Nipping her in the bud: Investigating into a Disguised Form of Gender Bias in Educating Girls in a Developing Economy framework

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Abstract

Existence and prevalence of gender bias exists in education of girls, especially in developing and less developed economies, is a widely discussed phenomenon. The most prominent reason attributed is low or no expected future returns, especially financial, from daughter due to significant differential in labor market returns tilted in favor of boy child, and, norms of girls leaving their natal homes following marriage and severing of natal ties. These raise opportunity cost of educating girl child. Factors like parental literacy levels, household background and distance from school also effect this bias. Given these factors, any interest shown or attempts made by a parent towards focusing on a daughter's education seems to be a very positive and encouraging development. But, excess amounts of interest displayed by a parent by over burdening a young girl child and insisting that the girl follow a cumbersome study routine, something that the girl's brother is not mandated by the parent to have to follow, makes the positive phenomenon actually seem to be a negative one. This paper attempts to show that gender bias in education also manifests itself in disguised form of parents putting unnecessary extra pressure of studies on young girl children, implicitly coercing them to drop midway out of school. This paper shows that this discrimination is set midway between perfect parental altruism and capitalism and is also a defense mechanism for such parents because this method provides a very easy way to shift blame onto the girl children.

JEL classification: D91, I24, J16, O41.

Keywords: Education, girl child, disguised discrimination, parental altruism, parental capitalism.

1. Introduction

I was conducting a survey among female microfinance beneficiaries, in 2012, essentially investigating into access to microfinance and empowerment. It was here, especially, while talking about whether having an independent income from micro-loan funded venture has helped them finance their children's education that I accidentally stumbled upon the issue that forms the central topic being examined in this paper. Since, the study was not conducted in the form of a conventional questionnaire-based survey, the women could digress into other aspects of their lives. And, whenever they talked about their children's education, they invariably commented, "*Ekdom porte chay na!*" (Doesn't want to study at all!). In our country, this is an absolute classic and timeless complaint of mothers having school-going children. I have heard my mother and the mothers of all my friends say this innumerable number of times when we were younger.

But, alongside this, some of the younger women were also heard to voice great dissatisfaction and concern about their husbands' over enthusiasm about educating their young daughters. They reported that their daughters were enrolled in school and were provided with private tuitions as well, and that, the fathers of these girls were very insistent that the girls attend both regularly. This phenomenon came across as very positive and the behavior of the complaining women seemed strange. In a society where women have been quintessentially pushed to the periphery and have generally been deprived of a fair share of resources or opportunities, including education, the fact that fathers were being so interested in educating their daughters seemed to be a very positive development. So, I prodded these

women a bit and asked them to elaborate on their concerns about such a seemingly positive development.

It turned out that the girls study for about 12-13 hours in a day. A typical day for these girls starts with completing school or private tutor's homework right after breakfast. Since, all these children attend day school, they leave for private tuitions by about 8-8.30 a.m., which continues till before commencement of school. Then, of course, they attend a normal school day extending 5-6 hours, or, 2-4 hours for very young children. Following this, they go home to grab a quick meal, after which they have to rush for more private tuitions that extend till about 8.30-9 p.m. Then, they return home completely tired out. Most times, they do not even have energy left to have a proper dinner. They have to be fed by their mothers or other female family members as they sit half asleep. They are left with no time or energy to play. On weekends, their days start about a couple of hours later than on school days. And, the routine of private tuitions extend as usual. But, this delay of a couple of hours does not really provide the children with any time for play. On both days, they sleep till later than usual, too tired out after the exhaustion of the week. Even girls as young as four and five were found to have to follow such a cumbersome routine.

Interestingly, all the affected children turned out to be girls attending primary or middle school. And, most of these girls were found to have one or more male siblings. Even more interestingly, the same men who insist on subjecting their daughters to such extreme pressure do not make any such insistence in the case of their sons. Even sons that were older than the daughters were seen not to have such pressurizing routines. Routines of male children were found to consist of school, on weekdays, and a reasonable amount of private tuitions, through the week, allowing for ample time for play, leisure and entertainment. Another important point observed was that the girls were required to travel to their private

tutors' places and study in batches. But, their brothers, even older ones, generally had their private tutors come over to their place and teach in a one-on-one basis.

The women expressed concerns that if their daughters are continued to be subjected to such extreme pressure, they might give up studying altogether once they grow up a bit. They seemed to have also had disagreements with their husbands on this issue, but had not been able to dissuade them. Citing examples of similar cases from within their familial network or circle of friends and acquaintances have also not helped. This behavioral pattern seemed very strange. More so, because men who only had sons, and no daughters seemed to display a very normal kind of parental interest in their sons' education. Fathers over burdening their young daughters with studies, despite, knowing that it might cause them to develop an unwillingness to study, and even induce them to drop out of school, did not seem to be reasonable behavior. The fact that these same men did not over pressurize their sons about studies suggested that their behavior with daughters may have to do with gender bias in educating girls.

Moreover, educating girls is much less expensive owing to various Government schemes of free education, mid-day meals and provision of free text books in Government run or aided schools. In addition to these, there are various other avenues of financial and in-kind incentives, meant exclusively for the girl child, via special emphasis on female education in the *Sarva Shiksha Abhiyan* ('Education For All' movement) of Government of India, and, other programs effected by the state governments, like, the *Kanyasri* program of the West Bengal Government. There also exist programs and incentive schemes run by various NGOs that are specifically and exclusively targeted towards encouraging female education. There are no such specific incentive schemes for boys because, in our society, people do not display any unwillingness to educate their sons. Thus, given such an atmosphere, the idea that fathers would actually want their daughters to drop out of school,

forfeiting a lot of incentives that would have accrued to the family, while they willingly spend for their sons' education seems to suggest an incidence of gender bias even more strongly. But, this particular phenomenon does not conform to any of the conventionally understood forms of gender bias in education.

2. Literature Review

The most commonly depicted manifestation of gender bias in education, in existing literature, is not allocating as much household resources in favor of the girl child as compared to the boy child which results in girls not being enrolled in school or explicitly not being retained in school after a certain age. The reason for this less investment in the girl child is largely because of unequal access for the girl and wage discrimination in labor market and resultant significantly less expected returns and chances of success in the labor market. This raises the opportunity cost of educating the girl child. Thus, parents tend to invest more in sons as they have a much higher probability of being more economically productive as adults. This is the central idea in studies like Rosenzweig & Schultz (1982), Behrman & Knowles (1999), Tansel (1997), Gandhi-Kingdon (1998), Deolalikar (1993) and Glick & Sahn (2000). In addition, studies like Dreze & Gandhi-Kingdon (2001), Tansel (1997), Kambhampati & Pal (2001), Glick & Sahn (2000) and Pal (2004) have shown that school participation rises with rise in parental literacy levels. Raymond & Sadoulet (2001), Handa (2002) and Lavy (1996) have shown that in areas where schools are far, parents face a higher cost of sending children to school, which aggravates this gender bias. Skoufias & Parker (2001), Kim, Alderman & Orazem (1999), Anguist et al (2000) and West (1997) investigate the impact of school grants and incentive programs from the private sector on school participation. But, Kingdon (2005)

and Mohanty (2006) opine that most of the bias exists while taking enrollment decisions. There is no evidence of bias after enrollment.

On the other hand, studies like Lahiri & Self (2004), Gandhi-Kingdon (2002), Sharma (1993) and Wahhaj (working paper) attribute parental unwillingness to invest in education of girls to the societal norm that girls leave their natal home after marriage causing their earnings to become part of their husbands' families. Field & Ambrus (2008) and Amin & Bajracharya (2011) show that when parents respond to education incentives, they end up having to pay a penalty, that is, a higher dowry, on the marriage market. Goody (1990) finds that in traditional societies, which are mostly patriarchies, younger brides are preferred. Younger brides tend to have reached a lower educational level making them more dependent on their husbands and in-laws, and thus, tend to be more obedient and docile. Dixon (1971) analyzes that the historic prevalence of early marriages in India, China, Japan and Arabia is due to prevalence of clans and lineages. Thus, as Quisumbing & Maluccio (2000), Quisumbing & Briere (2000) and Basu (2006) illustrate, more educated women tend to demand more bargaining power in household decision making process, making them less desirable in traditional societies. Thus, as Ramachandran (2001) shows, in such societies, the common perception is that girls must be kept at home and protected until they are married. This is also an important source of bias in educating girls. In fact, Ilahi & Jafarey (1996) show that rich families in Pakistan tend to educate daughters purely for marriage purposes rather than for labor market participation.

Thus, in most of existing literature, whatever may be the reason attributed to the origin of gender bias in education, parental unwillingness to invest in the education of the girl child is well documented, thereby showcasing capitalistic parental behavior. But, again, a school of thought in Macroeconomic theory, for example, the Overlapping Generations

Theory (henceforth referred to as OLG theory/model) and some Endogenous Growth Theories based on OLG model assume parental altruism towards children, which is directly contradictory to capitalistic parental behavior.

This paper explores the phenomenon of disguised discrimination as being situated in a position between perfect parental altruism and capitalism. Here, the parent seems to be more than willing to educate a very young girl child and even invests more, in the form of fees for excess amounts of private tuition. In reality, the parent does want the girl child to attain a certain level of education. But, s/he also wants the child to get so scared or fed up of studies that she will voluntarily drop midway out of school, thereby keeping her educational attainments at a tractable level (for her future husband) and necessitating payment of a substantially lower dowry than if the girl was highly educated. This way, the girl attains a moderate level of education, but, still remains a desirable match on a traditional society marriage market, and, the parent does not have to face any sanction, from any section of the society, for having explicitly discriminated against the girl child. The parent can very deftly shift the blame to his daughter under the plea that he had wanted and tried to educate his daughter, but the girl did not want to continue studying, despite his very best attempts. This defense mechanism on the part of the parent is particularly relevant for societies, like India, that are in the process of a slow and interrupted, but gradual, transition[1] from traditional patriarchy to a more modern egalitarian society.

[1] Here, the general mindset, especially in the urban areas, is being referred to. Since, this study is set in the immediate outskirts of a city, this transition is relevant in this context.

3. Methodology

The central idea of this paper was, as mentioned earlier, developed in 2012 while conducting a survey among 167 female microfinance beneficiaries residing in two of the largest urban underprivileged areas in North 24 Parganas district, immediately adjoining the metropolis of Kolkata (Calcutta), India. The women were between 19 and 62 years of age. 129 of these women were married (most living with their husbands) or widowed, and 58 of them have daughters in primary or early middle school. Out of that, almost 50 reported occurrence of the phenomenon that is the central issue being examined here. Of these, about 75 percent of the women reported to have one or more male children, in addition to the daughter(s). Being in West Bengal, most of the women belong to the Bengali community. And, this very fact adds a new dimension to the implications of the study. The Bengali community is not only a subset of the Indian societal structure, but is among the more academically oriented communities[2] in India.

The interviews were conducted by me, the author, in verbatim Bengali, and Hindi (for the few non-Bengali women). The above mentioned areas were chosen since many of the women residing there are personally known to me giving me the benefit of using local social networks. These women brought their female relatives, friends and acquaintances to participate in the study. The fact that I was personally known to them induced them to be mostly honest. Personal and prior experience had taught me that women in traditional societies are psychologically conditioned, from a very early age, to not discuss sensitive issues with unknown people.

[2] Here too, the general mindset is being referred to, and not necessarily to survey figures. Bengalis tend to gravitate towards studying and there is a great deal of societal emphasis on grades and degrees. National figures might not reflect this mindset because there are a lot of factors that affect computation of national statistics, including the fact that figures are mostly disaggregated State-wise or religious community-wise.

The interviews were more of the nature of a free-wheeling chat, rather than a Q&A session, centering on the women's experience with microfinance. But, of course, as is evident from the fact that the issue being examined here originated from this study, the women digressed a lot away from microfinance and into their lives and families. This was done because, again, prior experience has taught that such women tend to voice their real opinions and share anecdotal evidence from their own lives more freely in a relaxed atmosphere, as opposed to a more serious Q&A setting, where they tend to give stereotypical responses and say only what they are 'supposed to say'. The reason behind this paradoxical phenomenon is that in traditional patriarchies, women are always pushed to the periphery and there exists a very skewed notion of honor. The fear of shifted blame even made most of the women object to audio recording of the conversations, although they did not object to taking handwritten notes.

This study is largely based on the verbal information that the participating women voluntarily provided in confidence[3]. The sensitive nature of the issue, given that the men practicing this kind of disguised discrimination were doing it to escape tarnishing their reputation and honor, made it very difficult to obtain any kind of hard empirical evidence. Also, the fact that I had to talk in a very round-about way with the men in question to avoid implicating their wives, made getting any hard evidence even more difficult. So, I had to rely on detecting any changes in behavior as the topic of education of children was broached and delved deeper into. The men who were alleged to having been over burdening their young daughters only, and not their sons, with studies seemed to become uncomfortable and were too much in a hurry to get rid of me as soon as the topic was broached, as compared to the husbands of the other participants in my study who did not display any such behavioral

[3] It even had to be pledged that their names would not surface in the course of the investigation as they did not want any trouble at home.

changes and seemed quite comfortable discussing their children's education. Even the men who had not sent their daughters to school or had pulled them out midway displayed no such desire to get rid of me, and instead tried to explain their perspectives.

Following this, I conducted a further investigation into school dropouts in the area where the study is set, mainly, to confirm my understanding of the phenomenon. I interviewed 103 girls in the age-group of 13-18, living in the same urban underprivileged areas in which the other study is set, who had dropped out of school. Most of these girls reported to having attended middle school. A few even reported to having attended early high school. About 40 percent of these girls were married, despite the fact that the ones under 18 are legally underage. All the girls were chosen such that they have at least one sibling and 76 reported that they have at least one male sibling. This was done to create contrast in parental behavior which would showcase gender bias more clearly. This contrasting parental behavior cannot be displayed as prominently in the case of girls that are single children. In this case too, interviews were conducted in the form of free-wheeling chats as the information being sought is of a very sensitive nature and could not have been effectively gathered via a formal Q&A format.

On being asked about the reason behind their dropping out of school, the most prompt answers given by the unmarried girls were financial constraints and necessity to earn. The most popular answers in case of the married girls were marriage and loss of interest in study. But, they also reported that their parents did provide them with private tuitions before they had dropped out. On being asked about the educational attainments of their siblings, most of the ones with male siblings reported that their brothers have/are still attending school and have/are expected to complete high school. The girls having female siblings reported that

they too had dropped out of middle or high school. Only the ones that had very young sisters reported that those sisters were still attending school.

The girls reported that their brothers too attend private tuitions, but not nearly in the amount that they, the girls, had to attend. But, the ones having sisters reported that those girls too are having/have had to attend the same amount of private tuitions. Also, it was here that I could cross-check that private tuitions provided for boys are mostly in the form of one-on-one individualized tutors who travel to the boys' homes so as to lessen the exertion made by boys. But, that provided for the girls are mostly in the form of one-to-many group tutors who teach at their own homes or tuition centers causing the girls to have to travel to different places for each different tuition class. The ones whose brothers had dropped out of school had caused great distress and consternation to parents and caused a hue and cry in the family, emotions not displayed when the girls had dropped out. They also displayed some resentment as they said that, unlike with their brothers, their parents had not tried to make them or their sisters go back to school or enroll them in any open school system, like National Integrated Open School or *Rabindra Mukta Vidyalaya*, or even arranged for any vocational training for them. Instead, the girls have either been promptly married off or the process of looking for a groom has been promptly started by their families. Curiously, the resentment was not because they had not been able to study further. These girls looked upon studies as a big problem and were rather happy that it was over. The resentment and hurt was because they had not been treated like their brothers and their natal families had cared more about marrying them off, making them feel like they were big burdens on their families.

Asking them to compare their capabilities and talents with their brothers possibly pricked their pride, and, made them come out of the defensive mode and express their real opinions on the matter. The most common sentiment expressed was that they had actually got

fed up of studying. They did not like their days filled with school and private tuitions with no time left to play or hang out with friends. They even said that they used to be quite jealous of their brothers because they had time to play. The unmarried ones typically work as domestic aides and the married ones typically carry out domestic chores. But, surprisingly, they said that they like this life better. It may be more physical work, but, now they at least get to hang out with friends, talk to other people and indulge in some amount of entertainment, in between chores. They even talked of marriage being a kind of escape from the overwhelming pressure of studies. Most of them knew that they are underage and can choose to not get married by informing the local police[4], but they chose to not object to marriage. The younger ones were too young to fully realize the implications of dropping out of school and were too engrossed in enjoying a drudgery-filled, but study-free, life. The older ones (17 & 18 year olds) seemed to have started to realize that they were not looking at very cheerful prospects. But, despite knowing that, they have the option of going back to school seemed quite scared. In their minds, studying was synonymous with such an overwhelming amount of pressure that they even sort of preferred the life they were presently living.

As is evident here, the nature of information gathered in the course of both set of interviews is not at all objective. Thus, given the highly intuitive nature of the information that forms the basis of this study, this occurrence of disguised discrimination in the education of girls is examined using a theoretical modeling structure as elaborated in the ensuing sections.

[4] There is ample evidence in current local and national news media that show underage girls preventing their own marriages simply by reporting it to the local police station.

4. Model

The first of the three models being developed here is a macro model based on an endogenous growth theory with micro foundations being provided. This model shows that parents may not always be perfectly altruistic, as it is conventionally defined. The second model is a standard Microeconomic intertemporal model which shows that parents may not always be perfectly capitalistic in the conventional sense. These models in unison, when developed on the backdrop of gender discrimination in education, go to show that parents may be sitting in a position between perfect altruism and perfect capitalism. That is, parents might want the girl child to get an education, showcasing altruism. At the same time, they may be worried about the opportunity cost of educating the girl child and the higher dowry they may have to pay for a better educated daughter, showcasing capitalism. And, in the final model, the girl child's perspective is presented. But, before delving into the models, it is necessary to look at the factors that motivate parents to want to practice a disguised form of discrimination.

In developing economies that are traditional patriarchies, like India, men tend to hold the central position in society and women are pushed to the periphery. Men are the providers and protectors and women are assigned a dependent position. And, given the social custom that women leave their natal homes after marriage and are supposed to put their husbands' families before their natal families, compounded by the fact that the society is tightly knit around clans and lineages, there is a preference for marrying off girls as soon as possible. Thus, in such societies, marriage is generally looked upon as the ultimate goal in a girl's life. And, everything that happens in a girl's life seems to center on marriage, including this kind of disguised discrimination.

Inducing girls to drop out of school in their teens is conducive to early marriage. It also prevents girls from accessing incentive schemes of the Government or implemented by various Non-Governmental Organizations (henceforth referred to as NGOs) at the national or local level. This is because incentive schemes for young children are typically accessed by their parents. It is only after they grow up a bit that they access these schemes themselves. And, contingent upon these schemes are many allied training programs targeted towards skill development and provision of various opportunities to the girls. Preventing access to these schemes effectively cuts them off from opportunities that might make them aspire for higher education and an independent career which would make them less desirable on the marriage market. Along with this is obviously the unwillingness to invest in girls' education beyond a certain level due to low or no returns to the natal family.

But, unlike earlier, illiterate girls are no longer preferred on the marriage market. People prefer girls that are moderately educated, although highly educated girls are still not preferred because they are not likely to accept a dependent status. This shift of preference can be attributed to the gradual transition taking place in the societal fabric. Thus, parents prefer educating their daughters up to a certain level because that helps the girls get married faster. Having moderately educated girls also necessitates payment of a lower dowry. It, in fact, leads to the payment of bride-price dowry where the amount is decided by the girl's family. Having an illiterate or poorly literate girl shifts control to the groom's family implying that the girl's family has to pay a groom-price dowry. This, in addition to access to various government schemes for encouraging education of girl children, motivate parents to at least educate girls up to a certain level before inducing them to drop out.

Finally, one of the most important reasons for the need for practicing discrimination in such a veiled way is the fear of loss of reputation. Given the changing socio-cultural

mindsets about education of girls, parents who practice this activity are aware that it is not a right or honorable way to act. Yet, they are so trapped in tradition that they are unable to cut away from it. So, they device this veiled method, that allows them to shift blame over to their 'errant' daughters, in order to conform to tradition and yet to not have to face any loss of reputation.

4.1. Macroeconomic model with Micro foundations

The first model is a macroeconomic model based on an endogenous growth theory with micro foundations being provided. Here, the Romer model, an endogenous growth theory, is being adapted. The primary reasons for using Romer model are, first, it is based on an OLG framework, that is, there is scope for interactions across generations. Secondly, parents are the decision makers which coincide with reality in context of this study. Finally, in the model, the main thrust is on the fact that parents have a choice between getting current income from children by sending them to work and R&D, that is, developing children's skills, instead of making them work, in current period. It is this main thrust point that is essentially adapted in accordance to context, in this model.

Romer model is chosen in favor of Lucas model, a very similar kind of endogenous growth model built on OLG framework, because in the latter, children work part-time in current period. In this study, girls are assumed to not work at all in current period. And, in the case of girls over burdened with studies, they actually do not work at all. Unlike other girls of same age, these girls do not even help around at home or run errands. They only study in the current period.

This adapted model follows Romer model in that it works on an OLG framework with two generations and two period lives. Here, parents are the decision makers and each family has one parent and one child. There is a large population and total labor in each period is L (fixed) with each person's labor supply being one unit. Each person is also born with a set of skills denoted by At (t = time period). Prevailing wage rate is Wt.

The points of deviation from the original model are, first, only families that have girl children are considered part of the population being modeled. That is, each family consists of one parent and one girl child. Secondly, the original assumption of parental altruism is done away with. Contrary to Romer model, parents in this model do not necessarily derive utility from R&D (educating girls, here). Parents that do derive utility and are not trying to induce their daughters to drop out are labeled 'Regular Parents', and parents that are trying to make their daughters drop out are labeled 'Irregular Parents'. Thirdly, modifying on the original model where parents choose between children working or developing skills in first period, here, parents choose between regular or excessive amounts of study for daughters in first period. Regular Parents expect their daughters to go to school and attend a reasonable amount of private tuitions[5] such that the children have enough spare time to play and pursue their hobbies. Irregular Parents expect their children to attend school and a plethora of private tuitions such that they are left with absolutely no spare time to play or develop their hobbies. And, finally, this model provides micro foundations to this adaptation of Romer model.

[5] Some allowance has to be made for a reasonable amount of private tuitions as the population under investigation here belongs to the low income strata and the parents are largely educationally compromised. This renders them unable to monitor their children's studies. Thus, an external source of monitoring of children's studies is required to supplement parental supervision.

In first period or period t, parents of both types derive utility from consumption denoted by Ct, parent's intended level of educational attainment of girl denoted by (At+1 – At) and returns to parent from actual level of education attained by girl denoted by Rt.

Consumption in period t depends entirely on parent's income as the child does not work. And, this income depends on parent's skill level. Since in this study, most of the parents interviewed were educationally compromised, it is being implicitly assumed here that all parents possess only that set of skills, At, that they were born with. Therefore,

$$Ct = WtAt \qquad \ldots\ldots (1)$$

Next, a Regular Parent will want daughter to attain a higher level of education, denoted by βt^2, and an Irregular Parent will want a moderate level of education, denoted by βt, for daughter. Let, probability that a parent is Regular be p and that for Irregular parent be (1-p). And, whatever be the level of educational attainment, it in conjunction with the level of efficiency of the education system, denoted by γ, improves upon the set of skills the child is born with. Thus,

$$At+1 - At = p\gamma\beta t^2 At + (1-p)\gamma\beta tAt \qquad \ldots\ldots (2)$$

Finally, returns to a parent from the actual level of education attained by child depend on the parent's type. It is a real possible scenario that a child with a Regular parent acquires moderate level of education and one with an Irregular parent does not actually drop out. Let, probability that child acquires high level of education irrespective of parent's type be q and probability that child does not be (1-q). Of course, actual educational attainment also depends on efficiency of education system.

Therefore, returns to a Regular parent from actual educational attainment of child is,

$$Rt^{reg} = q\gamma\beta t^2 At - (1-q)\gamma\beta tAt \quad \text{..... (3)}$$

And, returns to an Irregular parent from actual educational attainment of child is,

$$Rt^{irreg} = (1-q)\gamma\beta t^2 At - q\gamma\beta tAt \quad \text{..... (4)}$$

This gives a resultant return to parent of,

$$Rt = p \log Rt^{reg} + (1-p) \log Rt^{irreg} \quad \text{..... (5)}$$

Therefore, assuming a quasilinear type of preference ordering and providing micro foundations to this essentially macro model, the utility function of the parent is,

$$U = \log Ct + \log (At+1 - At) + p \log Rt^{reg} + (1-p) \log Rt^{irreg} \quad \text{..... (6)}$$

Substituting all the values from the above specified equations, the utility function obtained is,

$$U = \log WtAt + \log (p\gamma\beta t^2 At + (1-p)\gamma\beta tAt) + p \log (q\gamma\beta t^2 At - (1-q)\gamma\beta tAt) + (1-p) \log ((1-q)\gamma\beta t^2 At - q\gamma\beta tAt) \quad \text{..... (7)}$$

Since, here the main focus is on the amount of education the girl child receives, U is maximized subject to βt. First order condition for maximization is,

$$\delta U / \delta \beta t = [(2p\gamma At\beta t + (1-p)\gamma At) / (p\gamma At\beta t^2 + (1-p)\gamma At\beta t)] +$$

$$[(2pq\gamma At\beta t - p(1-q)\gamma At) / (q\gamma At\beta t2 - (1-q)\gamma At\beta t)] +$$

$$[((1-p)(1-q)\gamma At - 2(1-p)q\gamma At\beta t) / ((1-q)\gamma At\beta t - q\gamma At\beta t^2)] = 0 \text{..... (8)}$$

Simplifying this equation,

$$[(2p\beta t + 1 - p) / (p\beta t + 1 - p)] + [(2q\beta t + q - 1) / (q\beta t - 1 + q)] = 0 \quad \text{..... (9)}$$

Simplifying further, the following expression for βt is obtained,

$$\beta t = [\ (3p - 3q) \pm (\ (3p - 3q)^2 - 16pq(pq - p - q + 1)\ )^{1/2}\ ] / 8pq \qquad \ldots\ldots (10)$$

This implies that βt depends on p and q. And, for every value of q, βt rises as p rises. In other words, for every level of education actually attained by the child, the level of intended educational attainment of child rises as the probability that the parent is a Regular one rises and it falls as this probability falls. This proves the contention that parents are not necessarily perfectly altruistic as is intrinsically assumed in a lot of existing literature. In reality, parents can indeed be non-altruistic, given that some may derive utility from children not attaining a high educational status.

4.2. Microeconomic Intertemporal model

The second model is a standard Microeconomic Intertemporal model being adapted to this context and within the framework set up for the previous model. In the original intertemporal model, a person chooses between present and future consumption. Here, the parent chooses between either a large spending on girl child's education in current period and no spending on education in future period or moderate spending on education in both periods. The entire framework set up before holds true here with each household having one parent and one girl child and there being two types of parents. Only one simplification from the previous scenario is being made. Since, in this model, the cases of Regular and Irregular parents are being dealt with separately, intended and actual educational attainment of child is not being considered separately. The possibility that the child may attain an educational status that is inconsistent with the type of parent she has is being assumed away. That is, it is being intrinsically assumed that a child with a Regular parent will attain the higher educational

level and the one with Irregular parent will attain a moderate level. This is done to essentially allow for the separate analysis of each type of parent, as also to avoid over complicating the context which may distract away from the real issue being explored. Therefore, the parental utility function is now of the form,

$$U = \log W_tA_t + \log (p\gamma\beta t^2A_t + (1-p)\gamma\beta tA_t) \quad \text{..... (11)}$$

Next, the budget constraint of parent is derived. A child with a Regular parent studies, a reasonable amount, in both periods. Thus, total household income is parent's income, W_tA_t in both periods[6], and monetary benefits from various Governmental and NGO schemes, G_t and G_{t+1}, in effect to encourage education of girls. Expenditure is consumption, C_t and C_{t+1}, and, school incidental expenses (not fees as education is free, and, mid-day meals and text books are given free) and fees for a reasonable amount of private tuitions, F_t and F_{t+1}. Now, paying F_t implies that child acquires up to βt (moderate) level of education in current period and paying F_{t+1} implies that child acquires up to βt^2 (high) level of education in future period. Therefore,

$$F_t = \gamma\beta tA_t \quad \text{..... (12)}$$

$$F_{t+1} = \gamma\beta t^2A_t \quad \text{..... (13)}$$

Substituting these values and elaborating the future value budget constraint of a Regular parent is,

$$C_t (1+r) + C_{t+1} + \gamma\beta tA_t (1+r) + \gamma\beta t^2A_t = W_tA_t (1+r) + W_tA_t + G_t (1+r) + G_{t+1} \quad \text{..... (14)}$$

[6] Here, wage rate is unchanged implying $W_t = W_{t+1}$. And, the parent's innate set of skills do not improve as in this model there is no scope for parents to acquire education.

Maximizing utility subject to budget constraint, a lagrangian function is obtained,

$$Ł = \log WtAt + \log (p\gamma\beta t^2At + (1-p)\gamma\beta tAt) + \lambda [WtAt(2+r) + Gt(1+r) + Gt+1 - Ct(1+r) - Ct+1 - \gamma\beta tAt (1+r) - \gamma\beta t^2At] \quad \ldots\ldots (15)$$

Deriving first order condition for maximization and simplifying after substituting p=1 (Regular parent), the expression for educational attainment of child with a Regular parent is obtained,

$$\beta t^{reg} = [-\gamma At(1+r) \pm (\gamma^2At^2(1+r)^2\lambda - 16\gamma\lambda At)^{1/2}] / 4\gamma\lambda At \quad \ldots\ldots (14)$$

Conversely, a child with an Irregular parent studies, an overwhelmingly unreasonable amount, in current period and drops out and is married off in the future period. Thus, total household income is parent's income, WtAt in both periods[7], monetary benefits from various Governmental and NGO schemes, Gt , in effect to encourage education of girls and the financial gain from being able to control and pay a lower bride-price dowry in future, Dt+1. Expenditure is consumption, Ct and Ct+1, school incidental expenses (not fees as education is free, and, mid-day meals and text books are given free) and fees for a reasonable amount of private tuitions, Ft, and additional fees for an excess amount of tuitions, Tt. Now, paying only Ft implies that child acquires up to βt (moderate) level of education in current period and paying Tt implies adding an extra pressure on the child without increasing her educational attainments. Therefore,

$$Ft = \gamma\beta tAt \quad \ldots\ldots (15)$$

$$Tt = \gamma^2\beta tAt \quad \ldots\ldots (16)$$

[7] Here, wage rate is unchanged implying Wt = Wt+1. And, the parent's innate set of skills do not improve as in this model there is no scope for parents to acquire education.

While computing gain from being able to control bride-price dowry, only the difference in dowry paid is considered. This is because, a girl with a Regular parent does marry, only at a later period, which is outside the scope of this model. And, in traditional societies, particularly in the lower income strata, dowries still remain an accepted practice despite efforts to abolish it. So, parents of any girl, irrespective of the level of education attained by the girl, have to pay a dowry. Also, cost of wedding ceremony and rituals for the Irregular parent is implicitly included in future consumption as this cost is common to all parents. For Regular parents, it is only postponed to a later period that falls outside the scope of this model. Therefore, considering δ to be the index of difference in dowries paid by the two types of parents, the financial gain from paying a lower dowry is,

$$D_{t+1} = \delta \beta_t A_t \quad \text{..... (17)}$$

Substituting these values and elaborating the future value budget constraint of an Irregular parent is,

$$C_t (1+r) + C_{t+1} + \gamma \beta_t A_t (1+r) + \gamma^2 \beta_t A_t (1+r) = W_t A_t (1+r) + W_t A_t + G_t (1+r) + \delta \beta_t A_t \quad \text{..... (18)}$$

Maximizing utility subject to budget constraint, a lagrangian function is obtained,

$$Ł = \log W_t A_t + \log (p\gamma \beta_t^2 A_t + (1-p)\gamma \beta_t A_t) + \lambda [W_t A_t (2+r) + G_t (1+r) + \delta \beta_t A_t - C_t (1+r) - C_{t+1} - \gamma \beta_t A_t (1+r) - \gamma^2 \beta_t A_t (1+r)] \quad \text{..... (19)}$$

Deriving first order condition for maximization and simplifying after substituting p=0 (Irregular parent), the expression for educational attainment of child with an Irregular parent is obtained,

$$\beta_t^{irreg} = 1 / [\lambda \gamma A_t (1+r)(1+\gamma) - \delta A_t] \quad \text{..... (20)}$$

Thus, comparing βt^{reg} and βt^{irreg}, it is seen that $\beta t^{reg} > \beta t^{irreg}$. But, still $\beta t^{irreg} > 0$, implying that girls are not entirely deprived of education even with Irregular parents. This proves the contention that parents are not necessarily perfectly capitalistic as is showcased via substantial existing literature. In reality, parents can indeed be non-capitalistic, given that they do invest some amount in educating their daughters in spite of not having any expectations of getting future returns from the daughters either due to wage differential in labor market biased against women and/or following marriage of the girls.

4.3. Child's Perspective

In this section, the girl child's perspective and behavioral pattern in both parental cases is depicted. The child derives positive utility from consumption, Ct, and education, (At+1 – At), and negative utility from excess pressure. If she has Regular parent (probability = p), there is no excess pressure, NPt. If parent is Irregular (probability = 1-p), excess pressure, EPt, exists.

Again assuming quasilinear preferences, utility function of the child is,

$$V = \log Ct + \log (At+1 - At) + p \log NPt - (1-p) \log EPt \quad \text{..... (21)}$$

Here, consumption depends on parent's income and education decisions are taken by parent, assuming away educational attainment inconsistent with parent's type to allow for separate analysis based on parent's type. Therefore, $Ct = WtAt$ and $(At+1 - At) = p\gamma\beta t^2 At + (1-p)\gamma\beta tAt$. And,

$$EPt = \gamma^2 \beta tAt \quad \text{..... (22)}$$

$$NPt = \alpha\gamma\beta tAt, \text{ where, } \alpha \text{ is leisure index and has a high value.} \quad \text{..... (23)}$$

Substituting these values the child's period t utility function is,

$$V = \log WtAt + \log (p\gamma\beta t^2At + (1-p)\gamma\beta tAt) + p \log \alpha\gamma\beta tAt - (1-p) \log \gamma^2\beta tAt$$

Next, the budget constraint of the child within an intertemporal setting is derived. With Regular parent, the child studies reasonable amounts in both periods. Her gains (proxy for income) are consumption, Ct and Ct+1, education, Et and Et+1, and not being pressurized overwhelmingly to study, NPt and NPt+1. Her losses (proxy for expenditure) are difficulty in finding a groom, Mt+1, and parent having to pay more dowry for her, Dt+1. Both these factors are resultant of the girl attaining a high education level. Therefore,

$$Et = \gamma\beta tAt \quad \text{..... (24)}$$

$$Et+1 = \gamma\beta t^2At \quad \text{..... (25)}$$

$$NPt+1 = \alpha\gamma\beta t^2At \quad \text{..... (26)}$$

$Mt+1 = m\beta t^2At$, where m is difficulty index[8] and has a high value. ..... (27)

Therefore, future value of budget constraint of child with a Regular parent is,

$$Ct(1+r) + Ct+1 + \gamma\beta tAt(1+r) + \gamma\beta t^2At + \alpha\gamma\beta tAt(1+r) + \alpha\gamma\beta t^2At = m\beta t^2At + \delta\beta t^2At \quad \text{..... (28)}$$

Maximizing utility subject to budget constraint, a lagrangian function is obtained,

$$Ł = \log WtAt + \log (p\gamma\beta t^2At + (1-p)\gamma\beta tAt) + p \log \alpha\gamma\beta tAt - (1-p) \log \gamma^2\beta tAt + \lambda [Ct(1+r) + Ct+1 + \gamma\beta tAt(1+r) + \gamma\beta t^2At + \alpha\gamma\beta tAt(1+r) + \alpha\gamma\beta t^2At - m\beta t^2At - \delta\beta t^2At] \quad \text{..... (29)}$$

[8] All indices used a throughout the paper belong to closed interval [0,1]. That is, they are all fractional in value.

Deriving first order condition for maximization and simplifying after substituting p=1 (Regular parent), the expression for educational attainment of child is obtained,

$$\beta t = [(\lambda\alpha\gamma At(1+r) - \lambda\gamma At(1+r)) \pm (\lambda\alpha\gamma At(1+r) - \lambda\gamma At(1+r))^2 - 12(2\lambda\gamma At + 2\lambda\alpha At - 2\lambda mAt - 2\lambda\delta At))^{1/2}] / [2(2\lambda\gamma At + 2\lambda\alpha At - 2\lambda mAt - 2\lambda\delta At)] \quad \ldots\ldots (30)$$

From here, it can be concluded that a value for βt is obtained and it depends on α. In other words, the child views education favorably and wants to study. This behavioral pattern is influenced to a certain extent by the fact that she has leisure time beyond studies and in not overwhelmingly pressurized to study.

With Irregular parent, the child studies an unreasonable amount in current period only. Her gains (proxy for income) are consumption, Ct and Ct+1, easily matched for marriage, Mt+1, and parent able to pay less dowry, Dt+1. The latter two factors are resultant of the girl attaining a moderate education level. Her losses (proxy for expenditure) are having to study, Et, because due to excess pressure any amount of study becomes a burden for the child, and the excess pressure exerted on her, EPt. Both these factors are resultant of the girl attaining a high education level. Therefore,

$$Et = \gamma\beta tAt$$

$Dt+1 = \delta\beta tAt$, where δ has a low value.

$$EPt = \gamma^2\beta tAt \quad \ldots\ldots (31)$$

$Mt+1 = m\beta tAt$, where m has a low value.

Therefore, future value of budget constraint of child with a Regular parent is,

$$Ct(1+r) + Ct+1 + m\beta tAt + \delta\beta tAt = \gamma\beta tAt(1+r) + \gamma^2\beta tAt(1+r) \quad \ldots\ldots (32)$$

Maximizing utility subject to budget constraint, a lagrangian function is obtained,

$$Ł = \log WtAt + \log (p\gamma\beta t^2At + (1-p)\gamma\beta tAt) + p \log \alpha\gamma\beta tAt - (1-p) \log \gamma^2\beta tAt +$$

$$\lambda [Ct(1+r) + Ct+1 + m\beta tAt + \delta\beta tAt = \gamma\beta tAt(1+r) + \gamma^2\beta tAt(1+r)] \quad \ldots\ldots (33)$$

Deriving first order condition for maximization and simplifying after substituting p=0 (Irregular parent), the expression for educational attainment of child is obtained,

$$m + \delta = \gamma(1+r) - \gamma^2(1+r) \quad \ldots\ldots (34)$$

Here, it is seen that the term βt vanishes absolutely after getting cancelled out from the equation. Only the marriage, dowry and efficiency of education system indices are left and m and δ are directly related to γ. This implies, that the child views education unfavorably and does not want to study. Instead she is more concerned with marriage and dowry ideas. In fact, she may even look upon marriage as an escape from the excess pressure of studies. This behavioral pattern is influenced to a large extent by the fact that she does not have any leisure time beyond studies and is overwhelmingly pressurized to study.

5. Discussions

The models elaborated in the previous section show that all parents are not necessarily perfectly altruistic or perfectly capitalistic with respect to education of their daughters. Some parents may be actually situated midway between the two perfect extremes. They may want their daughters to achieve a moderate level of education and may even willingly invest in it. But, at the same time, they may not want daughters to attain a high educational status and may use veiled methods, very useful in shifting blame away from parents and onto daughters,

to induce the girls to drop out of school of their own accord. And, usage of these veiled methods gives rise to a disguised form of gender bias in education.

The method of over pressurizing young girls with studies is a by-product of the parents', belonging to a lower income strata in a developing economy, need to provide private tuitions for all their children. Such parents generally belong to the educationally compromised section of society and cannot help with or monitor their children's studies. For that they need external help, which manifests itself in the form of private tutors. Seeking help of private tutors is not equivalent to sending a child to school. School hours are fixed and all schools operate along an academic calendar that includes school days and holidays. But, in the realm of private tuitions, each parent decides on the amount of time the child needs to spend with his/her tutor and/or the number of tutors the child needs based on each individual child's requirement and the amount of money the parent can allocate for tuitions. Private tutors of school-going children also typically work on the advisement of parents, implying that children are given a holiday only if the parents approve of it. This very informal nature of private tuitions creates the loophole that gives rise to opportunities to parents to practice veiled discrimination based on gender.

Here, of course, the question on the need of private tuitions arises, given that the children are already attending school. The basic reason is that, children belonging to this income stratum typically attend government-run schools that are significantly less expensive than private schools. And, in India, where this particular study is set, the quality of education provided, quality of infrastructure and staff and the method of operation of government-run schools are far from ideal. A significant amount of literature documenting and analyzing these deficiencies exists. And, since, these issues are beyond the scope of this paper, I shall

not delve into details here. But, inefficiencies and corruption present in the current education system necessitate that parents seek external help.

But, to provide a holistic analysis of the problem, it is necessary to also consider the issue in the light of prevailing socio-cultural scenarios in the country. Doing this might help in interpreting behavior that seems to be discriminatory as being queerly altruistic. People that are psychologically chained to traditionalism and believe all societal norms and traditions, including patriarchy, to be correct and paramount may actually believe that they are protecting their daughters. Not giving access to a lot of formal education prevents daughters from learning to question certain societal norms, or, aspiring for self-dependence and a career. These girls learn to conform and obey, which are desirable qualities for girls in a traditional patriarchal society. Such parents feel that inculcating these qualities into their daughters is important as that will help be ideal (in the traditional sense) wives and daughters-in-law, and, thus will be loved and respected in their marital homes. An interesting example reflecting this queerly altruistic psychology, albeit not in the realm of formal education, may be found in the behavior of Baba Allauddin Khan, one of the greatest Indian classical instrumentalists and teacher of some of the greatest Indian Classical musicians in India. He decided never to teach music to his youngest daughter after his older daughter had to face troubles in her marital home over her musical accomplishments. He, evidently, felt that by not allowing his youngest daughter to become accomplished, he would be protecting her by protecting her future marital bliss[9].

[9] The youngest daughter, Annapurna Devi (born Roshanara Khan) later persuaded her father to teach her after displaying her musical talents to him. She went on to become one of the most accomplished *Surbahar* (bass *sitar*) player, but chose to remain a recluse than seek fame for her talents and accomplishments.

6. Conclusion

There does not seem to be any instant solution that would remedy this behavioral pattern of parents. A possible method would be to plug the loophole in the education system that helps create this path to gender discrimination. If the custom of children seeking private tuitions can be eliminated totally, then parents would no longer be able to control study hours. For this to successfully happen, schools, especially government-run ones, would have to necessarily provide a good quality of education to ensure that children need no additional help, and, school hours have to be extended so that there does not remain any time left for private tutors at the end of a normal school day.

But, of course, extending school hours does not mean that the extra hours should be used for study. Using extra hours for study will produce the same effect of overwhelmingly burdening children with studies. Studies should not extend beyond regular school hours. The extra hours should be devoted to activities that develop the variety of non-academic talents that children have, thereby, providing them with an extra set of skills besides academic education. This is actually quite important. Most of such parents do not have enough income to able to allocate any for development of non-academic talents of their children, over and above, paying for their education. Further, these extra hours should include enough playtime and time for meals and rest for children. Extended vacations are a problem point. Compulsory day camps and field trips that academic, talent or leisure based can be organized. It is not necessary that every single day be accounted for. A few days off in between activities are not the problem as ad-hoc tuitions for a few days is not possible to be arranged. The focus should be on involving the children for a major part of the vacations.

But, given the current inefficiencies and distortions present in the education system in India, the above elaborated ideas seem to be really utopic and not very practicable. I do recognize that for these ideas to reach any real shape, the entire education system, as it exists now, needs to be revamped and restructured almost completely. But, if such a change can indeed be effected, then implementing these ideas may help resolve the issue being discussed in this paper to a certain extent.

Finally, there can be no permanent and lasting change effected unless there occurs a societal change in the concepts of what is right, desirable and honorable. As Appiah[10] showcases in his book, practices like Chinese foot-binding and dueling among Englishmen got eradicated when societal perceptions changed. A similar change has indeed happened in our society as well. There was a time, not very long ago from now, when illiterate girls were considered the best matches on the marriage market. But, changes in societal perceptions have changed that preference to moderately educated girls. Now, people prefer girls with some education over girls with none. This change was not very quick or smooth. But it happened. Similarly, the perception, that girls with high levels of education are non-tractable and are thus not preferred on the marriage market, will change too. The path to this change will probably not be smooth, but like all other changes for the better that have happened, this path too will reach its destination.

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[10] *Appiah, Kwame Anthony. 2010. The Honor Code: How Moral Revolutions Happen. New York: W.W. Norton and Company.*

Disclaimer: All personal information that would allow the identification of any person or person(s) described in the article has been removed.

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