

Discussion

Isolated and Proximate Illiteracy

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I Introduction

The concept of 'Isolated and Proximate Illiteracy' by Kaushik Basu, James E Foster and S Subramanian (hereafter BFS) in January 8, 2000 issue of *EPW* will definitely be helpful to 'design education programmes'. This interesting paper by BFS raises some simple questions. However, before raising the questions let me refer to an anecdote or rather a discussion that I had with one of my friends when both of us were studying in higher secondary. This friend of mine happens to be from a low caste fishing community from Orissa. We were discussing about caste barriers and I was arguing in favour of inter-caste marriage. However, my friend said that if inter-caste marriage would mean low (high) caste educated boys marrying high (low) caste educated girls, then what will happen to the uneducated low caste girls. Incidentally, during that time none of the girls from his village had the opportunity of attending high school (Table 3 of BFS also shows that the literacy rate for low caste rural females based on 1981 Census of India was about 6.3). I saw a point in his argument then but it becomes clearer after reading BFS.

According to BFS, there are two kinds of illiterates - proximate illiterates, P, and isolated illiterates, I. A proximate illiterate is one who is in close proximity to a literate, L. Thus, in a household if one person is literate then the other illiterate persons should be considered as proximate illiterates. Similarly, all the persons in a household with no literate members are to be considered as isolated illiterate. This distinction assumes that proximate illiterates will have access to some functioning associated with literacy. The paper by BFS considers "that in assessing the literacy status of a society it is important to reckon the intra-household externality arising from literacy" (p 39). The present

paper tries to address some issues relating to externality (Section III). However, before that and in the next section there is a brief discussion on the axiomatic approach of Basu and Foster. Section IV makes use of some recent information - 50th round of National Sample Survey (NSS). Section V touches upon some gender issues related with externality. Section VI gives one possible extension of the externality approach. Finally, some concluding remarks are given.

II Axiomatic Approach of Basu and Foster

It is necessary to refer here to the axiomatic treatment 'On Measuring Literacy' by Kaushik Basu and James E Foster (hereafter BF) in November 1998 issue of *Economic Journal (EJ)*. They propose that a measure of literacy (MOL) should satisfy the axioms of anonymity, monotonicity, externality, normalisation and decomposition. From these, the externality axiom is central to their effective measure of literacy, r^* , as against the traditional measure, $r = (L/(L+P+I))$, that takes into account the total number of literates as a proportion of the total population in consideration. I agree to the proposition of BF, but consider their externality axiom to be somewhat incomplete - it does not take into account the sentiments expressed by my friend in reaction to my argument in favour of inter-caste marriages (first paragraph of this note). Hence, I add to their externality axiom. Now let me explain the axioms.

Axiom A (Anonymity)

MOL should not be sensitive to the way the households or household members within a household are ordered. To elaborate, in a given population the literacy measure will be the same in whatever criteria the households (land-size, family-size, caste, geographical location, etc) or household members (age, sex, alphabeti-

cal ordering of names, etc) are ordered. "This axiom requires the MOL to ignore the names of individuals or families in the evaluation of literacy" [BF:1738].

Axiom M (Monotonicity)

MOL should be sensitive to a change in one person's literacy level. "If one person's literacy level rises (falls), and the rest of the society stays unchanged," (BF, p 1738, *parenthesis mine*) then overall literacy should rise (fall). In the traditional method the change was always in the positive direction. However, in the effective MOL proposed by BF, the change can also be negative - there is a possibility of a decline in some person's literacy level. This possibility is explained in the externality axiom.

Axiom E (Externality)

MOL should be sensitive to a household split. "If the split creates isolated illiterates, then literacy must decrease" (BF, p 1739). To this I add that the MOL should also be sensitive to a household merger, that is, as a result of merger, if isolated illiterates are converted to proximate illiterates then literacy must increase. Including household merger, I feel, completes the externality axiom (This has been elaborated in Appendix 1). The alternative to this axiom is that MOL should not be sensitive to a household split or merger (Axiom I, *Indifference*). The traditional MOL, r , satisfies this.

Axiom N (Normalisation)

MOL should have a minimum and a maximum. BF propose that at its minimum MOL will be zero if no person in the population under consideration are literate whereas maximum MOL will be unity if all persons in the population under consideration are literate. Hence, the value of MOL will belong to the interval $[0,1]$. In other words, $0 = \text{MOL} = 1$.

Axiom D (Decomposition)

If a population is divided into sub-groups then the MOL of the population should be equal to the weighted average of the MOL of sub-groups with the weights being the population shares of the sub-groups. It also means that in a population with two or more sub-groups the combined MOL will be greater (less) than the

minimum (maximum) MOL of sub-groups If MOL_k ($k=1, \dots, K$) denotes MOL of the k -th sub-group then $\text{Min}(MOL_k) < MOL$

Table 1 gives the various literacy measures and the axioms that they satisfy. The traditional MOL, $r=(L/(L+P+I))$, indicates the proportion of total literates to total population. The effective literacy measure, $r^*=(r+ep)$, indicates that besides literates, the proportion of proximate illiterates $p=(P/(L+P+I))$ receive some positive externality, e (where $0 < e < 1$), because of their proximity to literates. An alternative measure, $1-i=r+p$, indicates the proportion of individuals who have access to some functioning associated with literacy - it excludes all isolated illiterates. It may be noted that r is a special case of r^* when $e=0$ and $1-i$ is a special case when $e=1$.

III Some Issues on Proximity Induced Externality

Negative Externality

Now let me go back to BFS. To begin with, let me question the assumption that literacy by one member of the household or the sub-group concerned has a positive externality, e , on other illiterate members of the household. Hence, the illiterate members are referred to as proximate illiterates. However, there need not be any positive externality always. There are situations where parents think that sending their wards to school (that is, making them literate) will add to their burden and in no way help them. This has been the feeling in communities where school-going children have not been that successful in earning a livelihood either from a new vocation or from the traditional occupation of the family. This is so because the system of education currently prevalent in many parts of India, BFS will agree with me, does not teach the students 'vocations and avocations of life'.

I do agree that there are innumerable ways through which intra-household positive externalities can arise. I only pointed out the possibility of an aberration that ought to be captured in $e=0$ and corrected through effective designing of education programmes. In situations where $e=0$, a proximate illiterate is as bad as an isolated illiterate is. Hence, $e=0$ would refer to an isolated illiterate despite the presence of a literate person in the household. BF (p 1735) also point out the possibility of

"close proximity to a literate being a handicap rather than a help" because "relative literacy level can alter power relationships in a household, which in turn may affect the capabilities of household members".

Levels of Literacy

Now, let me discuss another aspect that is implicit in the definition of literacy - the capability of a person to read and write. This is just functional literacy and one ought to differentiate this from higher levels of literacy. In other words, an illiterate individual who comes in contact with a functional literate is likely to have a greater positive externality if she comes in contact with a middle school literate and even greater if s/he comes in contact with a high school literate. This has also been observed by Basu, Narayan and Ravallion (1999:20 and 24, Table 2). Of course, this argument is similar to the notion by BFS (p 39), rather their reference to Subramanian's (1999) critique and extension of BF's *EJ* article, that the positive externality to an illiterate person will be higher, the higher is the proportion of literates in that household (literacy coefficient). This view is also there in a recent paper [Subramanian 2000].

Number of Literates (Literacy Coefficient)

It may be pointed out that an increment in positive externality because of an increase in the literacy coefficient is likely to be at a decreasing rate. This will be so because proximity to two literate individuals at the same time may not mean much addition to 'e', but this need not be the case with regard to an increase in the level of literacy by an already literate-member. One does agree that, in some situations, the advantages to a proximate illiterate will in no way be different from that accruing to a literate. But at an aggregate level no amount of literacy coefficient or a higher level of literacy by the literate member will make proximate illiteracy to be considered as equivalent to literacy, that is, $e < 1$. Hence, $0 < e < 1$ in case of a proximate illiterate. There will always be some advantages that a proximate illiterate person will get by becoming literate. If a person is literate then his literacy level can be considered as unity.

Literacy coefficient can have a positive impact on 'e' not only at the household

level but also at a broader level. For instance, if one looks into the figures of r (literacy rate), p (proximate illiteracy rate) and i (isolated illiteracy rate) for the states of India then 'e' should be higher for higher 'r' or lower V . Following Table 1 of BF and Table 2 of BFS, the distribution of r , p and i based on 1981 Census has been given in our Table 2. What we would like to infer from our Table 2 is that 'e' ought to be the highest in Kerala and lowest in Arunachal Pradesh. In other words, 1.7 per cent isolated illiterates in Kerala will be better off than the 46.3 per cent isolated illiterates in Arunachal Pradesh. However, the point of conflict will be with regard to the situation where there have been rank reversals if one goes from literacy rates, r , to effective literacy rates, $r^*=(r+ep)$. For instance, the situation between Gujarat and Himachal Pradesh will not reverse if 'e' for Gujarat is 0.22, as against 0.21 for Himachal Pradesh. Even if 'e' is not a variable, there will not be any rank reversal between Gujarat and Himachal Pradesh if $e=0.18$.

Distribution of Illiterates

The point I want to make is that the absence of a rank reversal should not deter us from identifying positive impacts of 'p'. Hence, what is relevant is the probability of obtaining a proximate illiterate from among all illiterates $[(P/(P+I))=(p/(p+i))=p/r]$. Similarly, $[(I/(P+I))=(i/(p+hi))=i/r]$ denotes the proportion of isolated illiterates from all illiterates. From a policy point of view the first best outcome is to have no illiterates, proximate or isolated. Given limitations to attainment of total literacy it might sound equitable and ethical to have a higher proportion of proximate illiterates from among all illiterates, thus indicating the need for policy emphasis on isolated illiterates. However, it might be cost- and time-effective to emphasise on proximate illiterates to increase literacy. Discussions on these aspects need to be taken up separately, which is beyond the scope of the present paper. In our Table 2 the values of p/r has been given in column 5. We will

Table 1: Various Literacy Measures and The Axioms that They Satisfy

(r)	(r*)	(1-i)
Anonymity	Anonymity	Anonymity
Monotonicity	Monotonicity	-
Indifference	Externality	Externality
Normalisation	Normalisation	Normalisation
Decomposition	Decomposition	Decomposition

discuss about the estimates of p/r later, but now let us return to 'e'.

Situation-specific Externality

In fact, in situations like obtaining knowledge on government circulars, agricultural extension and the bulletin on oral re-hydration, as mentioned in BFS, the advantages, to a proximate illiterate will in no way be different from that of a literate. If we allow 'e' to be situation-specific then in such situations $e=1$ and $r^*=(r-f-p)=(l-i)$. If the proximity of an illiterate member to a literate member leads to the former being as good as the latter with regard to certain functioning, then with regard to that functioning there is no scope for improvement if a proximate illiterate becomes literate. However, with regard to income earning capacity of an individual, 'e' could turn out to be much lower than unity, as in case of the Bangladesh data shown in Table 1 of BFS and depicted in Figures 1-3 of BFS.

Household Structure

Now, let me elaborate on the three different categories of households by taking the hypothetical example of BFS but after making slight alterations. The alteration that we make is that $m=60$ households (instead of 50 in BFS). As each household will have 2 members each, $n=120$. Further, we retain that the number of literates, $L=60$ and as a result $r=(L/n)=0.5$ (as against 0.6 in BFS). After making the alterations, the two regimes of BFS will change. We refer to the two regimes as A_{Ours} and B_{Ours} - the number of proximate illiterates, P, and isolated illiterates, I, are $P=0$ and $I=60$ in the former and $P=60$ and $I=0$ in the latter. Assuming that $e=0.3$, as in BFS, $r^*(A_{Ours})=0.5$ and $r^*(B_{Ours})=0.65$. The purpose of taking up 60 households is to introduce a third regime, C_{Ours} , where $P=30$, $I=30$ and $r^*(C_{Ours})=0.59$. The reason for introducing regime C_{Ours} is to differentiate between three classes of households: H(L,L) where both member's are literate; H(L,P)=H(P,L) where one member of the family is literate and as a result the other member can be considered as proximate illiterate; and H(I,I) where both the members are illiterate.

In a given community, there is a possibility for all households to be of the same type or they can have a combination from the three types of households - there can

be seven possibilities. (1) Both the members are literate, H(L,L). (2) One member is literate and the other is a proximate illiterate H(L,P), as in regime B_{Ours} . (3) Both the members are illiterate, H(I,I). (4) In some households both are literate and in the remaining households one member is literate and the other is a proximate illiterate, H(L,L) and H(L,P), as in regime B of BFS. (5) In some households both are literate and in the remaining households both are illiterate, H(L,L) and H(I,I), as in regime A of BFS and A_{Ours} . (6) In some households one member is literate and the other is a proximate illiterate and in the remaining households both are illiterate, H(L,P) and H(I,I). (7) The three types of households H(L,L), H(L,P) and H(I,I) will be there, as in regime C_{Ours} .

IV Proximate and Isolated Illiteracy

1981 Census

A closer look at the situation based on 1981 Census depicted in our Table 2 shows that the three categories of individuals (somewhat different from the three categories of household) are distributed in different proportion across the states. It is this difference along with gender gap (G) that ought to be taken into consideration while designing education programmes.

Different questions ought to be asked in states like Gujarat, Maharashtra and Tamil Nadu that have a higher proportion of literates compared to the aggregate figures for India but with relatively lower rankings in gender gap as well as the proportion of proximate illiterates from among illiterates. In fact, such calculations should be done at a district or even lower levels for different groups of populations (scheduled castes, scheduled tribes and others) to make targeting effective.

50th Round NSS Data, 1993-94

Besides, looking at the effective measure of literacy at a disaggregated level, one should make use of recent information so as to make targeting effective. This could not be calculated from the data available for 1991 census. However, I came across National Sample Survey 50th Round (July 1993-June 1994) data that give some relevant information [National Sample Survey Organisation, hereafter NSSO 1996J. This has been given in our Table 3 because it will be of help to researchers interested in the arguments of BFS and policy-makers interested in targeting and eradicating illiteracy.

Let us look at certain observations from our Table 3 by keeping our Table 2 in the background. Rather, at observations that have some policy implications while designing education programmes.

(1) The rural scenario in Andhra Pradesh,

Table 2: Distribution of Literates, Proximate Illiterates and Isolated Illiterates and Gender Gap In Indian States: 1981

State			l	p/r	i/r			
Kerala	0.816	0.167	0.017	0.908	0.092	0	12	-2
Mizoram	0.740	0.218	0.042	0.838	0.162	0	11	0
Goa	0.653	0.264	0.083	0.761	0.239	0	21	-4
Maharashtra	0.558	0.314	0.127	0.710	0.290	-2	29	-14
Tamil Nadu	0.544	0.297	0.159	0.651	0.349	-5	28	-10
Gujarat	0.522	0.314	0.164	0.657	0.343	-3	27	-8
Himachal Pradesh	0.512	0.368	0.120	0.754	0.246	3	27	-6
Nagaland	0.503	0.322	0.175	0.648	0.352	-3	18	3
Tripura	0.501	0.299	0.200	0.599	0.401	-5	23	1
Manipur	0.497	0.369	0.134	0.734	0.266	5	29	-7
West Bengal	0.486	0.287	0.227	0.558	0.342	-4	24	2
Punjab	0.482	0.347	0.171	0.670	0.330	4	16	8
Karnataka	0.462	0.324	0.214	0.602	0.398	0	26	1
Haryana	0.439	0.394	0.167	0.702	0.298	7	32	-9
Meghalaya	0.420	0.287	0.293	0.495	0.505	-5	9	14
Sikkim	0.420	0.354	0.226	0.610	0.390	4	26	5
Orissa	0.410	0.328	0.262	0.556	0.444	1	31	-5
Andhra Pradesh	0.357	0.283	0.360	0.440	0.560	-4	25	8
Madhya Pradesh	0.342	0.330	0.328	0.502	0.498	0	29	3
Uttar Pradesh	0.334	0.358	0.308	0.538	0.462	3	30	
Bihar	0.321	0.320	0.359	0.471	0.529	0	30	
Rajasthan	0.301	0.351	0.348	0.502	0.498	4	31	•
Arunachal Pradesh	0.256	0.281	0.463	0.378	0.622	0	21	17
India	0.433	0.317	0.250	0.559	0.441			

Note: $r+p+i=1$. Multiplication of r, p and i with 100 will give the percentage distribution. Similarly for $p/r+i/r=1$. 'G' indicates percentage gender gap and 'y' indicates ranks across various indicators among above-mentioned states of India.

Source: BFS, Table 2, p 37.

Arunachal Pradesh, the BIMARU states and Orissa is such that there are more than 40 per cent of the households with no literate adult (15+ years of age) members and more than 70 per cent of the households with no literate adult female members. The high proportion of adult illiterate members does point to the possibility of ethnic differences. The lower level of literacy among scheduled castes and scheduled tribes is known. Nevertheless, one needs to probe further, at least in Arunachal Pradesh, for the difference between various scheduled tribes.

(2) In Andhra Pradesh and to a larger extent in Arunachal Pradesh the gender gap for the overall rural scenario is relatively much lower. This may indicate that gender gap is probably concentrated in the adult population.

(3) Orissa fares marginally better than the BIMARU states but has not been highlighted by researchers as well as policy makers. Of course, Rajasthan needs to be singled out from among them because of its striking gender gap (32 per cent) in the overall rural population.

(4) The question of gender gap also assumes importance in states like Gujarat, Haryana, Jammu and Kashmir, Karnataka, Maharashtra and Tamil Nadu.

(5) One is perplexed by the high proportion of households (almost 71 per cent) in rural Delhi with no adult female literate members. This could be because much of rural Delhi households could possibly be in-migrant male population residing in rented houses. The absence of female (literate) members in a large proportion of households is reflected in the very low sex ratio of 578 in rural Delhi [NSSO 1996:20].

Gender Segmentation vs Proximity Induced Externality

One of the major questions raised in the discussions from our Table 3 is the gender question. To discuss the relevance of female literacy let us go back to the main point by BFS, externality. We consider that literacy profile in terms of its equivalence to externality is unity for every literate person, $0 < e < 1$ for every proximate illiterate person and zero for every isolated illiterate person and let the effective literacy measure for a two-member household (female and male head of household) $H(v)$ to be $r^*(v)$. It follows that $r^*(L,L)=1 > r^*(L,P)=r^*(P,L)=((1+e)/2) > r^*(I,I)=0$. In the above lexicographic

ordering we are indifferent between $r^*(L,P)=r^*(P,L)$ or between the literacy status of the female and male head.

Now, we consider the first entry to denote the literacy level of the female member and the second entry that of the male. In such a situation, if reduction in infant mortality is given a greater weight, then externality from female literacy, e_F , will be greater than externality from male literacy, e_M , and hence, $r^*(L,L)=1 > r^*(L,P)=((1+e_F)/2) > r^*(P,L)=((1+e_M)/2) > r^*(I,I)=0$. This differential externality can be captured, as suggested by BFS, in $r^{**} = r + e_F P_F + e_M P_M$. However, in this regard I do not agree with the contention of BF (p 1746) that r^{**} "violates Axiom E since certain splits that were formerly 'externality-neutral', now alter the measured level of literacy." This has been elaborated in Appendix 2.

Differential externality may also depend upon who the recipient is. Now, let us assume that the households can be divided into three different categories according to the-sex of both the members - both are females, both are males and one member

is a female whereas the other is a male. Now, literate-illiterate combination can bring up four possibilities: e_{FF} female literate to female illiterate, e_{FM} female literate to male illiterate, e_{MF} male literate to female illiterate, e_{MM} male literate to male illiterate. Anyway, this is another matter. What emerges from the discussion is that it will be worthwhile for micro level studies to identify the number of households in each of the above categories, as this will be very helpful in targeting. One problem with household categorisation of the literacy level, $H(v)$, is that it implicitly assumes that there are only two members in the household. Of course, this categorisation is at a hypothetical level and one can incorporate more members. But in many social issues it would be appropriate if the literacy level of just two members - the female and male head of the household - is taken.

I am also of the opinion that policy decisions should rely on household characterisation of literacy level, $H(\cdot)$. More so, because the effective literacy

Table 3: Proportion of Households with 'No Literates' (I_H) and Those with 'No Female Literates' (I_{HF}) and Gender Gap (G) in Rural and Urban Areas in Indian States: 1993-94

State	Rural			Urban		
	I_H	I_{HF}	G	I_H	I_{HF}	G
Andhra Pradesh	0.508	0.776	0.205	0.192	0.443	0.153
Arunachal Pradesh	0.505	0.797	0.146	0.124	0.467	0.142
Assam	0.210	0.446	0.150	0.077	0.290	0.075
Bihar	0.496	0.825	0.263	0.207	0.70	0.213
Goa	0.109	0.277	0.193	0.120	0.331	0.144
Gujarat	0.273	0.619	0.244	0.128	0.340	0.131
Haryana	0.280	0.665	0.247	0.137	0.445	0.143
Himachal Pradesh	0.190	0.451	0.165	0.122	0.394	0.094
Jammu and Kashmir	0.283	0.590	0.206	0.052	0.231	0.117
Karnataka	0.366	0.662	0.195	0.129	0.354	0.133
Kerala	0.035	0.093	0.038	0.010	0.095	0.049
Madhya Pradesh	0.453	0.803	0.254	0.131	0.440	0.184
Maharashtra	0.279	0.580	0.232	0.089	0.326	0.133
Manipur	0.141	0.370	0.156	0.062	0.267	0.154
Meghalaya	0.253	0.449	0.104	0.034	0.231	0.068
Mizoram	0.077	0.183	0.021	0.004	0.047	-0.025
Nagaland	0.065	0.250	0.157	0.024	0.254	0.080
Orissa	0.414	0.700	0.217	0.148	0.428	0.152
Punjab	0.290	0.536	0.126	0.138	0.362	0.077
Rajasthan	0.449	0.866	0.323	0.187	0.524	0.223
Sikkim	0.152	0.543	0.167	0.105	0.362	0.043
Tamil Nadu	0.297	0.587	0.222	0.149	0.361	0.139
Tripura	0.179	0.371	0.144	0.072	0.229	0.065
Uttar Pradesh	0.414	0.786	0.267	0.208	0.502	0.171
West Bengal	0.307	0.560	0.179	0.122	0.376	0.116
A and N Islands	0.133	0.415	0.110	0.072	0.406	0.108
Chandigarh	0.219	0.598	0.124	0.097	0.394	0.047
Dadar and N Haveli	0.309	0.710	0.287	0.099	0.535	0.185
Daman and Diu	0.095	0.528	0.290	0.023	0.230	0.101
Delhi	0.075	0.709	0.220	0.169	0.448	0.067
Lakshadweep	0.042	0.187	0.112	0.022	0.214	0.080
Pondicherry	0.205	0.482	0.070	0.090	0.237	0.152
India	0.370	0.678	0.224	0.143	0.397	0.143

Note: The proportions of I_H and I_{HF} are for persons with 15 years of age and above. Multiplying I_H , I_{HF} and G with 100 will give the percentage distribution, whereas multiplying with 1000 will give the NSS estimates for 1000 households.

Source: NSSO (1996), pp 35, 44-45 and 47-48.

rate, r^* , can only be an estimate, as the exact value of 'e' will be difficult to obtain. Besides the value of r^* will also depend upon the question in hand.

VI Further Research

Now, let me add a point that came to my mind while reading the concluding remarks of BF (p 1747) where they had mentioned the possibility of literacy skills being associated with a market. What one can add to this is that they are of various types. A particular individual may be literate in one aspect but not in another. Say, for instance, an individual who is literate in the conventional sense need not be computer literate. Or, take another example - the literacy skills acquired by a plumber might not be sufficient to install a geyser; likewise an electrician's literacy skills cannot be sufficient for installing the geyser - literacy skills of plumbing and electrification are required to install the geyser. Again, because of the time constraint or some other factor, all persons cannot be literate in all respects.

Hence, people with different literacy skills have to help each other out either through the market or through some other networking. Thus, what matters is that in a society, more proportion of people should have access to the functioning associated with different literacy skills. It is also true that certain literacy skills will have a greater value than other skills and if the literacy skills are not complimentary to each other then, in due course of time, the literacy skills with greater value are likely to replace the one's with lower value. It also means that acquiring of literacy skills should be considered as a process. Further, I would like to add that like institutions, new literacy skills could emerge, the existing ones will either continue to persist or perish. Again, at any given space and time, there will be a limit to the possible literacy skills.

It implies that in a given society if a particular person has no access to the functioning associated with any literacy skills then s/he should be considered illiterate-her/his literacy level $V_i=0$ (where $t=1, \dots, T$ refers to the type of skill). On the other hand, if s/he has access to the functioning associated with 'all' possible literacy skills then $V_i=(1/T)$ for all t , and hence, $V=ZV_i=1$. We consider $V=1$ to be a hypothetical situation that should be considered ideal one that everyone would

like to achieve. However, given the constraints, there will be a limit towards attaining this ideal in any environment. Thus, at a pragmatic level $V=1 < 1$. The problem with this formulation is that at an empirical level it will be difficult to obtain data on 1 and T.

VII Conclusion

Let us go back to targeting - the major policy implication that could be drawn from BFS. As targeting becomes coupled with micro level studies, caste becomes an important factor in rural India. The positive externality would depend upon the caste of the household. In a village most of the H(L,L) households may be from a particular caste (say, high) whereas most of the H(I,I) may be from another caste (say, low). In this village if there are two H(L,P) households from the two different castes then the one from the high caste will have greater externality than the one from the low caste. The proximate illiterate from the high caste will benefit from greater externalities because of an additional proximity to the community. Because of the same reason, H(I,I) households from the high caste, if any, are likely to be better off than H(I,I) households from the low caste. One feels that in such situations caste identities will get strengthened and the differences polarised. It is this situation that can make inter-caste marriages among the educated an ineffective proposition in reducing inequalities, and hence, differences.

A point that I would like to reiterate is that while calculating positive externalities from different sources of proximity one should do away with overlapping. For instance, if a proximate illiterate has externalities from the household as well as community then while calculating externalities at the latter level one should be careful enough to exclude those included at the former level. This should be the principle while evaluating the possible proximity-induced advantages from different levels (say, village, district, rural and the like). The same logic also applies while adding the set of functioning obtained from different individual or from the same individual whose level of literacy has increased. However, what is more important is to identify various categories of households $H(v)$ by taking sex of members, caste, region (village, block, district, state or rural and urban) and other

parameters into consideration. It is this that will be of greater help in targeting and 'designing education programmes'. This should not only be kept in mind by Census and NSS for collection, tabulation and presentation of data, but also by micro studies that take household as the unit of analysis.

I further state that tabulation and presentation of castewise, villagewise, household data on literacy status of household members, $H(\dots)$, by taking into account the gender differentials is very much necessary in 2001 census. I strongly feel that the 2001 census should be able to provide the population distribution of literates, r , proximate illiterates, p , and isolated illiterates, i , and household distribution of all literate households, $H(L, \dots, L)$, some literates and some (proximate) illiterates, $H(\dots, L, P, \dots)$, and all illiterate households, $H(I, \dots, I)$. Further, one should be able to arrive at gender-wise and caste-wise estimates/figures of the above two distributions. More importantly, this information should be made available as early as possible to researchers and decision-makers at the grassroots level (panchayat level for rural areas of India) so that they can be used for designing education programmes.

In the appendices, following BF's EJ article, some additional notations are used. We have already mentioned that there are n adults and m households. Each household $i=1, 2, \dots, m$ has a household literacy profile y^* . We use the term society to refer to the vector of household literacy profiles, $y=(y, \dots, /)$ and denote A for the set of all possible societies. We also assume that a society x can be obtained from y through a change in household size either because of a split (m becomes $m+1$) or because of a merger (m becomes $m-1$).

Appendix 1

Let us visualise that there is merger between two households - a clear example is marriage. The point mentioned by my friend when we were discussing about inter-caste marriages (see first paragraph of the note). BF's article also touches upon this, though indirectly, while explaining the scenario in Tamil Nadu, as against that of Haryana. I think that a marriage can be explained by a split in one household and then a merger or by a split in two households and then a merger. According to BF (p 1738), a "society x is obtained from society y by a *household split* if

y has m households, x has $m+1$ households, y^m is the concatenation of x^{2^l} and a^{1*1} , and $x^h=y^h$ for all other households $h=1, \dots, m-1$. In other words the last household in y splits into two final households in x , while the rest of the households remain the same."

Similarly, a society x is obtained from society y by a *household merger* if y has m households, x has $m-1$ households, y^{TM} and y^{m-1} merge into x^{m-1} , and $x^h=y^h$ for all other households $h=1, \dots, m-2$. In other words the last two households in y merge into one household in x , while the rest of the households remain the same. The merger **will be called externality-neutral** if either (i) both y^m and y^{m+1} contained a literate person, or (ii) neither y^m and y^{m+1} contained a literate person. It will be '*externality-enhancing*' if exactly one of yn or $ym+1$ contained a literate person.

Having said that, BF's externality axiom will be as follows.

Axiom E (*Externality*): Suppose that x a A is obtained from y a A either by a split or by a merger. If the split/merger is externality-neutral, then $MOL(x)=MOL(y)$; if the split is externality reducing, then $MOL(x)<MOL(y)$; and if the merger is externality enhancing, then $MOL(x)>MOL(y)$.

I feel that adding a condition for merger makes BF's central axiom of effective literacy proposal complete. It will explain the increment in effective literacy rate if a female who is an isolated illiterate gets married to a literate person and moves into the latter's household. The concept of merger can also be helpful in explaining extended 'social networks' that arise as a result of marriage. For instance, the wife's natal household members might also benefit from some functioning associated with literacy level of the husband.

Appendix 2

BF, in their EJ paper (p 1746), had mentioned that their Gender sensitive index, r^{**} , does not satisfy their Axiom of Externality (E) - the central axiom of their paper. I do not agree to this. I feel that r^{**} satisfies axiom E. A split definitely alters the measured level of literacy, as compared to r^* , but a split will either be '*externality neutral*' or '*externality reducing*', and hence, their central axiom is retained in r^{**} . The conditions under which a split will be externality neutral or externality reducing will change. A split will be externality neutral if (i) both x^m and

x^{m+1} contain both female and male literate persons, (ii) both x^m and x^{m+1} contain a female (male) literate person but no male (female) literate person, or (iii) neither x^m and x^{m+1} contain a literate person. It will be *externality reducing* (i) if x^m contains a female (male) literate and x^{m+1} contains a male (female) literate person, or (ii) if exactly one of x^m and x^{m+1} contains female or male literate person(s). In fact, even if a situation leads to '*externality enhancing*' then, following Appendix 1, the situation can be incorporated in BF's central axiom. I may add that association of a *female-proximate illiterate* and a *male-proximate illiterate* will be different. However, in those situations where an illiterate person in y^m household is *female-* as well as *male-proximate* then the set of externality induced functioning can overlap. EPW

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Letters to Editor.

(Continued from p 1930)

issue. As regards this order, the second goal of filing the PIL, that is amendment of the act to include pre- and during-conception techniques like X and Y chromosome separation, PGD, certain ayurved/herbal methods, etc, has not been considered; there is no specific order on that. The order largely concerns only the implementation of the act and putting the required infrastructure in place. However, the order entrusts the responsibility to the central supervisory board of examining the necessity to amend the act keeping in mind emerging technologies and difficulties encountered in implementing the act and to make recommendations to the central government.

The favourable judgment of the Supreme Court is a step forward. Unless it is backed by stringent implementation by the state and complemented by people-based

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advocacy, it would only be another women-centred judgment which would remain on paper without having any impact at the ground level. As a result of this case the IMA at the national level seems to have made a turnaround and has issued a warning to its members. The FOGSI too has shown some concern through its newsletter. The government, that is the department of family welfare, too has got energised and has issued an advertisement in the national dailies saying that it is a crime to carry out sex selection and activated the central supervisory board by calling a meeting. This is a step forward and we hope that all stakeholders, the state, the medical profession, NGOs, activists, women and health groups, journalists and media, etc, come together to see that the provisions of the PNDDT Act are implemented to its fullest extent.

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