FEMALE FOETICIDE
Designing
A Public Policy for Humans

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A Public Policy For Humans

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To 
my wife Vijaya and grand children 
Soumya, Kartik, Adit and Dhruv
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PREFACE

Behavioural sciences generally and behavioural economics in particular have been instrumental in the evolution of a new paradigm which has equipped the society and the governments to understand, predict and effectively intervene in different areas of human interaction – economic, social and political. The approach is very different from that of behaviourism popular in the first half of the 20th century, which was based on the factually wrong assumption that our mind is a ‘blank slate’ and all human behaviour a product of environment. It is now generally agreed that (a) while many human traits are heritable, human behaviour is far from being determined by genes, (b) humans may be rational but are cognitively limited, c) cognitive biases, heuristics and limitations play a major role in shaping actual behaviour, judgement and decision making.

While economists have by and large accepted the consequential and inevitable modifications required in their extant models of the ‘rational actor’ and the mathematical game theory, the new paradigm is yet to be internalized by most of those concerned with the making of public policy. The book ‘Nudge’ authored by Thaler and Sunstein has helped promote this approach to some extent in the domain of public governance and public policy. A number of countries (UK, USA) have set up special units to incorporate a behaviourally informed approach in public governance. I have, in Governance Unbound: Public Services, Players, and Rules of the Game, explored the potential of this approach in respect of basic and need based services concerning approvals, certification and documentation (birth and death registration, permits and licences) in India.

Governments exercise a monopoly not only on violence but also on how various services and regulations may be exchanged, transacted, transferred and, where necessary, imposed on the citizens and other captive entities. They have, therefore, a
substantial advantage over the private sector; they can set their own rules without having to account for different tastes, preferences and priorities of the citizens. Citizens may also not bother about the quality of governance when government services are free or carry only nominal fees. This monopoly can be a handicap, however, in the areas of public governance where interactions are complex and the rules of the game are required to be designed so as to influence the behaviour and actions of the citizens.

The monograph seeks to extend the behaviourally informed approach to an area of social policy where personal interests and incentives of the actors matter even more than in the case of other public goods such as a healthy environment; the latter mostly have to address the factor of indifference or ‘rational disinterest’ of the actors. In the case of problems like female foeticide, however, the usual placebos of simplicity, efficiency, objectivity and depersonalization, the stuff and substance of ‘good governance’ in the case of need based services, may not be sufficient; rather the rules may need to be designed to factor in the motives and incentives of the actors, not only of the citizens but also the government officials.

Governments tend to view citizens mostly as passive pawns and sometimes as demons or angels (the Noble Savage), with the officials switching between the stereotypes of ‘knights’ or ‘knaves’. What is needed is a simple prism for viewing the actors and players in the governance markets as ‘humans’ who are by and large rational but whose actions and behaviour may also be influenced by their cognitive and affective limitations and biases.

I am sure the readers would find a number of weaknesses in the analysis of the problem and the eclectic methodology of limited interviews and discussions rather than the voluminous and quantitative surveys popular among researchers. All roads, however, may ultimately lead to Rome; it is generally agreed
that the present policy has been and, most likely, will continue to be a failure. The core proposal for redesigning the policy, including a lottery scheme with attractive prizes for pregnant women, may be helpful in turning the tide and rectify the gender imbalance in India in the short term and the near future.

I am grateful to the IDC for providing research and related facilities. As always, Dr. Pramod Kumar has been invaluable with his help and advice.

2 See Thaler, Richard H., 2015, Misbehaving: How Economics Became Behavioural, Allen Lane/Penguin Books for an excellent account of the academic skirmishes between the two schools; as usual, neither emerged as the acknowledged winner.
INTRODUCTION

The issue of adverse sex ratio and its implications for the Indian polity and society has been extensively examined and debated. While the trends, as reflected in the Sample Registration System (SRS) and the census figures, are somewhat mixed in respect of different States and different economic, social and population groups, the broad picture continues to cause serious concern even, and especially, when the 2011 census and the current SRS data are considered. The Pre-Conception and Pre-Natal Diagnostic Techniques (PCPNDT) Act passed in 1994 and amended in 2003 is the main policy instrument in India for redressing adverse sex ratio. The law is now (post 2003) much more stringent but nowhere near being the game changer it was hoped to be. While sociologists, demographers, the NGOs and advocacy groups have been recommending various interventions to make the law more effective, and most of these suggestions are also being earnestly implemented by the government with the support of courts, nothing seems to work or at least make a visible and significant difference. In fact, the 2011 census has surprised many observers; the laggard States in the Northwest show some improvement whereas the South and the West show marginally reverse trends. There is little evidence to show that pre-natal sex-selective practices including female foeticide have changed materially after the legislation.

The policy frame consists of a basic law and the subsidiary rules known as the ‘delegated legislation’. These rules of the game seem to have been unable to influence the motivations and incentives of the actors and, as such, bring about the desired policy outcomes. It may, therefore, be desirable to shift the focus of analysis and intervention from the generics of society, community, culture and society to the individual decision makers who have to make a specific choice in one direction or the other – to have a girl child or not. These decisions and choices made by the involved women, couples and families,
may be influenced, but are rarely determined, by social factors. Giving birth to a child is not the “production function” of the society or community but of individuals and familial groups; their incentive sets, motivations, choices, decisions and actions, and the transactions and interactions which flow therefrom, constitute, which we may call, ‘play of the game’. The issue being examined is whether a behaviourally informed approach, aggressively practised (though mostly in laboratory situations) and advocated by behavioural scientists, can help? It is proposed to show that:

(a) While a number of indicators and outcomes may be relevant to the problem of gender imbalance, so far as India is concerned, in today’s context, the key result area is the BSR (Sex Ratio at Birth).

(b) The punitive as well as promotional regulations and programmes have been a failure mainly of governance as they ignore the dimensions of incentives and behaviour of the human actors involved.

(c) There is a need to shift from a regulatory regime consisting primarily of negative incentives (sticks) to positive incentives (carrots) with the individual decision maker, the woman (and her family), as the locus.
1
‘SLIPPERY SLOPE’ OF SEX RATIOS

Outcomes of the public policy designed to redress gender imbalance have not been very encouraging. A report of the Punjab Governance Reforms Commission\(^1\) paints this grim picture:

- In India, 4 percent of the female foetuses and in Punjab 21 percent, get dropped during pregnancy.

- The practice of female foeticide continues to be widespread – in 2002, every 5\(^{th}\) household acknowledged undergoing foeticide. In 2006, every 7\(^{th}\) household revealed having undergone female foeticide; numbers could vary from a single instance to the more common 3, to as many as 14 abortions.

- 48.2 percent of Punjab’s women feel there is no harm in female foeticide.

According to an IDC Study\(^2\), pregnancies ending with birth of male children increased with the order of births; in the rural areas, 87 percent women in the upper strata carrying third pregnancy had confirmed male foetuses; in the urban areas, 95 percent of the upper income women carrying their third pregnancy reported a confirmed male foetus. 26.8 percent of pregnant women resorted to sex determination tests in 2006 with the urban areas reporting a marginally higher figure of 28.1 percent in comparison to 26.4 in the rural areas.

The three main indicators for assessing outcomes are expressed in terms of sex ratios – sex ratio at birth, the BSR (for assessing pre-natal sex selection practices), sex ratio for children 0-6 years, the CSR, (for factors of sex selective nutrition and health
Female Foeticide: Designing A Public Policy For Humans

care), and overall male/female ratio, the OSR, (in respect of factors affecting mortality of female adolescents and adults). The figures do not appear very flattering. The All India figures for the BSR are 994 (1961), 989 (1971), 967 (1981), 939 (1991), 915 (2001) and 910 (2011), a continuous decline, whereas the OSR figures are 941 (1961), 930 (1971), 934 (1981), 927 (1991), 933 (2001) and 943 (2011), and project a better graph. The table below indicates the three sex ratios and some other indicators over the period 1961 - 2011.

Table 1
Indicators of Gender Imbalance

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<tbody>
<tr>
<td>CSR</td>
<td>976</td>
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<td>962</td>
<td>945</td>
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<td>918</td>
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<td>930</td>
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<td>BSR</td>
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<td>989</td>
<td>967</td>
<td>939</td>
<td>915</td>
<td>910</td>
</tr>
<tr>
<td>MCMR</td>
<td></td>
<td></td>
<td>147</td>
<td>91</td>
<td>58</td>
<td>64</td>
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<tr>
<td>FCMR</td>
<td></td>
<td></td>
<td>157</td>
<td>101</td>
<td>61</td>
<td>73</td>
</tr>
<tr>
<td>FIMR</td>
<td></td>
<td></td>
<td>108</td>
<td>79</td>
<td>68</td>
<td>46</td>
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<td>(122)</td>
<td>(74)</td>
<td>(64)</td>
<td>(43)</td>
</tr>
</tbody>
</table>

Source: Compiled from various SRS Reports.
Note: MCMR: Male Child Mortality Rate.
      FCMR: Female Child Mortality Rate.
      FIMR: Female Infant Mortality Rate.
      MIMR: Male Infant Mortality Rate.

It would appear that there was: (a) marginal deterioration during the period when appropriate technologies – amniocentesis and ultrasound - were not available or were expensive (the period up to 1971); (b) steep deterioration during the next couple of decades (1971 to 1991) when sex determination tests became generally accessible and abortion laws were liberalised; (c) apparently negligible and even negative impact of the stringent law – PCPNDT Act 1994/2002- which banned sex selective practices. In fact, the CRS (Central
Registration System under which the data of births and deaths is collected) figures for 2014-15 obtained from Punjab and Chandigarh UT indicate the likelihood of the momentum continuing down the slope. A newspaper report “Gender ratio goes down”³ has pointed out that the BSR deteriorated in Haryana, from 874 in 2013-14 to 869 in 2014-15. It appears reasonable to conclude that the public policy has been a failure if viewed in terms of these quantitative outcomes.
The task of evaluation of the components of failure is somewhat complicated by the ready availability of a number of indicators with varying ‘degrees of separation’ (the theory of ‘six degrees of separation i.e., two strangers can be connected through a chain of not more than five intermediaries known to each other) from the outcomes; and each of these indicators may itself be a product of some overlapping variables. The difficulty in identifying specific dimensions of the problem and the social and governance interventions required to address them, gets compounded by a ‘human’ pattern-seeking tendency to club diverse macro socio-cultural and demographic factors with those concerning individual propensity, behaviour and choice. The result may be a sort of ‘witches’ brew’ of antibiotics, e.g., to treat pneumonia, tuberculosis as well as routine cough and cold, all in one shot. This holistic approach can no doubt build ‘redundancy’ in the structure of regulatory and promotional interventions; however, such redundancy, though deliberately planned into many computer programmes, is likely to be a recipe for inefficient, insufficient and misdirected inputs and resources. Their cumulative impact may simply lead to more entropy and disorder. There is, thus, a need to discover not the many causes of success but the unique cause of failure - recall the famous quote from Tolstoy “Happy families are all alike; every unhappy family is unhappy in its own way” (Anna Karenina). In the case of acts ending with female foeticide, the involved couples and individuals have to make a choice within the context of their specific circumstances, moral, social and personal values, perceptions of their economic situation, state regulatory capacity, and so on. And, though millions of these decisions may ultimately get reflected in apparently coherent statistical trends when aggregated, it may be not be prudent to make these statistics the basis of a ‘war’ on female foeticide and attack the problem on all the possible fronts.
The common indicators generally in use are:

(a) sex ratio at birth (BSR);
(b) sex ratio among children, 0-6 years (CSR);
(c) over-all sex ratio (OSR).

These indicators cover distinct structural aspects of gender imbalance and are subject to different sets of measurements and inputs; the other sub indicators of FIMR and FCMR get subsumed in these indicators. *It is proposed to show that the BSR needs to be the primary focus of attention and intervention in the context of present day India and its demographic profile.*

**Prenatal Discrimination and Missing Women**

Amartya Sen had pointed out the problem of ‘missing women’⁴, but as Anderson and Ray have argued⁵, one should not neglect the diversity underlying this phenomenon. The starting point is of course the BSR which, it is believed, is low mostly due to sex selective tests followed by abortion of the female foetuses. There are, however, other factors responsible for the missing females – cultural/nutritional/health neglect of the female infants and children, and in the case of adults, maternal mortality including cases whose ultimate cause may be the problems related to unsafe abortions. Female infanticide through violent means was a major problem until the early part of the 20th century but is no longer a major issue even though the Act was abolished in the 1920’s. It seemed to create acute governance problems in terms of social resentment, etc.⁶ The limited extent to which it still continues, however lamentable and tragic, seems to be mostly sex neutral, as in the case of teen pregnancies.

Another major factor has been maternal mortality (MM). A number of interventions – institutional deliveries, extensive and intensive care of pregnant women – have, however, been
instrumental in bringing about a substantial improvement in the MMR. Tamilnadu has shown the way through adoption of innovative practices, such as, death audits, verbal autopsy of maternal deaths. Institution of the ANM and ASHA workers who are primarily responsible for maternal and child health (MCH) activities at the local/village level and a high percentage of institutional deliveries also seem to have made a difference. Probably most of the residual problems of mortality among female adults can be ‘safely’ attributed to the restrictive law on abortions which forces women to resort to ‘unsafe’ abortions in unregistered and unapproved clinics, as mentioned later.

Similarly, some improvement is already noticeable, and will definitely be more pronounced in future, in respect of infant and child mortality, being mainly due to positive developments in the demographic and economic factors which matter. First, to a large extent, female neglect is a function of the number of children in a family and, healthier outcomes can be expected, once the Net Reproduction Rate (NRR) and the Total Fertility Rate (TFR) come down to manageable levels; the TFR, as per the Sample Registration System (SRS) data, is estimated to have come down to 2.3 in 2013 as against 3.6 in 1991. Second, there has been substantial reduction in poverty. In terms of the international threshold of $ 1.25 per day, it declined from 37% in 2004-05 to 21% in 2012. As per the Planning Commission, both rural and urban poverty in India declined during 2004-2010, from 33.8% to 25.7% and from 20.95 to 13.7% respectively. It seems logical to relate the relative preference for male progeny at least partially to the capacity of a family to bring up children, male or female. Third, social mores have changed and conspicuous neglect of female children is no longer acceptable socially. Apart from the schemes for providing financial help for the female children, advocacy by the NGOs and the government also appear to have been effective in curbing such a cultural neglect, at least to the extent it is visible.
Despite these positive developments affecting post natal mortality, academics continue to have a fixation on female infant and child mortality and maternal mortality rate (MMR) to the relative neglect of the BSR. Agnihotri almost skips the issue in his famous work. One reason could be the relatively high expenses incurred on sex selective practices at the time the book was written; this made universal adoption of female foeticide in India difficult and, as Bose notes, barring the prosperous States of Punjab and Haryana, the male child preference in other States could only be sustained by the inexpensive practice of infanticide.

The primacy and salience of the BSR is evident from a perusal of the long term trends. The BSR was leading the OSR during the 20th century but is now lagging, showing a reversal of demographics – more aborted female foetuses but improvement in the female (child and adult) mortality rates. During the initial years of this century, the female infant mortality rate (FIMR) may not have improved or may have even slightly deteriorated; the FIMR was 58 in 2004 and 61 in 2005 but it has shown constant though not dramatic improvement later. (Table 2)

<table>
<thead>
<tr>
<th>Year</th>
<th>MIMR</th>
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<tbody>
<tr>
<td>2004</td>
<td>58</td>
<td>58</td>
</tr>
<tr>
<td>2005</td>
<td>56</td>
<td>61</td>
</tr>
<tr>
<td>2006</td>
<td>56</td>
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<td>2007</td>
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<td>2008</td>
<td>52</td>
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<td>2011</td>
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<td>2012</td>
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<td>44</td>
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<td>2013</td>
<td>39</td>
<td>42</td>
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Source: planningcommission.nic.in/data, India SRS Reports Summary.
Hopefully, the factors of nutritional and cultural neglect and inaccessibility of professional assistance responsible for the high FIMR will be soon addressed by the massively funded health care programmes for mother and child care in India, especially the massive vaccination programs, such as, the *Indradhnush* which covers major childhood afflictions causing mortality. The latter is expected to bypass the problem of neglect of female children to the extent it exists. This improvement is, in fact, already noticeable. The MR (Mortality Rate) for the under-five females per 1000 live births is now 53 as against that of males of 47, as per the SRS Report and the two are expected to come closer\(^1\).

In fact, the data available in the SRS Report No.1 of 2014 provides ample scope for optimism in this regard:

- IMR for the country has come down to 40 in 2013 from 53 in 2008, a decline of 13 points over last 5 years and an annual average decline of about 2.6 points. *Both the genders have shown similar decline in the period 2008-13.*

- In 2013, U5MR for the country has shown a decline of 3 points over 2012 (49 in 2013 against 52 in 2012). *There has been a decline of 2 points in male U5MR and 3 points in female U5MR during the period.*

- Total Fertility Rate (TFR) for the country has declined to 2.3 in 2013 as against 2.4 in 2012. It is noteworthy that the replacement level TFR, viz 2.1, has already been attained by 11 States.

There is another reason we need to primarily focus and concentrate resources on the core dynamics of sex ratio at birth. This is the only event in the course of the journey of the female conceptus from embryo and foetus to birth, childhood and so on, where the individual and family incentives and
motivations – justified or otherwise, based on rational choice or dogma and prejudice - can work against social objectives. We also need to take note that 21% of births may be unintended (as per the NFHS-3), and a reduction over time in the number of these unintended births may further add to the imbalance, depending on the extent of male child preference and the intensity of incentives to resort to female deselection. The negative incentives leading to the neglect of female children may not matter so much in the case of post natal mortality; parents and families have no reason to be indifferent to maternal mortality or morbidity or to neglect female children. Probably, the neglect is not deliberate but due to the reasons mentioned earlier - poverty, family size and so on, factors related to ‘hardness of life, not of heart’, as mentioned later. And social and government incentives can and do provide positive and reinforcing feedback loops. Schemes such as Ladli in Haryana which are designed to help families with nutrition and education of children or even for dowry fit very well into this structure, whatever their other limitations.

The three indicators based on sex ratio, thus, reflect very different motives and incentive sets. One reason the BSR is a difficult aspect to tackle is that while infant, child and maternal mortality don’t involve much conflict between the social policy and the family/individual objectives, the countervailing family incentives do matter in the case of sex ratio at birth; families may make choices which appear to them to be in their own interest (irrespective of whether it is due to a false belief) but are otherwise in conflict with the social policy objectives. In fact, the analysis of diversity underlying the phenomenon of missing women by Anderson and Ray mentioned above only reinforces the relevance of the BSR. States like Punjab and Haryana where this is a material factor could focus on the BSR whereas, States, such as, West Bengal, and Orissa could focus on the main problem of high mortality among adult women.
Another reason the BSR needs to be the focus of public policy is the failure of even the draconian laws and regulations of the PC (PNDT) Act to bring about a dramatic improvement as expected. In fact, a casual statistical analysis based only on birth ratios will probably indicate a positive correlation between the adverse sex ratio and the PCPNDT Act and the regulations; the BSR which was 939 in 1991 came down to 910 in 2011. This period has probably seen the peak of enforcement; and 15-20 years is surely a reasonable span of time for assessing the impact of these regulations. This argument is of course fallacious. A number of factors contribute to the outcome measured by the BSR. Choices are being made by millions of families and would-be mothers, based on their biases, opinion, incentives, apprehensions and evaluation of the various available options. Additionally, cultural, religious and social mores - all play a part in this process of decision-making though the choice is basically personal or at best familial. It would, therefore, be unfair to lay the blame at the door of this law, but as we shall see, the problem may be of perverse or misdirected incentives which are not factored in the policy.

Assuming a biological norm of 950 female births per 1000 males, the 2011 figure of 910 indicates that the BSR is a substantial contributor to the gender imbalance – about 5%; it can be as high as 8% in some States. The gender imbalance attributable to the BSR is, therefore, the key factor to be addressed and we need to focus, in the words of Dreze and Sen, on prenatal rather than post natal discrimination.

While emphasising the need to focus on the BSR, we need to take note that it is not based on primary data and, as such, there is room for doubt whether the SRS data based on sample surveys is reliable and whether improvement in the BSR is due to ‘better reporting of female births or increase in actual numbers’. One can only say that the estimation processes appear to be fairly sound and one can safely adopt the BSR as the main indicator of the pace of change as well as of the
impact of regulatory and other variables. The States do compile figures based on the birth registration data but these may not be relevant for all the States due to the uneven pace of universal registration. In any case, the BSR is at least based on a continuous process of compilation of data about the physical event of birth, unlike the CSR which is compiled for the 0-6 year age bracket only at the time of the decadal census on the basis of information provided by the households. Moreover, the BSR, whatever the limitations of the SRS system from which it is derived, represents an objective outcome and can be graded and compared against an absolute, the biological norm for *Homo Sapiens.*
3
RULES OF THE GAME AND INCENTIVES

While the three major outcomes indicative of gender imbalance – BSR, OSR, CSR - do matter, the BSR appears to be the key result area in the contemporary context and should be the key variable for policy intervention. The tools and strategies for intervention, however, comprise of an eclectic mix of preventive and promotional measures: “distribution of public resources to deliver basic needs of survival with affirmative strategies to enhance access to development benefits. It includes free education, training and income-generating schemes and legal provisions and sensitisation for equal rights and protection--- Legal provisions include laws of equal remuneration, property rights, one-third reservation in political bodies, and protective laws etc”. The rather indiscriminate and patchy policy regime consists of awareness campaigns, regulation of the supply side activities, penalties including heavy prison sentences even for acts which have no criminal intent, and demand side measures for promoting girl child preference most of which have little nexus with the desired outcomes and objectives as shown later.

Limitation of Awareness Campaigns

A perusal of various government documents and websites shows that awareness campaigns are given the pride of place in the intervention strategies of the state and Central governments. Governments as well as non-governmental organisations have made efforts to “work through advocacy, sensitisation and awareness-raising programmes, (seeking to) change people’s mindsets and attitudes towards girls”. These have, however, not been much use; it has been noted that 95 per cent of the couples who underwent female foeticide were aware that this was a crime; many officials concerned with enforcement themselves believe in male child preference. And
as indicated later, awareness may affect attitudes but rarely behaviour.

**Punitive Provisions and Deterrence**

The sex selective practices on the supply side are regulated through compulsory registration and inspection and monitoring of the genetic, pathological and radiology centres and clinics. Stringent penalties and prison sentences are also provided for the actors on the supply and the demand side. The data given by Government of India indicates that during 2009-2014 a total of 180 convictions were secured whereas the total number of convictions before 2009 was only 26. These figures are intended to demonstrate the escalating level of implementation by the enforcement authorities. The break-up given, however, shows that substantial majority of these 119 cases were only in three states (Haryana 54, Punjab 28, Rajasthan 37); and one can be reasonably certain that most of these, for reasons indicated later, relate to constructive liability about maintaining proper forms and returns rather than substantive offences. There is apparently little correlation between the state-wise trends of the BSR and the penalties/convictions. Consensus among the academics, critics or supporters, and the administrators is that neither the regulatory apparatus for enforcement nor the programs for awareness and capacity building have been very effective in curbing female foeticide.

The demand side promotional measures consist of positive incentives in the form of direct subsidies at the time of birth, scholarships and other assistance to girl child households and so on. The inadequacy of these measures is analysed later.

**Myth of Best Practices**

There are some other straws in the wind to snatch at - ‘best practices’ which may be believed to have worked in particular localities or districts and may be the answer to prayers. These, however, as observed rarely survive outside the cocoons of
their birth. The fragility and transience of some of these best practices has also been commented upon by academics; one of these is the model of tracking of pregnant women as followed in a Punjab district, Nawanshahr. Apart from the governance problems associated with ‘a retrogressive informant and punitive tracking system’, improvement in the sex ratio in Nawanshahr district was a sort of pyrrhic victory; while it has claimed success with the 2011 Census reporting this district having the best CSR of 885, improvements in some other districts (Kapurthala, Fatehgarh Sahib, Jalandhar, Bathinda and Rupnagar) are better than that of Nawanshahr. Similarly one does not hear now about the ‘silent observers’- sensors installed in some of the districts in Maharashtra state which track online the scanning activity in the ultra sound clinics.

A large number of seminars, workshops and meetings are held every year to identify regulatory and implementation problems and deliberate on ways to remove the lacunae and improve outcomes. One of the reports stresses aspects of monitoring, training, advocacy and streamlining the PCPNDT Act. Another report attributes policy failure to lack of monitoring, non inclusion of genuine NGO’s in enforcement, lack of awareness of procedures on the part of enforcement officials and problems with collecting adequate evidence for successful prosecution. This report has also highlights some administrative weakness: authorities don’t meet as mandated; selection of the NGOs is not proper; there are problems of training and skills of staff; collecting evidence is difficult due to lack of witnesses; it is difficult to get willing decoy customers. It refers to inadequate and inefficient prosecution; out of 512 cases (196 cases for non registration, 153 for non-maintenance of records, 126 regarding disclosure of sex of foetus, 37 of illegal ads), only 25% relate to substantive offences; the offence of disclosure of sex under Sections 5 & 6 (determination and communication of sex) which can be by a word or a sign is unlikely to leave any paper trail; decoy witnesses turn hostile. And so on. The departmental website of Punjab Government indicates that there are 1362
registered ultrasound centres and during 2007-2013 the number of suspensions, cancelations and court cases was 390, 51 and 29 respectively. The data about convictions is not available but apparently enforcement officials are rather liberal with doling out suspensions, which can be revoked without any complications, rather than cancellations – something similar to government’s treatment of its employees, suspensions rather than dismissals - and with the same perverse impact on incentives and behaviour as indicated later.
4

CLINICAL PRACTICES: THE ‘MARKET’ FOR FEMALE FOETICIDE

In order to see why the public policy has not been very effective, it appears necessary to examine not only the available data, but also ‘play of the game’, the structures, practices, operational mechanisms and nature of interactions among the regulators, the suppliers of (illegal) services and the involved women and their families on the demand side.

A vast majority of acts of foeticide need two sequential steps: (a) establishing sex of the foetus, through the almost universal process of an ultrasound scan and (b) aborting the female foetus. Unfortunately except for the national family health surveys, not much data is available about the characteristics, nature and volumes of scanning (mainly) and other means (to some extent) of sex determination and sex selective abortions.

Sex Selective Practices: Scanning

Regarding ultrasound scans, the NFHS-2 (1998-1999) indicates that out of mothers who gave birth during the period of three years prior to the survey, 18% had a sonogram or ultrasound done whereas amniocentesis was rarely performed (only 2.3% cases). According to NHFS-3 (2005-06), in the case of pregnant respondents during five years preceding the survey, the ultrasound test was done for 23.5%; and 8.9% of these pregnancies ended in termination. The data on scans in the NFHS surveys unfortunately does not contain details about scans in the second trimester of pregnancy - the stage where sex of the foetus can be identified.

We could not get this data from any district or state authority in the north-western states as this information, contained in Form F prescribed under the PCPNDT rules is neither compiled at any level nor analysed. The forms and monthly returns containing...
the data of scans of pregnant women, maintained by the registered Clinics and sent to the govt. authorities, appear to be just locked away or used only at the time of physical inspection to investigate discrepancies and irregularities. Even the state and district wise data about the total number of scans and their classification (+12 weeks pregnancy and others) are not available for any period or administrative unit. Evidently the whole process is treated as a paper formality. Chandigarh UT and Punjab Health Department compiled the data at my request. The data for Chandigarh UT covered only a period of five months and indicates that scans of pregnant women done during the period of 13 to 20 weeks constitute approximately 10 to 15% of the total. The data compiled for one district, SAS Nagar, by the Health Department, Punjab shows that the scans of pregnant women as reported in form F are distributed almost equally over the three semesters (Annexure I and 1A).

Extrapolation of figures provided by the Chandigarh UT to the national level NFHS data mentioned above (10% second trimester scans out of 20% scans for all pregnant women i.e. 2% of the latter) is possibly indicative of the fact that sex selective tests, at least a substantial number, are conducted outside the registered clinics. On the other hand around 35% scans in the second semester reported from SAS Nagar could very well include a sizable number of sex selective scans. A research project which follows up such cases may clarify the picture.

**Sex Selective Practices: Abortions**

In regard to abortions, the national family health survey - NFHS-2 found that only 1.7 – 1.8% of all pregnancies among married women ended in induced abortion; there may however be some doubt about the category of spontaneous abortions - 4.4% - which could very well include a substantial number of sex selective abortions caused by abortion-inducing medications which are known to be common. According to the NFHS-3, 10.4% of pregnancies during five years period preceding the survey did not result in a live birth; the survey did not, however,
provide any data on induced abortions. Dreze and Sen after evaluating various studies conclude that the number of sex selective abortions carried out annually is 0.3 to 0.6 million\(^{20}\) (two to four per cent of all pregnancies). One data-set\(^{21}\) based on official figures shows the number of abortions to be 770714 in 2001 (29.5 per 1000 live births and a ratio of 2.87 abortions to total pregnancies); the figure came down to 661353 in 2012 (25.3 and a ratio of 2.47 respectively). There is also a large variation among the states; abortion ratios in 2012 ranged from 0.4 in Andhra Pradesh to 10.3 in Manipur. This would indicate an annual humanity deficit of around five to six lac. In fact a UNFPA publication\(^{22}\) also provides an estimate of 6 lac girls missing annually during the period 2001-07; this is based on the assumption that the normal ratio is 952, though the figure of 945 (converse of 106 males to 100 females) may be more realistic. A simple arithmetic can help firm up the figures. Assuming the biological BSR to be 950, as is agreed generally, the number of cases of female foeticide, for a state or India as a whole, is the deficit in the BSR divided by 950 multiplied by the number of new born females:

\[
\text{ Missing females at birth, 2011= } \frac{950-910}{950} \times \text{number of new born females}
\]

Evidently a substantial number of abortions go unreported and are conducted illegally; the estimated number of illegal abortions as indicated above is not much less than that of the reported ones (both the figures are around six to seven hundred thousand as indicated). The fact\(^{23}\) that half of pregnancies ending in abortion are unsafe would also support this conclusion.

Thus, though the picture is not very clear, it appears that the registered clinics may be responsible for only a fraction of scans resulting in disclosure of sex; further that the process of termination of female foetuses is also mostly conducted outside the approved institutions. The data in respect of the registered
radiology/ultrasound centres (number of scans etc.) and the approved MTP clinics (abortions conducted there) may not fully account for the large number of sex selective scans and terminations taking place. In any case, whatever the involvement of registered clinics in disclosure of sex, the termination process is definitely conducted mostly outside the institutions approved under the MTP Act.

**Professional Take on Sex Selective Practices**

The issue was discussed with the enforcement officials and professionals running the registered clinics in the Chandigarh UT and the states of Punjab and Haryana. There was a striking congruence of opinion, with some exceptions, among these sections in regard to sex selective practices in north-western India:

a) By and large sex selective scans are conducted mostly (70-90%) by quacks, paramedics and other persons who have managed to learn the technique of identifying sex of the foetus through scanning (this is reportedly not very difficult) and have acquired second hand ultrasound machines and/or hand held Doppler units. In fact, in many cases, there may be a tie up among the quacks for a one-stop service, the test followed by immediate abortion. One of the professionals mentioned about a bus load of pregnant women being taken almost every day from place A to place B for this purpose.

b) There are some black sheep among the registered units also but their number is limited and at least the registered clinics believe that they carry out the illegal business generally under political- administrative protection, with the knowledge of the enforcement staff.
c) It is difficult to maintain immaculately and correctly all the particulars in Form F and other registers. That is the reason enforcement officials admit that they rarely inspect and check the government hospitals which are likely to have such lacunae in plenty. Registers and records such as Form F are in fact a ‘self declaration of innocence’ – no clinic in its right mind is likely to retain any documentary evidence which can link it on paper to sex-selective practices. The *Least Effort Principle*, focussing attention on the low hanging fruit, suits the Humans running the clinics and the enforcement agency and their intuitive and effortless ‘System 1’ and the rational controller but lazy ‘System 2’. Scrutiny of these forms and using them as evidence of mal practice is therefore a self-defeating proposition with little link to the policy outcomes.

d) Sex selective abortions are mostly conducted illegally due to the factors not only of convenience but also the stringent provisions of the MTP Act in the case of abortions during the second trimester, +12 week, pregnancy. The practice of self medication of abortion pills also implies that many such abortions may actually be reported as D&C (dilation and curettage) procedure.

The discussion indicates the following:

(a) The enforcement agency lacks information about the unregistered clinics and persons indulging in illegal practices;

(b) It is difficult to obtain evidence of the illegal activities carried out by only a few of the registered clinics; further the few registered clinics who carry out such activities are believed to be doing so under political/administrative protection;
(c) Government hospitals are generally exempt from inspections, of course in good faith;

(d) The only bit of easily available evidence is records and forms regarding scans of pregnant women.

The consequence is that the burden and cost of maintaining the charade of compliance and enforcement falls primarily on the private registered clinics even though they may be carrying out their practice within the law.

The upshot is that both the activities – sex selective tests and the termination of foetuses – are mostly carried out by unauthorised (and may be non professional) persons illegally. While estimates differ, it is generally agreed that over 80% of sex selective scans and over 90% of consequent abortions are carried out in unregistered clinics or by unqualified persons.

The conclusion that sex selective practices are not generally conducted within the registered clinics may also appeal to common sense. A large percentage of scans are carried out by clinics which employ multiple staff – trained doctors, paramedics etc. It is not possible for them to ensure secrecy about illegal practices and the risk is likely to be disproportionate to returns. Second, the professionals, mostly doctors, unlike quacks and other unqualified persons, are generally not dependent on such illegal activities for making a decent living. There is, therefore, not much incentive for them in the risky game especially when the numbers are not enough (only 5-10% of pregnant women) to ‘clear’ the market. On the other hand, for unqualified persons – quacks/paramedics – this may be the only possibility of making decent money. Governments are thus just left holding the wrong end of the stick – going after the registered clinics primarily for data recording errors, thus further driving the whole process further underground.
SOCIAL VALUES AND INDIVIDUAL CHOICE: THE MORAL CONUNDRUM

Gender balance is a public good but unlike other public goods/bads such as drug abuse, smoking and clean environment which are supported by a clear social consensus about the ends and objectives, if not the means, in this case even the ends are hotly contested. People have strong personal views on issues such as value of a life, even a foetus, freedom of choice and of course the means by which the state should regulate individual behaviour. These moral dimensions are likely to affect individual actors not only on the demand and supply side but also the enforcement staff.

Ethical Basis of the Policy

Many of us may question the very rationale of state intervention in ‘nudging’ or rather (in the case of regulations in India) ‘kicking’ the society and the citizens to bring about an otherwise socially desirable outcome of balanced sex ratio. Liberals would like the govt. to leave the matter to the choice, to be freely exercised, of individuals and families. This is the view for example of Grayling who endorses complete and full autonomy of the woman involved to terminate a pregnancy. The perspective on state intervention given by Matt Ridley goes beyond a simplistic ideological approach and exposes the shaky moral foundations of such interventions. He recalls (Chapter 21 Eugenics - one of the 23 chapters, dealing with chromosome 21 of the human genome) how most of the so called advanced nations passed a number of laws in the first half of the 20th century providing for incarceration and compulsory sterilization of the ‘feeble minded’ – all for the social good! Should governments ban sex selective screening? As he remarks, “if the govt. were to ban genetic screening on the ground that it might be abused, it would risk increasing the load of suffering in the world; it would be just as cruel to outlaw
screening as to make it compulsory” (the latter is the case for example, in Down Syndrome a genetic disease affecting children where some of the governments have been empowered to abort the foetus without the parents’ consent; according to newspaper reports, the Indian government is also contemplating assuming this authority!).

The moral issue, therefore, – whether, in place of the affected would-be mother, the government should take the decision - is difficult to resolve. Similar arguments were advanced in favour of the eugenic laws mentioned above. Many of us would consider this an example of what Ridley calls “the danger of letting government out of control”.

No doubt there may be situations in which the use of sex selective tests may be considered ethical. Allahbadi\(^{27}\) gives an example: Molly suffered from a fatal genetic disorder and needed a compatible donor for bone marrow transplant; Molly’s parents produced 30 embryos; one among the five male embryos with transplant compatibility resulted in a successful birth through use of the IVF; stem cells of the new born were then successfully used to replace Molly’s defective marrow. Such instances of sex selection will probably not be considered unethical but the phenomenon of female deselection in India rarely involves such delicate ethical dilemmas.

So is the PCPNDT Act a mindless repeat of eugenic laws of the early 20\(^{th}\) century, even assuming that \textit{laissez faire} is not an option? It is difficult to find an answer but the problem is that governments have to demonstrate some flurry of activity when pushed by the NGO’s and sometimes even a majority of voters, and a \textit{laissez faire} approach may not be feasible. The rationale of the social policy is quite clear; an adverse sex ratio is harmful to society. There is enough documentation of the ways in which the social and family fabric can get destroyed if the male female ratio is imbalanced – in terms of crime, prostitution and so on, apart from the moral repugnance we all feel when faced with
the prospect of a male majority society. The issue is not whether a balanced sex ratio is morally and socially desirable but whether the public policy for achieving a public good – balanced sex ratio – can be redesigned to maximise individual freedom and choice, and be compatible with the behaviour, beliefs, biases and incentives of the parties involved – the women and families and (of course), the professionals and businesses providing services.

**Population Control and Female Foeticide: Moral Ambivalence of Regulations**

There is a tacit conflict between the two laws, the PC (PNDT) Act and the MTP act and this is obvious in the design of the two relevant regulations. The MPT Act is premised on the fundamental tenet of freedom of choice of the mother to abort the foetus; the issue of sex thereof is eschewed. On the other hand the PCPNDT Act specifically prohibits sex selective abortion of female foetuses. The moral underpinnings of the two Acts are thus in conflict and this is likely to pull the human agents in different directions. The MTP Act may in fact provide some moral support for rationalisation of the illegal acts of abortion of female foetuses. Part of the explanation why the volume of unreported abortions equals, if not a multiple of, reported ones, may be the convenience factor which compensates to some extent for the higher cost of abortion in private clinics and hospitals. An additional factor is the difficulty created by the provision about the consent of two doctors required in the case of abortion of +12 week foetuses, which most of the sex selective abortions are likely to be. And the costs are reportedly modest, given the competition; as in the commodity markets, volumes compensate for low professional fees. In any case, the conflicting moral bases of the two Acts are likely to jeopardise their effectiveness; the clientele and the enforcement agency are the same. Mothers for example, can easily rationalize acts culminating in foeticide. A remark made by an academic seems relevant: ‘female foeticide is a product of son craze and family planning’.
Confronting (im)moral underground

This conflict can affect the performance even of the committed enforcement professionals. Do they work for MTP Act or against female foeticide? Sociologist Lisa Dodson in The Moral Underground sympathetically documents how ordinary Americans, including officials, are protesting against unfair rules to provide justice to the underdog. The UK provides liberty to the NHS doctors not to advise abortion as per the government policy in case their beliefs are different – “any doctor with a moral objection does not have to certify a woman for an abortion---- but must recommend another doctor -----.” While we are a long way off from giving such freedom to officials, it is difficult to prevent those having similar values from being sympathetic to, and taking a lenient view of, illegal practices, the reverse of the Stockholm syndrome in which the victim develops sympathy or empathy with the captor. In the Indian context, however, the failure of enforcement does not appear to be the result of such ‘regulatory capture’ as in the case of economic regulations. It may also not be due to the enforcement officers having a soft corner for the fellow professionals on the supply side, as some academics have argued. It is the commercial underground which appears to be providing speedy solutions, though rarely for moral reasons.
6

FAILURE OF CONVENTIONAL WISDOM

Awareness and information campaigns, meetings, form filling rituals, raids, incentives and threats don’t seem to have had much effect. By and large the gender imbalance in India continues and if there is some improvement, it is not even at the much derided ‘Hindu rate of growth’ of the Indian economy – it almost seems to be moving at the slow pace of evolutionary change. Some measures of gender empowerment are only contingency measures and social insurance, for example, under the Shagun scheme in Punjab, does nothing beyond accepting the state’s joint liability with parents while endorsing the concept of daughter as a burden. In any case these are unlikely to affect the BSR. Moreover, as Guilmoto perceptively remarks, most of these measures are not feasible or affordable. Solutions, suggestions and prescriptions by a number of reports, workshops and evaluations, which are based on conventional wisdom, appear to have been ineffective. The problem may also not be resolved by the type of changes advocated – tougher punishments, authorizing the police to take direct cognizance of such offences, more frequent inspections by, and meetings of, committees consisting of detached if not self interested enforcement staff and so on.

If, as it appears, a large percentage of activities, actions and client-professional exchanges are being conducted outside the registered institutions, surely more of focus on the enforcement of laws within the registered clinics is not going to help. The problem is similar to that of narcotic drugs – the trade being illegal, the licenced pharmacies are unlikely to be the main source of supply. Fortunately in the case of sex ratio, we have the demographic data to check the vague claims of success; similar parameters are not available in the case of illegal drugs, prostitution and similar activities. And the Census/SRS figures have exposed, at least for the present, almost total failure of these regulations. One common but somewhat wishful
rationalization is that sex ratio at birth would have been much worse in the absence of these regulations! One does not know and it is impossible to prove or disprove this hypothesis; it is not amenable to being falsified, philosopher Karl Popper’s well known touchstone for a scientific hypothesis.

In fact this view about the misdirected monitoring of registered clinics has also been propounded by the medical faculty during discussions and interviews. An article\textsuperscript{32} provides a number of instances of irrelevant and wasteful regulations, including the one proposed about further tightening the definition of a sinologist, and that also when, as shown earlier, the involvement of even the presently qualified sinologists is marginal. Actions such as prosecution of registered clinics for minor violations (some examples given are blank columns, not putting complete signatures, not displaying the latest copy of the PNDT Act etc.) only result in more and more of clients shifting to the grey market service providers and unqualified operators. The role of qualified doctors and approved clinics in the case of abortions is also marginal, as shown above. The measures directed at the registered clinics are thus unlikely to help considering the latter’s marginal role, whether in sex selective tests or abortions. And such activities can always be rationalized through the ‘moral underground’ philosophy’!

It appears that the behaviour and actions which matter and impinge on the outcomes – actions of the affected women, clinics, enforcement agency - take place in a different dimension than the one regulated. The story of the government regulations banning gambling, abortion, prostitution, alcohol or drugs follows a familiar trajectory. As Grayling remarks\textsuperscript{33}, things don’t change much; the activities are simply pushed more and more underground, when trades and services are criminalised. And the results are also similar; the enforcers are happy making money and/or dispensing patronage/protection – they have their own incentives.
**Problem of ‘Free Riding’**

There are two other contextual factors which need consideration. While gender balance is, like healthy environment, a ‘natural’ public good, it can be destroyed by acts and choices which are essentially private; information about them is not and cannot be in the public domain, unlike the ‘tragedy of the commons’ of physical resources played out under full public gaze. The problem, therefore, is not amenable to resolution through public and community institutions. Guilmoto remarks: “..... we can consider a balanced sex ratio as a public good available to everyone like clean air or world peace”, skewed sex ratio is an externality inflicted on the society by individuals acting in their own interest. The problem, therefore, is that of free riding; one can benefit from a healthy sex ratio while simultaneously personally benefitting (may be not really but the belief is what matters) from sex selective practices. In these circumstances the rational response may be to indulge in female deselection, while making socially and politically correct noises and availing of the benefits of a healthy ratio contributed by others.

**Regulatory Burden: Social and Moral Costs**

The second aspect is the regulatory burden imposed on the society. It is evident that various measures and regulations for restoring gender imbalance have been a dismal failure. This is so whether one considers the census figures and the SRS data about outcomes or the quality of regulatory governance. The data results are corroborated by academic studies as well as impressions of professionals (whether engaged in supply or enforcement) and the NGOs and organisations concerned about this problem. And these evaluations do not even take into account the burden imposed on the society, in terms of tremendous material and psychological costs borne by the agencies and actors on the demand side (pain, anxiety, guilt suffered by the involved women and sometimes family discord) and the supply side (cost of filling up and maintenance of forms
and returns which are rarely put to productive use, coping with sometimes genuine but mostly manufactured inspections to check compliance of somewhat impractical obligations). The standards of proving innocence - absolutely no error in forms and records - expose honest clinics to situations faced by the women prosecuted for witchcraft in the middle ages. In the ‘ordeal by water’ – dunking of witches in water - death by drowning was indicative of innocence and survival indicated culpability; in both the situations the result was fatal35!

The penalty for proper maintenance of forms is an especially remarkable regulatory innovation, as a lapse is itself a penal offence and does not require proof of intent unlike the criminal law, probably the only such instance in criminal jurisprudence. And proving one’s innocence in such matters of routine neglect can be an impossible task. There seems little point in persisting with an elaborate set of regulations whose impact in terms of improved demographics is negligible but the costs imposed on the society are substantial.

The regulatory design needs to be sensitive to the moral and social factors mentioned above, if it is to have any chance of influencing the behaviour of different actors.
The basic flaw in the regulatory design appears to be a simplistic assumption that popular inputs - sensitization, awareness and information campaigns and provision of harsh punishments for violation of the law - would result in a magical transformation of the behaviour of actors. As has been seen, proper maintenance and scrutiny of records etc. has little nexus with substantive results. You focus on paper work – forms, Returns and meetings - and the output is chaotic paper work all round, a frenzy of fruitless activity of ‘treading water’. The result, as in the case of corruption, is an idealistic philosophy of zero tolerance in a situation of one hundred percent non compliance. One reason why the policy makers persist with these typical legal-administrative approaches which rely on penal regulations is possibly Ideology, if not Ignorance or Inertia – the three Is generally responsible for the unimaginative design of regulations. As remarked earlier, injecting energy through these inputs may only result in more entropy. An effective policy design needs to be able to influence the large number of actors and their diverse and sometimes competing incentives and motivations not only on the demand but also the supply side. The latter also include various agencies and actors in the government and state apparatus - health, police, district administration, prosecution, judiciary, and so on - with different interests, personal biases and preferences at worst and disinterest at best. More of the same ineffective medicine (regular reviews and inspections, tracking of pregnant women, more and more prosecutions) are unlikely to make much difference. It is well known that awareness campaigns, for example, may help in changing attitudes but do not influence behaviour.

We need a shift in focus from tough regulations with little prospect of compliance to the incentives and behaviour of the actors and what can ‘sell’. The missing link is the behaviour and
incentives of the actors involved in these governance interactions. Responses of human actors to such regulations are mostly rational but may also be influenced by human quirks and foibles, cognitive biases and heuristics to which ordinary mortals as well as experts are prone. Tversky and the Nobel-winner Kahneman have drawn attention to these limitations in a famous article and Kahneman in his latest book has expounded this approach to reach the lay readers. Kahneman and Tversky stipulate that actors may not always be driven by self-interest and material incentives; they sometimes spontaneously make choices, take decisions and undertake activities which may not be in their real interest. Preferences are not fixed, and are subject to reversal, depending on ‘framing’ and other factors, and the expected utility function does not show ‘invariance’, as modelled by economists. Some of the factors affecting choice and judgment are ‘availability’, ‘representativeness’, ‘anchoring’, ‘risk avoidance for loss but risk appetite for gain’, ‘overconfidence’ in one’s abilities, ‘myopia’ (obverse of the ‘availability’ heuristic) and ‘status quo bias’. It has been demonstrated that economic and logical reasoning does not come naturally to Homo sapiens who are dominated by the ‘intuitive’ and automatic System I rather than ‘reflective’ but lazy System 2.

These basic assumptions are now generally accepted: human beings are not ‘Econs’ but are subject to various emotional as well as cognitive heuristics, biases, limitations and illusions which are as, if not more, important as self interest. The Smithian notion of self interest, the foundation of economic activity, is itself under attack. As remarked by Camerer, who introduced behaviour in the hitherto mathematical game theory, “self interest is an exception or a heuristic outcome, rather than the rule in human behaviour”. Any public policy which seeks to influence the behaviour and actions of the players needs to take these factors into account.
Since the book *Nudge*\(^{42}\) came out, governments have been fascinated by the concept and have initiated this approach in the realm of government-citizen interactions. The UK is reported to have used it for reducing traffic congestion and for promoting donation of organs. The US government has issued a set of instructions regarding the format and presentation of regulations\(^{43}\)—flexible approach, default rules, disclosures in place of mandates and bans, ‘look back’ on existing Laws, as in the 2012 Regulatory Plan. I have dealt with this aspect in detail in a chapter in *Governance Unbound*\(^{44}\). Thaler\(^{45}\) has given an excellent account of how behavioural economics has developed and the fundamental insights it has provided for the makers of public policy though unfortunately only a limited few make use of it. Despite such initiatives, the approach is yet to be, to use a term popular with social scientists, ‘mainstreamed’ in public governance, at least in India.

The purpose of invoking behavioural sciences is to see whether this can help governments design better rules of interaction through what Thaler calls ‘nudges’—small changes in framing rules and situations, ‘choice architecture’, building in ‘defaults’ while offering choices, enriching rather than complicating processes through providing appropriate details to encourage voluntary compliance, and so on. *Poor Economics*\(^{46}\) and *Nudge*\(^{47}\) provide a number of examples—magic of ‘free’ (free bed nets for malaria), financial world (default options for savings). In the case of the PCPNDT Act for example, it is generally believed that the scale of punishment should be increased to provide effective deterrence even though the solution may not work due to various reasons related to the motivations, behaviour and incentives of the actors involved - ‘over confidence’ of the actors, corruption and malpractices on the part of officials and rather strong motivations, as seen above, on the demand side, which may lead to results very different from those expected.

The bias of ‘over confidence’ in one’s abilities is especially relevant. As mentioned by Kahneman\(^{48}\), 90% of the drivers
believe they are above average; another example is that the probability of survival of small businesses in the US is just 35% whereas new entrepreneurs rate their chances of success at 60% - almost double the probability! If criminals are over confident about their ability to escape the law through skills or manipulation, they are unlikely to be bothered about the relative harshness of penalties – 3 years or 8 years imprisonment.

There are three major aspects of female foeticide policy where this perspective may be helpful not only in understanding failure but also in designing effective regulations - productive use of data, design of promotional measures and punitive regulations.

Statistics and Lies

Demographic statistics are a major source of information and analysis in the case of gender imbalance. The available data, however, is limited, skimpy and may not be very reliable in the case of India, based as it is on sample survey methodologies, which have wide margins of sampling errors and other problems. Primary data about births etc. is not readily available due to the fact that the Civil Registration processes are not universal. And in this area involving a host of complex factors, the socio-psychological dynamics can change dramatically over time making it difficult to interpret and predict trends. This problem is compounded by some of the human failings and limitations likely to afflict even experts. One interesting example of reading too much in the skimpy data based on the SRS surveys is provided by the following report:

“Now, however, comes evidence that India may in fact be succeeding (in improving sex ratio). In a pair of articles in the Indian Express, Surjit Bhalla, an economist, and Ravinder Kaur, a sociologist, use a different set of figures to get a different result. On the basis of the national sample surveys (NSS), they calculate that India’s sex ratio at birth swung from 924 females per 1000
males in 2004-05 to 977 in 2011, a stunning turnaround in favour of girls\(^{49}\).

Had there been a dramatic improvement in the year 2011 over 2001, there would have been back slapping all over – policy makers, enforcers, the NGO. So neither the ‘acche din’ feeling nor the hypothetical explanation for it (richer middle classes and its changing attitudes as provided by Bhalla et al) had any basis. The tendency however is to form simple narratives and hasty conclusions based on skimpy data; the process need not be a deliberate or conscious misinterpretation.

**The Law of Small Numbers**

One fallacy to which experts dealing with statistics may be especially prone arises from the law of small numbers. Academic studies by Agnihotri and many others have analysed the structure of sex ratios across different geo-physical regions (the ‘north–south divide’), ‘male centred’ and female friendly’ regions and the need to disaggregate data at the sub regional and district levels; they emphasise the need for micro level analysis and going to the district and even block levels to identify unique local causes and interventions\(^{50}\). The law of small numbers tells us that small samples are more likely to show extreme variations. The common example is a toss of coin; a sample of ten tosses is likely to show more variation (frequency and regularity of heads or tails) than that of one hundred tosses. To take an example relevant to the issue, in a 30 bed hospital, sex ratio in case of new- born infants is likely to vary much more than in a 1000 bed hospital. Kahneman gives an interesting example of the fallacy in action: the Gates Foundation spent or rather wasted $1.7 billion to establish small schools, basing this on a research finding that the most successful schools are small; as he remarks, bad schools also tend to be smaller than average and small schools are simply more variable. In the case of sex ratio at birth, the process of examining and devising policy inputs at local level, though ideologically saleable, is a shaky foundation for analysis as well.
The futility of monitoring sex ratios locally will be obvious from a perusal of data based on the CRS (Central Registration System) which was obtained informally from Chandigarh UT and Haryana. The tables at annexures 2 and 3 indicate a bewildering variation even among contiguous areas; the law of small numbers is in play. One wonders what can be achieved by a micro analysis in this situation.

The task is probably as, if not more, difficult as predicting the movement of share markets on the basis of historical trends; As Nassim Taleb noted in his famous book, ‘Black Swan’ events are constantly negating these predictions. And unlike the share markets affected by a simplistic ‘herd mentality’ which can be exploited by experienced traders, the underlying factors here are much more complex – not only economic but also social, cultural and psychological. One example is the shift in the sex ratios for SC/ST populations. Census data does not contain information about the sex ratio at birth for different socio economic groups but for the purpose of intergroup comparisons, one can probably adopt the CSR as a proxy for the BSR; the assumption is that any differentials in the CSR would be mostly contributed by the relative differences in the BSR. The CSR for India in 2001 and 2011 was 927 and 919 respectively. For the SC’s it was 938 and 933, with the latter thus maintaining an almost steady edge during the decade mentioned. In the case of Punjab, the CSR for total population was 798 as against 861 for the SC’s in 2001 and the figures for 2011 are 846 as against 888 for SC’s. In Haryana similarly, the CSR for total population in 2001 was 819 against 865 for the SC’s and in 2011 the respective figures are 834 and 876. The gap has narrowed over the period of ten years. There may be a number of reasons for the higher sex ratio in the case of SC/ST communities. Some academics feel that this is due to different social ethos about the family size – the SC families do have male child preference but do not indulge in female deselection and therefore instead of aborting female foetuses, tend to adopt terminal family planning measures once a male child is born;
this is known as the ‘stopping rule’ in economics. The fact is that the analysis based on the 20th century data has been shown to be dated by the CSR figures of 2001 and 2011. And this may reverse in 2021. The trend reversal in the case of the BSR in North West India (much better ratios) and regions other than the north-west (deterioration) has been noted earlier. The point is that countless millions are exercising choices and taking decisions on whether or not to adopt sex selective practices; this they do after taking note of various factors and circumstances and their actions and behaviour - rational or biased and heuristic - could result in very different outcomes; in 2021, the CSR for the SC’s which is leading today, could lag the CSR of the total population. And the BSR may deteriorate further (and it seems very likely) despite various schemes and programmes; of course the ‘human’ academics can always take recourse to ‘hind sight’ in that case.

A quote from Ronald Coase the Nobel winner on Economics by Gary Smith will illustrate the point53: “If you torture data long enough, it will confess”. Smith calls this practice data grubbing – selective reporting and data pillaging. The problem with the data on sex ratios is that unlike Big Data (billions of electronic data bytes), the favourite tool of analysis today, even sufficient data is not available in the present case. The poor quality of data coupled with the free play of the fallacy of small numbers mentioned and the ‘confirmation bias’ makes coincidental correlations much more likely. Even long term data in the case of these essentially random events may not be helpful; Gary Smith remarks: “Don’t bet the bank on historical patterns and relationships that have little or no logical basis”.

Probably what Kahneman54 calls WYSIATI (What you see is all there is) explains this: WYSIATI is explained as “jumping to conclusions on the basis of limited evidence”. The intuitive System I of the human brain latches on to the cognitive ease of what is immediately available for recall; “neither the quantity
nor the quality of the evidence count”. Experts are human after all and make do with whatever is available.

The problems indicated above are intended to flag the pitfalls of an uncritical reliance on available data about events which are random (sex ratio at birth) and using it for the design of policy. There is little point in analysing data within small population groups such as towns, small size UT’s and so on. The major objective for the next five to ten years needs to be to bring about a ratio of 950 or so. And as we shall see, this can be done with much less social cost if we focus on the pivotal role of individuals on the demand side.
ACTORS, INCENTIVES AND RULES

There are a couple of other areas, punitive regulations and promotional programmes, where this perspective may be helpful. Rather than mining data under the ever shifting sand of complex demographics for the purpose of predicting trends and later taking recourse to hindsight wisdom, we need to focus on what the policy makers can do to influence individual choice and align it with social policy through a redesign of rules of the game. This needs a look at the possible motivations, behaviour and response of the individuals and households.

Demand Side Incentives

The major motivations generally believed to be relevant for sex selective behaviour are:

(a) that a son will look after parents in old age, unlike a daughter who after marriage by convention leaves the home of parents;

(b) dowry – say Rs. 2 lac (at today’s prices) for the low income groups and Rs.5-10 lacs for the middle class families; this is an adaptation of the advertisement which was reported to be promoting sex selective practices in the 1970’s and 1980’s: “pay Rs.500 now rather than five lacs later”. As Guilmoto remarks, costs of marriages are “enhancing asymmetries for families of sons versus those of girls”.

One can probably leave out of consideration the other negative incentives - safety of girls, expenses on education (without expectation of any returns, unlike investment in educating male children) etc. These factors are not easily quantifiable unlike the more ‘available’ and salient factors mentioned above and may not by themselves provide a sufficient incentive for families to resort to sex selective practices.
Incentives for Sex Selective Tests

So what are the incentives – carrots and sticks – the public policy provides at present? The stick consists of punitive provisions including incarceration which primarily target the providers of illegal services. In any case, the involved women can safely presume that the possibility of being prosecuted, let alone convicted, for deselection is remote; this is so as in any case the law presumes the mother to be innocent, another instance of the burden of ideology carried by regulations. Moreover, any pregnant women can access the major mechanism of ultrasound examination; supportive documentation which can provide proof of the fact of disclosure of sex of the foetus is not necessary; and there is little possibility of the regulators gathering enough evidence in such cases. The best bet for them is decoy clients and in that case, the penal dice is loaded against the suppliers of these services, not the customers.

Incentives for Sex Selective Abortion

So far as sex selective abortions are concerned, the present law – the Medical Termination of Pregnancy Act (MTP) Act – permits abortion on the ground of failure of contraceptive devices. And this is legally a valid ground for getting the foetus aborted at the registered clinics and hospitals at least in the case of married women (even though the law does not make this distinction, it matters in practice). A woman may possess information about the sex of the foetus but the clinicians and surgeons would not know and are bound to accept the woman’s statement at face value. In fact, it is surprising why in spite of this liberal provision, the number of unreported, may be not all illegal, abortions is estimated to be rather high as compared to the numbers reported.

Of Human Bondage

Demographers and sociologists appear to have neglected, while analysing trends of the IMR and child mortality another relevant
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and important dimension, that of human relationships - the bond which a new born forms quickly not only with the mother but also other family members and siblings. In fact, given whatever little we know of human nature, this choice can be a very painful process. The theory of *The Selfish Gene* propounded by Richard Dawkins appears to be at work, at least for the organism if not the genome. One likes to see one’s progeny survive and prosper and birth of a child is just the starting point for the expression of genetic selfishness and/or human bonding. *Sparta*, a Greek state which was fitness crazy and probably killed unfit male babies by throwing them off the cliff tops was surely an exception!

To some extent, even in the case of sex selective abortions, one needs to factor in this aspect of loss and pain suffered by the family/mother in the process of losing the foetus. Sherman captures this in a chapter (A Moral Science of Women’s Rights’); he quotes Edward Tylor’s 19th century anthropological observation: “Infanticide arises from hardness of life rather than hardness of heart”. As he says “Normal people do not kill their children for no reason” and like all human behaviour *infanticide has ‘non trivial causes.*

This proposition probably applies, though a little less forcefully, to foeticide as well. The decision to abort a male or a female foetus is a painful one and instead of devising harsh punishments for mothers and couples, one need to consider what may (in their view) be the potential benefits gained or losses avoided, forcing them to take the painful decision of aborting a female foetus. We may need to restructure incentives not around the stick so much as the carrot, or better, as Gneezy says, dress up the stick as a carrot, rather than throwing the rule book at the parents and providers of tests and abortions. Sociologists and academic researchers appear to argue about cultural and nutritional neglect as if it were a costless process for the mother and the family; *they need instead to incorporate in their models the social and economic*
motivations which are strong enough to overcome and suppress this bond and compel the family to harm the female child or foetus.

Misdirected Programmes of Promotion

A similar story is repeated in the case of promotional incentives directed at promoting gender balance and the girl child. A number of such incentives are provided in Punjab: The Balri Rashak Yojna is one such scheme for the girl-child. A cash incentive of Rs.500 and Rs.1000 per month respectively is given for one/two female children upto the age of 18 years. The number of families, however, is negligible – only 512. Moreover, it is primarily a measure for family planning with little impact likely on the BSR (which should encourage more than two girl children) and as mentioned later, the family may or may not use it for welfare of the child.

Similarly the scheme for giving awards to panchayats who show the best sex ratios albeit well intentioned does not appear to be well considered. Panchayats do not play any role in this matter nor are likely to do so. Barring making polite noises, as mentioned above in connection with ‘free riding’ problem, the PRI’s are wise enough not to get involved in such social issues especially in the current state of these fractured political institutions. Moreover, as mentioned, the law of small numbers is applicable in such cases involving small demographic units and it may be just by random chance that a panchayat happens to have a low sex ratio in any particular year; it may be just the reverse next year.

That also holds true in the case of similar schemes in Haryana - awards to panchayats, concession to women consumers (electricity charges, stamp duty etc.) and the Ladly scheme under which financial assistance of Rs.2500 per girl child is provided per year after the birth of the 2nd girl child; the amount is to be invested in an LIC scheme and will provide approximately Rs.90000/- at the age of 18 years. A new
scheme\textsuperscript{58} announced in Haryana provides for an amount of Rs.21000 to be deposited on the birth of first daughter under \textit{Apki Beti – Hamari Beti} Scheme. The problem as mentioned earlier in case of Shagun scheme in Punjab is that this only reinforces the perception that dowry is a burden and the government is simply sharing it. The futility of such promotion schemes is indicated by a newspaper report \textit{‘Gender ratio slips despite schemes for girl child: CAG\textsuperscript{59};} despite eight schemes for improving status of girl child and correction of gender imbalance, sex ratio deteriorated in Hissar and Jind districts during the period 2009-14.

In any case, whatever the effect of these schemes on the health and welfare of female children, it is unlikely to bring about any change in respect of female foeticide. One needs to take note of the cognitive bias of hyperbolic discounting or temporal inconsistency; future benefits are heavily discounted as compared to present costs. An amount of Rs.90000/- available after 20 years may, after discounting, be worth only to Rs.5000 – 10000 in hand today, hardly a sufficient incentive to offset the perceived cost of a girl child. We know of the marsh mellow studies on delayed gratification among children, conducted at Stanford. In the case of six year olds in America, one study\textsuperscript{60} found time preference to be 150\% per month, this was the extra reward required to delay instant gratification. Adults may not display such extreme preferences for the short term but the fact is that incentives and gains which can be availed of only in the remote future appear disproportionately small when compared to the looming present costs.

The same holds for schemes which provide for staggered and graded payments according to the age of the girl-child. One may seem callous in making the observation but surely if the government consider cultural and social factors to be primarily responsible for the neglect of female children, the money would only give rise to a ‘moral hazard’ – families can pocket the money but still neglect the girl-child, adolescent or adult; there
is no logical correspondence between the money given and its use for the purpose it is meant for. As we know, money is fungible. And if the money is placed in a frozen account to be used only by the girl child on attaining majority, that would further reduce the incentive, if any, to the family to better look after of the child, let alone incentivise the mother to give birth to it.

Punitive Regulations and Supply side Incentives

As economists don’t tire of saying, whenever something is in demand, supply will become available; it is a matter of sufficient incentives, whether for drugs or prostitution or whatever. Economist Tyler Cowen points out that the markets are universal: ‘sometimes, it seems like there are markets in everything’.61 This market for illegal services is probably provided primarily by unregistered clinics and persons, rather than the registered clinics except for a few operating at the margins of legality. Operating the ultrasound equipment, especially for the limited purpose of sex determination, is not a very difficult task and necessary skills can be acquired easily. It is also well known that portable units are very much in use. One is reinforced in this belief by the fact that the number of illegal abortions – those conducted outside the registered clinics – is much higher than the reported ones; and these need more sophistication and wherewithal than simple ultra-sound scans. The basic problem of regulating these areas is the scarcity of information available to the enforcers of law, even given the motivation of officials which may itself be questionable.

It would appear that the stakes are too high for most of the medical professionals to take the risk of breaking the law; most of these professionals as also owners of clinics are not primarily dependent on such illegal custom for income. That would hold also for the laboratories and ultrasound clinics. It appeared from discussions with the professionals that the managers and owners of registered clinics are much more worried about paper work as any problem with records also translates into a
penal offence. Proper record keeping and sending of returns and forms in time to the government functionaries, as required by law, has little nexus with the act of communication of sex of the foetus which, as mentioned above, can be completed without any documentation and leaves absolutely no clue. Decoy operations are the only threat but as noted earlier the scope is limited in the absence of sufficient incentives for volunteer decoys. The scope for the use of decoys and whistleblowers is very limited, even when compared to another area of social evil – corruption, where despite high temptation for collusion, whistle-blowers and complainants are relatively plentiful. In this case, substantial sums of money are not at stake, fees negligible and incentives for collusion high. It is to use a term from the market design theory in economics, a ‘thin market’ with neither enough customers nor enough suppliers; the only viable market, therefore, is the grey market.
9 REDESIGNING THE PUBLIC POLICY

The PCPNDT Act and its implementation design appear to present a tragedy of well intentioned errors. First, the positive, promotional incentives which are directed primarily at the demand side clients, couples and families (prize money for Panchayats, dowry and education money for daughters and so on) are not effective or even efficient as has been indicated above. The same in the case with negative incentives – threat of penal consequences for mothers/families and the clinicians. Moreover, if the regulations have not worked at the present level of punishment, they are unlikely to work if imprisonment is increased to say 10 years. Considering the implicit social support and rationalization readily available for such actions, the family can always convince itself that aborting a foetus is the best course, especially as conviction is unlikely. For a normal, otherwise law abiding family, the threat of punishment even at the current levels is more than adequate; for most of them even a day’s stay in the police lock-up is unthinkable. True, a drastic scaling up of punishment – if for example death penalty is provided for female foeticide – may possibly work. This is however not feasible. There are enough voices pleading for abolition of the death penalty even for heinous crimes and many countries have in fact done so. Moreover, the death penalty for drug dealers as provided in Singapore, China and some other countries has not led to the eradication of this menace. The more stringent the penalty, the more the incentives to avoid it through various means – bribes and so on - apart from the bias of ‘over confidence’ of criminals who may believe they will escape the law.

So far as the supply side is concerned, as in the case of collusive acts of corruption, evidence is rarely available to secure a conviction, let alone prosecution. As noted, the regulations have only helped turn the whole machinery of sex determination and foetus termination into an underground
industry. And the grey market has strong incentives; this is probably the only way for quacks to make money.

‘Nudges’ or ‘Kicks’?

The question is what can take the place of the ineffective cocktail of interventions, consisting of carrots which are misdirected in the choice of targets and timing, and sticks which have only helped create an underground market of suppliers. We may need to shift our focus from society, structures, organisation and implementation to the motivations, behaviour and incentives of the individuals and families. ‘Nudges’ advocated by Thaler and Sunstein is one option. In the case of negative incentives or ‘sticks’, institutions and rules based on ‘naming and shaming’ may be more effective. The US Agency for Environment adopted a simple practice of ‘naming and shaming’ by placing on their website (known as the Toxic Release Inventory) the list of companies emitting pollutant gases in excess of norms. This had a salutary effect even though there were no penal consequences for the violation of norms. This can be done by making it mandatory for all pregnant women to have the scans done and have the sex of the foetus brought on record. A follow up of these cases is then easy enough and the ‘shaming’ process can follow.

This course is however subject to the problem that it may not be possible in a liberal democracy to build a consensus around such peremptory mandates affecting individuals’ freedom of action and the dictatorial connotations such processes imply. Governments could instead provide facilities for inexpensive and free screening and disclosure of sex for those who want it and decriminalise sex disclosure and aborting of female foetus, while maintaining data for the purpose of naming and shaming or even for the reverse motivation of families indulging in these actions. Unless one tries one cannot assume that decriminalisation will cause a catastrophe. Governments will through such liberal measures at least ensure that morbidity and possible mortality of women following unsafe and
unhygienic abortions is minimized. That will need changes in the MTP law to make the act of abortion even after 12 weeks a simple process based primarily on the mother’s choice. Decriminalisation of the presently prohibited practices may itself bring about a change; a small addition to the number of women choosing to give birth to a female child who do so despite the absence of criminal consequences, may cause a positive ripple effect. The law, as it stands, may itself be responsible for creating a negative psychological impact, a feeling that female deselection practices are universal, and thus lead to a ‘herd mentality’. In the US and the UK, simple information made available to the tax payers that the majority is paying their taxes led to an increase in the number of tax compliant citizens. Information that university students do not normally consume alcohol in excess led to a significant decrease in consumption; the students were under an erroneous impression that high consumption is the norm among undergraduates. Surely not everybody already having two or more girl children is having the female foetus aborted; as mentioned it is a difficult choice for families and feelings of affection for the unborn are not to be brushed aside. Some medical professionals endorse a similar approach, reversing the direction of the law and instead of prohibiting disclosure of sex, *mandating determination and recording of sex in all cases* to facilitate further tracking and control of female foeticide. *This will turn an intrusive best practice (of tracking pregnant women) in Nawanshaher, into a proper protocol of state intervention simply based on records!* But this half-way house is unlikely to work not only due to apprehensions about possible prosecution but also the social sanctions which may follow in the case of a mother who is on record as having knowledge about the sex of the foetus but is unable to bring it to successful completion. Considering the general climate of socio political opinion neither of these options is in any case is likely to be acceptable, however appropriate from a behaviour based perspective.
‘Frame’ of the Incentive Compatible Proposals

The third option - retaining the element of criminality but targeting the demand side incentives – is not likely to give rise to such problems. Governments can keep the focus on enforcement and prosecution in the case of violations of the present law however limited the impact. Simultaneously some positive incentives can be put to work independently to encourage the socially productive choice of retaining of the female foetus by the mothers and families involved. Given therefore the basic structure of regulations – registration of clinics, penalties for disclosure of sex of the foetus and so on – the rules of the game need to be tweaked by devising ‘nudges’ and incentives which are aligned with the players’ behaviour. One can follow the pragmatic approach outlined by Gneezy\textsuperscript{63} which is not clogged by ideology – of ‘libertarian patrimonialism’- as advocated by Thaler\textsuperscript{64} et al. Broadly the approach consists of the following:

(a) define the outcomes desired and how to measure them.

(b) understand the motivation, values and incentives of mothers and families involved. We need to find out what people really value in the context of a public policy and then we can figure out the triggers or mechanisms needed. “Until one fully understands what incentives motivate people, it is impossible to predict how new policies or changes will actually work”.

(c) Attention to detail:

“the who, what, when, where, why and how much you motivate” which is beautifully brought out through the famous real life example of play school incentives in Israel. Disincentives in the shape of fines were created for parents who were late in collecting their children; this monetary disincentive, however, resulted in increase
in the number of such parents; when parents had to pay the fine, they no longer felt guilty *being late*!

There are three major aspects of the public policy where a behavioural perspective may be relevant; two of these concern regulations regarding negative incentives and the third, the carrots or positive incentives for promotion of gender balance.

**Actors as Whistle blowers**

The best bet, as in the case of corruption appears to be what has been called the invisible foot’ strategy\(^6\), to encourage whistle blowers, and in this case women, by providing immunity and even incentives to them to provide evidence against the clinics. The strategy is the other side of Adam Smith’s ‘invisible hand’; the only difference is that it effectively regulates illegal trades. Lott Jr. in a section titled, *‘How rent control killed the Kitty cat: Enforcing the law when everyone involved wants to break it’*,\(^6\) refers to an incident in which a landlord refused to rent out an apartment to the author as he had a cat which was suffering from a disease, whereas the regulations prohibited keeping diseased pets; this was the case, even though the rent offered was more than the rent fixed under the Rent Control Law. The apprehension of the landlord was that the tenant may provide evidence later, to the Board, not only to recover the extra rent paid but also compensation; the rent control law of LA provides for penalty for violation of the rent control laws at double the amount of over payment and the beauty of the law is that the landlord is solely responsible for compliance; the tenant is considered a ‘victim’. The law thus ensures compliance of the rent control regulations by creating distrust among the parties. Similar is the case for the minimum wage laws in the US; 75 to 80 per cent of the minimum wage violations are reported by the workers themselves.

Most of the regulations of India, however, treat both the parties as culprits and hence the code of silence and the problem of
lack of information. A simple provision that the victim, sex worker, labourer, or an emigrant who is duped by an agent, even if a willing party to the transaction, is empowered to provide information and evidence and is entitled to get relief, may itself bring about the desired results. The victims will be potential ‘spies’. The law today does provide protection to women against prosecution but little by way of encouragement; simply the existence of this possibility will probably be a big deterrent for illegal sex disclosure and similar activities. Such innovative regulations need to replace the simplistic and unimaginative provisions for declarations of intent made under law by the women concerned and the clinicians (“I declare that I do not want to know the sex of my foetus”). The proposal being made is similar to that of the anti-corruption laws providing protection to whistleblowers who may even be the bribe givers. This will also address the problem of information asymmetry, a major weakness of this law.

One could therefore consider devising a regulatory ‘nudge’ for the women who may be parties to the collusive transaction of sex determination tests at the clinics. The law can provide immunity to them, treating them as ‘victims’, and thus provide an incentive to these victim whistle blowers to file a complaint even after the office is committed. Once a clinic, whether registered or otherwise, knows that the complicity of the woman in the illegal activity of diagnostic tests will be no bar to her being a witness or complainant, it may hastily review its incentives!

**Maintenance of Forms and Records**

The provisions of harsh punishment for the minor errors of record keeping and form filling are only likely to generate perverse incentives and it will be appropriate to eliminate these punitive provisions which provide for a prison sentence even for minor violations and inaccuracy in filling forms etc. The current provision reads:
“Person conducting ultrasonography on a pregnant woman shall keep complete record thereof in the clinic/centre in Form F and any deficiency or inaccuracy found therein shall amount to contravention of provisions of section 5 or section 6 of the Act, unless contrary is proved by the person conducting such ultrasonography” (note provided in form F of the PCPNDT Rules).

The reason for recommending abrogation of this clause is not simply to promote the ‘ease of doing business.’ The problem with such provisions is that it is almost impossible to comply one hundred percent with the law, even given full dedication and absent mala fide; the problem is the limited attention span of humans in the performance of routine activities. The Medical Associations are complaining that the doctors are now required to demonstrate their skills not as doctors but as clerks and record keepers. Moreover, considering the problem of information about substantive illegal activities, the tendency of the enforcement bureaucracy is to focus precisely on these very areas where violations can be easily found and a semblance of enforcement kept going. The position is similar to that of labour laws where inspectors tend to focus on the minor violations of non-maintenance of records and registers rather than substantive violations such as denial of minimum wages and employing ‘shadow labour (employment off the record) about which it is hard to acquire information. Such stringent provisions may only result in more of corruption.

One problem with tough punishments for such unintended errors of omission is that one may be prepared to pay a high price to avoid them and thus create a perverse temptation for the enforcement staff. No doubt the courts have provided some correctives and un-intentional errors would rarely result in conviction. The problem is the interim costs incurred in this process; while wrong conviction is unlikely, one should not forget the costs of arrest and tortuous prosecution following the registration of an FIR. Innocents may not suffer in long term
but, to quote Keynes, by that time, they are dead in any case! Basically such provisions violate the principle of *proportionality*, the basis of criminal laws and regulations in modern societies, create wrong incentives, shift the focus from outcomes to outputs and seem to be perverse on behavioural as well as moral grounds.

**The Wheel of Fortune for the Girl Child**

As the fear of imprisonment, and similar negative incentives or kicks, are unlikely to change the behaviour on the demand side, we need to think up some attractive carrots which can provide incentives in the present rather than the remote future. One way is to promote the value of the girl child through schemes such as those mentioned above, apart from changes in the laws of inheritance to ensure that girls are not deprived of their rights as successors. Some professionals have suggested a somewhat drastic solution which in their opinion would definitely work; this is to amend the law to provide that *only the female descendents should be entitled to inherit property*. Apart from its feasibility, the reverse possibility is more likely; even the male siblings, not to speak of parents, may consider their sisters *persona non grata*.

The present context does not provide an easy way for the sticks to be dressed as carrots; this highly recommended ‘framing’ is based on the finding that incentives need to be framed in terms of losses rather than gains; given equal values, losses have two to three times more impact than gains – say a loss of Rs.100 equals a gain of Rs.200! The present schemes for carrots – mainly financial incentives – do not target the real clientele as indicated earlier. Probably a well designed lottery scheme for pregnant women may do the trick. The proposal is based on a common cognitive failing of humans: lotteries are popular despite negligible odds of winning, as humans overestimate low probabilities. Gneezy et al show that even in the case of raising money for charities, and irrespective of whether the mainsprings of altruism are rooted in expectations of reciprocity
or vanity and ego, tying up such appeals for donations with some element of raffle draw leads to higher donations. Thaler observes⁶⁹: ‘If you want to get people to do stuff, lotteries can be very effective motivation.’

The usual incentive schemes fail because governments can never provide enough money to offset perceived costs - say provide a gift of Rs. 5 lac on the birth of every female child. However, huge resources are not needed for lottery prizes. Let us say that each state facing the problem provides two or three main prizes which are substantial (Rs.25 lac to Rs.1 crore depending on the resources), apart from 10-20 prizes of Rs. 1 to 5 lac each. The annual expenditure on two draws a year may be around Rs.3-5 crore; this is peanuts when one considers the annual expenditure on the Shagun scheme of over Rs. fifty crore per annum in Punjab alone. These are substantial sums and would provide a much better chance of winning than in the case of Lotto and other mass lotteries.

As the BSR shows, over 90-95% of pregnant women are obviously not resorting to sex selective practices and only 5-10% of pregnant women constitute the target group for the lottery scheme. What matters therefore is not the incentives and motives of all pregnant mothers but only of those who may for various reasons choose to abort the female foetus. That means the eligibility is limited to pregnant women who give birth to a girl-child during the specific period to be fixed – six months to one year. The idea is not to target all the mothers already having girl children but only those who are in the process of deciding whether or not to give birth to a girl child. This scheme can provide a strong incentive to women to continue with female foetuses, rather than terminating them. It can be linked with decriminalization to assess its exclusive impact but if this is not feasible for the reasons indicated, it can function alongside these (albeit ineffective) negative incentives.
There is another advantage of the raffle system. Economists generally tend to assume that preferences are static and irreversible. However, as various experiments have shown these are liable to change: in the case of money for example, additional earnings of ten dollars for a person with 100 $ assets has a very different meaning than for another having $10000; preference for a male child can vary inter-alia depending upon whether the male child is the sole child or follows after one or two daughters or two boys. In the last case a male child may not be very much preferred to a daughter. Arguments for male preference such as the ritual of a son lighting the funeral fire of parents may not have much significance in the situation last mentioned. Further, the intensity of incentives would vary, depending on the number of children – male and female. Prizes could be designed to fit the incentives of different customer ‘segments’ of pregnant women. The first prize could be Rs.25 lac for a mother with only one girl-child, Rs.50 lac for a mother with two girl children and Rs.1 crore for women having 3 or more girl children. Depending on the response, the scheme could be modified. The scheme of a lottery can thus provide incentives at least to a large number of expecting mothers whose psycho-social preferences for male progeny may be marginal.

The lottery scheme can also help in increasing the productivity and coverage of programmes relating to mother care. Lottery tickets can be provided free of charge to pregnant women who come for pre-natal check-up to the health centres and other govt. institutions.

The details of the scheme of course have to be carefully worked out - income limits if any for eligibility - but the best course is to keep it simple and universal and cover only women who give birth to a girl child during the time specified. Some issues such as whether the ticket should be free or priced, the agency for enrolment (probably the ASHA/ANM workers), and the back-up
measures for providing visibility and salience to the scheme would need to be carefully worked out.

While the scheme may incentivise a large number of women (e.g. women with no child or having a male child) whose preference for a male child is marginal, there are others who may have a strong preference for a male child; these would probably be women with three or more girl children who desperately want a male child and may not be swayed by the remote chance of winning a prize. One of the ways can be to provide, apart from the lottery scheme, a sizable incentive to this segment of pregnant women, say a sum of Rs.1 lac on the birth of a girl child. In fact a better option may be to put the money in an escrow account in their name, payable only if they have a girl child. This will create an ‘endowment effect’ and dress up the gain as a loss which they would incur if they take steps to abort the female foetus; and as mentioned above, the psychological impact of loss is almost twice that of gain. The proposal can be made more cost effective by confining the eligibility for cash payment payable on the birth of a girl child only to mothers already having two or three female children; they presumably have a much stronger preference for the male child. There are however two problems. In the first place it may be difficult to clearly identify this segment; the SRS data about live births by order of birth does not support the common assumption that the order of births is a major factor contributing to low female ratios. Second, it is likely to cost much more.

These schemes would likely address the incentives problems not only related to the social evil of dowry but also of education and health, by providing appropriate incentives at the appropriate time, not only for economic but also social and cultural compulsions (and even social and personal incentives may ultimately translate into economic ones, as the Hollywood film *The Indecent Proposal* shows). The scheme should satisfy the proponents of the rational choice model as well as the
‘nudge’ school. Mothers would gain substantially as they would avoid the suffering due to loss of progeny as also the feelings of shame and guilt, if not fear of prison. And on the positive side, there is a chance to win a fantastic lottery just for doing nothing, a common human ‘status quo bias’ or inertia.

The scheme of lottery prizes for pregnant women, supplemented, where warranted, by direct incentives for the ‘price sensitive’ segment of pregnant women who may have too high a male-child preference to be influenced by the chance of a prize, will provide the required incentives at the right time to the right clientele. Arguing as a Devil’s advocate, the worst that can happen is that the prizes will be appropriated mostly by women who in any case may have been happy with a girl child; as noted above, pregnancies ending with female foeticide are only a small percentage of the total. Only the winners, however, know the truth. The government, therefore, may be able to bring about a shift, from an erroneous ‘information cascade’ consisting of “most of the pregnant women get female foetuses aborted” to “most of them retain the female foetus”, thus altering the dimensions of a ‘herd mentality’. And even irrespective of any immediate impact, probably this will be a sound and cost effective strategy for promoting the social value of the girl-child.

Abhijit Banerjee, co-author of Poor Economics and Director, Abdul Latif Jameel Poverty Action Lab, MIT, has analysed the importance of peer pressure and strong neighbourhood influence through a Bangla Desh study on the programme of construction of proper toilets. Exhortations, appeals and awareness campaigns did not have much effect but strong neighbourhood influence was a material factor. Neighbourhoods where a few households built subsidised toilets were much more likely to follow and build even unsubsidised toilets. A similar effect of ‘social proof’ may be witnessed in this area when a small number of families demonstrate their willingness to adopt a socially positive choice – the girl child.
This is in addition to the demonstration effect of the prize money. Further, unlike lotteries – public or private - which have the motive of generating a surplus for the organisers, government or private, which is not the case here, the less the number of contestants who enter the lottery, the more its attraction and impact due to the increased probability of winning a prize. The advantage of a lottery is that all the contestants view themselves as potential winners and the simple act of enrolment and participation in the scheme may be enough to bring about the desired result. The proposal for financial and economic incentives need not be viewed as an attempt to bribe and buy a life, though that may itself be a worthy cause; in fact it may make it easier for a woman to do something – save the foetus - she may love to do but for her circumstances.

**Positive Externality: Happiness**

Another major plus point of a lottery scheme with attractive prizes is the positive impact on the mental frame of the families and mothers involved. Hundreds of thousands of such persons are violating the law, whether through illegally obtaining information regarding sex of foetus or its termination, and this is bound to leave an imprint of anxiety and suffering not only due to the material costs but also the psychological feelings of loss, as indicated above, compounded by moral problems of guilt and shame caused by illegal and socially prohibited acts. These negative feelings among the vast masses of people involved in such illegal acts may be transformed into a mood of optimism and happiness when they choose the lottery option; this program will surely raise the Gross National Happiness (GNH) index about which most of the nations are concerned today. *This positive externality may by itself be worth the expense.*

The lottery scheme may also cost much less than the resources expended on misdirected targets – prizes to Panchayats, ridiculously low financial incentives for girl child families and hit
the bull’s eye, the incentives and choices of involved individual/couples/households. The scheme can be made operational, even in case decriminalization is considered a risky option, without any change in law or enforcement structure, however ineffective. And, as indicated above, the simple act of owning the lottery ticket may not only make it valuable (the ‘endowment effect’ to behavioural economists) but also reshape incentives.

**RCTs and Gender Policy**

Many proponents of a behaviour based approach recommend randomised control trials (RCTs) to discover the best options for a public policy. The structure of the present proposals is based on the application of principles and premises which appear logical but experimental variations can be tried. We are lucky in having a federal system with autonomous states and one can experiment with different incentives and see what works. The US provided scope for such studies and natural experiments as the states there are able to adopt different regulations and practices to address similar problems, in the sphere of education and control of crime, for example. Schools and health institutions have provided scope for assessing the effectiveness of inputs and interventions through the RCTs, in areas such as attendance, supply of text books, flip charts and antihistamines. The states in India provide an ideal laboratory for experimentation regarding the proposals given and deciding on what works rather than adopting centrally directed and uniform regulatory and promotional mechanisms, where Panchayats get awarded at the state level and the states at the Central level for outcomes which may be random and accidental.
10
CONCLUSION

The challenge of restoring gender balance in India is no doubt somewhat complex. The outcomes may be influenced by a large number of social and economic factors and the convictions and priorities of the individual agents and these can in turn be affected by the structure of the regulations. It has been shown that both the positive and negative incentives in-built in the law and the current promotional measures are unlikely to push or nudge in the desired direction the choices of individuals, couples and families, who are taking decisions on the vital issues of whether to go for information about the sex of foetus and further whether to proceed with the termination thereof. There is need to review the penal regulations - the sticks - as well as the positive measures – the carrots - if governments are to have a reasonable chance of influencing the choice of the mothers and families involved. A number of pragmatic options have been indicated. We could give freedom of choice to mothers, coupled with promotional measures, mainly a lottery system. In case this option is not socially acceptable, status quo can be maintained in regard to the structure of penal regulations and enforcement. Specific proposals include:

(a) ‘set a thief to catch a thief’ principle, the ‘invisible foot’ strategy for deterring the clinics, quacks and other suppliers of illegal services;

(b) abrogation of the provision of incarceration even for unintentional errors in paper work and record keeping;

(c) attractive prizes through a lottery system for pregnant women, supplemented, if required, by cash incentives for mothers with a strong male child preference.

A UNFPA report sums up the complexity and ambiguity of how things are today: *inconclusive debate about “reduced son*
preference even when numbers are more skewed than ever before”; are the “latest figures proof of heightened practices and infanticide or signs of turnaround”? Should governments continue with the policy of criminalisation or give women the power to choose? It also summarises the possible areas of action and research: education, labour participation of women, violence, understanding local context. Some of these measures, however desirable morally and socially, have been examined in the context of their relevance for addressing the ‘clear and present danger’ of the adverse BSR. And a micro perspective can be misplaced as indicated. While there is extensive debate about gender imbalance in India, there is surprising silence (unlike the Millennium Development Goals about poverty, mortality rates etc.) about the specific targets to be achieved. This appears necessary as we know the biological ratio and the target is only what is ‘natural’ and the nation should aim to achieve it during the next 5-10 years. One needs to remember that the BSR is a random outcome and some variation is always likely. Once this operational target for the BSR, say 940-950, is agreed, public policy can focus on the states having very low ratios which are evidently the result not of chance but of human intervention. Kerala for example need not be subjected to the same regime of regulations as Haryana or Punjab. A similar focus can be created for the promotional schemes.

It has been argued that issues of mortality of female infants and children will very likely be addressed in the near future by universal immunisation and other programmes and the BSR needs to be the focus of policy for providing carrots as well as sticks. The BSR which is based on a one-time choice and decision of the mothers and households concerned is, and can be, influenced by governance interventions, both positive and negative, but these need to be properly designed. Guilmoto very perceptively sums up the demand-side preconditions as “parents have to be able, willing and ready” to practice sex selection. This clarity and logic of analysis, however, is generally not followed through by devising logical interventions for
influencing the incentives – the *readiness of parents*. It is also problematic to adequately structure strong negative incentives or sticks to change or influence decisions and choices regarding the termination or otherwise of a female foetus, given the moral ambiguity and behavioural complexity indicated above. The unique cause of failure of the policy appears to be its inability to influence the behaviour and choice of the mothers involved at the appropriate time. Governments need to rely much more on positive but simple incentives on the lines indicated. Smoking is a good example. The two simple components of a successful policy to control smoking have been taxes (neither too high nor too low) and banning it in public places.73 Policy makers need not bother about the ultimate causes - whether or not the disposition to smoke is genetic or psychological and so on. A similar approach may be required here rather than having a battery of experts debating on the root causes of the problem and how to resolve them.

There may be some arguments against this approach, especially by those who bemoan the fact that we have moved from a ‘market economy’ to a ‘market society’ and who would like the human actors to magically imbibe social and moral values. A moral frame may be relevant in the case of altruistic activities; as Titmuss demonstrated fifty years ago, the system of voluntary donation of blood works much better and more effectively than the market solution of paying for blood. Alvin Roth, however, has shown that even areas such as donation of kidneys, where price is not an issue, can be made more efficient through market design and matching. It appears that in this unique situation of ‘tragedy of the commons,’ a moral ‘framing’ is unlikely to work and rules of the game need to be redesigned to appeal to humans who are neither impeccably rational nor ‘predictably irrational.76
## ANNEXURES

### Annexure-1
**Form F – Scans of Pregnant Women**  
**UT Chandigarh – 2014-15**

<table>
<thead>
<tr>
<th>Month</th>
<th>Total Cases</th>
<th>13 to 20 weeks data</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 2014</td>
<td>6899</td>
<td>652</td>
</tr>
<tr>
<td>January 2015</td>
<td>5673</td>
<td>708</td>
</tr>
<tr>
<td>February 2015</td>
<td>6108</td>
<td>750</td>
</tr>
<tr>
<td>March 2015</td>
<td>6775</td>
<td>788</td>
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Source: Directorate of Health and Family Welfare, UT, Chandigarh.

### Annexure-1A
**Form F – Scans of Pregnant Women**  
**SAS Nagar Mohali, Punjab – 2014-15**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
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<tbody>
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<td>Total number of F Form received</td>
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<tr>
<td>Total number of forms for 1&lt;sup&gt;st&lt;/sup&gt; Trimester scanned</td>
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</tr>
<tr>
<td>Total number of forms for 2&lt;sup&gt;nd&lt;/sup&gt; Trimester scanned</td>
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</table>

Source: Director, Health, Punjab.
### Annexure-2

**Districtwise Sex Ratio at Birth in Haryana during 2012-13**

<table>
<thead>
<tr>
<th>District</th>
<th>2012</th>
<th>2013</th>
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</thead>
<tbody>
<tr>
<td>Ambala</td>
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<td>909</td>
</tr>
<tr>
<td>Bhiwani</td>
<td>869</td>
<td>847</td>
</tr>
<tr>
<td>Faridabad</td>
<td>879</td>
<td>893</td>
</tr>
<tr>
<td>Fatehabad</td>
<td>877</td>
<td>869</td>
</tr>
<tr>
<td>Gurgaon</td>
<td>839</td>
<td>857</td>
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<tr>
<td>Hisar</td>
<td>864</td>
<td>876</td>
</tr>
<tr>
<td>Jhajjar</td>
<td>812</td>
<td>804</td>
</tr>
<tr>
<td>Jind</td>
<td>849</td>
<td>856</td>
</tr>
<tr>
<td>Kaithal</td>
<td>866</td>
<td>874</td>
</tr>
<tr>
<td>Karnal</td>
<td>847</td>
<td>880</td>
</tr>
<tr>
<td>Kurukshetra</td>
<td>793</td>
<td>887</td>
</tr>
<tr>
<td>Mewat</td>
<td>920</td>
<td>917</td>
</tr>
<tr>
<td>Mohindergarh</td>
<td>786</td>
<td>761</td>
</tr>
<tr>
<td>Palwal</td>
<td>875</td>
<td>895</td>
</tr>
<tr>
<td>Panchkula</td>
<td>896</td>
<td>911</td>
</tr>
<tr>
<td>Panipat</td>
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<td>851</td>
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<tr>
<td>Rewari</td>
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<td>797</td>
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<td>Rohtak</td>
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<td>847</td>
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<tr>
<td>Sirsa</td>
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<td>888</td>
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<td>824</td>
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<tr>
<td>Yamuna Nagar</td>
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<td>895</td>
</tr>
<tr>
<td>Haryana</td>
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<td>868</td>
</tr>
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</table>

**Source:** Director Health and Family Welfare, Haryana.
### Annexure-3

**Sex Ratio – UT Chandigarh - Institutional Deliveries during 2013-14**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of the Health Facility</th>
<th>Total Live Birth</th>
<th>Male</th>
<th>Female</th>
<th>Sex Ratio (Female)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Police Hospital 26</td>
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<td>18</td>
<td>24</td>
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<tr>
<td>2</td>
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<td>34</td>
<td>44</td>
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<tr>
<td>3</td>
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<td>129</td>
<td>58</td>
<td>71</td>
<td>1224/1000</td>
</tr>
<tr>
<td>4</td>
<td>HD-27</td>
<td>60</td>
<td>27</td>
<td>33</td>
<td>1222/1000</td>
</tr>
<tr>
<td>5</td>
<td>S/C Palsora</td>
<td>139</td>
<td>63</td>
<td>76</td>
<td>1206/1000</td>
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<tr>
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<td>CD-11</td>
<td>65</td>
<td>31</td>
<td>34</td>
<td>1096/1000</td>
</tr>
<tr>
<td>7</td>
<td>S/C Raipur Khurd</td>
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<td>70</td>
<td>76</td>
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<tr>
<td>8</td>
<td>CD-38</td>
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<td>113</td>
<td>120</td>
<td>1061/1000</td>
</tr>
<tr>
<td>9</td>
<td>S/C Raipur Kalan</td>
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<td>31</td>
<td>32</td>
<td>1032/1000</td>
</tr>
<tr>
<td>10</td>
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<td>946</td>
<td>468</td>
<td>478</td>
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</tr>
<tr>
<td>11</td>
<td>PHD-25</td>
<td>136</td>
<td>68</td>
<td>68</td>
<td>1000/1000</td>
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<tr>
<td>12</td>
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<td>190</td>
<td>187</td>
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<tr>
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<td>151</td>
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</tr>
<tr>
<td>14</td>
<td>ESI-29</td>
<td>190</td>
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<td>94</td>
<td>979/1000</td>
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<tr>
<td>15</td>
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<td>95</td>
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<td>47</td>
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<tr>
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<tr>
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## April 2014 to March 2015

<table>
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<tr>
<th>Sr. No.</th>
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<th>Sex Ratio (Female)</th>
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<tr>
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<tr>
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<tr>
<td>52</td>
<td>GMSH-16</td>
<td>107</td>
<td>63</td>
<td>44</td>
<td>698/1000</td>
</tr>
<tr>
<td>53</td>
<td>Kaimbwaala</td>
<td>127</td>
<td>75</td>
<td>52</td>
<td>693/1000</td>
</tr>
<tr>
<td>54</td>
<td>CD-19</td>
<td>76</td>
<td>46</td>
<td>30</td>
<td>652/1000</td>
</tr>
<tr>
<td>55</td>
<td>CD-42</td>
<td>181</td>
<td>112</td>
<td>69</td>
<td>616/1000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>14101</strong></td>
<td><strong>7474</strong></td>
<td><strong>6627</strong></td>
<td><strong>886/1000</strong></td>
</tr>
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**Source:** Director Health and Family Welfare Chandigarh U.T.
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R.N. Gupta was a member of the Indian Administrative Service and has worked with the Government of India and the State Governments of Punjab and Tripura. He also headed the management of a major print media entity, The Tribune, for five years and has since been actively associated with the Institute for Development and Communication, Chandigarh.

He has published a book on public governance - Governance Unbound: Public Services, Players and Rules of the Game (2014) which propounds a human centred approach to the making of public policy specifically and public governance generally. The monograph extends the behaviour based approach to a major social policy area of gender imbalance and demonstrates how this frame can be helpful in designing an effective policy.