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**36**

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*Joysankar Bhattacharya and Sarmila Banerjee*

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**INSTITUTE OF DEVELOPMENT STUDIES KOLKATA**

**DD-27/D Salt Lake City, Sector - 1  
Kolkata - 700 064**

**Phone : +91 (33) 23213120/21 Fax : +91 (33) 23213119  
e-mail : [idsk1@vsnl.net](mailto:idsk1@vsnl.net), Website : [www.idsk.edu.in](http://www.idsk.edu.in)**

# Women Empowerment as Multidimensional Capability Enhancement: An Application of Structural-Equation-Modelling<sup>1</sup>

*Joysankar Bhattacharya\* and Sarmila Banerjee\*\**

## ABSTRACT

*This paper tries to offer a comprehensive measure for empowerment where empowerment is viewed as capability-enhancement. A critique of the idea of considering autonomy as the sole indicator of empowerment has been presented and an attempt has been made to supplement autonomy with other dimensions like health and knowledge in shaping empowerment. This paper also tries to offer a quantitative measure for empowerment constituted of capability scores on all these three dimensions. A particular form of structural equation modelling, called Multiple Indicator Multiple Cause (MIMIC) model has been used to estimate capabilities and the empowerment index has been constructed as weighted average of the scores of Health, Knowledge and Autonomy. The method has been applied on some primary survey data collected from adult women of two districts of West Bengal and the results have demonstrated that high autonomy along with high attainment in other capabilities definitely improves the empowerment index, but considerable empowerment-attainment may be observed even with low autonomy with higher achievements in other capabilities and vice-versa.*

**Keywords:** Empowerment, Capability Approach, Structural Equation Modelling, MIMIC

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\* Joysankar Bhattacharya, Post-Doctoral Fellow(Economics), RNTCHDS, IDSK.

\*\* Sarmila Banerjee, Professor of Economics, Calcutta University

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## INTRODUCTION

The Beijing conference (1995) was instrumental in bringing women empowerment as a key strategy for development: “women’s empowerment and their full participation on the basis of equality in all spheres of society, including participation in decision-making process and access to power, are fundamental for the achievement of equality, development and peace” (Beijing declaration, UN, 1995). Unfortunately the concept as used by development bodies and the offered indicators tend to reduce its scope to women’s ability to participate in decision-making process only. Not everyone accepts that empowerment can be clearly defined, let alone measured. The value of the concept lies precisely in its fuzziness. As long as women’s empowerment was argued for as an end in itself, it tended to be heard as a ‘zero-sum’ game with politically weak winners and powerful losers. By contrast, instrumentalist forms of advocacy which combine the argument for women empowerment with demonstrations of a broad set of desirable multiplier effects offer policy makers the possibility of achieving familiar and approved goals, albeit by unfamiliar means. A critical analysis of attempts to measure women’s empowerment thus provides a useful standpoint from which to assess both the narrower implications of replacing intrinsic arguments with instrumentalist ones.

The notion of empowerment is inescapably bound up with the condition of disempowerment and it refers to the processes by which those who have been denied the ability to make choices acquire such ability. In other words, empowerment entails a process of change. However, to be made relevant to the analysis of power, the notion of choice has to be qualified in a number of ways. First of all, choice necessarily implies the possibility of alternatives, the ability to choose otherwise. There is a logical association between poverty and disempowerment because an insufficiency of the means for meeting one’s basic needs often rules out the ability to exercise meaningful choice. However, even when survival imperatives are no longer dominant, there is still the problem that not all choices are equally relevant to the definition of power. Some choices have greater significance than others in terms of their consequences for people’s lives. We therefore have to make a distinction between first- and second-order choices, where the former are those strategic life choices which are critical for people to live the lives they want

(such as choice of livelihood, whether and whom to marry, whether to have children, etc.). These strategic life choices help to frame other, second-order, less consequential choices, which may be important for the quality of one's life but do not constitute its defining parameters.

The ability to exercise choice can be thought of in terms of three inter-related dimensions: resources, agency and achievements. Resources define pre-conditions; resources include not only material resources in the more conventional economic sense, but also the various human and social resources which serve to enhance the ability to exercise choice. Resources in this broader sense of the word are acquired through a multiplicity of social relationships conducted in the various institutional domains which make up a society (such as family, market, community). Such resources may take the form of actual allocations as well as of future claims and expectations. Access to such resources will reflect the rules and norms, which give certain actors authority over others—the ability to define priorities and enforce claims. Heads of households, chiefs of tribes or elites within a community are all endowed with decision-making authority within particular institutional contexts by virtue of their positioning within those institutions.

The second dimension of power relates to agency—the ability to define one's goals and act upon them. Agency is about more than observable action; it also encompasses the meaning, motivation and purpose which individuals bring to their activity, their sense of agency, or 'the power within'. Resources and agency together constitute what Sen refers to as capabilities: the potential that people have for living the lives they want, of achieving valued ways of 'being and doing' which are valued by people in a given context.

Among other issues, our concern is with those aspects of agency that affect an individual's opportunities to achieve well-being. "A functioning is an achievement of a person, what he or she manages to do or be. It reflects, as it were, a part of the 'state' of that person" (Sen, 1985). 'Functioning achievements' refer to the particular ways of being and doing which are realized by different individuals. It is only when the failure to achieve one's goals reflects some deep-seated constraint on the ability to choose that it can be taken as a manifestation of disempowerment.

The term 'empowerment' is not one that Sen's capability approach always employs. But it is related to, although not synonymous with, an increase in human agency. The World Development Report 2000/01 draws attention to the "sense of voiceless and powerlessness", poor persons highlighted when they discussed social and public institutions. "Those materially deprived feel acutely their lack of voice, power and independence" (World Bank, 2001). The words 'sense of' and 'feel' suggest that empowerment refers to person's own judgments and recurrent emotional states. Such an improvement would have an intrinsic value and would also enable communities to advance their own concerns effectively. This aspect of empowerment could similarly be analyzed using the spirit of human agency.

However, reducing the notion of women empowerment solely to the agency-aspect misses other important dimensions of human capabilities. This paper tries to offer a comprehensive measure of empowerment, viewing it as a process of capability enhancement. But the capabilities by definition cannot be directly measured. What can be measured are the functionings, namely, the achievements in each dimension. These achievements are generally identified by proper indicators reflecting the performance in the associated dimension. There could either be one indicator or as is more often the case a whole range of indicators available for each capability dimension. Moreover, the observed level of achievement is not only contingent on the level of intrinsic capability but it is highly contextual and gets affected by socio-economic preconditions reflected in a bunch of factors like age, marital status, caste, religion and relationship with the household head, etc.

In this paper we try to offer a quantifiable measure for empowerment, where empowerment is viewed as a process of capability-enhancement. We develop a research methodology which follows three major steps: (a) measuring latent capabilities through observed functionings, (2) assessing the contribution of different socio-economic factors in influencing capabilities and (3) deriving measure for empowerment determined by different levels of capability in a sample of poor to middle-income women of rural and semi-urban West Bengal. The paper explores the correspondence between autonomy and empowerment and validates the fact that autonomy stands as an important constituent of empowerment but autonomy alone may not ensure empowerment, unless supplemented by other capabilities.

## **EMPOWERMENT AS CAPABILITY ENHANCEMENT: SELECTION OF CAPABILITIES**

Empowerment cannot be understood separately from an understanding of power. Power, in fact, can be perceived in four forms (Oxaal and Baden, 1997). *Power over*- this power involves either/or a relationship of domination/subordination. It is based ultimately on socially sanctioned threats of violence and intimidation and requires a constant vigilance as well as invites active or passive resistance. The second is *power to*- this power relates to having decision making authority, power to solve problems and can be creative and enabling. The third is *power with*- this power involves people organizing with a common purpose or common understanding to achieve collective goals. The fourth is *power within*- this power refers to self-confidence, self-awareness, and assertiveness. Through this power individuals can recognize by analyzing their experience of how power operates in their lives and gain the confidence to act to influence and change this. To begin with the first interpretation of power as *power over*, a person has to be empowered because that person is at the wrong end of a power inequality. Hence, the first interpretation gives the rationale to begin a process of empowerment. The second interpretation of *power to* talks of the ultimate stage of empowerment when a person has achieved the capacity to take action. The third interpretation of *power with* reflects on the methods that such a process can be initiated and set into motion, i.e. through purposive collectives. The fourth interpretation of power as *power within* can be thought of as the sustenance of the process whereby empowerment does not remain limited to intermittent actions but can be conceived as the building of capacities to carry out future action in a sustained manner.

Empowerment leads to the enhancement of social space of the individual in different forms by encouraging her to attain *power within* through social networking (*power with*) and enhancement of her quality of life (*power to* perform certain acts). By "space" is meant that which allows a woman, the place/freedom/margin, to do what she intends to do. Initially everyone has an allotment of spaces at a moment in time and this allotment is determined by the domestic and macro environment, within which she lives. Spaces determine the person's capacity to act and the ultimate behaviour both within households and outside. A constriction of spaces amount to lack of

power to act. Constricted spaces negatively affect power over, power to, power with and power within. Hence, in domestic power dynamics, it is the expansion and contraction of spaces that explain the relative positions of the members. Spaces include both tangible and intangible features of categories that are economic, socio-cultural, political and physical.

While a constriction of spaces implies a reduction of power in all the dimensions, an expansion of space alone does not necessarily imply empowerment. The expansion of space is necessary but not sufficient for the enhancement of empowerment (Deshmukh-Ranadive, 2002). For example, an intervention like micro-finance, which has given a wider economic space to a woman, does not necessarily empower her, since she may not have any control over that income. It may even lead to an increase in domestic violence as has been found in some case studies in Bangladesh (Goetz, 1996). However, if the intervention could have increased her levels of confidence and self-esteem, then a process of empowerment would have been unleashed. Sometimes before an action is taken, the very mental decision on the part of the person to act instils a feeling of confidence. What has to expand is one's mental space.

*Autonomy*, viewed as the decision-making power of a woman within the family, has been looked upon as one of the important factors which can influence the life of the woman herself as well as others (Safilios-Rothschild, 1983). A fresh outlook on the emphasis and need for study of women's decision-making power is endorsed by the international conference on population and development (ICPD), Cairo (1994) as a part of improving women empowerment. The work of Blood and Wolfe (1960) gives a direction of decision-making power and area in connection with the resources being possessed by an individual person. Resource includes not only the income of the person but also the educational attainment and the occupation. It further continues that in a family if a person has more resources, she will have more power to exercise in making decisions of the family. Resource theory of decision-making has been supported by various other studies as well (Buric and Zecevic, 1967; Lamouse, 1969; Lupri, 1969)

Rodman (1972) demonstrated that power is not limited only to resource, rather it is also shaped by cultural setting. It needs to be

understood the setting of the society whether it is strong patriarchal, modified patriarchal or equalitarian and he finds that in the strongly patriarchal society husband has more power irrespective of his resources whereas it is not true either in modified patriarchy or equalitarian society. Decision-making is by and large affected by various factors and among others the level of education (Lamouse 1969), husband's education (Fox 1973), occupation (Buric and Zecevic 1967), the place of residence and age (Acharya et al. 1983) may be mentioned. Besides social setting, a woman's life cycle plays an important role in the dynamics of decision-making and it is true that when a woman becomes older, she has more power and control than when she was young (Cain et al. 1979; Das Gupta 1996). Jejebhoy (1995) points out that degree of gender stratification in the society acts to condition the impact of other factors. In extreme patriarchal setting, where the seclusion of women or their withdrawal from outside activities is a high prestige, even better educated women may experience less decision-making autonomy than uneducated women of less stratified setting. Dyson and Moore's (1983) work also corroborates that in the less gender stratified society of south Indian women enjoy more autonomy than their counterparts of the north.

Thus, the expansion of mental space of women is necessary for an enhancement of women's autonomy. The centrality of autonomy as a basic human capability lies in choice and responsibility. But to take decisions properly one needs physical and mental ability to implement the decision in practice. None can deny the significance of good *health* as an important constituent of one's well-being. Being healthy is not only an integral part of welfare but also acts as an instrument in enhancing one's capacity to work and earn a living. Health is valuable not only in itself but also in enabling a person to be usefully occupied (whether it is for earning a livelihood for oneself and one's family or for helping others). Also, the healthier can be more active in participating in local community affairs on the political, social or environmental fronts, which will positively influence the choice-set on the whole. If we view empowerment as a process to expand various spaces of a woman's life, then health is an important constituent, as better health not only improves physical space but also enhances her preparedness to command over various other spaces and her relative positioning within those spaces.

There is a strong relationship between the benefits for education to women and the goals of empowerment. Education and empowerment can be linked through the psychological and behavioural changes and each component is expected to affect: increased sense of control, confidence, competence, changed behaviours, increased access to resources, and an ability to get around in modern society. They are also linked through larger societal effects on women's status and roles. Most often in developing countries, women are oppressed because they are illiterate and do not have access to *Knowledge* capability. Attainment of Knowledge capability plays an important role to promote the process of empowerment through a proper understanding of both the structures of power within which a life is placed and rights and duties as members within families as well as citizens of a civil society. So, the capabilities most relevant in the context of enhancement of empowerment are *Health, Knowledge and Autonomy*.<sup>2</sup>

#### **EMPOWERMENT AND CAPABILITIES: MEASUREMENT ISSUES**

Conceptualization of empowerment in terms of these three capabilities throws a challenge in developing appropriate methodology to quantify empowerment index in the capability space because capabilities are latent by definition and therefore cannot be directly measured. What can be measured, however, are the functionings, namely, the achievements in each dimension. These achievements are generally identified by proper indicators reflecting the performance in the associated dimension. There could either be one indicator or as is more often the case a whole range of indicators available for each capability dimension. In other words, one normally has a vector of functionings rather than a scalar indicator corresponding to each domain. Besides these, each capability gets affected by a bunch of socio-economic factors like age, marital status, caste, religion and relationship with the household head. Having established the nature of the underlying latent capabilities and the observed nature of the outcomes or functionings, it is fundamental that we maintain both sets of variables in our model and link the two through a set of relationships. These will complete our analytical setting while paying heed to our concern for differentiating between capabilities and functionings.

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2. This is essentially our pick from the Nassbaum's list of central human capabilities, with some aggregation to bring out three central capabilities.



Linear measurement models decomposing manifest variables into hypothesized unmeasured variables have been well-studied in econometrics (Lawley and Maxwell, 1971). When the unmeasured variables are linear combinations of manifest variables, such as principal components, they are measurable, but when the unmeasured variables span a space of greater dimensionality than the space of manifest variables, as in factor analysis, they are not measurable or determinate (Williams, 1978). In that case, they are appropriately called latent variables (Bentler, 1980). Models that combine simultaneous equations and measurement models into interdependent multivariate linear relations have only recently been proposed and applied, but their impact on psychology and other social sciences promises to be substantial (Aigner and Goldberger, 1977; Bentler, 1980; Bieby and Hauser, 1977). In these developments, no consideration has been given to measurement models that are more complex than the simple factor analytic model, yet it is easy to consider combining higher-order measurement models, such as Joreskog's (1973) second-order model relating manifest variables to two levels of common factors, with a latent variable simultaneous equation system. The partial least squares or soft modelling approach with unmeasured variables is also available for application (Wold, 1966), but in this approach the unmeasured variables are actually derived compounds of manifest variables.

The MIMIC(Multiple-Indicator-Multiple-Cause)model(Joreskog and Goldberger, 1975) represents a step further in the explanation of the phenomenon under investigation as it is not only believed that the observed variables are manifestations of an underlying unobserved latent concept but also that there are other exogenous variables that cause and influence the latent factor(s). In the MIMIC approach each of the indicators is assumed to be a component of functioning and capabilities, as latent variables, are linked to the observed indicators. In separating causes from indicators, the MIMIC approach brings more structure to bear on the problem than do the comparatively unstructured principal components and simple factor-analytic models. The MIMIC approach allows us to think of this model as comprising two parts: a structural equation shows how the latent variable is estimated through the observed indicators and a measurement equation that takes into account the causal link among the latent variables and the observed causes.

But our final aim is to arrive at a quantifiable index of empowerment in a capability space. For that we propose a structural equation (measurement) model to estimate the Empowerment Index, an unobserved phenomena in terms of estimated capability scores, obtained from the MIMIC model, mentioned above. The regression coefficients of the measurement part of the MIMIC model work as weights in constructing the estimated capability scores as weighted averages of indicators. The constituents of latent empowerment index are the estimated capability score of each category, Health, Knowledge and Autonomy and we will consider a structural equation (measurement) model to bring out the influence of each capability score in constructing the latent empowerment index. The regression coefficients, derived from this model will provide the extent of influence of each capability-score in generating a quantifiable measure of empowerment, namely the Empowerment Index.

#### **PRIMARY DATA**

To illustrate the proposed methodology, primary survey was carried out in two districts of West Bengal and information was collected from 1500 women spread over six different blocks of varied economic status. The respondents are in reproductive age (18-49 years).<sup>3</sup> The questionnaire in this context has been designed to capture information related to socio-cultural factors like marital status, caste, religion, relationship with head of the household, living condition and occupation of the respondent. The influence of all these factors was studied on functionings related to capabilities like health, knowledge and autonomy. In most of the cases the variables are categorical in nature and defined as qualitative attributes on an ordered scale.

Women autonomy is an integral part of women's status within the family and outside. Even though alternative definitions and terms have proliferated in capturing the meaning of the concept of women status, it has been broadly agreed that an analysis of women's status involves the distinction between access to resources and the control of them. Merely having access to resources, i.e. the right to use or consume them (provided those who control them give their

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3. Primary data was collected from 750 women from each of the two districts: Hooghly and South 24-Parganas. Three administrative blocks were chosen from each district: Pandua, Tarakeswar and Chanditala-I at Hooghly and Baruipur, Canning-I and Sonarpur at South 24-Paraganas. 250 women were chosen randomly from each block.

permission) is insufficient to generate control over one's environment. Autonomy, viewed as the decision-making power of a woman within the family and outside has been looked upon as one of the important factors which can influence woman's control over her own environment. To assess autonomy a distinction is made here between actual participation in decision making and a sense of participation in decision making. It is interesting to observe that the rank-order of these two dimensions may not always tally. Information is collected on (1) decisions taken on one's own self, like obtaining healthcare, spacing between two children, place of delivery of children, etc., (2) decisions related to day-to-day running of the household like items to cook, items to purchase, etc., (3) those related to the purchase of durable goods like livestock, jewellery, etc., (4) decisions involving relationship of the head of the household with greater society like purchasing gifts for others, visiting and staying with parents or siblings, etc. and finally (5) for the working women, an additional question was asked related to the autonomy enjoyed over their own earning. Whether or not women need to seek permission and approval from the male-members of the family to go outside for meeting acquaintances and keeping other social commitments has been recorded here to capture her freedom of movement and autonomy explicitly.<sup>4</sup>

To ascertain the health status, information is collected on both general health and reproductive health. In case of general health emphasis was laid on overall health perception, manifestation of physical disorder like pain and discomfort, deficiency of vision, etc., mental disorder like anxiety, depression, insomnia, etc. and finally the quality of functional health assessed in terms of mobility and self-care. Since all these attributes are subjective in nature, as a basis of objective evaluation information is collected on food and nutritional intake in terms of consumption of cereal, pulses, fruits and vegetables, animal and milk protein, and so on.

Information of reproductive health was collected from three different angles: (a) number of live birth and abortion along with availability and quality of institutional facilities, (b) awareness regarding possibility and types of contraception, and finally (c) extent of participation in conjugal decisions. While the first aspect was incorporated in

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4. We explicitly abstained from asking any question related to political autonomy as the time was sensitive to discuss these issues.

assessing health status, the second one was used to evaluate knowledge capability and the third one was utilized in verifying autonomy-status along with information on decision-making in other spheres of life.

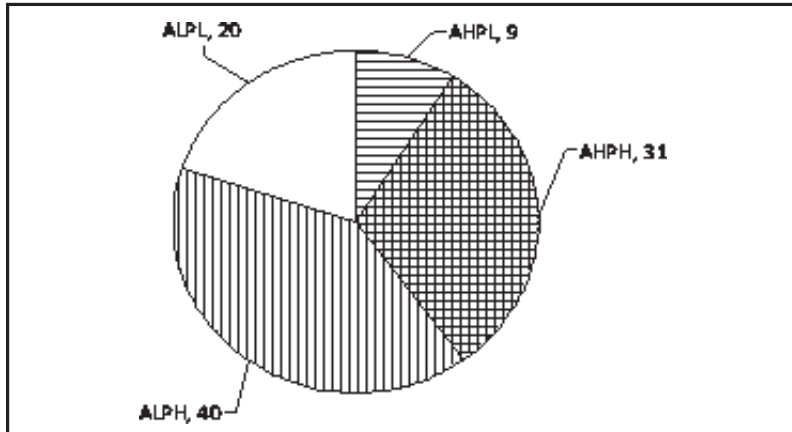
On education, information was collected on both achieved literacy and functional literacy. If the education is terminated, the causes of termination have been interrogated. Information is collected on the family-tradition in respect of guardian's educational status, where the guardian may be father, mother, husband or head of the household. However, the quality of life depends not on the acquired knowledge but on applied knowledge. Hence, a number of questions were asked on functional literacy in terms of ability and frequency of reading and writing in day-to-day life.<sup>5</sup>

Out of total sample of 1500 adult women 71% perceive high autonomy status and the remaining 29% are reporting low status. However, when specific questions are asked in terms of actual space they enjoy in different spheres of decision making the autonomy status becomes sensitive and our 'autonomy index' identifies 40% of subjects to enjoy high-status, leaving the remaining 60% to low-autonomy category. So, our sample shows that that the actual autonomy achievement and perception about autonomy do not show a uniform correspondence. For 51% of the sample the actual achievement and perception tally at the same direction, 20% of them low autonomy achievement and low perceived autonomy and 31% of them attain high at both actual achievement and perception. Nine percent of the sample women achieve high autonomy while their perception about autonomy is lower and 40% of them perceive high autonomy but their achievement is lower. Figure 1 depicts this situation. It is interesting to note that 75% of those who are enjoying high autonomy are enjoying good health also (in terms of our health-index) but high achievement in health-status alone does not necessarily improve autonomy.

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5. For each of these factors, the respondent's status is recorded in qualitative scale and the overall sub-index on each count has been derived following the methodology applied for the construction of Human Development Index. For each factor, the minimum possible score has been deducted from the achieved score and then the difference is divided by the total possible range of variation in score. Appendix A describes the selection of latent capabilities and achieved functionings.

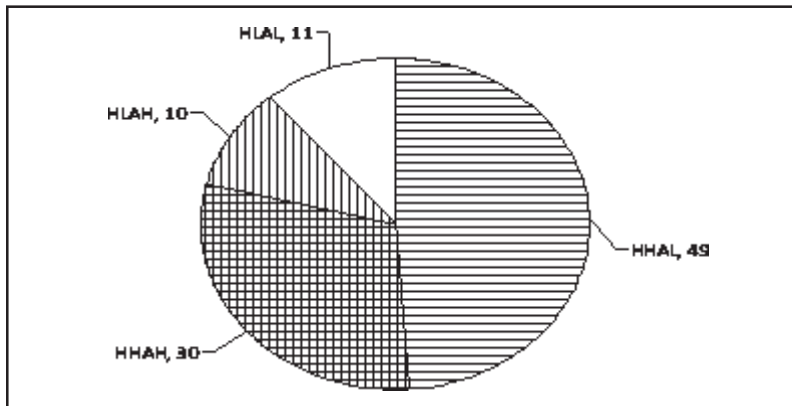
**Figure 1: Autonomy: Actual Achievement and Perception (%)**



AHPH: Autonomy High, Perception High; AHPL: Autonomy High, Perception Low; ALPH: Autonomy Low, Perception High; ALPL: Autonomy Low, Perception Low;

For 41% of the sample women, both capability-achievements move in the same direction (30% of them achieve high health and high autonomy and 11% achieve low at both capabilities), but 49% of the sample women achieve high health capability while their autonomy is low and 10% achieve high autonomy, despite having low health capability. Figure 2 reflects this phenomenon.

**Figure 2: Health and Autonomy (%)**

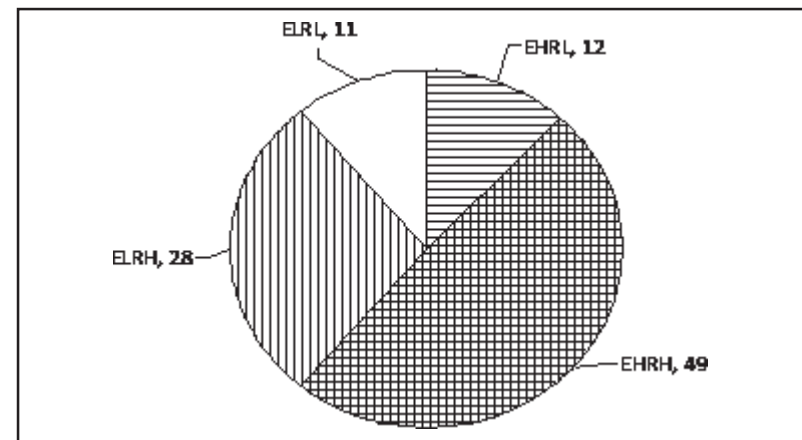


HHAH: Health High, Autonomy High; HHAL: Health High, Autonomy Low; HLAH: Health Low, Autonomy High; HLAL: Health Low, Autonomy Low;

For the influence of education-status on autonomy the situation is not so obvious: 50% of the sampled women with high autonomy are enjoying high education status and the remaining 50% are from weak education background. To resolve this puzzle a series of questions have been asked on autonomy with respect to reproductive decisions like adoption of family planning practices, spacing of the child birth, etc, and here the role of education became more prominent. In our sample 77% of married women with at least one child are enjoying high autonomy with respect to reproductive decisions and nearly 65% of them are enjoying high education status (Figure 3). In fact, very few with high education report the absence of autonomy in this regard (20%). Here 60% of the sample women achieve these capabilities at the same direction: 49% of them achieve high degree in both capabilities, whereas 11% attain lower at both. The correspondence is at opposite direction for the rest 40% women: for 28% of them education status is lower but they enjoy high autonomy regarding reproductive decisions and 12% enjoy higher autonomy despite having low educational status.

Thus, health and knowledge capabilities are playing important roles in determining the extent of empowerment enjoyed by adult women in a society along with the autonomy.

**Figure 3: Education and Reproductive Autonomy**



EHRH: Education High, Reproductive Autonomy High; EHLR: Education High, Reproductive Autonomy Low; ELRH: Education Low, Reproductive Autonomy High; ELRL: Education Low, Reproductive Autonomy Low;



However, these causal influences are in no sense linear. It is found that aged women with poor functional health and poor functional literacy may enjoy greater space in the domain of decision making and here high value of the autonomy index itself will make them sufficiently empowered. But, if adequate control can be applied to neutralize the influence of these other contextual factors then a comprehensive measure of empowerment may be proposed by combining health, knowledge and autonomy capabilities in the functional place.

Our sample contains a whole lot of variations in the socio-economic factors, viz., age, marital status, religion, caste, relationship with the head of the household, housing condition and occupation. Table 1 below presents the distribution of some of the factors across different categories for the both the districts.

**Table1: Characteristics of Sample Respondents**

	Marital Status	%	Religion	%	Caste	%	Housing Condition	%	Occupation	%
Hooghly	Married	82	Hindu	78.5	General	63.0	Toilet	86	Work-participation Rate	28
	Widow	10	Muslim	21.5	S.C.	30.5	Electricity	77	Primary	23
	Single	8	Other	0.0	S.T.	6.5	Bio-mass	97	Secondary	18
									Tertiary	59
South 24-Pgs	Married	89	Hindu	80.8	General	33.7	Toilet	81	Work-participation Rate	45
	Widow	5	Muslim	19.2	S.C.	62.5	Electricity	68	Primary	18
	Single	6	Other	0.0	S.T.	3.8	Bio-mass	98	Secondary	15
									Tertiary	67

**METHODOLOGY: MIMIC AND SEM**

A research methodology needs to be designed to address three major objectives (a) measuring latent capabilities through observed functionings, (2) assessing the contribution of different socio-economic factors in influencing capabilities and (3) deriving measure for empowerment determined by different levels of capability. We will formulate a Multiple-Indicator-Multiple-Cause (MIMIC) model to address the first two objectives and this will generate some quantifiable

measures of 'latent' capabilities. To address the third objective, we will formulate a structural equation (measurement) model to estimate Empowerment Index, an unobserved phenomena in terms of estimated capability scores, obtained from the MIMIC model.

**The MIMIC Model to estimate Capabilities**

The theoretical framework requires a model which assumes that the capabilities are unobservable latent variables observed through a set of indicators. Principal components, factor analysis and MIMIC (multiple indicators and multiple causes) models - all fall into this line of reasoning. Latent variable models are common in psychology and one can find an excellent coverage of most of these models with applications in Bartholomew and Knott (1999) and Skrondal and Rabe-Hesketh (2004). The principal components estimate the latent variables as linear combinations of the observed indicators chosen in such a way as to reproduce the original data as closely as possible. But this method lacks an underlying theoretical model which the factor analysis offers. In the latter model the observed values are postulated to be (linear) functions of a certain number (fewer) of unobserved latent variables (called factors). Thus it provides a framework for going beyond functionings to reach the capabilities represented by the latent factors. However this model does not have the analytical extension to explain the causes that bring about changes to these capabilities. That analysis is essential for successful designing of policies. It is not enough to be able to measure how much is achieved but it is also important to be able to say how things can be improved.

The MIMIC model (Joreskog and Goldberger, 1975) provides a finer explanation of the phenomenon under investigation as it is not only believed that the observed variables are manifestations of an underlying unobserved latent concept but also that there are other exogenous variables that cause and influence the latent factor(s). This model displays a mixture of econometrics and psychometric themes; it is a restriction of the general model of LISREL (Linear Interdependent Structural Relationship).<sup>6</sup>

6. LISREL started as software and became a method which was used to estimate the structural coefficient of factorial analysis using the maximum likelihood. However the application of this model has become a general procedure to estimate the statistical relationships among latent, unobservable variables and observable ones: the structural equation model (SEM).

MIMIC tries to give an answer to two kinds of questions:

- (a) Measuring latent variables that are either unobservable or not properly measured.
- (b) Estimating a causal link based on maintained hypothesis.

To do this, the MIMIC model consists of two parts:

- I. The measurement model shows how the latent variables are estimated through the observed variables, the so-called *indicators*;
- II. The structural model displays the causal link among the latent variables and the observed *causes*.

In this case the specification of MIMIC model considers three latent capabilities, viz., Health ( $\eta_1$ ), Knowledge ( $\eta_2$ ) and Autonomy ( $\eta_3$ ) where  $\eta_1$  is reflected through three observed indicators like *Food Intake* (INTAKE[ $Y_1$ ]), *Perceived Health status* (HSTAT[ $Y_2$ ]) and the *Status of Reproductive Health* (REPROST[ $Y_3$ ]),  $\eta_2$  is reflected through *Educational attainment* (EDU[ $Y_4$ ]), *Functional literacy* (FLIT[ $Y_5$ ]) and the application of awareness/knowledge in the context of *Family planning* (CONTRA[ $Y_6$ ]) and  $\eta_3$  is reflected through extent of participation in *Actual decision making* (ACTUAL[ $Y_7$ ]), *Perceived freedom* (PRCVD[ $Y_8$ ]) and the extent one is allowed to enjoy an extended space in terms of *Permission regarding mobility* (PERMISS[ $Y_9$ ]).<sup>7</sup>

It has already been mentioned that besides the set of indicators ( $Y$ 's) there is some intrinsic interdependence among latent capabilities ( $\eta$ 's). Thus  $Y_p = Y_p(\eta_i, \eta^{-i})$ , where  $\eta^{-i}$  represent all  $\eta$ 's except  $\eta_i$ .

Thus  $y_p$ , the  $p$ -th indicator variable associated with  $\eta_i$  is influenced by both  $\eta_i$  and  $\eta^{-i}$  and confirms the interdependent nature of capabilities in an ideal set-up. However, MIMIC model, while successful in relating the observed functionings ( $Y_p$ 's) with unobserved capabilities ( $\eta_i$ ), fails to capture the inter-capability interdependence. Here  $Y_p = Y_p(\eta_i)$ . The combined effect of all unobservable  $\eta_i$ 's would be culminated into another unobservable measure, viz., Women empowerment (EMPI).

The influence of each  $\eta_i$  on the final outcome, viz., Empowerment Index (EMPI) is likely to be contingent on different socio-economic and cultural factors. Hence, to posit the social agenda related to

7. PERMISS is contributing negatively towards the attainment of autonomy.

the enhancement of *women's empowerment* in an appropriate policy context, one needs to study the influence of such factors ( $X_i$ 's) on the  $\eta_i$ 's and the analytical frame has to be extended beyond measurement model accordingly. This will take us to the estimation of structural part where seven common causes have been identified as marital status of the respondent (MSTAT[ $X_1$ ]), religion (RELGN[ $X_2$ ]), caste (CASTE[ $X_3$ ]), relationship with the household head (RELNH[ $X_4$ ]), housing condition (HSC[ $X_5$ ]), occupation (OCCUP[ $X_6$ ]) and age of the respondent (AGE[ $X_7$ ]), which are expected to influence the capabilities.

We can now write down the model in formal terms as follows

In the structural model, each of the three latent variables is linearly determined, subject to a disturbance, by a set of seven observable exogenous causes

$$\begin{aligned}\eta_1 &= \gamma_{11}X_{11} + \gamma_{21}X_{21} + \dots + \gamma_{71}X_{71} + \varepsilon_1 \\ \eta_2 &= \gamma_{12}X_{12} + \gamma_{22}X_{22} + \dots + \gamma_{72}X_{72} + \varepsilon_2 \\ \eta_3 &= \gamma_{13}X_{13} + \gamma_{23}X_{23} + \dots + \gamma_{73}X_{73} + \varepsilon_3\end{aligned}$$

So, the latent variable  $\eta_i$  is linearly determined, subject to a disturbance  $\varepsilon$ , by a set of seven observable exogenous causes  $X_j$ ,

i.e.,  $\eta_{ik} = \sum_j \gamma_{ji} X_{jik} + \varepsilon_{ik}$   $i=1, \dots, 3, j=1, \dots, 7, k=1, \dots, n$  (no. of observations)

Each latent variable  $\eta_i$  manifests itself through three observable indicators. In our framework three latent variables determine, linearly, nine indicators  $Y_{pk}$  subject to a disturbance  $u_{pk}$

$$Y_{pk} = \lambda_p \eta_{ik} + u_{pk} \quad p=1, \dots, 9 \quad i=1, \dots, 3 \quad k=1, \dots, n$$

So we can write  $Y = \lambda \eta + u$  (1)

$$\eta = \gamma' X + \varepsilon \quad (2)$$

$$E(\varepsilon u') = 0, \quad E(\varepsilon^2) = \sigma^2, \quad E(uu') = \Theta^2 \quad (3)$$

As we stated before this model is divided into two parts: (1) is the measurement equation of the latent variable and (2) is the structural equation that specifies the causal relationship between the observed exogenous causes and the latent variable. As we know,  $\eta$  is unobserved; we need to combine (1) and (2) to estimate the coefficient of the model. The reduced-form representation is

$$Y = \lambda (\gamma' X + \varepsilon) + u = \Pi' X + v \quad (4)$$

where the reduced-form coefficient matrix is

$$\Pi = \lambda \gamma' \quad (5)$$

and the reduced-form disturbance vectors

$$v = \lambda\varepsilon + u \quad (6)$$

has covariance matrix

$$\Omega = E(vv') = E[(\lambda\varepsilon + u)(\lambda\varepsilon + u)'] = \sigma^2\lambda\lambda' + \Theta^2 \quad (7)$$

As this model characterizes a causal relationship between a latent variable and a set of exogenous factors we can also have a graphical form representation of the model, using the path analysis.

The path analysis is a methodology for analyzing systems of structural equations (Wright, 1921, 1934). A path diagram is a pictorial representation of a system of simultaneous equations. One of the main advantages of a path diagram is that it presents a picture of relationships that are assumed to hold. To understand path diagrams, it is necessary to define the symbols involved.

1. The representation of the variable:
  - the unobserved endogenous latent variable,  $\zeta$ , is in a circle or an ellipse form;
  - the observed variables (either causal variable  $x$ , or exogenous indicator  $y$ ) are in a square box.
2. The representation of the causal link: the causal link among variables is represented by unidirectional arrows, their direction implies the causality of relationship (from the independent to the dependent variable), the strength of these links is shown by the regression coefficient.<sup>8</sup>

Path Diagram of our proposed model is presented in Figure-4.

### The Structural Equation (Measurement) Model to estimate Empowerment

We propose a structural equation (measurement) model to estimate the Empowerment Index, an unobserved phenomena in terms of estimated capability scores, obtained from the MIMIC model, mentioned above. The regression coefficients of the measurement part of the MIMIC model work as weights in constructing the estimated capability scores as weighted averages of indicators. The constituents of latent empowerment index are the estimated capability score of each category, Health, Knowledge and Autonomy and we consider

8. The simple association (without any causal link) is represented by a two-way arrow; the strength of these links is shown by the correlation coefficient. This has not been used in this paper.

the following path diagram of a structural equation (measurement) model to bring out the influence of each capability score in constructing the latent empowerment index (Figure 5)

Figure 4: Path Diagram of MIMIC Model

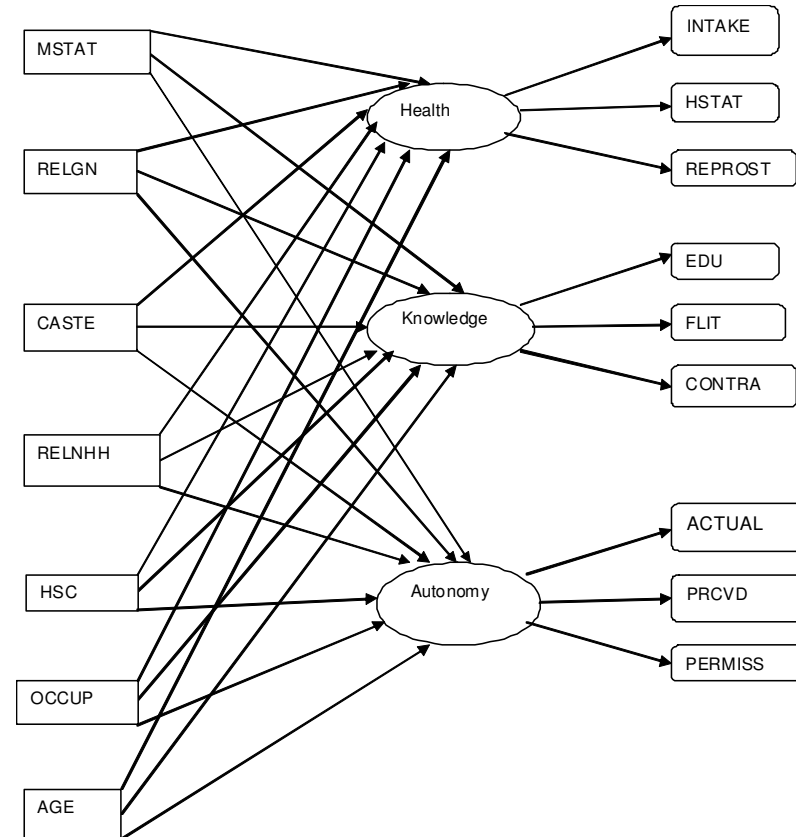
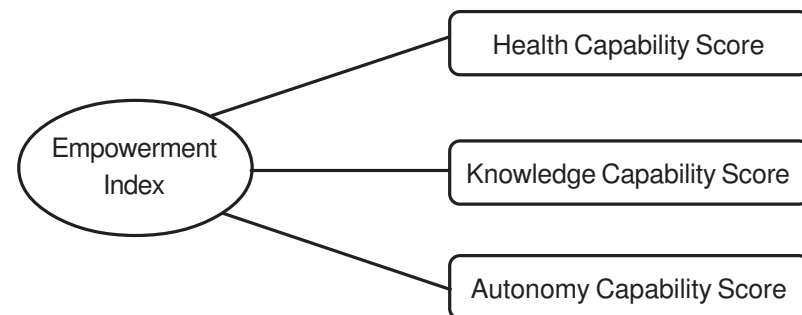


Figure 5: Path Diagram to estimate Empowerment



The regression coefficients, derived from this model will provide the extent of influence of each capability-score in generating a quantifiable measure of empowerment, namely the Empowerment Index.

### DATA ANALYSIS

The analysis is reported in three parts: (a) the measurement part and (b) the structural part of the MIMIC model and finally (c) an estimation of the unobserved empowerment index in terms of estimated capability scores, so obtained, by utilizing the technique to map unobservable into observables.

#### (a) The Measurement part of the MIMIC Model:

**Table 2: Coefficients of the Measurement equation**

Capabilities	Functionings	District : Hooghly	District : 24-Parganas(South)
Health	INTAKE	0.76**	0.43*
	HSTAT	1.22**	0.92*
	REPROSTAT	0.60**	0.54**
Knowledge	EDU	0.74*	0.90*
	FLIT	0.72**	0.76**
	CONTRA	0.46*	0.20**
Autonomy	ACTUAL	0.68*	0.72**
	PRCVD	0.66**	0.55**
	PERMISS	0.81**	0.92**

\*\*significant at  $p \leq 0.05$ , \*significant at  $p \leq 0.10$

The regression results are presented in Table 2. The regression coefficients portray the manifestation of latent, unobservable capabilities through observed indicators. It is interesting to note that demographic characteristics play an important role in the process of translation of latent capabilities into observed functionings. The perceived health-status (HSTST) has been observed to be more influential on latent health capability than INTAKE in both, the indicating the possibility of the presence of undiagnosed health problems and over-reporting of perceived health status.

Educational achievement and Functional literacy are the main constituents of the latent Knowledge capability. Awareness of contraceptive measures depends much on the relative popularity of family planning programs at the district-level and the local characteristics of the sample districts. In our sample the district of Hooghly performs better than South 24-Parganas.

Actual autonomy achievement and perceived autonomy achievement contribute positively in constructing the latent autonomy capability. However, it is interesting to note that permission-requirement from husband or other members of the family for women to move out for economic and social activities plays a crucial role in determining latent autonomy capability. The need to ask for permission makes one's relative position in familial hierarchy more visible and influences her own sense of autonomy within the system.

#### (b) The Structural part of the MIMIC Model

The main regression results are presented in table 3.

**Table 3: MIMIC Model for latent capabilities: Regression coefficients of the structural equation**

District: Hooghly								
		Marital Status	Religion	Caste	Relationship with the Household Head	Housing condition	Occupational status	Age
Capability	Health	-0.20**	-0.05*	-0.25**	-0.007	0.29**	-0.16**	-0.37*
	Knowledge	-0.09**	-0.25**	-0.07**	0.30*	0.23	-0.12*	-0.20*
	Autonomy	-0.15	0.11*	0.07	-0.30**	-0.10*	0.10**	0.30**
RMSEA: 0.08								
District: 24-Parganas(South)								
		Marital Status	Religion	Caste	Relationship with the Household Head	Housing condition	Occupational status	Age
Capability	Health	-0.25**	-0.44**	-0.29*	0.06	0.22	-0.10**	-0.29**
	Knowledge	0.09**	-0.33**	-0.10	0.17**	0.27*	-0.04	-0.11**
	Autonomy	0.22*	-0.09	-0.05**	-0.30*	0.09**	0.20*	0.36**
RMSEA: 0.07								

\*\*significant at  $p \leq 0.05$ , \*significant at  $p \leq 0.10$

It is typical of SEM models to produce large values of chi-square and thus Root Mean Square Error of Approximation (RMSEA) may be a more meaningful measure of goodness of fit. The RMSEA values of our results indicate that the fit of the model is reasonable.

Most of the coefficients are significant; the regression coefficients are the relative strength of the link among the observed causes and the latent variables. In Hooghly, married women enjoy an enhanced capability set compared to widow, separated and unmarried women: married women are better off in case of all the three capabilities considered.

In the South 24-Parganas district, the same effect of marital status has been observed in terms of Health Capability, where married women enjoy an enhanced set uniformly in all the blocks, but in terms of Knowledge and Autonomy, we observe a reverse pattern and married women are under-performers. Actually the district of South 24-Paraganas, which shares the border with the neighbouring country Bangladesh, is distinguishably characterised by migration and this may have a significant impact in determining the relative positions in familial hierarchy. This reasoning will again appear in analysing the influence of relationship with the household head later.

In Hooghly, Muslim women are enjoying lesser Health and Knowledge Capabilities, but autonomy is higher for them. Here poverty seems to play the role of the curtain-raiser and the male members cannot afford to restrict the women-members of the family much and they enjoy an enhanced space especially in the economic sphere. In South 24-Paraganas the impact of religion exhibits a strong result, where Muslim women's capability set is severely downsized

Caste has a significant impact in Hooghly and women from the upper castes enjoy better health capability compared to their lower-caste counterparts. Knowledge capability is also significantly lower for the backward-caste women. But caste couldn't leave any negative impact on autonomy. This confirms the historical fact that in the backward-caste families in rural India, patriarchy doesn't play the role as it plays in upper-caste families, and in some cases, backward-caste women enjoy better autonomy than their higher-caste counterparts. The district of South 24-Parganas exhibits the adverse effects of an extremely caste-divided society. In this district, women from the lower-caste families are under-performers in terms all the three capabilities, Health, Knowledge and Autonomy.

Impact of the relationship with the head of the household provides an interesting observation. Even if the relationship with the head of the household does have a negative impact on Health Capability in Hooghly, it leaves a positive impact on Knowledge Capability. The impact is uniformly negative in both the districts for Autonomy capability, where autonomy is severely downsized for the members who are not either the head or the spouse of the head of the household. This is in conformity with the standard Indian "joint" families where female members suffer from severe contraction of autonomy if she is not either the head or the spouse whereas her relation with the head of the household does not affect her other achievements, namely Health or Knowledge.

Improved housing condition influences both the Health capability and Knowledge capability favourably in Hooghly, whereas the effect turns out to be negative in case of Autonomy. The result is in tandem with the idea that autonomy depends much on the relative position in familial hierarchy and it may not have any link to the housing condition. South 24-Paraganas exhibits a different pattern where housing condition influences the entire capability set positively

Occupational status has a uniform positive effect on autonomy in all blocks of the sample but it's impact on other two capabilities is not so encouraging. Being in work seems to undermine the health of the rural women and since most of the available jobs are menial in nature here knowledge capability has very little to contribute. In fact working women need to negotiate their personal time-allocation between domestic chores and outside imparting an adverse effect on their health capability.

Impact of age is uniform in both the districts. Age affects adversely both Health and Knowledge in both the districts. And autonomy improves with age as the older women enjoy better social status in the decision-making process.

#### **(a) The SEM to estimate Empowerment:**

We will use the regression coefficients of the measurement part of the MIMIC model as weights to derive capability scores of each category, viz. Health, Knowledge and Autonomy and the capability scores will be weighted averages of the respective indicators. The extent of enhancement of women empowerment depends on these capability-scores and in what follows the measurement coefficients will be used



to construct this Empowerment index by following the simple rule of weighted average. The regression coefficients of the measurement model of latent empowerment index are presented in Table 4.

**Table 4: Latent Empowerment and its Measurable Determinants: a SEM Estimation**

Capabilities	Hooghly		South 24-Parganas	
	Coefficient	t-value	Coefficient	t-value
Health	0.37	2.10**	0.39	1.98**
Knowledge	0.44	1.88*	0.42	1.80*
Autonomy	0.29	1.92*	0.30	1.96*
Chi-square	49.27		55.97	
p-value	0.0149		0.01064	
RMSEA	0.056		0.035	
No. of Observations	750		750	

\*\*significant at  $p \leq 0.05$ , \*significant at  $p \leq 0.10$

In both the districts, knowledge capability score contributes more to the attainment of empowerment. It is interesting to note that when we have tried to incorporate dimensions like Health and Knowledge along with autonomy in constituting the empowerment index, the coefficients (factor loading) for health or knowledge are greater than that of autonomy. This is not to undermine the importance of autonomy, but rather to supplement it with the dimensions like health and knowledge so as to get a comprehensive measure for the empowerment index.<sup>9</sup>

Out of a total sample of 1500 adult women 40% have high autonomy index, according to our indexation. Empowerment index is higher for those with high autonomy (3.18) than those with low autonomy (3.06). But empowerment index increases as high autonomy index gets supplemented with high health index and high Knowledge index. Empowerment index is highest (3.42) for those, who achieve high knowledge index and high health index along with high autonomy index.

9. An alternative formulation, as the construction of Human Poverty Index (HPI) with capability scores as components has been explored. HPI maintained the same pattern and order as the Empowerment Index. Although HPI doesn't consider the latent nature of variables and hence the possibility of measurement error, what SEM effectively does.

Again, it is interesting to note that empowerment index is lowest (2.67) for those, who achieve high autonomy index but performs lower in case of health index or knowledge index. Table 5 portrays this phenomenon.

Even when autonomy is low, with high Health and Knowledge, the average EI value becomes 3.26, which is way above the average overall EI and EI for low autonomy group. Again, low Health and Knowledge along with low autonomy is lowering EI to a lesser extent (2.75) compared to the set with high autonomy and low Health and Knowledge (2.67). So, the compromise with autonomy status lowers empowerment status, but the denial of Health and Knowledge capabilities are having substantive marginal effects with serious policy implications.

**Table 5: Value of Empowerment Index (EI) across Capability Groups**

Average EI: 3.13							
Autonomy							
High: 3.18				Low: 3.06			
Health				Health			
High: 3.26		Low: 2.84		High: 3.13		Low: 2.80	
Education		Education		Education		Education	
High: 3.42	Low: 2.90	High: 3.15	Low: 2.67	High: 3.26	Low: 3.00	High: 2.89	Low: 2.75

Note: EI stands for Empowerment Index.

We tried to apply adequate control to neutralize the influence of different socio-economic factors to arrive at a measure for the empowerment index. Once we have our measure for empowerment index, we can calculate empowerment index for different socio-economic categories and sub-categories and in this way we can explain divergent achievements in terms of empowerment within a single category. We have seen the influence of marital status in shaping different capabilities of adult women. Married women achieve higher average empowerment index (3.15) than separated or widow (3.05 and 2.60 respectively), but empowerment index for married women who belong to the lower caste is significantly lower (2.98), whereas married women who belong to the low-age-bracket achieve higher empowerment index (3.24) than the overall average. Again, average empowerment index is highest for the unmarried women (3.35) among different marital status categories, but those unmarried women who belong to the lower caste achieve an average empowerment

index (2.81), which is much lower than the overall average. Average empowerment index is highest for unmarried women, who belong to the higher caste (3.72). Muslim women are less empowered than their Hindu-counterparts across different marital status categories. Table 6 gives a detailed account of empowerment and autonomy across different marital status categories and sub-categories.

It is to be noted that even if unmarried women achieve the highest empowerment index among different marital status categories, Autonomy indicator is relatively low for them. In our sample, 95% of the unmarried women belong to the lower-age-tier and this age becomes an advantage for Health and Knowledge capability while it works in opposite direction for Autonomy capability.<sup>10</sup>

**Table 6: Marital Status, Autonomy and Empowerment**

Total Sample	Marital Status			EI	AI
Count: 1500	Married Count: 1287 EI: 3.15, AI: 2.04	Religion(count)	Hindu (1047)	3.30	2.06
			Muslim (240)	3.01	2.04
		Caste(count)	High Caste (59)	3.34	2.08
			Low Caste (692)	2.98	2.00
		Age (count)	Low Age (642)	3.24	1.45
			High Age (645)	3.05	2.62
	Separated/ Divorced Count: 21 EI: 3.05, AI: 2.41	Religion(count)	Hindu (11)	3.18	2.59
			Muslim (10)	2.94	2.20
		Caste (count)	High Caste (14)	3.21	2.41
			Low Caste (7)	2.73	2.42
		Age (count)	Low Age (6)	3.25	1.51
			High Age (15)	2.98	2.77
	Widow Count: 82 EI: 2.60, AI: 2.73	Religion(count)	Hindu (62)	2.75	2.70
			Muslim (20)	2.56	2.82
		Caste (count)	High Caste(49)	2.46	2.91
			Low Caste (33)	2.82	2.46
		Age (count)	Low Age (11)	2.82	2.40
			High Age (71)	2.57	2.94
	Never Married Count: 110 EI: 3.35, AI: 1.12	Religion(count)	Hindu (75)	3.36	1.16
			Muslim (35)	3.10	1.03
Caste (count)		High Caste(65)	3.72	1.08	
		Low Caste (45)	2.81	1.17	
Age (count)		Low Age (105)	3.36	1.06	
		High Age (5)	3.14	2.46	

Note: EI stands for Empowerment Index and AI for Autonomy Indicator

10. Moreover, for married women there is no health cost due to reproductive obligations.

Since, on the whole, the advantage from the first two counts dominates the overall empowerment index, it assumes a higher value for the unmarried women. So, here the age-pattern of marital status is the main influence on empowerment status and not the marital status per se. Separated women and widows achieve lower empowerment index than married women but their marital status leaves them alone in deciding on various issues of their day-to-day livelihood and their autonomy is higher than that of the married women. It has been uniformly observed across different marital status categories that while lower age may empower, their autonomy is always lower than the senior members of their families.

We have considered the influence of relationship with the household head in shaping different capabilities of adult women. Here also, if we look at the sub-categories, we see that the influence of caste plays an important role. Within each category except mothers, the difference in terms of average empowerment index between higher caste and lower caste is remarkably sharp: daughters who belong to the higher caste achieve an average empowerment index of 3.69, while that of their lower-caste counterparts turns out to be 2.91, higher-caste daughter-in-laws achieve an average empowerment index of 3.42, but their lower-caste counterparts achieve only 3.05. However, the situation reverts in case of mothers: mothers who belong to the lower caste achieve higher average empowerment index (2.57) than those who belong to the higher caste (2.43). It is interesting to note that even if the average empowerment index is highest for daughters (3.36) than other categories, daughters who are at the higher-age-bracket achieve an empowerment index (3.20), which is far below the average. Even when daughters or daughters-in-law achieve high empowerment their autonomy is significantly lower (1.21 and 1.64 respectively) than the head of the household or his spouse (2.13).

**Table7: Relationship with Household Head, Autonomy and Empowerment**

	Relation with the Household Head		EI	AI	
Total Sample Count : 1500	Head/ Spouse Count: 1222 El: 3.15, AI: 2.13	Religion(count)	Hindu (987)	3.27	2.19
			Muslim (235)	3.00	2.11
		Caste(count)	High Caste(567)	3.27	2.19
			Low Caste(655)	2.96	2.07
		Age (count)	Low Age (547)	3.23	1.56
			High Age (675)	3.00	2.66
	Daughter Count: 124 El: 3.36, AI: 1.21	Religion(count)	Hindu (83)	3.56	1.22
			Muslim (41)	2.98	1.18
		Caste (count)	High Caste(72)	3.69	1.83
			Low Caste (52)	2.91	1.24
		Age (count)	Low Age (111)	3.41	1.07
			High Age (13)	3.20	2.32
	Mother Count: 15 El: 2.47, AI: 2.07	Religion(count)	Hindu (14)	2.71	2.07
			Muslim (1)	2.56	2.14
		Caste (count)	High Caste(11)	2.43	2.43
			Low Caste (4)	2.57	2.08
		Age (count)	Low Age (1)	2.74	1.49
			High Age (14)	2.44	2.44
	Daughter-in-law Count: 133 El: 3.25, AI: 1.64	Religion(count)	Hindu (106)	3.56	1.68
			Muslim (27)	3.11	1.57
		Caste (count)	High Caste(69)	3.42	1.68
			Low Caste (64)	3.05	1.61
		Age (count)	Low Age (103)	3.27	1.42
			High Age (30)	3.17	2.42
Relatives/Others Count: 6 El: 3.23, AI: 2.23	Religion(count)	Hindu (5)	3.56	2.53	
		Muslim (1)	2.90	0.74	
	Caste (count)	High Caste(4)	3.31	2.42	
		Low Caste (2)	3.09	1.86	
	Age (count)	Low Age (2)	4.67	1.12	
		High Age (4)	2.51	2.79	

Note: EI stands for Empowerment Index and AI for Autonomy Indicator

Again, age plays a significant role and those who belong to the lower age-bracket always enjoy lower autonomy than their senior members. Table 7 gives a detailed picture of empowerment and autonomy across different relationship categories and sub-categories.

We had an objective of framing an empowerment index, where empowerment is viewed as capability-enhancement. An empowerment index constituted of indices of health capability, knowledge capability and autonomy capability reinstates the importance of other capabilities rather than solely relying on autonomy in explaining empowerment. Again, by using this kind of an index we can explain better the variation in translation of achievements from underlying capabilities due to exogenous factors like marital status, caste, religion, age, etc.

**Table 8: Occupational Status Empowerment - Autonomy**

Occupational Status (Hooghly): 213 (%; EI)				Occupational Status (South 24-Paraganas): 340 (%; EI)			
High (74.18; 3.49)		Low (25.82; 3.43)		High (81.18; 3.06)		Low (18.82; 2.99)	
AI_SOE (%; EI)		AI_SOE (%; EI)		AI_SOE (%; EI)		AI_SOE (%; EI)	
High	Low	High	Low	High	Low	High	Low
88; 3.57	12; 3.32	80; 3.61	20; 3.45	87; 3.10	13; 2.99	80; 3.00	20; 2.88
AI (%; EI)		AI (%; EI)		AI (%; EI)		AI (%; EI)	
High	Low	High	Low	High	Low	High	Low
59; 3.24	41; 3.83	46; 3.18	54; 3.64	44; 3.09	56; 2.97	23; 3.11	77; 2.95

Note:

- AI\_SOE: Autonomy in terms of spending own earning
- AI: overall index of autonomy
- EI: Empowerment Index

Occupational status<sup>11</sup> influenced all the three capabilities, but the impact was more pronounced on autonomy capability. The impact on the other capabilities didn't exhibit any uniform pattern. Moreover,

11. We measure occupational status in terms of pattern of work and type of payment. Sample women were asked about the pattern of work, whether the work is a permanent, seasonal or purely temporary in nature. On the type of payment, mode of payment like cash or kind was asked.

the impact depends much on the local conditions. Keeping that in mind we try to analyse the district-wise pattern of association between occupational status vis-à-vis empowerment. Depending on the regularity of payment, type of payment and duration of employment the occupational status has been classified into high (regular) and low (irregular). The control over one's own earning was also recorded. A sub-index of autonomy status has been derived on the basis of the extent of this command (AI\_SOE). The value of the overall autonomy index (AI) and that of AI\_SOE have been used to subdivide the sample for both districts into high and low sub-groups. For each subcategory the average value of empowerment index (EI) has been reported in Table 8.

Though in South 24-Parganas both the work participation rate as well as high status employment among the sampled women are higher compared to that in Hooghly, the autonomy over spending one's own earned income is almost same (more than 80%) in both districts regardless of the employment status. Moreover, those who earn but are not allowed to spend according to their free-will are enjoying lower value of EI (empowerment index) in general. Another interesting point to note is that across the two sampled districts the picture related to the association between AI and EI is not that uniform.

This reinstates our claim of considering an empowerment index, constituted of capability scores on several dimensions, like health, knowledge and autonomy with multi-dimensionality in each constituent component. A sole emphasis on autonomy misses the fact that autonomy may be context-specific and an improvement in autonomy may not necessarily empower. A specific context and/or an exogenous factor may improve a specific autonomy, whereas overall autonomy may be lower and autonomy alone fails to reflect empowerment, unless supplemented by other dimensions like health or knowledge.

### **CONCLUDING OBSERVATIONS**

This paper tries to offer a comprehensive measure for empowerment where empowerment is viewed as capability-enhancement. A critique of the idea of considering only the autonomy-aspect to explain empowerment has been presented and an attempt has been made to supplement autonomy with other dimensions like health and knowledge in shaping empowerment. Women empowerment takes

place when women challenge the existing social norms to effectively expand real freedoms in terms of operational space that they enjoy. Empowerment leads to enhancement of social space of the individual in different forms by encouraging her to attain power within through social networking (power with) and enhancement of her quality of life (power to perform certain acts). The Capability approach by focusing on what people actually can do makes visible the inequalities women suffer in the family and outside environment and the complex connections between the two and a poor woman's own sense of worth. This paper considers three basic dimensions: health, knowledge and autonomy and tries to offer a measure for empowerment index, constituted of capability scores on those dimensions.

The capabilities by definition cannot be directly measured and what can be measured, are the functionings, namely, the achievements in each dimension. We consider a particular form of structural equation modelling, called Multiple Indicator Multiple Cause (MIMIC) model which is useful in addressing all the three measurement issues : 1) it works within the multidimensional framework and considers a mixture of both aggregative and non-aggregative strategies<sup>12</sup>, 2) it maintains the simultaneous and interdependent structure by its very nature: and 3) considering capability as a latent variable, manifested through a set of observed achieved functioning and the influence of several exogenous causes affecting capabilities it pays proper attention to the analytical structure of the capability approach. To estimate our empowerment index, capability scores of each category, Health, Knowledge and Autonomy, work as constituents and we consider a structural equation (measurement) model to bring out the influence of each capability score in constructing the latent empowerment index.

The paper explored the impact of local characteristics and demographic features in shaping the attainment of capabilities (and hence empowerment) and analysed our constructed empowerment index for all the categories (and sub-categories) within each local and socio-economic environment. We used the empowerment index to validate the fact that although autonomy is an important constituent of empowerment, autonomy alone cannot explain empowerment in a

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12. Even if achieved functionings have been considered in a non-aggregative fashion, their contribution in constituting the latent capability leaves room for aggregation in the space of capabilities.

comprehensive manner. The results demonstrated while that high autonomy along with high attainment in other capabilities definitely improves the empowerment index, considerable empowerment-attainment may be observed even with low autonomy but with higher achievements in other capabilities.

Again, capabilities are the feasible choices that one faces in life and functionings are the outcomes. Therefore it is not difficult to imagine that there could be more than one achievement level for the same capability level. Not only do capabilities interact among themselves but also with other elements representing the socio-political setup. For some elements belonging to the latter group, there are feedback effects (thus making them jointly dependent) whereas for others the causal link operates in one direction (making them purely exogenous). An econometric model which effectively accommodates this simultaneously can capture the extent of causality in a more comprehensive way. Even if MIMIC-type of Structural-equation model, developed so far, cannot address joint-interdependence, still it tries to move one step ahead in operationalising capability approach in a meaningful way. Estimating Empowerment Index by using unit-level NFHS-III data may be a good attempt in that direction.

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**Appendix A**

**List of Unobserved capabilities, Observed Functionings and their determinants**

Unobserved Capability	Observed Functioning	Determinants of Observed Functionings		Socio-economic Factors (same for all capabilities)
		Perceived Factors	Institutional Factors	
Health	Health-achievement Indicator	<ol style="list-style-type: none"> <li>1. Status of overall Health</li> <li>2. Status of Morbidity</li> <li>3. Status of Self Care</li> <li>4. Status of Pain and Discomfort</li> <li>5. Status of vision</li> <li>6. Status of Sleep and Energy</li> <li>7. Status of Affect</li> <li>8. Number of abortions</li> <li>9. Number of children born(dead)</li> </ol>	<ol style="list-style-type: none"> <li>1. Intake of Milk</li> <li>2. Intake of Pulses.</li> <li>3. Intake of vegetables</li> <li>4. Intake of fruits</li> <li>5. Intake of eggs</li> <li>6. Intake of chicken/meat</li> <li>7. Type of maternity services received</li> <li>8. Type of professional services during delivery</li> <li>9. Awareness of family planning</li> <li>10. Practice of family planning</li> </ol>	<ol style="list-style-type: none"> <li>1. Age</li> <li>2. Religion</li> <li>3. Caste</li> <li>4. Marital status</li> <li>5. Relationship with the head of the household</li> <li>6. Housing condition</li> <li>7. Occupational Status</li> </ol>
Knowledge	Achieved Education	<ol style="list-style-type: none"> <li>1. Level of Education</li> <li>2. Highest Grade achieved</li> <li>3. Capacity to read and write</li> <li>4. Capacity to read newspapers/magazines/books</li> <li>5. Frequency of reading newspapers/magazines/books</li> </ol>	<ol style="list-style-type: none"> <li>1. Mother's education level.</li> <li>2. Father's education level (if unmarried) Or Husband's education level</li> <li>3. Possibility of forced termination.</li> <li>4. Availability of adult education center.</li> </ol>	
Autonomy	Achieved Autonomy	<ol style="list-style-type: none"> <li>1. Complete lack of autonomy in decision making (External pressure : to get rewards or to avoid punishment)</li> </ol>	<ol style="list-style-type: none"> <li>1. Decision on cooking.</li> <li>2. Decision on health care</li> <li>3. Decision to visit siblings/friends</li> </ol>	<ol style="list-style-type: none"> <li>1. Age</li> <li>2. Religion</li> <li>3. Caste</li> <li>4. Marital status</li> </ol>

*Table (contd...)*

Unobserved Capability	Observed Functioning	Determinants of Observed Functionings		Socio-economic Factors (same for all capabilities)
		Perceived Factors	Institutional Factors	
		<ol style="list-style-type: none"> <li>2. Partial lack of autonomy in decision making (To get approval or to avoid guilt)</li> <li>3. High level of autonomy in decision making (Thoughtfully considered or fully chosen)</li> </ol>	<ol style="list-style-type: none"> <li>4. Reproductive decisions</li> <li>5. Decision on purchasing jewellery</li> <li>6. Decision on purchasing major household items.</li> <li>7. Decision on repairing the house.</li> </ol>	<ol style="list-style-type: none"> <li>5. Relationship with the head of the household</li> <li>6. Housing condition</li> <li>7. Occupational Status</li> </ol>