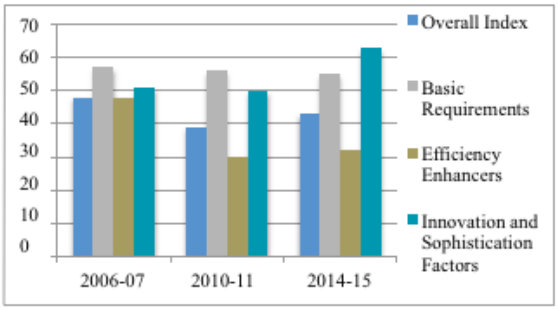
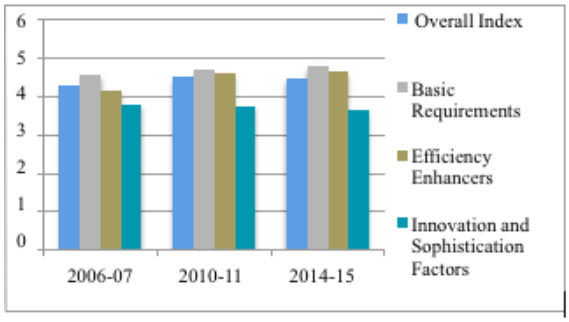


Figure 5: GCI Scores for Poland



Although there is a need to improve productivity and competitiveness in Poland, there are some limitations to considering this as the ultimate means for a greater welfare. Enhancing productivity needs be accompanied by transformations that adapt to the new technological, geopolitical, and ecological reality to ensure that progress translates into higher human development for all. Moreover, productivity does not directly translate into a higher economic growth. The link between economic growth, and overall prosperity and welfare may also be broken due to different factors such as wealth.

Financial Wealth in Poland

Human welfare partly consists of access to assets. Assets capture the long-term, dynamic nature of financial welfare because they reflect lifetime financial accumulation. Financial wealth accumulation is done for various reasons, such as to smooth out the variability of current income, to store for future consumption, and for transmission of advantages to future generation. So, personal financial assets are a better indicator to measure a society's prosperity rather than real estate because they serve the purpose of meeting future consumption in a better way, with lesser risks of dwindling value.

Financial Assets v/s Gross Domestic Product (GDP)

Even though the proportion of GDP in the world's poor regions is increasing rapidly with respect to the richer regions, the same pace is not observed in the increase in proportion of financial assets in the poor regions. While incomes and assets are closely linked, there is a certain time lag involved: households have to exceed a certain income level before accumulating any wealth at all. So, the substantial assets available in the richer countries are the result of cumulative economic successes of the past, and decades of saving efforts, often spanning several generations. Thus, it will take Poland a few more years to increase the magnitude of growth of financial assets, because it became a free market economy only in the 1990s. This accumulated financial wealth is an important consideration in determining the welfare of a country.

Analysis of Data on Financial Wealth in Poland

According to the Global Wealth Report 2014 by Allianz, Poland is classified as a 'middle wealth country' (countries with average net per capita financial assets of between $6,732 and $40,393). The average net financial wealth per capita was estimated at $10,406, much lower than the OECD average of $42,903 (ranking 30th out of 36 countries) in 2013. Even though

private financial wealth in the country grew at a slow rate of 9.8 percent in 2013, it was more than double the rate of economic growth (2.3 percent) and higher than the average of 7.1 percent in Eastern Europe. The liabilities increased by 1.25 percent from 2013 to 2014 and are now estimated at $190,420. Households' financial assets and liabilities in Poland have been summarized in Table 1 for the first quarters of the years 2010 to 2014.

Table 1: Households' Financial Assets and Liabilities in Poland (in dollars)

Type Stocks						
Frequency		Quarterly				
Time		Q1-2010	Q1-2011	Q1-2012	Q1-2013	Q1-2014
Transaction						
Financial Assets	Investment fund shares	23351	28122	23295	27115	35112
	Net equity of households in life insurance reserves	23153	25483	22714	22816	25040
	Net equity of households in pension funds	69237	84004	79215	86095	54134
Liabilities	Loans	149370	172026	171545	169124	19042

Bank Deposits

Extremely low interest rates not only have a long-term impact on asset accumulation, but also have direct implications in terms of income: interest payments on bank loans are lower, but so are the interest payments received on bank deposits. Poland has benefited from net interest gains on the whole. Households have gained around EUR 1,000 per capita or more.

Wealth Distribution

The share of the top population decile in net financial assets in 2013 was approximately 48 percent in Poland, with a decrease of around 2 percentage points since 2000, thereby assigning it to the category of relatively egalitarian societies. This homogenous distribution is probably because there has not yet been much time available to accumulate private assets, as it became a free market economy only in the 1990s; hence no marked differences have emerged so far.

Thus, in Poland, as the total assets are experiencing a growth, more and more people seem to participate in this prosperity. So in order to achieve more even wealth distribution, policymakers should not aim to limit asset growth by imposing taxes and levies, but rather to foster asset growth as a whole.

Financial Wealth v/s Productivity

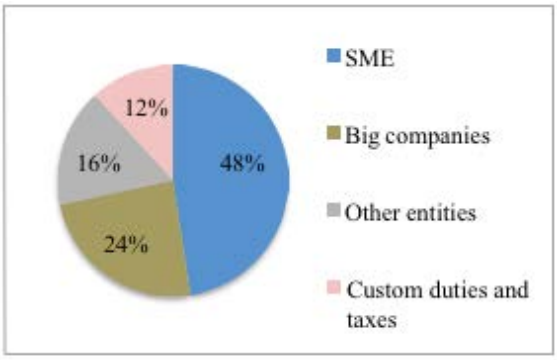
Wealthier economies have a comparative advantage in sectors with financial imperfections because wealthier entrepreneurs are better able to overcome incentive problems in borrowing-lending relations. Smaller firms are more likely to be financially constrained, as many of these are family firms, with personal wealth of the owners determining the amount that can be borrowed from the bank. Wealthier entrepreneurs are less dependent on external finance, thus mitigating the agency problem in credit contracts.

This low failure rate translates into lower lending rates, inducing an expansion of

production in the small-firm sector. Moreover, in the large-scale sector, it takes longer for a talented-but-poor entrepreneur to self-finance the capital needed for operating at a profit-maximizing scale. The selection of entrepreneurs into the large-scale sector is also based more on individuals' wealth (or self- financing capability) and less on their entrepreneurial talent or productivity. With financial frictions in the form of collateral constraints, entrepreneurs' production and individuals' occupational decisions are constrained by their available wealth. This leads to a distortion of allocation of capital, and talent (with talented-but-poor individuals delaying their entry and incompetent-but-rich entrepreneurs remaining in business for longer), as well as the number of production units for a given distribution of entrepreneurial talent. This lowers sectoral and aggregate productivity.

Figure 6 depicts a detailed picture of the composition of revenues generated in Poland. The Small and Medium Enterprises (SME) sector generates almost 50 percent of the GDP, partly owing to the moderate level of financial wealth in the country. Thus, a greater financial asset accumulation is essential for giving a boost to both small-scale and large-scale sectors, thereby enhancing the welfare and prosperity.

Figure 6: Composition of revenues generated (as a % of GDP) in Poland



Conclusion

Even though productivity is an extremely important factor in determining an economy's growth, some focus needs to be shifted towards financial assets too. Analyzing the case of Poland, it can be observed that there may be a slow translation from productivity to economic growth and welfare if the level of financial wealth and the pace of its accumulation is sluggish in the economy. Thus, focusing solely on improving productivity through its different pillars would not be a good strategy for an economy.

A higher pace of growth of Poland's economy can be achieved via a larger growth in the financial assets, as this will give a boost to all the sectors. Therefore, it is equally important to implement certain policies targeted towards enhancing the financial wealth in the country.

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A study into the rationale behind remaining uninsured

Naomi Satam

Topic Statement:

An analysis of the choice to remain uninsured using Behavioural Economics and Game Theory.

Abstract: Life insurance is a huge industry in many developed countries and ownership of a life insurance poli-cy is considered to be a basic necessity for secure life. However in spite of the extensive boost given to the in-surance sector and the numerous incentives being offered to prospective customers of insurance, there still exist people who choose to remain out of the insurance net, voluntarily. These outliers have impeded the universali-sation of life insurance and thus there is a pressing need to study their justification for avoiding the purchase of life insurance so as to take appropriate policy measures to integrate them into the insurance net. This paper is an attempt to study the rationale of these insurance outliers through a game theoretical analysis of their decisions and further to study the biases that may lead to their stand-out behaviour through behavioural economics.

Introduction:

An insurance is a risk transfer mechanism which guarantees the insured protection against potential but uncer-tain losses or compensations for the same. An insurance company hedges the risk of an individual by spreading it over a large body of insured thus successfully lowering the risk burden of each of the insured in return of pre-determined, regular payments called premiums. Life insurance is a huge industry in developed countries and insurance coverage is considered to be an indicator of socio-economic development and standard of living. Ownership of a life insurance policy guarantees to the household a sustained capacity of survival even after the death of the income earner. Thus, it is not so much a compensation for death as it is an instrument for the survival of those left behind.

Though the insurance sector has been studied extensively from the point of view of the insurance companies, there is hardly any research done on the rationale of those choosing to be (or not to be) insured. The insurance net in most developed countries is widely laid and insurance penetration is considerably high. Owning a life insurance is considered to be a basic necessity for any household along with clothing and shelter as it ensures sustainability of the household's stability even after contingency. However, in spite of this, there are people who choose to remain out of the insurance net voluntarily. Whether these insurance outliers are simply 'irrational' individuals who fail to apprehend the advantages of having an insurance or whether they are perfectly rational persons who have an uncustomary justification for this decision is not known. Nor has it been studied in any systematic way. The aim of this paper is to fill in this gap in research.

Theme Connect:

Insurance penetration is considered to be an indicator of socio-economic development and standard of living. In developed countries, insurance penetration is significantly high ("OECD Statistics", 2016). However, there are still some people who voluntarily chose to remain uninsured and thus emulate the behaviour of an outlier. This research will try to theoretically understand why people opt to stay out of the insurance net and investigate if something can be done to change their

behavioural notions and perceived trade-offs so as to bring them within the insurance coverage.

Hypotheses:

1. People who voluntarily chose to remain uninsured do so out of 'rationally' perceived trade-offs. These outliers (the uninsured) can be integrated into the insurance net through policy measures targeted towards changing their risk perceptions and trade-offs.

Objectives:

1. To study why some people voluntarily choose to remain uninsured despite the obvious advantages asso-ciated with having an insurance

2. To explain through game theory, how individuals make the choice of whether or not to buy a life insur-ance by estimating the relative payoffs and the expected utility from either choice.

3. To understand how behavioural notions influence an individual's perception of risk about his/her health prospects and thus influence their decisions on whether or not to buy an insurance.

Methodology:

The author will use game theory to systematically understand the relative pay-offs involved in the decision of buying an insurance. The various factors that affect the utility derived from individual decisions will also be studied in detail. Finally, the psychological factors that cannot be incorporated in the mathematical model will be analysed through behavioural economics.

Literature Review:

Game theory is an efficient tool for the scientific analysis of decision making. Game theory suggests how indi-viduals—when faced by choices based on uncertain outcomes and involving relative payoffs—should behave, so as to get the optimum benefit out of their decision. A Gaming matrix enables us to systematically lay down all the possible choice permutations before a player and then proceed to analyse which choice will give him/her an equilibrial outcome. Thus, it is the most suitable way for studying decisions in a scientific and impartial manner.

The decision to purchase an insurance can also be analysed methodically through game theory. Richard Zeck-hauser has done extensive research on the subject of risk sharing in the insurance sector in his paper, 'Medical insurance: A Case Study of the Tradeoff between Risk Spreading and Appropriate incentives' (Zeckhauser, 1970). Here, he talks about how insurance premiums are set and how an insurance company secures its payoffs through game theoretical decision making. However, game theory alone cannot be used to holistically under-stand decision-making as there is also the impact of certain psychological and sociological influences which need to be factored in. These factors can be analysed through behavioural economics. Authors C. Arthur Williams Jr. and O. D. Dickerson have tried to systematically analyse insurance decisions of 'rational' cus-tomers in their paper 'Game Theory and Insurance Consumption: The Worry Factor Revisited', wherein they have also incorporated psychological traits that may impact rational decision-making (Williams, Dickerson, 1966). Besides papers such as 'Behavioral game theory: Experiments in strategic interaction by Colin Camerer' (Cramer, 2011) and 'Behavioural Game theory' (Durlauf, Lawrence E, 2008) provide valuable insights into the linkage between game theory and behavioural economics in understanding strategic decision making while also accounting for psychological factors. 'Health Insurance Coverage and Take-Up: Lessons from Behavioral Eco-nomics' (Baicker, William, and Sendhil, 2012) and 'Insurance and behavioral economics: Improving decisions in the most misunderstood industry' (Kunreuther, Pauly, McMorrow, 2013) are some other papers that have made instrumental contributions towards behavioural understanding of the Insurance sector by providing intel-ligent insights into the rationale of the decision maker.

Analysis:

Hereunder, we have tried to analyse insurance decisions using a 2x2 gaming matrix. Following is a two-player finite game, modelled to compare the tradeoffs for a person making a decision about whether or not to purchase a life insurance policy (Table 1). The game is the most stripped down version of the choice theory and is based on multiple assumptions. Game theory proceeds with the a priori assumptions of rationality[1] and perfect knowl-edge, both of which are difficult to actualise in empirical situations. However, for the sake of simplicity and in-telligible results from the model, we go ahead with the aforementioned assumptions. To make the analysis more practicable and suited to real life situations, the author will dedicate the latter part of her research to explaining the behavioural characteristics that may impact the choices of individuals. Thus the empirical limitations of the model will be removed further down in the research

	DEATH	NO DEATH
INSURED	(A) PROFITABLE OUTCOME (Ability of the household to survive after death of breadwinner)	(C) LOSS OF UTILITY THROUGH PREMIUMS (Utility as determined by purchasing power)
UNINSURED	(D) INABILITY TO PROVIDE FOR FUTURE (Death of bread earner leading to loss of income)	(B) PROFITABLE OUTCOME (No loss of purchasing power due to payment of premiums)

Table. 1

As we can see in this gaming matrix, the two profitable outcomes are:

a) Choosing to get insured and dying within the coverage period, in which case the insurer gets the full reim-bursement for the premium payments as well as an additional lump sum amount of the insurance money; and

Choosing not to get insured and not dying, in which case there is no outgo of money in the form of premiums and thus more utility enjoyed through a higher purchasing power which did not come at the cost of insufficien-cy after death.The choice of the individual must lie between these two outcomes depending on the trade-off between forfei-ture of purchasing ~~power through premi~~ums (w.r.t choice A) and taking on the risk of dying without adequate indemnity in the form of insurance (w.r.t choice B). The two remaining options (C and D) quantify the opportu-nity costs involved in each of the two pure strategies. Since death is a one-time phenomenon and irreversible, we assume that there can be no mixed strategy equilibriums i.e. picking different options in different repeated to achieve a minimax solution.[2]

[1] Rationality, by itself, need not be an absolute but may be relative to the player making the choice. Any reasonable objec-tive is rationale. In fact, Game theorists believe that a person is acting rationally if he chooses that decision-making rule which is most likely to enable him/her to achieve his/her objective. (Arthur Williams, Jr, 1960)

The above is a basic model that gives us an overview into the most fundamental trade-offs in the insurance de-cision, one between risk and money. However, this is just the tip of the iceberg and a comprehensive game-the-oretical analysis needs to incorporate many more factors. For instance, here we move ahead with the assump-tion that premium payments constitute a loss of utility as they lead to fall in funds for consumption expenditure. However, this might not be the case if the player under consideration earns a surplus and ends up saving the same. We also do not consider any emotions on part of the insurer—such as worry of dying for an uninsured or irritation from having to pay premiums for an insured—which do have an impact over the overall utility of the person. Furthermore, it is assumed that the benefits of insurance are transferable i.e. the profit that the kin of the deceased will get from the insurance can be transferred to the deceased. This is because even though a life in-surance is taken by person A who also pays the premiums for the same, the benefit of the insurance accrues to a third party B. So unless we assume that the profit/loss of the third part is equal to the profit/loss of the deceased, this game cannot be applied to our case. Although these assumptions may seem contrived at face value, they are requisite for a clean model. The subjective factors that this model fails to address will be explained later.

The above game is a modified version of a 'two player game' wherein neither player knows what the other is going to do and so the most rational choice is one that maximises gains or minimises losses of the player in question regardless of what the second player does. Such a utility maximising move is called a dominating strategy. Here the second player is nature or fate or any such abstraction that you may attribute the possibility of death to. If we were to find the minimax Nash equilibrium[3]for this game, the rational thing to do would be to assume that the other player (nature) will be at her worst and so act in a way that would minimise your maxi-mum losses. So the Nash Equilibrium output is Death-Insured (Row 1, Cell 1). This is rationality in absolute terms whereby we assume that the loss/gain of utilities other than those accruing from living / dying account for nothing (i.e. we ignore the influence of worry, irritation and other behavioural factors on utility). So the Nash equilibrium simply says that given the worst that nature can do to you i.e. cause your death, your most optimal move would be to get insured. However, if every individual acted in accordance to Nash equilibrium, the insur-ance rate would be much higher. The fact that it is not is proof that the relative pay-offs and utilities ignored in the equilibrium have a role to play in the real decisions. This makes it important to inspect the second profitable outcome i.e. No Death - Not Insured (Row 2, Cell 2) which will offer us an explanation for the insurance out-liers. People choose not to get insured when they perceive the risk of dying as not very high. This can be at-tributed to either of the following two factors or even a combination of both;

A) They assume the probability of them dying in near future to be very low (thus the perceived benefits from insurance are low) or

B) They assume the premiums to be too high (thus the loss of utility through payment of premiums is too high) These two perceptions differ with change in age and income level and will be analysed hereunder.

[2]The idea of quantifying and comparing utilities has been directly borrowed from several existing researches of this kind and the author will simply move ahead with the assumption that such a quantification is possible. Any further explanation on the ordinality of utilities will only complicate the practical application of this game and will serve as a digression from the main topic. But for the sake of clarity, utilities here are measured ordinarily i.e. in orders of preference since it is as-sumed that the individual has the capability to rate one outcome over the other depending on

A) Impact of Age on Risk Perceptions:

An assumption that we make while drawing out the Nash equilibrium in the above game is that the second player (nature) is completely independent and thus its move in the game is random and cannot be predicted. In simpler words, we assume that death is random and can happen to any person at any time without any con-straining factors. However, there are certain factors that influence the probability of death such as health of the person, his lifestyle, family's medical history etc. If we take health as a factor impacting probability of dying, then we can make this variable less random and this can help us make a more calculated choice. The most ob-vious and uniformly applicable factor influencing health is age. Ceteris paribus, health deteriorates as age pro-gresses (after a certain age level). For the following analysis, we consider households within the USA surveyed for their ownership of life insurance. It has been observed in repeated surveys that most life insurance owners in the USA are concentrated along the upper age margins i.e. above the age of 35. The youngest households are the least likely to own life insurance and furthermore the percentage of households with the bread earner below the age of 35 covered by life insurance have been declining over the years. The following table by the Life In-surance Management Research Association (LIMRA) survey clearly illustrates the same. ("LIMRA", 2015)

Table 9
Ownership by Age of Household Head

	Percent Owning									Number of Households		
	Individual			Group			Any					
	1998	2004	2010	1998	2004	2010	1998	2004	2010	1998	2004	2010
Under age 35	33%	33%	29%	45%	50%	46%	62%	70%	60%	481	401	1,122
35–44	52	46	45	66	65	54	82	82	75	433	374	758
45–54	60	59	48	70	62	52	87	84	73	370	497	747
55–64	63	57	51	49	53	51	80	80	75	172	480	757
65 or older	52	60	52	27	29	40	74	77	70	187	345	382
All households	50%	50%	44%	52%	52%	49%	76%	78%	70%	1,644	2,143	3,766

Table. 2 Source: Household Trends in U.S. Life Insurance Ownership, LIMRA Report.
These results have seen being replicated in a number of such surveys.

Thus it is seen that younger households are less likely to buy a life insurance policy and thus constitute the largest section of the outliers. It is important to understand this find against the backdrop of the policy rates and their relation with age. For any life insurance policy, the premium rates increase with increase in age, typically by about 8 per cent to 10 per cent for every year of age. This means that a 55 year old will have to pay an ap-proximately 80 per cent higher premium than a 45 year old to purchase the same life insurance with the same coverage and same—if any—term period. The reason for this is that every successive year inches you one year closer to your life expectancy or in grimmer terms, to your death. The higher your age, the higher is the proba-bility of you dying within the coverage period and this consideration is most important when determining in-surance premiums. This can be better illustrated through the mortality or morbidity table which shows the prob-ability of death or the likelihood of a person of a certain age dying before his/her next birthday. The mortality rate quantifies the probability of death and is naturally a figure between 0 and 1, 0 being the least probable and 1 being the most. As is seen in the table, the mortality rate rises with rise in age and so naturally the premium amount also increases. This is because at a higher probability of death, the insurer takes up a much higher risk of the person dying and so the probability that the insuring company will have to pay the indemnities is also very high. So higher the age, pricier it is to procure an insurance coverage. This implies that it would cost an individual much more to get an insurance coverage at a later age than it would to get the same coverage earlier.
Superimposing these results on the previously obtained information, one is faced by an irony. There is a higher tendency among individuals to purchase life insurance at a higher age in spite of the fact that it would cost them a lot less to purchase the same insurance at a lower age. Inferentially, individuals attribute a higher weightage to mortality rates than to the rates of premium while calculating their trade-offs for buying a life insurance. Since the probability of dying at a younger age is low, individuals are willing to take on the mortality risk and defer availing an insurance so as to not forgo the loss of purchasing power through premiums. However, the same individual at a higher age, is much more likely to avail the life insurance as the probability of death is higher thus making the insurance more beneficial in terms of likelihood of returns. This clearly shows the competing priorities at different ages wherein at a lower age individuals prioritise purchasing power while at a higher age they prioritise security.[4]

In order to understand the impact of the probability of death on an individual's perception of risk, let us specify the trade-offs in more concrete terms. Let L be the loss of utility due to premium payments, P the probability of death which is directly proportional to age of the person and W the worry factor which quantifies the worry caused due to risk of not having an insurance cover.

Intuitively, Worry $\propto$ Probability (Death) as higher the mortality higher is the risk taken on by the individual and therefore higher is the worry. Therefore, the Worry factor will be compounded with every rise in age.

An individual will be willing to buy an insurance cover as long as the following equation holds; L ≤

That is, insurance will be purchased as long as the disutility arising through risk of death outweighs the disutili-ty due to loss of purchasing power. So, if the real income of an individual remains more or less constant, the Worry factor will intensify with rise in age and so the individual will be more likely to get an insurance cover.

B) Impact of Rate of Premium on Relative Pay-Offs:

The other factor that impacts purchase of insurance is the rate of premiums contrasted against the individual's purchasing power. At what rate of premium will an individual buy an insurance considering he/she has a certain level of income? The obvious answer is - when the premium is less than or equal to the risk perception. Accord ing to the LIMRA survey, life insurance ownership increases with household income. The following table indi-cates this trend and also shows that the purchase of insurance has fallen for people across all income groups.

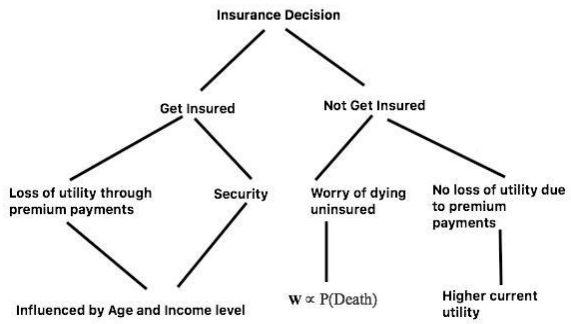
Ownership by Household Income*

	Percent Owning						Number of Households	
	Individual		Group		Any			
	2004	2010	2004	2010	2004	2010	2004	2010
Under $35,000	34%	31%	22%	18%	53%	42%	239	816
$35,000–$49,999	53	40	53	44	82	66	439	765
$50,000–$99,999	52	46	68	62	89	81	467	1,490
$100,000–$124,999	58	53	70	67	88	85	339	358
$125,000 and over	65	59	66	65	93	86	457	336
All households	50%	44%	52%	49%	78%	70%	2,143	3,766

Table. 4 Source: Household Trends in U.S. Life Insurance Ownership, LIMRA Report.

Usually players in a game try to find a minimax solution i.e. to maximise the minimum gains or minimise the maximum loses. In this case, the individual aims at minimising his losses if death does not occur. This is differ-ent from the Nash equilibrium as it goes ahead with the assumption that the most favourable outcome will hap-pen. In our context, it refers to a player who will assume that he is not going to die in the near future and will thus abstain from getting an insurance cover to avoid the opportunity cost of having to forfeit the purchasing power lost through premium payments.

Given the objective of avoiding this cost, the rational thing to do is to refuse to buy insurance until P > L i.e. the probability of death is greater than disutility due to premium payments. Now, assuming that L is larger for low income households (as premium outflows will hurt their incomes to a greater extent than they would to high-income households), it naturally follows that these households would be less likely to get covered.



C) The Market for Lemons and its Impact on Insurance Purchase:

Insurance decision is also influenced by the other individuals in the insurance net. Potential insurance buyers may be deterred due to adverse selection. The problem of adverse selection, also known as the lemons problem, explains how low quality goods drive out high quality goods from the market. The same also applies to insur-ance markets. Insurance companies cannot sufficiently distinguish high-risk individuals from low-risk ones. If it anticipates adverse selection, it raises its premium which breeds further adverse selection. As a result, people with lower risk no longer find it viable to buy the insurance policy knowing that they will be paying for some-one else's risk. Thus high-risk people drive low-risk people out of the market.

Furthermore, there is also the illusion of moral hazard. Individuals with lower risk perceive themselves to be on the receiving end of on an unjust risk burden. The insurance company, by pooling the risk of all the insured, reduces its overall risk by laying it over a wider space. But at an individual insurer level, the risk may be ele-vated. The high risk individuals benefit at the cost of low risk one due to the levelling effect. A low risk indi-vidual seeking to buy an insurance might find it more viable not to do so if he is able to make this calculation and weigh his pay-offs accordingly.

D) Behavioral Factors Influencing Insurance Decision:

The risk perceptions of individuals depend upon their estimation of the probability of death and utility that they expect to derive from various choices. Usually these estimates are a mixture of objective and subjective elements. The objective elements include past experience, empirical data and an analysis of present situation. The subjective elements are impacted by the psychological makeup of the individuals. These psychological elements involved in the decision making introduces an additional layer of complexity in the decision

1. **Confirmation Bias:** Confirmation Bias is the tendency of interpreting data in a way that confirms one's pre-existing beliefs. It is based on inductive reasoning based on the limited information available to individuals and may thus not be completely correct. Individuals may defer the purchase of an insurance policy if they perceive their personal loss from the information asymmetry in the insurance market to be very high. In particular, a per-son who understands the insurance sector would be able to justify his not buying an insurance through the idea of market of lemons.

2. **Short-termism:** It refers to an excessive focus on short-term results at the expense of long-term interests. Individuals tend to give a higher weightage to the current utility at the cost of future stability. Thus they may desist from buying a life insurance as it adversely impacts the current purchasing power

Illusion of Control Bias: The illusion of control is the tendency for people to overestimate their ability tocontrol events. This is a very important factor that influences investment decisions and may be responsible for a large number of outliers. To many people, buying an insurance is akin to letting go of the reins to one's life. People tend to believe that they can control the circumstances and time of their deaths to a great extent. They do not ascribe a high

2) Probability to untimely death and thus abstain from taking insurance.

3) **Availability heuristic:** People who cannot recall to mind recent deaths in their families tend to be affected by this bias. A person who has experienced a recent death is more likely to get himself insured. On the other hand, people who observe the insured around them getting no returns from their coverage may have less inclination to get coverage themselves.Thus behavioral traits also play a great role in impacting insurance decisions and in many cases may be the reason of the insurance outliers.

Conclusion:

The theoretical analysis of insurance decision-making produced some rather interesting results. It demonstrated how individuals weigh their relative utilities based on their perceptions of the probability of death and premium rates. It also revealed the competing priorities at different ages wherein at a lower age individuals prioritise pur-chasing power while at a higher age they prioritise security. Furthermore, through the use of ideas based in be-havioural economics, the author was able to rationalise the decisions of the insurance outliers thus going be-yond theoretical modelling and making space for the formulation of a practicable solution to the problem of in-surance eluders. The inferences drawn through this research may perhaps be utilized in designing an appropri-ate nudge architecture to integrate the insurance outliers into the mainstream. However, that is beyond the scope of this research and will thus be left open to further studies.

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In Pursuit of Education:

An analysis of the problems faced by Female Students

Meghna Nair, Nikita Sharma, Nithya Srinivasan, Stuti Agarwalla

Introduction

Developmental concerns today are becoming increasingly focused on gender bias and gender inequality (Chakravarty, 1998) which make development efforts hollow without a more inclusive and equitable outcome. At the confluence of this concern lies the issue of female children dropping out of schools. The positive contribution of female literacy towards lowering fertility rates, infant and child mortality and reducing population growth has been well established and makes it a major driver of social development (Kingdon, 1999). The education of women heralds improvement in the nutrition level among children and health care practices. Yet, it must be borne in mind that the matter of female literacy is pertinent not just because of the positive social and economic spillovers of education among females but more importantly because of the opportunity education holds for them, like any other able individual, to lead a fulfilling and creative life.

Efforts have undoubtedly been made to bring each child, especially the female child under the ambit of education. Unfortunately, they have fizzled out as half-hearted attempts or pending goals. The sluggishness in the fulfillment of these goals has been due to inadequacies at the policy level of which insufficient fiscal support is one. On the 20 December, 2017, sixty economists wrote to the Finance Minister urging him to deviate from the ongoing trend of low budgetary allocations given to various social sectors, including that of Education. Currently the Government allocates 3.7% of its budgetary finances to the Education sector which in absolute terms is nearly Rs. 80,000 crores. 62% of this is provided to higher education and a meagre 38% to school education and literacy.

In light of this insufficient fiscal support, the research project endeavours to gauge the extent of deficiencies in the schools visited by the female children of Delhi's urban poor settlement through the impediments faced by them in their pursuit of education. Familial background, involvement and expectations are analysed along with public services in the spheres of academics, health and infrastructure. The social fabric of the region is taken into purview through a small examination on caste and migrant realities as well.

Literature Review

The problems faced by female students have often pushed them to drop out from schools. Analysis of dropout statistics reveals a disturbing insight; dropout rates have consistently remained higher for female students than for male students (Choudhury, 2006). This skewed trend stems from social, cultural and economic reasons that are

generally seen as falling broadly under three categories: (i) family related reasons (socio-economic status, family size, parental education); (ii) school related reasons (infrastructure of schools, quality of teachers and education being imparted, academic performance, interest in school and school work, distance from school and security); (iii) personal reasons (onset of puberty and personal and physical discomfort arising thereof, extenuating circumstances like marriage, financial pressure to work) (Weber, 1989).

This matches with the results from India-specific studies. In a study of District Primary Education Programme it was found that "general household characteristics like income, caste, occupation and education level of parents continue to determine access, attendance, completion and learning achievements'' (Ramchandran & Saihjee, 2002). Family is a crucial unit in a country like India which is largely deeply rooted in tradition. While it can be supportive and close-knit, it can also be pressurising and limiting. A study of female children in West Bengal revealed that the strongest factors behind school participation, enrolment and dropouts were household factors such as parental schooling, household income and father's occupation (Sengupta & Guha, 2002). Along with these, caste and religion came out as significant determinants as well.

Other familial factors are the family size and the number of siblings. These factors become significant because a large family size could put financial constraints on families with limited means. Moreover, the need for looking after younger siblings has often come up in studies and reports as an impediment to female education. In other contexts, however, there exists another diametrically opposite relation between family size and education. Looking at the evidence put forth by Borooah, 2003 and Choudhury, 2006 the negative relation seems to hold in the Indian context. A study in a north-eastern part of the country revealed that an increase in the family size by one increases the chances of dropping out by 1.7 times. Going by a number of empirical investigations in the country it can be concluded that larger families inflict more educational disadvantages than smaller families (Choudhury, 2006). These factors are likely to have a larger impact in the education prospects of the female children due to the gender bias against them in the allocation of the family resources which has been pointed out by various studies.

However, unlike the relation with family size, studies in India have reached inconclusive results about the influence of parental education (as to which parent's education impacts more) on dropout rates among children. A study in the north eastern part of the country holds the father's education to be more significant with the chances of student dropout reducing by 16 percent for every year's increase in the father's education (Choudhury, 2006). Similar conclusions have been reported by a study in West Bengal (Sengupta & Guha, 2002). However, contradictory results have been observed by Zeba A Sathar, 1994.

While family units still have some control over their monetary resources, there are nevertheless some social endowments that are beyond the control of an individual. Religion and Caste are examples of such social endowments and are significant determinants of an individual's socio-economic status. There relevance also holds in the retention of students in schools (Sengupta & Guha, 2002). Among students those who are Muslim are less likely to continue in school as compared to their Hindu and Sikh peers (Borooah, 2003). As per a study set in the north-eastern part of

the country, Muslim children are 1.9 times more likely to drop out of schools than Hindu or Sikh students (Choudhury, 2006). The argument provided for the increased dropout rates among the Muslim children stems from the positive influence of higher educated parents on education attainment and comes after analysis of the 1991 census data and the 43rd and 50th round of the NSSO. Communities that were able to reap the benefits of education earlier passed the advantage further down the line and in this respect the Muslims lagged behind. For at the time of independence Hindus were in a better position to gain from secondary education while the Muslims were waiting to catch up in literacy and primary education (Bhat & Zavier, 2005).

The often conservative values of Muslim households, believing that the female children's place is at home and should have little to do with education, have served as deterrents in their pursuit of education. This is reflected in the lower probability of female Muslim children in enrolling in schools, higher likelihood of dropping out and lower grade completion levels in comparison to those from Hindu families (Sengupta & Guha, 2002). Owing to social discrimination and atrocities born of the caste system, the children of the backward classes have also shown lower enrolment and higher dropout rates in comparison to those from Hindu families. A child from a backward caste is 3.2 times more likely to dropout than a child from a privileged caste (Choudhury, 2006). While the government has been undertaking various schemes and programmes to make education more accessible to them and engender inclusivity, discrimination still continues. There have been some improvement in their status but not substantive enough to make up for centuries of marginalisation and entrenched prejudices. Similar trends have also been noticed in the case of tribal communities (Sengupta & Guha, 2002).

As per the data from 52nd round of National Sample Survey (NSS), the lack of interest on part of the child is the major factor behind dropouts among both male and female students with 37 per cent responses to that effect in both rural and urban areas. The reason behind this disinterest among students ranges over expectations from and worthiness of education being received. Parents discourage female children from pursuing studies because they do not believe in its utility for in their minds their daughters will soon get married and eventually manage a household only. To parents, by continuing with her education a female child tends to become 'over-qualified', making it difficult for her to get a hand in marriage. From their perspective, marriage may seem as a way of ensuring for the provision of the female child in adulthood and protection against financial risks. The social influence also at play here sees marriage as a guard against the dangers and stigma of pre-marital sex. Education is demonised for instilling 'non-conformist' zeal among 'impressionable' female children as well (Chowdhury, 1994). Moreover, seeing that the economic benefits of spending on the education of the female child will accrue to the family that she is married into and not the natal family which is making the investment also deters parents from sending their daughters to school (Sengupta & Guha, 2002).

However, studies and surveys have shown that the intensity of these factors lessens with the transition from rural to urban areas. This is likely to be due to the modernising influence of the urban spaces. Better economic opportunities in the urban areas also ease out the financial constraints and the improved access to education positively influences its attainment. Urban areas have a greater demand for a skilled labour force

which gives an impetus towards human resource development. This has been observed in an experimental research design in India which found that expansion in the labour market opportunities in the randomly selected area led to a shift in aspirations at individual and family level among the female populace there. Girls there, between the ages of 15 to 21, had a greater tendency for enrolling in computer or English-language courses. Even the younger female children showed improvements in enrolment and body mass index because of increased investment in nutrition and healthcare of female children (Lives, 2015). As per the data from 52nd round of National Sample Survey (NSS) which highlights the reasons behind female children dropping out of schools, 'Parents not interested in studies' affect 17 per cent and 11 per cent female children in rural and urban areas respectively. This goes to show the increased interest and importance of education among parents and further supports the argument of the modernising influence of urban areas. However, 5.6 per cent of female children quit their education due to financial constraints and the need to supplement the family income in urban areas. A probable underlying cause for this is greater avenues for getting employment and incentivising relatively higher wage in urban than in rural areas. A higher proportion of female children get absorbed in domestic duties than the male children in rural (6.7 per cent) and urban (6.3 per cent) areas. This fall in percentages from rural to urban areas potentially points to a more equitable treatment of children in urban areas which come with modern values.

Familial fears and expectations are a part of the social fabric which changes at its own pace but access to quality education is dependent on the policy structure and reach which changes with governments. A study on a large Indian database constructed by National Council for Applied Economic Research (NCAER) led to the observation that while only 11 per cent children lived in villages without a primary school, 30 per cent resided in villages with or without a middle school (Borooah, 2003). Distance from school translates into distance from education. In the remote parts of the country, children have to walk for hours over kilometers to reach their school. This daily travel not only has a high opportunity cost in terms of the help that they could have provided in the domestic chores but also exerts them to the extent that they become unable or even frustrated to prepare for their lessons at home. For the female children this problem gets compounded with additional security concerns. For them a longer journey from home means a greater risk of sexual assault on the way and this, regrettably, comes as no surprise given India's unfortunate infamy for not having a completely safe environment for women.

Female students have also expressed a fear of bathrooms (if they are there) which have not been gender-segregated. To them it puts them at a vulnerable spot and prone to bullying and harassment from fellow male students and to avoid this they often miss school while menstruating (Lives, 2015). Sometimes due to lack of availability of pad/cloth in school, female children often go back to their homes and simply not come back. There is an absence of dialogue and a certain stigmatisation around menstruation which makes it difficult for adolescent girls to physically and mentally deal with this natural process. In the absence of a support system at school or particular encouragement at home, female children often dropout after hitting puberty.

Security and distance couple with infrastructural inadequacies and qualitative deficiencies of the government schools to further disenchant female children from

pursuing education. With priorities skewed towards enrolment than functioning, government schools continue to remain plagued with teacher absenteeism and under-qualification, insufficient sanitation and crumbling infrastructure.

Female children have to encounter additional social, economic, cultural, logistical, and attitudinal hurdles in their pursuit of education. They have to fight not only with the ideals of a patriarchal society, but also their spirit which would die without any form of encouragement. Family is centric to most of the constraints preventing female children from pursuing education. Family size has a direct relationship with the dropout rate in the Indian context, while income varies inversely. Parental education has shown to play a definite role. However, results have been inconclusive with regard to which parent (the mother or the father) has the greater role to play. Family's social standing in the caste hierarchy, religious outlook, and orthodox expectations are significant impediments to the access of education for the female children. Educational attainment is also prevented by security concerns and distance from schools. The inadequate infrastructure, teacher absenteeism and poor quality of education being imparted act as discouraging elements as well. These are the major factors which nip the potential of the female children in the bud by prompting their dropping out of schools.

Research
Research Question

An analysis of the socio economic factors affecting female education in urban poor settlements in Delhi

1. Does parental education have a relationship with the child's academic performance?
2. Does domestic involvement act as a deterrent to school education in case of females?
3. Does menstruation act as a barrier in the pursuit of education amongst the poor?
4. How do family expectations affect the attainment of education among girls?

Research Methodology

The research was based on primary data collection and analysis. 70 female children of the age group 8-18 years were surveyed and interviewed on their familial and social background, school facilities and their satisfaction with them, in order to identify the most influential factors impeding their education.

This particular age group was chosen, in cognizance of the fall in school participation and enrollment at the onset of puberty as widely suggested by the existing literature. Five urban poor settlements of North Delhi were visited and the households in each community were chosen randomly in order to prevent any form of selection bias. The respondents included enrolled students and dropouts residing in Sanjay Basti (Timarpur), Nirankari Basti (Mukherjee Nagar), Lalbagh (Azadpur), Samaypur Badli and Daka (Outram Lanes).

The respondents were asked questions from a survey questionnaire which consisted of both closed and open ended questions. They were questioned on a wide spectrum of topics ranging from family's social and economic standing income, parental influence, school infrastructure, menstrual health and hygiene, academic performance among others. Moreover, even parents were interviewed in order to see the effect of factors such as family attitude and expectations.

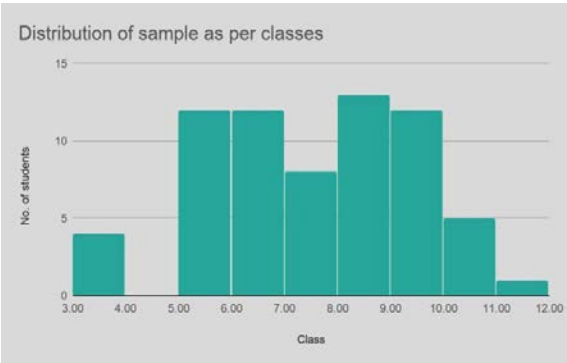
The study adopts both quantitative as well as a qualitative approach for the analysis. Quantitative approach is necessary to be able to provide a value/range for each observation which is further necessary in order to invoke useful and detailed comparison. Further qualitative approach has been incorporated in order to account for the diversity of responses that could be found.

Limitations

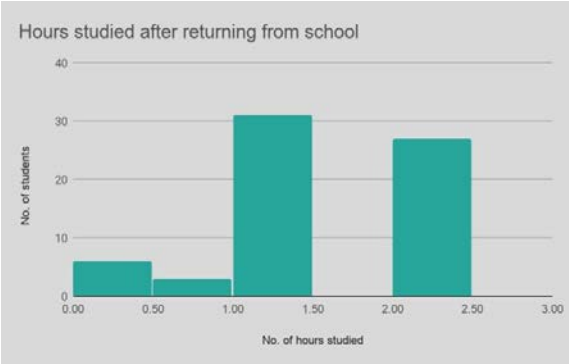
The survey takes a small sample size of 70 respondents and that too only in a particular section of the city (North Delhi) which may prevent generalisation of the results obtained. Further, as this survey was based on self-reporting there may be chances of underreporting and recall bias. In some cases the parents were not available. Hence, the family perception/attitude questions were discussed with the respondents. There is a chance that the results would have been different if parents had been questioned in such cases.

Analysis

Family



The sample had girls studying in grades varying from the 3rd grade to the 12th. However, in light of the increasing diligence demanded by higher grades, there does not seem to be much variation in the hours put in by them to study, which was mostly one and at most two.

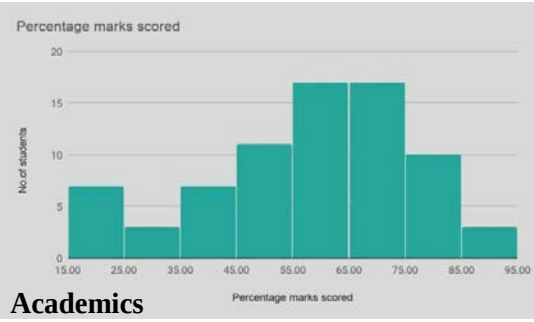


The modal family size was 5 with most girls having at least one younger sibling. While only 13% of respondents' father were not bringing any income to the family, 36% of the mothers had sought to contribute to the family income by seeking employment as domestic aids, factory workers, among other vocations. It is encouraging to note that these young women aspire to succeed beyond their mothers' profession with Teacher, Doctor and Police officer being the most common aspirations.

Fathers had shown a more continued pursuit of education than mothers. However, when it comes to university level education, a roughly equal share of both the sets of parents had completed it (2.8% fathers and 4.2% mothers). The number of mothers who had never been enrolled in schools was twice that of the number of fathers. The trends of parental education show two distinct stages when most dropouts occur; after classes 5th and 10th. It must be noted that the 5th grade marks the end of primary education and the further pursue of education requires a change of school in most instances; the completion of 10th grade marks matriculation. While the graphs show fewer share of mothers dropping out at both the stages, it must be borne in mind that this share is small because a far reduced share of mothers have reached this stage.

A majority of the respondents were unaware of the reasons behind their mother's discontinuing education. Of the known reasons, marriage was the most popular and was followed by disinterest in studies. 60% of the dropouts sampled did not make the decision to discontinue their education on their own with the most common reason pertaining to Family. This relation also corresponds with that of the mothers. The other reasons include personal illness and poor academic performance. None of the dropouts were married or about to be married at the time of the survey and only 10% of them were working. Another significant trend among the respondents who have dropped out is that a majority (40%) of them have done so at the completion of their 10th grade. This partially mirrors the dropout trends displayed by their parents' generation where the incidence of discontinuation of education showed a spike after 5th and 10th class.

The sampled data harks back to the known bias towards male education with fewer fathers not being ever enrolled in schools than mothers and more sustained continuation in school among fathers. Interestingly, a close percentage of both the sets of parents reached university level education.

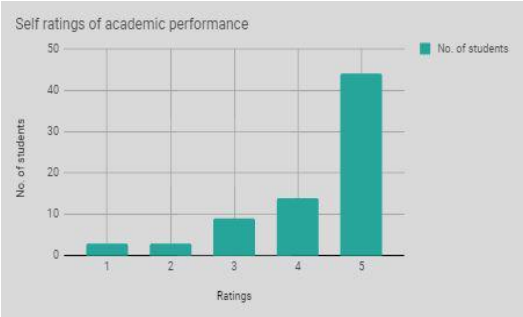


Academics

The marks obtained by the students showed a significant variation with modal marks centering at 60. However, the self-rating startlingly skewed towards 5; a large share of the respondents came across as extremely satisfied, even happy, with their performance, however poor. This is probably indicative of the low expectations and underestimation of their own potential.

This wave of contentment even spread to the perceptions of teacher effectiveness with only 8% displaying outright dissatisfaction and rating their teachers as 1 and 2 on a scale of The teachers were also largely reported as being serious and regular about

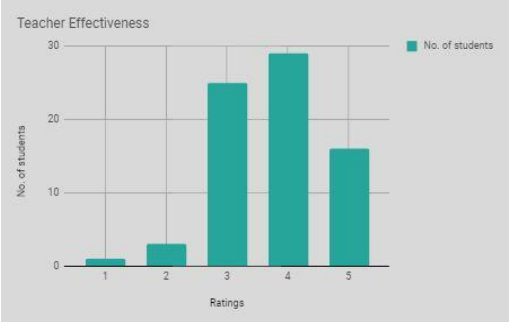
their responsibilities, which was in sharp contrast to the teacher absenteeism strongly suggested by the existing literature. Only 11.4% of the female students were unsatisfied with the education being received at school.



None of the respondents reported discrimination academic performance. No instances of bullying non-teaching staff and fellow students were reported on grounds of gender, caste and or harassment by teaching or

Travel

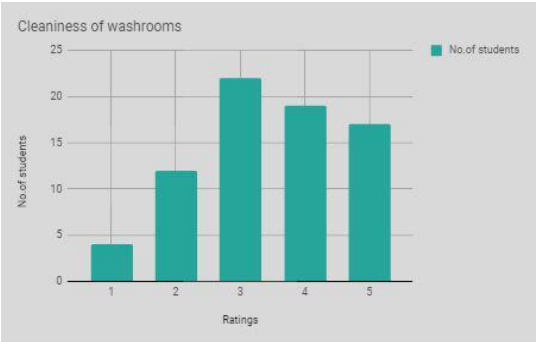
All the urban poor settlements visited had a public school in them. The respondents, who were also the residents of these settlements, were not faced with a commuting distance of more than a kilometer. Majority of the students, thus, comfortably walked to school with only a 13% of the respondents hiring a rickshaw to reach their respective schools. The modal daily cost of commuting through a paid rickshaw has come out as INR 30. Apart from this, 27% the respondents reported other financial cost pertaining to the expenses incurred in the payment of the school uniforms and textbooks as in the cases where some scholarship was given to the students to buy them, it was not sufficient. These combined
overhead costs amounted between INR 1000-1500 annually which is a significant amount in households of urban poor settlements that have a monthly modal earning of INR 5000.



While only 12% of the respondents travelled alone to schools and 29% were accompanied by their elders, all students reported feeling safe during their commute to school. However, 7% of them have also claimed to be eve teased, at least once, on the way.

Infrastructure

All the respondents reported adequate and satisfactory seating arrangement along with drinking water facilities, science labs and libraries. 21.4% of the female students were not receiving midday meals in the school. However, this could also be because some of the respondents were not in elementary schools that come under the purview of RTE 2009 which mandates the provision of midday meals in schools.



Arguably the most important aspect of infrastructure, especially in the case of female students, is toilets. The number of toilets was resoundingly adequate and separate for female students. While the ratings of the toilets weigh towards moderate satisfaction, a whopping 68.6% of the respondents reported not using the toilet in times of need owing to its stench and dirty state.

Health

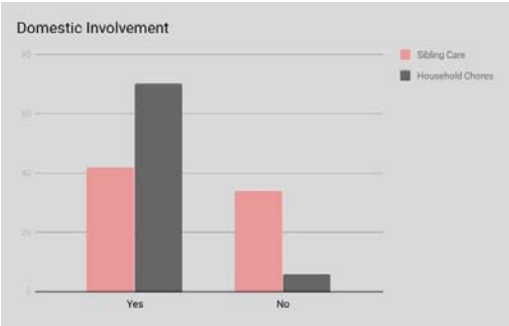
Contrary to the prevailing trends in the existing literature pointing to the discontinuation in education after hitting puberty among female students, the research revealed it as not a major deterrent to the pursuit of education.

Two encouraging observations were that most of the respondents interviewed were using sanitary napkins provided by the school and these were also available at their school's medical room in case of emergencies. However, 20% of the respondents reported that pads were unavailable in the medical rooms when needed. 47.1% of the students reported that they did nothing on experiencing pain and only 10% took medication. One particular government school in Timarpur had its students report that its medical infirmary no longer kept pads and students had to carry their own at all times.

In most cases, menstruation was not found to significantly hamper the respondents' lives at school or home as the female children reported walking to school and carrying out all their activities, academic and domestic, just the same. In case they experienced any pain while they were in school, menstrual or otherwise, they found it comfortable to turn to their teachers, who they said have always helped them out. None of the students reported any event of being shamed by either their teachers or fellow students incase they were sick or found their uniforms stained with blood.

In case of major health conditions, schools immediately contacted the parents/ local available guardian of the student and have them taken home. A medical room, as mentioned above, is always available and the nurse in charge is reported to be approachable and friendly.

Domestic Involvement



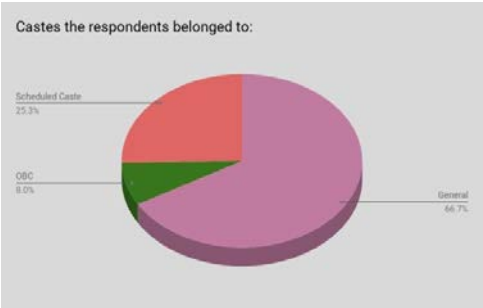
The graph illustrates the active involvement of the respondents in domestic chores with 70% of the respondents capable of cooking an entire meal. This percentage reached 100 in the cases where the mothers were working. 83% of them, a huge majority, did not believe that this came in the way of their studies. This is interesting to note considering that the majority of these same young women believed that they could perform better had they been given more time to study at home. Therefore, to be domestically involved is an inescapable aspect of gender role for these female children. So, even if only 17% students admitted to domestic chores hindering their academic performance, this is merely because it is not a trade off any of them think they can make.

Caste

A majority of children, 66.7% of them, belong to General, unreserved castes; 25.3% to Scheduled Castes and a meagre 8% (which also includes the muslim respondents) to Other Backward Classes.

While the families belonging to the same caste tended to cluster around different sections of the bastis, this segmented social relations did not extend to the female children interviewed. Not only did friend circles include a variety of castes, children of different religions too, were found to be good friends.

However, we did note one particular unreserved Muslim family that sent it's young to only the local Madrasa. Most children could not point out their specific caste which leads us to believe that caste based awareness is less prevalent among the young. The same did not report of any caste based discrimination at school or among their peers. However, what children were aware of was whether their families could avail of a reservation or not.



Most of the respondents had been born and raised in Delhi and very few were migrants. Those who had migrated had done so at a very young age which does not leave much to base an analysis on.

Expectations and Hopes

In the sample of 8-18 year olds, the dominant expectation from the young women is to study with 14.3% of the respondents reporting facing family pressure to get married but none to work. At the time of the survey, only 7% of them were working with a majority being engaged in family enterprises such as shops and carts. Others were employed as househelps and earning INR 1200 on average.

The respondent's modal expectation of the age of marriage is 20 years. This is 5 years more than the modal age of marriage among the mothers. This is in touch with the trends observed in developing economies wherein the expected age of marriage is being pushed forward with the female children staying in schools longer. This retention in school has been bolstered by the importance of education among parents. In our sample, 97.1% of the parents find the education of their daughters worthwhile and 91.5% find it satisfactory. The existing literature suggests that parents did not encourage their daughters to pursue education as according to them it would lower their probabilities of getting a suitable hand in marriage and the benefits of education would accrue to the in-laws' family. However, 77.2% of the parents maintained that their daughter would get a better hand in marriage with better education and 95.8% believed that education would enhance their daughter's future earning capacity.

Key Findings

- The parents' generation showed spikes in dropouts at the completion of 5th and 10th standards. The dropouts partially mirror this pattern

with a majority of them occurring after class 10th.

- An indication of low expectation from self in terms of academic performance.

- All urban poor settlements had a public school less than a kilometre away and travel to school was safe and easy.
- The amount received for the purchase of books and uniforms falls short of their full cost.
- Menstruation did not come up as a particular deterrent to the pursuit of education.
- Involvement in domestic chores increases noticeably when the mother goes out to work.

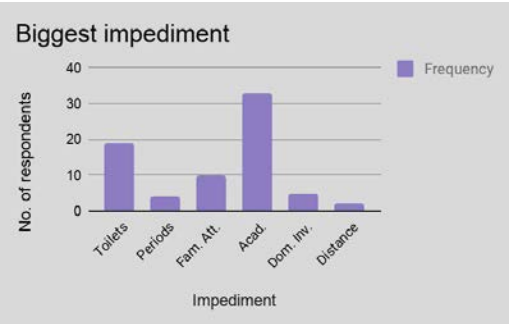
Policy suggestions

- **Awareness campaigns on vocations and career counseling**- The young women were aspirational with 91.4% wanting to resign themselves to just a domestic life. Such campaigns would go a long way in giving them a direction and concrete knowledge of what they need to fulfill their dreams.

- **Vouchers for uniforms and textbooks**- Since the subsidy provided for the purchase of uniforms and textbooks often fell short and significantly ate into a household's expenditure, a voucher system is suggested. Through this a student would only have to provide the voucher at the time of purchase and the retailer can later seek reimbursement from the appropriate government.

- **Awareness campaigns on menstrual health and hygiene**-The inaction towards assuaging menstrual pain by nearly half the respondents requires awareness drives to spread information on available medication and dispel the myths surrounding them as well.

Conclusion



This research aimed at finding the effect of various socio-economic factors on female education in the urban poor settlements of Delhi. With a school in almost every settlement, access(Distance) to education did not come across as a significant obstacle. However, its quality and interaction with the teachers(Acad.) came across as the most common deterrent. Unhygienic toilets and poor sanitation, especially once these girls have attained puberty, poses as the second biggest challenge. Family pressure to work, get married or assist in domestic chores (Fam. Att and Dom. Inv.), were the third most noticeable impediment. Interestingly, menstruation(Periods) was the least troublesome factor.

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Moving on up?

A look into Intergenerational Educational Mobility in India since Independence

Rituparna Sanyal

Abstract

Are the economic fortunes of children tied to that of their parents or is there a fair chance of movement up and down the economic ladder from one generation to the next? The extent to which parental factors (specifically, parent's educational attainment) relate to the (education) outcomes of their children is the primary question this paper seeks to answer.

Using data from the India Human Development Survey (IHDS) 2012, I examine intergenerational educational mobility in India since 1947, an issue on which very few systematic and rigorous studies exist. The individuals are grouped into classes and patterns of mobility are documented at the all-India level. I found that despite substantial intergenerational persistence, parent's education has an increasingly weaker impact on the child's educational outcome today than in the past. Overall, the results suggest a gradual upward mobility in education in India.

Introduction

All of us admire stories of the son or daughter of an uneducated daily wage labourer or farmer cracking the Union Public Service Commission or Indian Institute of Technology's entrance exams. The question, however, is whether such success stories, constituting intergenerational upward mobility in education, are becoming more common or do they constitute mere aberrations?

Intergenerational mobility refers to any change in the socio-economic position of members of the same family that takes place from one generation to the next. It is the extent to which some key characteristics and outcomes of individuals differ from those of their parents. Intergenerational mobility has been a pressing issue in India and thus, has wide policy implications. It is an important goal in both developed and developing countries as it indicates the opportunity for children to move beyond their social origins and obtain a status not dictated by that of their parents.

India's rapid economic growth since the 1980s has been accompanied by increasing inequality in *outcomes*, raising widespread concern that it may be a reflection of growing inequality in *opportunities*. Inequality in opportunities across people is of concern for intrinsic reasons and also because it may have an instrumental impact on the development process (World Bank, 2005). It is particularly important for India which stands out as a deeply

stratified society.

However, limited empirical work has been done on this area in India. This paper hopes to make a minuscule contribution to this dearth of literature. I begin by setting the context of education in India, and briefly reviewing selected existing literature on the topic. I then move on to describe the dataset and methodology used, along with the results obtained. Finally, I lay down the implications it has for policy and conclude.

Intergenerational Transmission of Education – A Background

Over the last few years, educational outcomes – as measured by the time a person spends in school[1] – have improved considerably in India. The mean years of schooling have grown across successive generations, for both men and women, in both rural and urban areas.

During this period, the reach of the schooling system has vastly expanded. Universalisation of education, at least at the primary level, has been a political agenda for successive governments that have introduced a series of educational intervention focused on getting children into school (midday meals, free textbooks, free uniforms, etc). At the same time, the private sector has expanded, especially in urban areas.

As a result, the Gross Enrolment Ratio (GER) for all persons in elementary education increased from 81.6% in 2000-01 to 96.9% (provisional figure) in 2014-15. At this level, the GER for boys and girls increased by 4.5 (from 90.3% to 94.8%) and 26.4 (from 72.4% to 99.2%) percentage points respectively during the period. (Ministry of Human Resource Development, 2016)

The adult literacy rate too has shown an upward trend for females as well as males. It has increased from 61% to 69.3% during the period 2001-2011. This is an indicator of the stock of our human capital. As per NSS 71st round findings, the adult literacy rate stands at 70.5% for the year 2014. (Ministry of Human Resource Development, 2016)

With improvement in the number of schools, facilities in schools and enrolment, the annual dropout rate at the primary level has come down by 1.28 percentage points (from 5.62% in 2011-12 to 4.34% in 2013-14) for all categories of students.

[1] A valid concern, documented in the Annual Status of Education Reports, is that years of schooling is an imprecise measure of cognitive skill formation. Learning outcomes remain much too low and vary across states.

At this level, the dropout rate for boys and girls decreased by 1.36 (from 5.89% to 4.53%) and 1.2 (from 5.34% to 4.14%) percentage points respectively during this period. (Ministry of Human Resource Development, 2016)

However, even as we contemplate with satisfaction the above remarkable achievements, we must focus our attention on improving the quality of education. Number of years a child spends in school is only one measure of educational outcomes. A full understanding of the inequality in educational opportunities would require focusing on educational quality and learning outcomes. But while many household surveys reveal how many children are in school and how many years they spend there, information on the basic competencies they acquire in school is hard to acquire. Years of schooling remains an important indicator to monitor and understand in the Indian context where a large number of children still do not complete the requisite years of school. But, it is to be cautioned that my focus on the changes in mobility captured by the total years of schooling measure represents a partial picture of educational outcomes.

Review of Literature

The issue of intergenerational mobility in income, education, and occupation has been extensively explored in the literature. While a wealth of literature has accumulated in Western contexts where these aspects have been studied for a longer period, the study of social and education mobility is still in its infancy in India. However, one advantage that India has is the existence of representative, large-scale data-sets such as IHDS I and II, National Family Health Survey (NFHS) I-IV and the thick National Sample Survey (NSS) rounds. The prospects for analysis on the various forms of social mobility therefore look promising.

Internationally, in economics, there is considerable literature on the transference of economic success from one generation to the next. That the family plays a crucial role in perpetuating or eliminating inequality has long been recognized by economists. Black and Devereux(Black & Devereaux, 2010) presented a recent survey of the evidence and methodological problems of the research available for the developed economies. Hertz et al. (Hertz, et al., 2007) studied the trends in intergenerational transmission of educational attainment for a sample of 42 nations over fifty years. They documented large regional differences in educational persistence, with Latin America displaying the highest intergenerational correlations, and Nordic countries the lowest. They estimated the global average correlation between parent and

child's schooling to be around 0.42 over the fifty year period.

In India, Jalan and Murgai (Jalan & Murgai, 2007) looked at inequalities in educational outcomes across groups of individuals and the perpetuation of these inequalities across generations using the 1992-93 and 1998-99 NFHS data. They found that intergenerational mobility in education has improved significantly and consistently across generations. Mobility has improved, on average, for all major social groups and wealth classes. The differences in mobility are more along the rich-poor line rather than along caste lines. An important limitation of their analysis is, however, that in the NFHS data, respondents are not directly asked about the education of their parents. Hence, parental outcomes are only known for child-parent pairs that are still living in the same household. As a result, they only focus on children aged 15 to 19 years who are more likely to be living with their parents.

In another paper, Rajarshi Majumder (Majumder, 2010) sought to determine levels of Educational Attainment and Occupational Structure separately for the *Excluded Castes* (SCs, STs and OBCs) and the *Advanced Castes* (Upper Castes) in India; determine mobility across generations in terms of Educational Attainments and Occupational Structure separately for these two classes; and explore whether the mobilities are different for the different groups, separately for two gender groups. He observed that a substantial upward mobility is present in terms of educational attainment levels. About 48 per cent of children in 1993 and about 56 per cent of children in 2004 have higher educational levels compared to their parents. Mobility is higher for the younger age group compared to the older, and for boys compared to girls. However, social disparity in mobility levels is quite evident. Upward mobility was lower for the excluded castes compared to the advanced castes in 1993. The gap has decreased in 2004, especially for the boys, but is still significant.

Similarly, using a unique father-son matched data set relying on the India Human Development Survey (IHDS)-I, Azam and Bhatt (Azam & Bhatt, 2012) studied the extent of intergenerational mobility in educational attainment in India during 1940-85 and provided an estimate of how India ranks among other nations. They also documented this mobility across social groups and states in India. Further, they investigated the evolution of mobility in educational attainment across the two generations and whether this trend differed across social groups and state boundaries. They found that there have been significant improvements in educational mobility across generations in India, at the aggregate level, across social groups, and across states. Interestingly, they also found that at the lower end of the education distribution, sons of less educated fathers are more likely to achieve greater education than their fathers, implying improved mobility. However, at the top end of the distribution there is evidence for

regression of sons' educational attainment. There has also been a decrease in the inertia of the prevalent discrimination based on caste. Although most of the Indian states have made significant progress over time in terms of improved mobility, there remain significant variations across states, with some states faring worse than others. My paper is largely inspired by their work.

Data

For this paper, I have used the data from the second round of India Human Development Survey (IHDS) conducted in 2011-12. The IHDS[2] is a nationally representative, multi-topic survey of 41,554 households (2005) in 1503 villages and 971 urban neighbourhoods across India. The first round of interviews was completed in 2004-5. A second round of IHDS re- interviewed most of these households in 2011-12 (N=42,152 households) and data for the same is available online. IHDS has been jointly organized by researchers from the University of Maryland and the National Council of Applied Economic Research (NCAER), New Delhi. (IHDS, 2018) The survey has collected a wealth of information on education, caste membership, health, employment, marriage, fertility, and geographical location of the household. One of the major hindrances in carrying out any intergenerational study in developing countries is lack of long panel data. In India, this problem is exacerbated as none of the large cross sections (such as NSS or NFHS) collect information about the father for all surveyed persons. In contrast to the NSS and the NFHS, the IHDS has asked specific questions regarding the education of household head's father/husband (irrespective of the father/husband living in the household or not).[3]

These questions allow the identification of father's education for almost the entire adult male population (in the age group 20-65).I have used the strategy followed by Mehtabul Azam and Vipul Bhatt (Azam & Bhatt, Like Father, Like Son? Intergenerational Education Mobility in India, 2012) to create a matched father-son data using the IHDS.[4] The first additional variable I use is the “ID of father” in the household roster which helps linking individuals to their fathers directly if the father is living in the household.[5] Utilizing this information by default imposes the co-residence condition which drastically reduces the sample size and may cause severe sample-selection problems.

[2] The survey covered all the states and union territories of India except Andaman and Nicobar, and Lakshadweep islands. The data is publicly available from the Data Sharing for Demographic Research program of the Inter-university Consortium for Political and Social Research (ICPSR).

[3] Question no. 1.18c on page 3 of the Household Questionnaire

[4] My sincere thanks to Professor Azam for sharing the STATA do-file.

[5] Question no. 2.9 on page 4 of the Household Questionnaire

However, as mentioned, the IHDS asks another question regarding the education of household head's father (irrespective of the father living in the household or not). This helps identify fathers' education for household heads that constitute more than 60 percent of the male respondents in the 20-65 age groups. Combining this variable with the "ID of father" variable, I was able to identify fathers' schooling for about 96 percent of the male respondents in the age group 20-65. I also identify fathers' years

of education for some of the remaining adult males (who are not the household heads and whose fathers are not identified through co-residence) by exploiting "relation to head."

A sample of father-son pairs achieved through co-residence may be misleading as it may not be a representative sample of the adult population of interest. Co-residence effectively over- represents younger adults in a sample, which is expected as these individuals are more likely to be living with their parents.

Methodology

Given the objective of the study, the focus is on the adult population which is defined to be within the age group of 20-65.[6] Since the survey is from 2012, there is data on individuals born between 1947 and 1992. Hence, the mobility in educational attainment across birth cohorts going as far back as our independence can be studied. The analysis is conducted at the all-India level. Accordingly, I have divided the sample into nine five-year birth cohorts starting from 1947-52 till 1987-1992.

The main variable of interest is the son's educational attainment which is measured by years of schooling. In the literature, parents' education is proxy by either father's education, maximum of parents' education, or average of both parents education. In the IHDS, since there is not enough information on mother's education for the whole sample, I have used father's years of schooling as a proxy of parents' educational attainment.

I then estimate the following regression model:

$$Y_{c,1} = B_0 + B_1 Y_{c,0} + e_{c,1}$$

where Y = years of schooling
c = birth cohort
i = {0,1} = generation i

The estimated coefficient of $Y_{c,0}$, i.e. b_1, measures persistence in educational attainment for cohort c, where higher values imply greater persistence. A higher value for the coefficient implies that parental education has stronger effects on the schooling of their children, and therefore implies less mobility. Since education of both father and child is measured in number of years of schooling, the extent to which these coefficients are less than unity describe how fast differences in education tend to systematically lessen across generations. Alternatively, $1 - b_1$ is a measure of intergenerational mobility. Thus, $b_1=1$ corresponds with complete immobility and $b_1=0$ corresponds with perfect mobility. Comparing b_1 across birth cohorts in the sample gives a measure of how intergenerational persistence in education has changed over time.[7]

Results

Table 1 presents the results at the all India level across the nine birth cohorts. There are a few key findings. First, father's' education has an economically and statistically significant effect on the child's education for each birth cohort. Second, the measure of intergenerational persistence (b_1) displays a pronounced decline across cohorts, with the estimated coefficient falling from 0.634 for the 1947-52 cohort to 0.405 for the most recent cohort, 1987-92. This establishes the evidence of *increased mobility in educational attainment over time in India.*

Table 1 Intergenerational Education Mobility in India

Dependent variable: Son's Years of Schooling

				Son's	**Birth**	**Cohort**			
	1947-52	1952-57	1957-62	1962-67	1967-72	1972-77	1977-82	1982-87	1987-92
Father's years of schooling (b_1)*	0.634 (0.013)	0.605 (0.011)	0.627 (0.011)	0.623 (0.009)	0.697 (0.008)	0.674 (0.008)	0.592 (0.009)	0.486 (0.008)	0.405 (0.008)
R-squared	0.421	0.397	0.409	0.421	0.515	0.486	0.383	0.277	0.218
Observations	3087	3875	4459	5346	5951	6526	6739	7982	8996

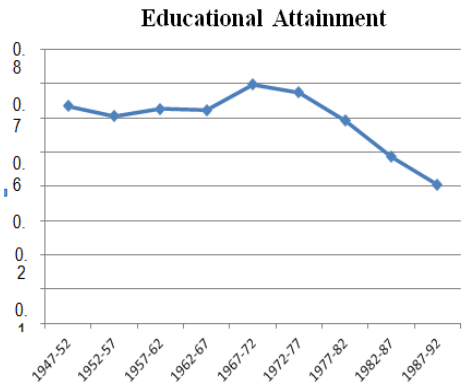
Note: *p-values significant at 5% level of significance Standard errors in parentheses

[6] Lower limit of 20 years has been chosen as a majority of individuals in India finish their college (about 15 years of education) around this age. Upper limit of 65 years has been arbitrarily chosen.

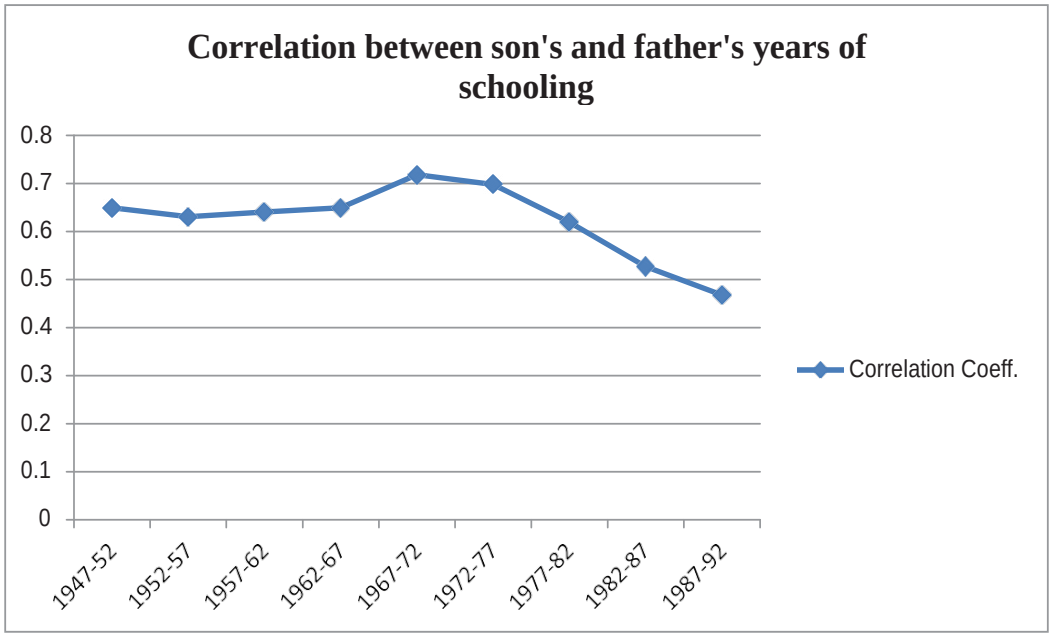
[7] This statistical approach is based on an entirely *relative* conception of mobility

Overall, a declining trend in b_1 is noticed, which implies an increasing trend in $1-b_1$. Thus, from the data, it can be concluded that intergenerational education mobility in India has been rising since independence. However, these numbers do not explain the reasons behind the negative trend of b_1, which could be numerous.

The finding of rising mobility in educational attainment across cohorts could, to some degree, reflect the success of government policies undertaken since the 1950s in equalizing educational opportunities over time and across regional boundaries.



I also calculated the correlation coefficient between the son's years of schooling and father's years of schooling for the different cohorts, using the data. The pattern that emerged, which is not different from that obtained from the regression coefficient, is shown below. As with the educational persistence value b_1, lower correlation between the two variables indicates that parent's education has a weaker impact on the child's educational outcome.



A simple average of the intergenerational correlations is calculated to be 0.62. This is much higher than the world average of 0.42 as reported by Hertz et al. (Hertz, et al., 2007)

The inability of children born in less educated families to study further thus seems to be a vicious circle. Income is an important determinant of access to education. This is bound to influence the ability of parents to provide education to their children, given the high costs of providing good education. It could also work in the opposite direction. Many of those who drop out from educational institutions cite the need to augment family incomes or attending to domestic chores as the reason for dropping out. Such pressure to drop out from school is more intense for first-generation learners, who often hail from economically weaker sections of the society.

Implications for Policy

Mobility in education plays an important role in promoting social mobility, i.e. the movement of individuals, families, households, or other categories of people within or between social strata in a society, and economic mobility, measured by changes in income and wealth. The concept of mobility has important consequences and policy implications for a country. If mobility (of any form) is low, people may be unable to participate and contribute as full members of society simply because they were raised in a

household with low access to resources such as income.

In other words, the consequence of the 'birth lottery' is large and determines one's position in life. In such a scenario, the State must interfere and level the playing field. On the other hand, if mobility is high, low availability of resources during childhood need not necessarily leave a scar. In this case, the market should be allowed to determine outcomes, as outcomes are the result of individual ability.

This paper will be incomplete without highlighting the role of public policy to remove obstacles to the intergenerational mobility in education. Policy reform that aims at reducing education inequalities can remove obstacles to intergenerational social and economic mobility as well and thereby promote equality of opportunities across individuals.

The top policy associated with increasing opportunities regardless of background is cost- effective and glaringly obvious: education reform. There must be a very strong education system in place, including much more investment in early childhood education for children from less advantaged families. Progressive education financing at all levels from early care to higher education promotes upward mobility and decreased persistence of family background (Solon, Cross-Country Differences in Intergenerational Earnings Mobility, 2002). Solon (Solon, A Model of Intergenerational Mobility Variation over Time and Place, 2004) highlights the importance of the progressivity of educational expenditure as a factor leading to greater mobility.

This point is further supported by Jo Blanden (Blanden & Macmillan, 2014). He states that there is a negative relationship between education spending and intergenerational persistence. Those countries which devote more of their income to public spending on human capital investment tend to be more mobile.

Education can boost the mobility of children from poor and low-income families (and from wealthier families as well), because each additional level of attainment - from a high school degree, to a college degree, to a professional or graduate degree - adds substantially to income. The gaps between each level of education are substantial. For instance, the gap between a high school degree and a college degree in the United States of America was over $29,000 in 2005 (Isaacs, Sawhill, & Haskins, 2008).

It is true that India has made substantial strides in education policy, such as the Mid-day Meal Scheme, Sarva Siksha Abhiyan and the Right to Education Act. Investment in human capital has grown significantly over the last few decades. The country's expenditure on education as percentage of GDP had gone up from 4.10% in 2012-13 to 4.13% (provisional) in 2013-14 (Ministry of Human Resource Development, 2016). But from a policy perspective, it seems necessary to understand how expansions of the education system have ended up disproportionately

benefiting children from richer backgrounds.

In summary, it is undoubtedly the case that school standards and their access have improved; but not for everyone, and perhaps, not as much as they could have. Substantial improvements in mobility require more drastic systemic action. Because education has the potential to boost the mobility of children, it is important to ask whether the country's educational system does enough to promote economic mobility.

Scope for further research

In a country as diverse as ours, there is a lot of scope to research on several dimensions of this topic, controlling for different variables. For instance, one could draw a comparative study on education mobility across all the states, and its correlation with state expenditures on education. One can also study education mobility across varied castes, religions and between genders. The IHDS-II can be thoroughly exploited for this purpose, as it contains detailed data on caste, religion, and state of residence for each individual.

As more countries of the world gather acceptable-quality data, rigorous international comparative analysis of mobility needs to be facilitated. With a worldwide database on mobility, countries with low mobility can learn from the factors that are responsible for high mobility in other nations.

Conclusion

The nature of inequality in any period can be better understood if we appreciate the extent to which it is related to family background; the extent to which one's starting point in life, in some sense, preconditions ultimate adult social and labour market outcomes.

The aim of this paper was to assess the change in educational inequalities and mobility across generations since the Indian independence. In this paper, focusing on one measure of human capital – years of schooling – it is seen that intergenerational mobility in education has improved over the years. This is clearly encouraging for the promotion of children's life chances and may lead to further improvements in mobility if returns to education remain stable.

The greater the capacity and ability of families to invest in their children, both in monetary and non-monetary terms, the more likely children will develop the human capital to succeed in the labour market. The more equal the returns to education in the labour market, the more level the incentives to make these investments. Finally, the more progressive the public policy—that is the more relative benefit it is to the relatively disadvantaged—the more level the playing field.

The case of missing women:

Understanding declining female labour force participation in India

Shreshtha Mishra

There has been a lot of discussion regarding the demographic transition that India has been going through, with falling fertility rates and death rates and a swelling up of the labour force. While this demographic transition has the potential to reap dividends; it could also turn into a disaster lest the youth is productively employed.

One of the major precursors to reaping a demographic dividend is the rise in female labour force participation rates that accompanies a fall in fertility rates. In India, the historically low female labour force participation rate has been a drag on the economy and a major hindrance to the modernisation of the labour market. Now, this historically low rate is also falling. The Indian story of a falling female labour force participation rate despite strong growth, rising wages, and a decline in total fertility rates presents a puzzle that is contrary to what has been predicted by standard development theories and by the experience of other countries including China, Bangladesh etc[1]. As stated in the ILO's Global Employment Trends 2013 report, out of 131 countries with available data, India ranks 11th from the bottom in female labour force participation.

TRENDS

In 2012-13, India's Real GDP grew at 5.6% and increased to 7.6% in 2015-16[2]. During this period, the female labour force participation rates (FLFP) fell from 42.7% to 31.1%[3]. The main highlight is that the female labour force participation rate in rural areas is continuously declining[4], while that in the urban areas is showing a marginal increase even as the overall rate continues to fall. Infact, 53% of the total fall is attributed to a

[1] With the exception of Turkey

[2] Ministry of Finance Monthly Economic Report, April 2016

[3] National Sample Survey, Employment and Unemployment Schedule, 61st, 66th and 68th rounds, and Labour Bureau's 2013-14 annual employment unemployment data.. (Consist of estimates for females 15 years or above in age)

[4] Close to 22 million women left the agricultural sector between 2004-05 to 2009-10; 19 million of these were self employed.

drop in participation rates in rural India, among those aged 15 to 24 years[5].

In the current essay, the factors considered to study the low FLFP rates are: the effect of unearned household incomes, the effect of increasing enrollments in secondary education, limited female mobility across sectors, measurement issues, employment opportunities and finally, other cultural and social factors.[6]

The effect of unearned income: Income and substitution effects

Of all the factors that affect FLFP rates, the simplest is the effect of unearned income (in the form of husband's wage, family wealth etc). In Neoclassical theory, labour supply decisions depend on labour-leisure choice i.e. on income and substitution effects[7]. It is highly likely that with rising growth, as the incomes and wages of the male workers in the household rises, the income effect outweighs the substitution effect and females choose to supply lesser labour. This effect is higher for females than for males because of the traditionally accepted roles of men and women in the Indian society.

To illustrate, between 1999-2000 to 2004-05, real wages in the agricultural sector were stagnant and growth in this sector was not statistically significant. However, this period witnessed a large increase in the FLFP rates in the agricultural sector due to distress employment. Out of the 18.5 million people who joined the agricultural labour force in this period, 16.9 million were women[8]. However, between 2004-05 to 2009-10, as the real wages in the agricultural sector rose[9], close to 22 million women left the workforce due to rising incomes at the household level. This clearly shows that increasing household incomes play an

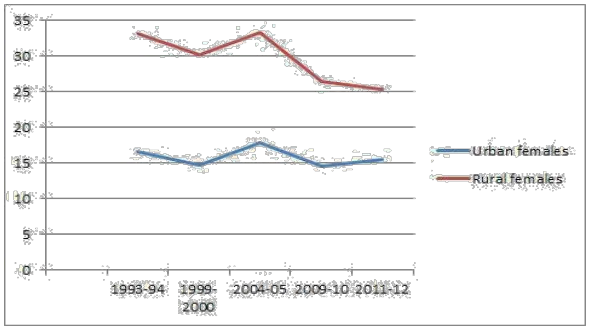
[5] Further, a larger number of the working women end up in marginal or subsidiary employment in comparison to the earlier year

[6] When studying the effects of any factor, all other factors are held as constant

[7] Any expected wage is an opportunity cost of not working and thus, contributes to both substitution and income effects while unearned incomes contribute to the income effects. Based on the substitution effect, as wages rise people will choose to work more. However, as wages rise, people might choose to reduce their labour hours because they feel richer due to higher income. An increase in unearned income (non-labor income or labor income earned by other household members, particularly the husband) reduces the marginal utility of the women's earnings and therefore reduces labor force participation

[8] Further, this effect was seen across all income groups in the rural areas, primarily because close to 40% of even the rich rural households tend to live just above subsistence levels and were thus, adversely affected by the slowdown in the agricultural wages.

[9] Due to government schemes to increase the rural sector employment, chiefly due to NREGA (National Rural employment guarantee act) which aimsto enhance livelihood security in rural areas by providing at least 100 days of wage employment in a financial year to every household whose adult members volunteer to do unskilled manual work



Graph 1:

Female labour force participation in Urban and rural areas
Source: National Sample Survey, many rounds

important role in determining the FLFP rates controlling for other factors.

Education levels and lack of employment opportunities

Increasing enrollments of women in secondary education are also believed to form an important explanation for declining FLFP rates[10].

As seen from the table, the enrollment ratio of both rural and urban females in the age group of 15-24 years has risen steadily from 1993-94 to 2011-12. In addition, the mean years of education after 14 years i.e. secondary schooling has also been on the rise in both rural and urban areas.

While increasing education levels among women is a positive trend, its effect on FLFP rates requires greater attention. Most human capital theories estimate rising FLFP rates with rising education, however, a U-shaped curve is hypothesised to exist between the educational status and FLFP in India.

Among the poorest sections of the society, with the added-worker effect and large fluctuations associated with household incomes, the participation rate among women is high. At high levels of education, on the other hand, high potential wages raise the opportunity cost of not working and swamp the negative forces, thus inducing women to work. This is also because the stigma associated with women working in the service sector is lesser.

[10] Rangarajan et al. (2011)

Table 1: Enrolment Ratio and Mean Years of Education of Female Labour Force of Age 15-24 Years

Source: Estimates based on various NSSO rounds

	Enrolment Ratio		Mean Years of Education after 14 Years	
NSSO Rounds	Rural female	Urban female	Rural female	Urban female
1993–1994	8.4	27.8	1.7	2.5
1999–2000	11.3	29.9	1.8	2.7
2004–2005	14.8	33.2	1.9	2.7
2009–2010	15.2	34.5	2.1	3.2
2011-2012	19.7	35.7	2.1	3.4

It has been observed around the world that women in the labour force across the world tend to cluster in certain occupations, especially in the services sector[11]. Between these two levels of education, women may be discouraged to seek work because of large income effects, lower access to service sector and other socially acceptable jobs. Thus, education seems to play a major role in affecting the preferences of women and their willingness to actively seek a job.

As education levels rise, as has been the case in India, women prefer certain kind of jobs (especially white-collar jobs). Lack of access to these contributes to educated women being discouraged from participating in the labour force[12]. How the education-labour force participation link evolves over time depends on the structure of labour demand growth in the economy and the status associated with different types of work[13].

A problem of measurement:

A third potential contributor to the falling FLFP rates in India is a large number of women who report attending to domestic duties as their primary status. In 2009-10, the number of women attending to

[11] World Bank, 2011; Gaddis and Pieters, 2012

[12] Desai et al., 2010

[13] For instance, in 1989, almost 65% of the highly educated women were employed in public administration and education. In 2009, this share had fallen to 45%. Further, although the share of women in other sectors like finance and business services has increased overtime, these account for a very less portion of the overall female employment. Thus, as the demand for white-collar jobs is limited to women with a graduate degree or above, the employment growth decline in major sectors like public administration and services might be an important contributor to declining FLFP rates. This effect is further exacerbated due to limited female labour mobility between sectors due to occupational segregation and the attached stigma

domestic duties in India was 216 million, which is larger than the population of Brazil. Among these, 12.7 million women had a graduate degree and above. A major reason behind this is the very belief that it is the responsibility of a woman to undertake all domestic duties. This is even manifest in the fact that men were excluded from the role of domestic work and from all records of extra-domestic work in NSS 55th round. This demonstrates a growing patriarchal role demarcation in India. It is widely seen as very dignified for men to be uninvolved with domestic matters.

As is indicated by the table above, there was an increase in the number of females attending to domestic duties by around 50 million, in which the share of women with a graduate degree and above was 4.6 million.

In rural areas, the number of women who report primarily attending to domestic duties has been steadily rising from 2004-05 to 2011-12 and was at a staggering rate of 92% in 2011-12. During this period, a sharp decline in rural female participation in the labour force was registered.[14]

However, these are productive economic activities as, if women did not do these work, someone else would have to be employed to do them and be paid for it. Although the System of National accounts includes the production of goods for self-consumption within its purview, it does not include the 'invisible work' done by women which takes several forms including, but not limited to, cooking, reproductive activities, care and other responsibilities[15]. This mis-measurement may not only affect the level but also the trend in the participation rates.

	Not literate	Primary and Middle	Secondary and higher	Graduate and above	Total
In 2009-10	84.8	81.4	37.1	12.7	216.1
Increase Between 2004-05 and 2009-10	13.0	16.8	14.4	4.6	49.4

Table 2: Number of females who reported attending to domestic duties in 2009-10 and the increase in this number between 2004-05 to 2009-10 (all figures in millions)
Source: Estimates based on NSSO 2011

[14] In the same period, the number of women in the urban areaswho reported attending to domestic duties first rose and then declined. During this period, a marginal rise in the urban female labour force participation rates was noticed.

[15] As traditional surveys cannot capture this work adequately, time-use surveys can be used to capture such activities

	1993-1994	1999-2000	2004-2005	2009-2010	2011-2012
Required to spend most of the time in domestic duties (%)	88	89.8	88	89	92
Out of the females in (1), the percentage of females reporting 'no other person to do domestic duty' as the reason for being engaged in domestic duties	55	56	55	62	60

Table 3: Responses of Rural Women in the NSSO EUS Reporting Activity Status as Domestic Duties under Codes 92 and 9

Source: Estimates based on various NSSO round

Secondly, as women are traditionally expected to take care of all household responsibilities, it limits their ability and willingness to take up formal employment[16]

There is an opportunity cost in terms of time as well as in terms of wages that could have been received if the same activities were conducted outside the household.

[16] To illustrate the effect that having a broader definition of national income and including household responsibilities might have, a few facts might help. A study conducted by the Organization for Economic Cooperation and Development (OECD) in its 26 member countries and three emerging economies of India, China and South Africa found that Indian women spend 4.3 to 5 hours more on unpaid work than the men, whereas, Indian men spend considerably more time sleeping, eating and relaxing in general

This cost time constraint restricts them from pursuing employment opportunities[17].

However, as a positive change, it is also noted that there has been a fall in the number of women not willing to work. Around one-third of females above 15 years of age in rural areas and more than one-fourth in urban areas, who were engaged in domestic duties (by usual principal activity), were willing to accept work opportunities at the household premises, if such work were made available.

Specifically, there was a strong willingness among females primarily involved in household chores to take up tailoring work within their premises. This highlights the benefits that can be reaped by providing skill training to such females in vocational occupations such as tailoring, beauty-related work etc.

Further, there should be institutional support to help them obtain the required loans, market their products and overcome any logistical difficulties. Currently, only 2-3% of the workforce in India receives some form of formal training.

Therefore, in a way, the declining trend in the female work participation rate highlights the lack of skill training and employment opportunities for females.

E. Other factors

While the factors mentioned above are important contributors to declining FLFP rates, several other factors operate at different levels to dissuade women from seeking employment. Workplace safety concerns, the widespread pay-gap between men and women working at the same position and with the same level of education and skills, the fear of harassment, especially prevalent in the informal sector, contribute to the low participation rates.

Additionally, socio-cultural factors such as caste, marital status etc. play an important role in restricting access of women to formal employment. The process of housewification and sanskritization is common[18]. This is a vicious cycle in the sense that usually women without a means of earning income have a lesser bargaining power in

[17] Between 1999-2000 and 2004-05, due to rural distress, the number of women who reported their principal activity status as 'attending to domestic duties', fell sharply and consequently, the female labour force participation rates rose. However, as the female labour force participation rates in 2004-05 declined (due to a rise in household incomes), the number of women attending to domestic duties also rose. This shows that time constraint restricts most women from pursuing both formal employment and household duties together.

[18] Chakravarti, 1993; George, 2002; Poitevin and Rairkar, 1993

the household which reinforces gender discrimination and further restricts access to paid work. For instance, it has been noted that married women work less than household (in which the woman has very low bargaining power).

Suggestions:

There are two reasons to be interested in the declining female labour force participation rates: the intrinsic level and the functional level.

Females are an important part of the society and are responsible for its efficient functioning. Thus, they deserve equal access to employment opportunities that will provide them agency, greater bargaining power and allow them to be agents of economic growth. At a functional level, capturing the demographic dividend is contingent upon productive employment of females.

As argued above, the problem of declining female labour force participation rates is a result of various factors working at different levels and in tandem, each supplementing the effects of the others. A few steps that policymakers can take to reverse the current trend are:

1. Methods must be devised to better capture unpaid work done by women. The magnitude of unpaid work by women in India is extremely large[19]. Thus, if this gender parity were to be tackled, we are looking at some big-time growth in our GDP.

2. There must be a move towards equal sharing of work at the household level so that women have more time to devote to formal employment opportunities. This can be facilitated by policies such as longer maternity leaves, contractually fixed working hours (at least for women) and most importantly, the introduction of longer paternity leaves[20]. This will be an important step by allowing men to participate in child care and other domestic duties. Further, access to water and infrastructural development must be prioritised in order to reduce the time taken by women in attending duties.

[19] According to some studies, if that unpaid work were to be valued and compensated in the same way as paid work, it would contribute US$300 billion a year to India's economic output

[20] Currently, paternity leaves are largely absent in the private and unorganised sectors and even otherwise, the leaves are of a very short duration. The Paternity Benefit Bill, 2017 is due to be tabled soon in the Parliament under which men might be be eligible for leave up to 30 days as paternity leave. This will include men in the private and the unorganised sectors as well.

3. The importance of dedicated skill training, especially in rural areas and among women with low levels of education, can hardly be overemphasized[21]. This can be achieved through infrastructural development, hiring females for teaching purposes in rural areas, providing greater incentives for women to attend these vocational schools non-farm jobs that match their educational potential[22]. As highlighted before, the willingness of women to take up part-time and full-time vocational employment is high. If successfully teamed with skill training, the rural FLFP rates will increase drastically from the current 23.5% to around 39%. In addition, micro-finance and self-help groups must be promoted as these provide women with access to economic opportunities and promote discussions on a variety of social issues.

4. Subsidies for female employment in sectors less explored by women must be provided for a fixed time period so as to promote female mobility across different sectors. This can take the form of the government incentivizing certain sectors to employ more women. For example, the government could consider paying a part of the income of women in certain sectors.

5. Decent working conditions must be ensured and policies must be devised to ensure safety especially in the unorganized sector as women are heavily represented in the informal economy where their exposure to the risk of exploitation is usually greatest. Further, gender sensitization must be actively promoted and females should be encouraged to speak up against harassment at work. There should also be transparency in the wages paid and stricter punishments against gender-biased pay.

While all of the above tackle certain aspects of the problem, a cultural shift is necessary. Gender-specific constraints must be evaluated and policies must be formed accordingly. The goal should not be to increase just participation rates but ensure decent working conditions for women.

[21] One of the main drivers of the East Asian Miracle was the human capital formation through adequate skill training

[22] Such as jobs in the rural manufacturing sector that allows women to work from their households or as a community so as to avoid the stigma associated with women working in the manufacturing sector.

As highlighted by Amartya Sen, the agency of women is a significant driver of an economy not just in terms of growth rates, but also in terms of its effects of nutrition of children, better healthcare and ultimately, towards creating a better society. Women agency has the power to read to 'development' in the true sense of the word. Thus, it is about time that we start talking about the 'gender dividend' in conjunction with the demographic dividend in India[23].

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In conversation with:
Isher Ahluwalia

Environmentalist.

Policy Smith.

Altruist.

Q: You've emphasised a lot on the development of the town and cities for the growth of the economy of our country. Should we use our investments in the cities and towns of backward areas, or for the well-known cities and towns?

A: We need to work at every level. In bigger cities problems are different. Bigger cities are already congested, and suffer from air pollution, water scarcity and water pollution. In tier 2 cities these problems are lesser because not much development has taken place. There we can start right by planning the cities, linking them backward with rural areas and forward with larger towns. When it comes to providing drinking water, wastewater treatment, or solid waste management; it is relatively easier to plan and implement such plans in smaller cities. It's not a question of whether we should focus on big cities or small cities, you need to start at both ends and see that at some point, the trail meets. In order for private funding to come, you need to have a revenue model so that the project generates a rate of return. For this, we need a lot of reforms in finance and governance of public utilities that are currently delivering the services. If you can't charge for public services to cover even the O&M cost, then no private sector is going to come in a public private partnership. In the smaller cities, you'll need strengthening of public institutions.

Q: The responsibility and accountability for urban services has been delegated to the City governments while the finances have been left with the State governments. Do you think this has created unfunded mandates?

A: Yes. The 74th Amendment has transferred responsibility from state government to local government but funding has not been devolved by the state governments. The State Finance Commissions were supposed to determine how to devolve, but they have failed in this job because of lack of political will at the state government level. Hence, the local governments are dependent on the transfers from the state government and these transfers are neither predictable nor guaranteed. There are a number of National Urban Missions. First, there was the Jawaharlal Nehru National Urban Renewal Mission (JNNURM); now there are Amrut, Smart Cities Mission, Swachh Bharat Abhiyaan and so on. The Centre’s funding is meagre- in a total of Rs 50,000Cr, only Rs 15Cr is supposed to be the contribution of the Government of India, and even that is disbursed very little so far. The states, the local governments and the private sector are expected to bring in the rest. The private sector funding will only come if there is a revenue model, and that in turn requires major reforms.

Q: Do you think the views held by certain lawmakers over Global Warming being a myth, are causing a setback on the work of economists and scientists trying to limit the carbon footprint of citizens and government?

A: Yes. However, very often, when we think of global warming, we think of it as a phenomenon for the planet as a whole and we continue thinking of it in terms of an instrument to negotiate between our country and other countries. We need to be more concerned about the impact of global warming on our health. Our public health conditions are affected by global warming because it leads to extreme events like floods and droughts for which we are not prepared. The floods of Chennai were a man-made disaster, a result of the encroachment of our lakes and rivers. Some of them are results of climate-change. With climate change, we have extreme weather conditions. If we face extreme weather and floods, and we don’t manage our solid waste or waste waters, our people living in those low-lying areas are exposed to the epidemics that are bound to erupt. When we link the consequences of global warming

with public health, it makes people realise that we are directly adversely affected. I believe that is a much more immediate connect for people.

Q: What are the challenges that a developing country like India is going to face when we're looking at sustainable development? Do you think that the government now needs to go ahead and make a lot of investment into sustainable development?

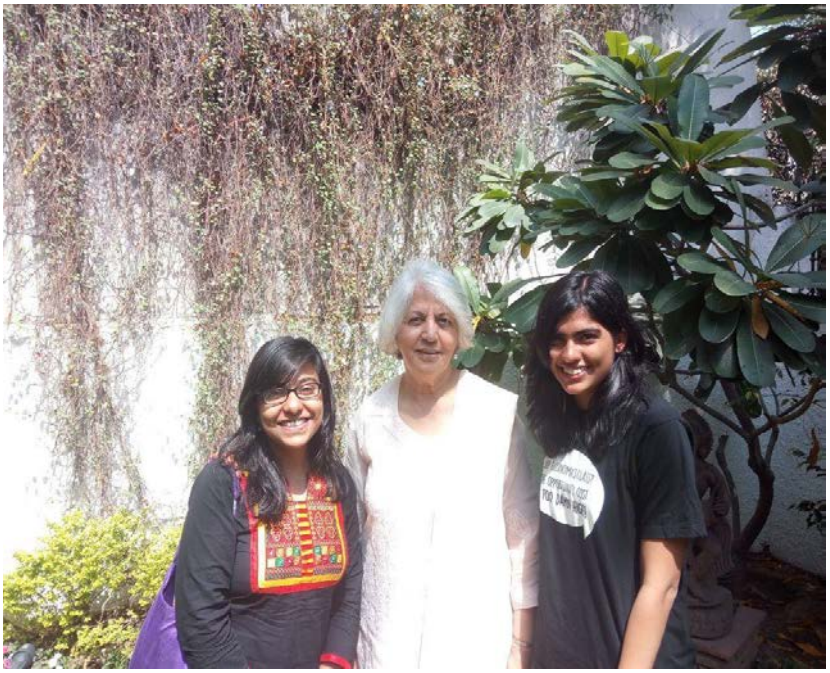
A: Clearly, we have to look for alternatives to coal by developing wind energy and solar energy. We have sun in abundance, but storage is the challenge. There has been a clear decline in the price of these renewables which makes them closer to application and also, the research into solar batteries is going full steam. So, I am actually quite optimistic that in a few years we will have a renewable energy solution to our problems. With regard to nuclear energy we have to be certain that the safeguards are in place to curb any misuse or accidents. We have to cut on our energy consumption in our agriculture; if we could just get our irrigation channels to work better, people would not use energy to pump groundwater. There is so much slack in the system, so much inefficiency that if we can just tighten up at every level, that gives us a lot of cushion to make progress. On investment, I don't believe problems get solved by throwing money at them and I don't believe the government invests very efficiently. We need to encourage research and development whether we use government money or private money and create an environment in which people feel and industries feel the need to do research. That's what we need.

Q: You've often highlighted the success of cities that have transformed themselves in terms of wastewater treatment. Why can't these small scale successes be transformed into large scale successes in metropolitan cities?

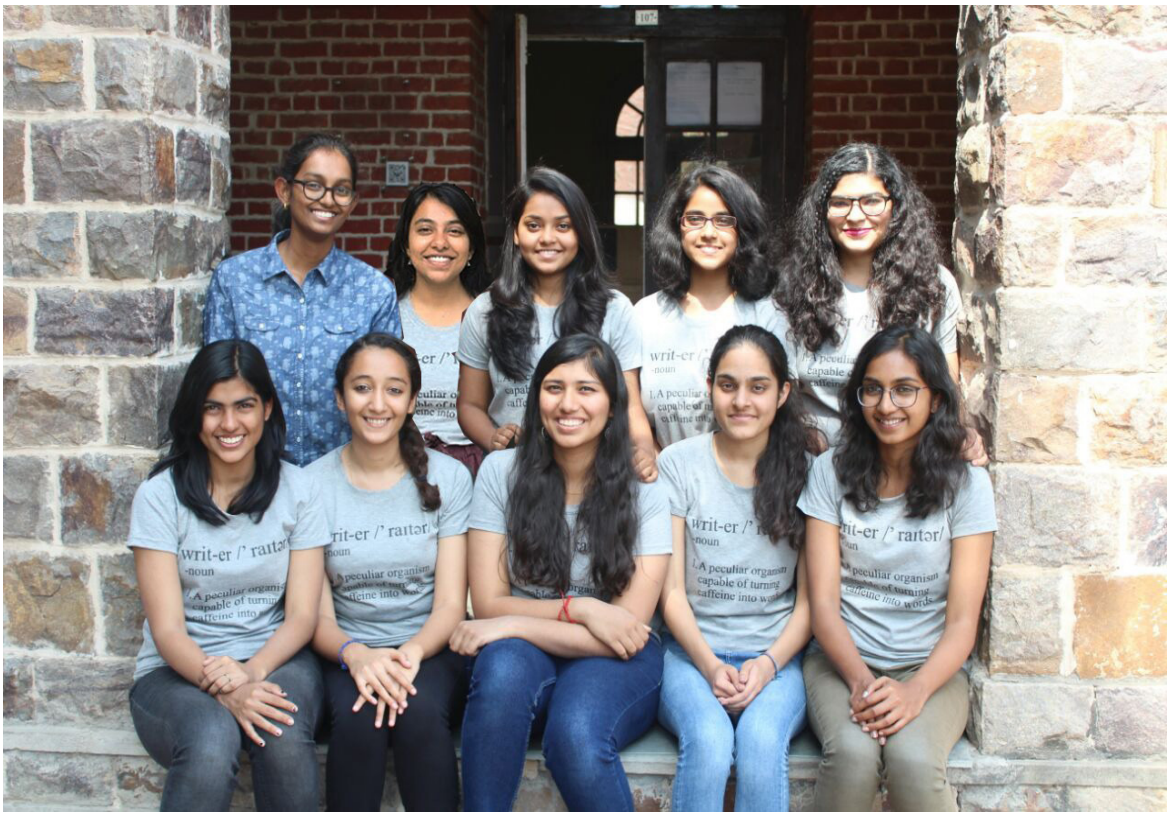
A: That is a million rupee question which I have not found an answer to. If you read the introduction to my book, "*Transforming our Cities*", we have about 8000 or so cities and I have only given 40 case studies where major transformations were brought about in the urban environment. While selecting the cities, I did not look at the states. In whichever city some urban development project was doing well, I went there, verified it and then wrote about it. In the end, my 40 cases were bunched in five or six states - Maharashtra with the maximum number, then you had Andhra Pradesh, Gujarat, Karnataka, Tamil Nadu and Madhya Pradesh. These were the states where the Municipalities were relatively less weak financially and where the state government provided an enabling environment, and also built local capacity for planning, finance and management. Third, and importantly, in each of these case studies, there was human leadership - one face that comes to mind, a change agent who could engage the community and; drive the process. So, with all this talk of technology and smart cities and all, I believe you can only make progress when you have human leadership and motivation. Technology by itself will not deliver; the last mile has to have governance.

Q. Urbanisation is a very novel and different aspect of economics. What are the other areas which young students of economics can go into?

A: If you could get data, to connect incidence of disease with the state of public service delivery in India, that would be a turning point. The world is changing at such a rapid rate. Your generation is bombarded with information. Now that everything is one click away - you have to exercise your wisdom over what to make of all this information. I would say for economics, try to develop an approach which is interdisciplinary. Both in solving problems and in bringing about behavior change and engaging the community, you need to combine learnings from different disciplines.



The Team



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