A Structural Model of Female Empowerment

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Abstract

This paper proposes a structural model for measuring female empowerment in a capability perspective. Empowerment is defined as the decision-making ability of a woman regarding her strategic and non-strategic life choices. This is characterized by resources, values/traditions, and decision-outcomes. These three elements interact into a system of structural equations. Resources are represented by a collection of exogenous causes enhancing the decision-making ability. A latent variable is specified to differentiate between feasible and actualized decision-making. The model is applied to study Cambodian female empowerment in 2005. Stochastic dominance analysis is used to compare the empowerment status of women across dimensions.

Keywords: Female Empowerment, Capability Approach, Structural Equation Modelling, Stochastic Dominance, Cambodia.

JEL classification codes: C3, I21, I31, O54.

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1 Introduction

The last two decades the development agenda has called attention to the promotion of gender equality and women's empowerment as a policy goal. The Beijing Platform for Action, the Cairo Programme for Action and the Millennium Declaration, among other international development conferences, have greatly contributed to this concern. These platforms have acknowledged the intrinsic and instrumental importance of female empowerment and thus, their profound implications for public policy. There has consequently been a proliferation of interdisciplinary studies from sociology, anthropology and economics aimed at conceptualizing, measuring and operationalizing women's empowerment. These studies have also focused on the impact of policies on female empowerment and of women's empowerment on other desired policy objectives (Malhotra et al, 1998-2004; Narayan, 2005). The empowerment of women has become a prior concern and a necessary condition for poverty reduction (Narayan, 2002).

From the conceptual standpoint female empowerment is characterized as a complex, multi-faceted, context-dependent notion. It is defined as a dynamic process rooted in the idea of human agency and choice. As a process empowerment means the progression from a state of disempowerment, a change where women themselves are the significant actors (human agency) having the possibility to choose among real alternatives (Kabeer, 2001; Sen, 1999; Rowlands, 1995; Nusbaum, 2003; Malhotra et al, 2002). Kabeer (2001) drawing on Sen's (1999) Capability Approach furthers this definition. She makes a distinction between strategic and non-strategic (less consequential) life choices. The strategic class refers to those choices that are critical for the woman to live the life she wants to lead, such as marriage and reproduction. And therefore shape the woman's non-strategic choices. The definition provided by Kabeer becomes very useful for the operationalization of female empowerment. She offers a framework that triangulates the main components characterizing choice: resources (in a broad sense) that pre-condition the ability to choose, agency understood as the decision-making ability of women, and achievements or outcomes. As well, she highlights the role that preferences, values and cultural norms play in the woman's ability to choose.

Many studies had attempted to apply this definition to the empirical field while providing a universalist approach that captures these complexities on one hand, and allowing for comparability across different population groups on the other (Malhotra et al, 2002; Alsop et al, 2006). Although they have considerably contributed to the selection of relevant dimensions and level of analysis (household, community or broader arenas) they are silent about the nature of the dimensions (strategic or not), and the interactions among achievements (direct indicators), resources (in a broad sense), and values/traditions in the measurement exercise. Moreover they found dif-
ficulty in measuring the agency aspect characterizing empowerment and limit their studies to the measurement of decision-outcomes.

From the economics perspective the study of female empowerment draws mainly on the literature of intra-household gender dynamics. This literature has studied a variety of models comprising the simplest "unitary model" (Becker, 1965a, 1965b) to alternative models of household behavior that better incorporate the complexity of gender relations. Cooperative collective bargaining ones, have become the reference (cf. Haddad, et al 2000; Quisumbing, 2003; for a survey). According to these models intra-household welfare could be affected by improving the exit or threat options of the disadvantaged groups. The threat options reflect the well-being status of the household member if cooperation fails. Thus, a woman's bargaining power within the household is defined by the strength of her threat options. An improvement of the her fall-back position would lead to an enhancement of her decision-making ability. These exit options are determined by, for instance, the woman's educational level, personal wealth or parental education, variables termed as "extra-household environmental parameters" (EEPs)(McElroy, 1990). It is by the means of the EEPs that policy interventions may improve the decision-making ability of women. However these models fail to accommodate the complexities of gender relations beyond the household. They have little to say about the role played by social norms, culture and perceptions in the bargaining process (Quisumbing, 2003, Agarwal, 1997).

This paper relates these two branches of the literature. It proposes a structural model for measuring female empowerment in a capability perspective, which is theoretically supported by the intra-household gender dynamics literature. Empowerment is defined as the decision-making ability of a woman regarding her strategic and non-strategic life choices. This is characterized by resources, values/traditions, and decision-outcomes. These three elements interact into a system of structural equations. A latent variable is specified to differentiate between feasible and actualized decision-making. Three types of decisions are considered: "self" and "familial" strategic life choices, and non-strategic life choices. Each of them is imperfectly measured by observed indicators of actualized decision-outcomes, and influenced by values and traditions. Resources are represented by a collection of exogenous causes enhancing the decision-making ability. This holistic approach of constitutive elements provides better insights for intra-family allocative processes, and successful development assistance programmes. The model is applied to study Cambodian female empowerment in 2005. Stochastic dominance analysis is used to compare the empowerment across dimensions.

The paper is structured as follows. Section 2 discusses the conceptual framework according to the capability approach, and the intra-household gender dynamics literature. Section 3 presents the model that relates these two conceptual stand points.
The data and the empirical application are described in Section 4. In section 5 the results of our estimated model, and those of stochastic dominance analysis are presented. Section 6 concludes.

2 The Conceptual Framework

2.1 Empowerment in a Capability perspective

Conceptualizing female empowerment has been a challenging task for the mainstream literature of gender development. As an important goal in its own right but also as a mean for other goals, empowerment has been conceptualized from a variety of disciplines. Studies from anthropology, economics, demography and sociology define empowerment as some form of choice, control or power (Malhotra et al., 2002). However the relation between power and choice is far from being simple and unique. As a socially constructed phenomenon it is shaped by cultural norms, traditions, as well as, values and preferences. To capture these complexities one needs a definition that holistically conceptualizes empowerment. One avenue in this direction is to ground such conceptualization in the Capability Approach (CA). The CA (cf. Sen, 1999) is a choice-based framework concerned with the expansion of real opportunities (effective choices) that one has in life. It is precisely the enlargement of effective opportunities that female empowerment ought to be concerned with. The role that traditions and cultural norms play in gender relations make of women one of the most disadvantaged groups, one whose ability to choose is more constrained than any other group.

Among the many attempts in the literature seeking this choice characterization the one offered by Kabeer (2001) is found to be the reference (Malhotra et al., 2002). Her definition, rooted in the Capability Approach, equates power with choice, with power denoting the ability to make choices. In this perspective, those that do not have this ability are considered to be disempowered. Empowerment is therefore conceptualized as a process, a progression from a state of disempowerment, where women actively involved (human agents) acquire the ability to choose. The idea of process entails a characterization of potential vis-à-vis actualized choice. In other words, a differentiation between a woman’s decision-making ability (potential choice or degree of empowerment) and her decision-outcomes (actualized choice). The gap between these two choice concepts might partly explain why many empirical studies do not fully succeed in adequately measuring empowerment. Often these focus on decision-outcomes as indicators of empowerment and forego the potential side (Kabeer, 1998). The conceptualization of empowerment, therefore should

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be viewed as a transformative mechanism. To be empowered is to improve one's
decision-making ability which, other things being equal, will lead to greater decision-
outcomes. However, the relation between potential and actualized choices is not an
isolated one. It is shaped by the action of power through the woman's values and
preferences and through the institutional norms (traditions) governing her life.

On one hand, these institutional constraints reflect the principles of distribution
and exchange of the resources. Resources comprise economic, human and social
factors that pre-condition the ability to choose. These are enhancing factors of po-
tential choice resulting from the social relationships that the woman fosters within
her family, her community, or other institutional domain. Her access to these re-
sources is defined by the norms and rules that regulate distribution and exchange.
This confers certain actors the decision-making authority regarding resource allo-
cation. For a woman within the institutional domain of the family, with strong pa-
triarchal and patrilineal structures, it is the head of the household (usually a male
member) who decides on her access to and allocation of resources, whether these
are in the form of material resources, say land, or in the form of human resources,
say access to education and/or health care. The important role that resources (in
a broad sense) play in the decision-making ability of women should be accounted
in the measurement of empowerment. Policy interventions interested in improving
women's potential choice could concentrate their efforts on the enhancement of fe-
male access to resources.

On the other hand, the power-constraints through the woman's values and pref-
ereences on her choices reflect the woman's "self" denial of choice. Although the
main source of such denial comes from the capacity of a dominant group (male for
instance) to override the agency of another ("power over") values and preferences
constitute another important source. In societies with hierarchical gender struc-
tures women tend to internalize their social status as persons of lesser value. Their
values and preferences might not necessarily reflect their own. Instead these will re-
fect the values of the institutions in which they live. It is not unexpected, therefore,
that in many situations women will "choose not to chose" and even go against their
own well-being or support female discrimination. Appealing examples are the op-
pressive exercise of mothers-in-law over daughters-in-law, preference for sons and
practices associated with daughter discrimination in south-asian societies (Dreze
and Sen, 1995; Dyson and Moore, 1983). Values and preferences therefore need to
be included in the measurement exercise of empowerment.

Finally, a holistic conceptualization of empowerment would not be complete
if one does not differentiate among the type of choices that are meaningful for a
woman's life. The agency-component of empowerment, previously discussed, points
to those decisions that raise the critical consciousness of women regarding those tra-
ditions, norms that are taken for granted, but that have a negative impact on their
own well-being or that support forms of gender discrimination. This is an addi-
tional feature in Kabeer’s (2001) definition. She differentiates between the conse-
quential significance of choices on a woman’s life and categorizes them as first-and
second-order choices. The former refers to strategic life choices, those are critical
for a woman to live the life she wants to lead. These are choices in critical arenas
such as marriage, reproduction or friendship that shape the second-order group.
This ultimately refers to important decisions for a woman’s quality of life but do
not constitute her defining parameters. Additionally, the consequential significance
among either of these two groups is not uniform. Basu and Koowal (2001) argue that
a woman’s full-decision making regarding the household or other family members
is not an indicator of empowerment, but instead a sign of full responsibility. This
discussion led them to separate between decisions that concern the woman herself
(selfish type), as closer measures of empowerment, from those decisions that might
improve their technical ability to become better mothers of wives (technical respon-
sibility). Though their definition of empowerment differs from the one taken in this
paper, we agree that is important to disentangle between the selfish and technical
type of decisions, whether these are within the strategic or within the non-strategic
class.

From the above discussion we can conclude that empowerment is a complex,
multi-faceted, context-dependent notion. It is a dynamic process rooted in the idea
of human agency and choice. Its conceptualization and measurement, requires a
general framework for capturing the interrelations among its constitutive elements:
resources, values/preferences, decision-outcomes. Access to new resources may
increase the range of feasible choices for women, but they are unlikely to lead to
greater decision-outcomes uniformly. Instead they will vary according to the woman’s
(shaped) values and preferences and the institutional norms that govern her life. As
well, an improvement in a woman’s decision-making ability varies within the type
of choice considered. Strategic and less consequential life choices are both impor-
tant, although the former frames the latter. This paper proposes a latent variable
framework for accounting all these complexities.

2.2 Empowerment in Intra-household gender dynamics

The second conceptual standpoint that has been used for quantifying female em-
powerment comes from the literature of intra-household gender dynamics. Many
decisions that affect the well-being of individuals are made within families or house-
holds. Their members have varying and often conflicting preferences and interests,
as well as, differential abilities to pursue and realise those interests. Households
function as producers, investors in human and physical capital, and as consumers,
where individual decisions concerning both labor, and resource allocation are made.
Evidence from many regions across the world reveals persistent gender inequalities in the distribution of household resources and tasks (Quisumbing, 2003).

The economic literature has tried to address such complexities, within and outside the game-theoretic format. The starting point was a critique of Becker's (1965, 1981) unitary model of the family. This model also referred as the common preference model, treats the household as a single entity in relation to both consumption and production. It assumes that all household resources and incomes are pooled, and that resources are allocated by an altruistic household head who represents the household's tastes and preferences and seeks to maximize household utility. An alternative to this model, considered to be unrealistic, comes from collective models. These cover cooperative models, non-cooperative models or a mix of the two. Collective models are the broader class of alternative models. They focus on the individuality of the household members and possible differences in preferences. Their only assumption is that the outcome of the decision process is Pareto efficient, nothing is assumed \textit{a priori} about the nature of the decision process. The cooperative and non-cooperative models are two subclasses of collective models that additionally impose a structure on the decision process of household members. Broadly speaking the decision process is characterized by some form of "bargaining".

Within the bargaining approach, intra-household interaction contains elements of cooperation and conflict. Household members cooperate insofar as cooperative arrangements make them better-off than non-cooperation. Among the set of cooperative outcomes, some would favor certain members, leading to a conflict between them.

In the economic literature female empowerment has been conceptualised and empirically measured within this bargaining perspective. Her degree of empowerment is viewed as her bargaining power within the household. This is defined by a range of factors, in particular, the strength of her fall-back position, also termed as the "threat point". The threat point (exit option) refers to the outside options that determine how well-off she would be if cooperation failed. Thus to improve the empowerment of females within the household one needs to improve their fall-back positions. Within this literature social planners and policy deciders interested in promoting gender empowerment should focus on the determinants underlying female's bargaining power.

Studies of cooperative bargaining models have deeply explored the possible determinants of women's fall-back positions within the households. In this kind of models the assumption of common preferences is relaxed while retaining that of income pooling. Manser and Brown (1980) and McElroy and Horney (1990) pioneered the application of these models. Household members thus bargain over the
use of pooled income, the outcome depending on their bargaining power, determined by their respective fall-back positions. It is therefore envisaged that intra-household welfare could be improved by improving the exit options of the disadvantaged groups. To be successful one needs to identify the exit options.

Two sub-classes of outside options are often addressed. The first class is separation from the household (Manser and Brown, 1980; McElroy and Horney, 1991). The second is the so-called separate spheres, hypothesized by Lundberg and Pollak (1993). The separate spheres model is a mixed of cooperative and non-cooperative models. It points out that for many small decisions in a marriage divorce is not a credible threat should cooperation fail. Rather people may remain within the marriage but withdraw into separate spheres of activities, say, a division of labor based on socially recognized gender roles that emerge without explicit bargaining. In other words a non-cooperative solution is used as a threat point in a cooperative game.

McElroy (1990) argued that the determinants of exit options should be viewed as extra-household environmental parameters (EEP). Among them he identifies parental wealth (husband's and wife's), non-wage income, and the legal structure governing marriage and divorce. Agarwal (1997) suggests that female bargaining power in rural areas would depend on eight factors. At the household level, these comprise ownership of and control over assets (land), access to employment, and other income-earning means, educational status and legal literacy. At the communal level, she suggests access to traditional social support systems such as kinship, support from NGO's and the state as relevant factors determining female decision making. She also highlights the influence of social norms and perceptions in the bargaining process.

Within the non-cooperative class of models the assumptions of Pareto efficiency, income pooling, and enforceable and binding contracts are relaxed. They allow for differing preferences and individual production decisions (Ulph, 1988; Carter and Katz, 1997). However, we do not find an explicit identification of the determinants of the exit options. For this reason we do not describe them in more detail.

It is important to note that the intra-household resource allocation models, previously described, follow a classical utilitarian approach, that contrasts the capability one taken in this paper. Thus, there is a conceptual difference regarding the evaluative space of our study: ours being capabilities, this is feasible decision-making of women. We include it because this literature has been the reference framework in economics for the study of gender empowerment.
3 The Model

In this section we present the specification of the multiple-indicators multiple-causes (MIMIC) model proposed to measure female empowerment. MIMIC models belong to a broader class of structural equation models (SEM’s). These are regression equations with less restrictive assumptions that allow measurement error in the explanatory as well as the dependent variables. The equations contain observed and unobserved or latent random variables. SEM’s encompass and extend regression, econometric and factor analysis procedures. They have been widely applied in social psychology, sociology, and also in economics (Bollen, 1989; Bollen and Curran, 2006). More recently they have been used in well-being and poverty studies (Kuklys, 2005; Krishnakumar, 2007; Krishnakumar and Ballon, 2008). Pitt et al, (2006) used a MIMIC model to analyse the impact of a micro-credit program participation on empowerment.

The MIMIC model offers a general framework that relates the two conceptual standpoints discussed in the previous section. Female empowerment is defined as the decision-making ability of a woman regarding her strategic and non-strategic (less consequential) life choices. This is characterized by resources (EEP’s) that precondition the ability to choose, values/traditions, and decision-outcomes. These three elements interact into a system of structural equations. Resources (EPPs) are represented by a collection of exogenous causes enhancing the decision-making ability. The strategic decisions are further decomposed into "self" and "familial" life choices. Self choices refer to decisions that concern the woman herself, while the familial ones refer to altruistic decisions involving mainly her children.

To differentiate between feasible and actualized decision-making we treat female empowerment as latent. This comprises three (latent) dimensions of empowerment: self and familial strategic choices, and non-strategic life choices. Each of these latent variables is partially measured by a vector of observed indicators of decision-outcomes. These indicators are taken to be manifestations of the latent variables. This is, they reflect a 'transformative mechanism' of feasible decision-making into actualized decisions, which is influenced by values/traditions. Hence in the MIMIC model there is a 'measurement model' (equation 2) which specifies how the observed endogenous indicators are determined by the latent empowerment dimensions, and by values/traditions (assumed exogenous).

The influence of resources (EEP’s) is specified by a second set of equations, called 'structural model'. This specifies the relationship between each empowerment dimension and its causes. These causes are resource variables (exogenous) that precondition the ability to choose, and enhance feasible decision-making (equation 1).
3.1 Model specification

The statistical representation of SEM’s has been approached by several authors (Joreskog, 1973; Joreskog and Goldberger, 1975; Muthen, 1984; Bollen, 1989; Muthen and Muthen, 1998-2004). Among these we find two broad classes of models. The full multivariate normality approach, and the conditional normality one. The former assumes that all variables in model, exogenous and endogenous, are multinormally distributed. The latter relaxes this assumption and assumes multivariate normality only for endogenous variables. In this paper we follow the conditional multivariate approach proposed by Muthen and Muthen (1998-2004) as full multivariate normality is often not realistic.

Equation 1 formalizes the ‘structural’ model:

\[ \eta_i = \alpha + \Gamma x_i + \zeta_i \]  

where \( \eta_i \) is a \((3 \times 1)\) vector representing the degree of empowerment of the \( i \)-th woman in each of the 3 dimensions; \( x_i \) is a \((k \times 1)\) vector of \( k \) exogenous factors representing the causes of empowerment that pre-condition the ability to choose, and enhance feasible decision-making; \( \zeta_i \) is a \((3 \times 1)\) vector representing the unknown omitted factors in the explanation of \( \eta \) that are not explicitly modeled in the equation (random errors); \( \alpha, \Gamma \) are the corresponding coefficient vector and matrix.

The observed indicators of decision-outcomes in the different empowerment domains can either be continuous or qualitative variables. In order to be able to treat these two types in a uniform way we introduce a response variable \( y^*_i \). With continuous indicators the response variable equals the observed indicators. Whereas with qualitative data the response variable is latent and linked to the observed variable through a qualitative response model. This gives the following measurement equations:

\[ y_i = \nu + \Lambda \eta_i + Dw_i + \epsilon_i, \]  

\[ y_{ij} = y^*_{ij}, \]  

when the observed indicator is of a qualitative nature, we write:

\[ y_{ij} = c, \quad \text{if} \quad \tau_{j,c} < y^*_{ij} \leq \tau_{j,c+1} \]
It is further assumed that the observations are centered without loss of generality, and that the disturbances across individuals are homoscedastic and non-autocorrelated, with $V(\zeta_i) = \Psi$ and $V(\epsilon_i) = \Theta$.

Since $\eta_i$ is unobserved it is impossible to recover direct estimates of the structural parameters $\alpha, \Gamma$. However if we combine equations (1) and (2) and solve for the reduced form (RF) representation, we can write:

$$y_i^* = \pi + \Pi_0 x_i + \Pi_1 w_i + \delta_i,$$

where $\Pi_0$ and $\Pi_1$ are the reduced form coefficient matrices, and $\delta_i$ is the reduced form disturbance. Once the reduced form parameters are estimated, estimates of the structural parameters are recovered. It is interesting to note that the RF representation of equation (5) characterizes the economic relation that game-theoretic models estimate for quantifying female bargaining power within the household. Anderson and Eswaran (2009) examined the determinants of female autonomy within households in Bangladesh. Using a cooperative model a similar RF representation was used to represent female bargaining. Among the determinants used in their study we find age, education, and value of assets of both husband and wife.

### 3.2 Estimation

The fundamental hypothesis for a structural equation model is that the covariance or correlation matrix of the observed variables $\Sigma^s$, may be parametrised based upon a given model specification with parameter vector $\theta$. A general form of a measure of fit between $\Sigma^s$ and $\Sigma(\theta)$ is given by:

$$F(\theta) = (s - \sigma)^\top W^{-1} (s - \sigma)$$

where $s$ is a vector of the elements of the lower half of $\Sigma^s$, and $\sigma$ is the corresponding vector of the lower half of $\Sigma(\theta)$. $W$ is a positive define matrix. When weighted least squares is used $W$ is formed as an estimate of the asymptotic covariance matrix of $s$.

Following Muthen, (1984) conditional normality assumptions the model is estimated by minimizing the distance between the sample and theoretical moments, using first and second conditional order moments. The variance of the estimates is corrected using the well-known ‘sandwich’ formula under non-normality (quasi-maximum likelihood, cf. White, 1982; Gouriéroux, Monfort and Trognon, 1984).

Once the parameter estimates are obtained, the final step consists in the estimation of the vector of latent variables for each woman. These are called factor scores.
and could be estimated by various methods. Following the empirical Bayesian approach, which is a standard procedure suggested in the related literature (cf. Skrondal and Rabe-Hesketh, 2004), the latent factors are estimated by their posterior means (modes) given the sample, replacing the parameter values by their estimates.

4 The Data

The data used in this study are taken from the Cambodian Demographic Health Survey (DHS) of 2005. This survey collected nationally representative data on reproductive health issues from women 15-49. It also provides information on the following topics for ever-married women: the spouse selection, spouse's education and age, decision-making outcomes, education, domestic violence, respondent's attitudes on gender roles and on children's education and health care, labor force participation, parental education, control of earnings and expenditures, awareness of AIDS, and media exposure. For the purposes of this paper the sample was limited to all married women aged 15-49, having at least one living child. The sample size in our study is 2385 women.

The indicators used for the measurement of each empowerment dimension were selected on the basis of previous empirical applications and data availability. Our selection draws on the studies of Kishor (2000), Jejeebhoy (2000), Malhotra et al (2002), Basu and Koolwal (2001). Table (1) shows a summary of the indicators used in our analysis. For the self strategic empowerment dimension, we chose indicators that reflect decisions on marriage, access to health care, and freedom of movement. The familial strategic life choices include indicators of decisions about having another child, and about children's education and access to health care. The non-strategic empowerment dimension corresponds to "economic choices". These are measured by indicators of decisions about participating in large household purchases (economic decision-making), and daily need purchases (domestic decision-making). These two indicators are complemented by a third indicator of decisions on labor force participation. In each case the respondent was asked whether the decision has been the husband's/someone else's, or has been made with husband or someone else, or was entirely hers. This is represented by a three-categorical ordered variable.
Table 1: Distribution of Decision-outcome indicators (in %)

<table>
<thead>
<tr>
<th>Dimension/Indicator</th>
<th>Husband's or someone else's</th>
<th>With husband or someone else</th>
<th>Respondent's</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Self strategic choices</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spouse selection</td>
<td>15.9</td>
<td>63.5</td>
<td>20.6</td>
</tr>
<tr>
<td>Deciding on obtaining health care</td>
<td>3.4</td>
<td>35.8</td>
<td>60.8</td>
</tr>
<tr>
<td>Deciding about visiting family and friends (freedom of movement)</td>
<td>6.4</td>
<td>63.8</td>
<td>29.7</td>
</tr>
<tr>
<td><strong>Familial strategic choices</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deciding on having another child</td>
<td>7.3</td>
<td>79.2</td>
<td>13.5</td>
</tr>
<tr>
<td>Participating in children's access to health care</td>
<td>3.1</td>
<td>76.1</td>
<td>20.8</td>
</tr>
<tr>
<td>Participating in children's education</td>
<td>7.3</td>
<td>81.1</td>
<td>11.5</td>
</tr>
<tr>
<td><strong>Second-order economic choices</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participating in economic decision-making</td>
<td>18.0</td>
<td>65.6</td>
<td>16.4</td>
</tr>
<tr>
<td>Participating in domestic decision-making</td>
<td>3.8</td>
<td>16.2</td>
<td>80.0</td>
</tr>
<tr>
<td>Deciding whether to work or not</td>
<td>23.6</td>
<td>56.7</td>
<td>19.6</td>
</tr>
</tbody>
</table>
Among the strategic decision-outcomes Table 1 shows that a higher proportion of women have the final say on decisions about their access health care (60.8%). Decisions about spouse selection and freedom of movement are mainly carried out with the husband or someone else (around 63%). However there are 15.9% of women who do not intervene in decisions of spouse selection. This lower proportion reflects cambodian traditions of arranged marriage. In the case of self strategic decision-outcomes we observe that decisions about having a new child, and about children's education and access to health care are mostly jointly taken (79.2%, 81.1% and 76.1%, respectively). Although 20.8% of children's health care decisions are taken exclusively by the mother. Finally, for second-order economic choices Table 1 shows that 80% of women have mainly a final say on small household purchases, whereas only (16.4%) decide alone about big household purchases. These decisions are mostly taken with husband or someone else (65.6%). This is also the case on decisions about labor force participation (56.7%). Around 19% of women either decide alone or do not have any final say.

Resources are understood in a wide sense, referring to factors that pre-condition the ability to choose or causes of empowerment. These comprise: age at marriage of women, household’s wealth or assets, her education level (or years), her parents’ level of education (or years), and the age and educational difference between spouses. We would expect a positive influence of the educational variables, and household material welfare ones (assets, wealth) on empowerment. As well we would expect a negative parameter for age and educational spouse difference variables. Table 2 presents the descriptive statistics of these ‘causes’ of empowerment.

This tables shows that the educational level of among the respondents’ mothers is particularly low. Forty six percent of women have mothers with no education, and thirty percent have education between primary and secondary levels. The educational level of respondent’s fathers shows a different structure. Half of the sample have father’s with an educational level between primary and secondary. Only fourteen percent of these have no education. Around fifty eight percent of respondents have primary education as their highest education level. Twenty five percent of these women exhibit no education. While only sixteen percent of them have attained secondary of higher educational levels. Sixty seven percent of women in our sample were between 16 and 21 years old at the time of their marriage. Only six percent of them got married after 26 years old. However ten percent of women married at 16 years old or younger. This structure of age at marriage shows that cambodian females get married very young, although having some final say on this decision (Table 1). When looking at the age and educational differences between spouses, we see a high proportion of women marrying men older than them. Forty two percent of them are married to men that are 1 to 4 years older. Thirty one of women marry men that are 5 or more years older. These women are often more or equally edu-
cated than their husbands (65%).

Values/preferences and traditions are represented by variables of Table 3. To avoid having a lengthy table we present the sample proportions of the variables that turned out significant in our model. We see that around 97% of the sample is aware about AIDS, and 94% is Buddhist, while 9% live with in-laws. Eighty percent of women count on support form their birth family. Around 62% participate in the labor force, and 68% are exposed to mass media. Thirty four percent agree with 'justified' domestic violence, and with female participation in discussions of money matters.

Figure 1 presents the path-diagram of our model. Circles denote latent variables, whereas rectangles denote observed ones. The left hand side variables of the figure represent the causes of empowerment, while the right hand side ones represent values/preferences/traditions. The three latent dimensions of empowerment are represented by circles. Each of them is (partially) measured by a three categorical indicators.
Table 2: Distribution of Enhancing factors of empowerment

<table>
<thead>
<tr>
<th>Variable</th>
<th>Categories</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother's level of education</td>
<td>None</td>
<td>46.2</td>
</tr>
<tr>
<td></td>
<td>Primary</td>
<td>21.5</td>
</tr>
<tr>
<td></td>
<td>In between</td>
<td>30.1</td>
</tr>
<tr>
<td></td>
<td>Secondary or higher</td>
<td>2.2</td>
</tr>
<tr>
<td>Father's level of education</td>
<td>None</td>
<td>14.3</td>
</tr>
<tr>
<td></td>
<td>Primary</td>
<td>24.6</td>
</tr>
<tr>
<td></td>
<td>In between</td>
<td>51.9</td>
</tr>
<tr>
<td></td>
<td>Secondary or higher</td>
<td>9.2</td>
</tr>
<tr>
<td>Level of education (respondent's)</td>
<td>No education</td>
<td>25.8</td>
</tr>
<tr>
<td></td>
<td>Primary</td>
<td>58.3</td>
</tr>
<tr>
<td></td>
<td>Secondary or higher</td>
<td>15.9</td>
</tr>
<tr>
<td>Age at marriage (respondent's)</td>
<td>&lt;16</td>
<td>10.2</td>
</tr>
<tr>
<td></td>
<td>16-18</td>
<td>36.2</td>
</tr>
<tr>
<td></td>
<td>19-21</td>
<td>31.2</td>
</tr>
<tr>
<td></td>
<td>22-25</td>
<td>16.8</td>
</tr>
<tr>
<td></td>
<td>26 or older</td>
<td>5.7</td>
</tr>
<tr>
<td>Age difference between spouses</td>
<td>Wife older or no difference</td>
<td>27.0</td>
</tr>
<tr>
<td></td>
<td>Husband 1 or 4 years older</td>
<td>42.4</td>
</tr>
<tr>
<td></td>
<td>Husband 5 or more years older</td>
<td>30.6</td>
</tr>
<tr>
<td>Educational difference between spouses</td>
<td>Same education</td>
<td>65.4</td>
</tr>
<tr>
<td></td>
<td>or wife more educated</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Husband more educated</td>
<td>34.6</td>
</tr>
</tbody>
</table>

Table 3: Distribution of values/preferences/traditions

<table>
<thead>
<tr>
<th>Variable</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are aware about AIDS</td>
<td>97.5</td>
</tr>
<tr>
<td>Are Buddhist</td>
<td>94.3</td>
</tr>
<tr>
<td>Disagree with socially recognized gender roles</td>
<td>24.3</td>
</tr>
<tr>
<td>Agree with ‘justified’ domestic violence</td>
<td>33.9</td>
</tr>
<tr>
<td>Live with in-laws</td>
<td>8.8</td>
</tr>
<tr>
<td>Have support from birth family</td>
<td>80.1</td>
</tr>
<tr>
<td>Participate in the labor force (working status)</td>
<td>62.6</td>
</tr>
<tr>
<td>Are exposed to mass media</td>
<td>68.8</td>
</tr>
<tr>
<td>Agree that wife should participate in discussions about money matters</td>
<td>34.5</td>
</tr>
</tbody>
</table>
5 Results

5.1 Measurement and structural model results

The results for the measurement model are presented in Tables 4, 5, 6. To allow comparing across variables we report the estimated values of standardized parameters. The standardization for each of the equations multiples the estimated parameter by the ratio of the standard deviation of the explanatory variable to the standard deviation of the explained variable. Quality of fit indices of the full model show a relative good fit. The CTI has a value of 0.8 and the TLI fit measure a value of 0.87, both above the threshold of good fit of 0.7. Additionally the RMSEA is below the 0.05 cutoff.

The $\Lambda$ parameters of the measurement equations, called factor loadings, represent the expected change in the corresponding observed decision-outcome indicator following a one unit change in the latent variable. The factor loadings of self strategic choices range from 0.051 for spouse selection, 0.44 for freedom of movement, to 0.597 for decisions about obtaining health care. This means that the impact of a unit change in the feasible decision-making ability of strategic choices is not uniform across decision-outcomes. The greater impact been on health care (Table 4). In the case of familial strategic life choices, factor loadings also differ, although in a smaller range. A unit improvement of the familial empowerment dimension would lead to an improvement of 0.716 standard deviation in decisions concerning children's health, 0.55 in decisions about children's education, and 0.33 in decisions about having a new child (Table 5). Clearly the impact is much greater than the one exhibited in the self domain. Factor loadings of second-order economic choices are more uniform (Table 6). Domestic decision-making will improve in 0.56 standard deviations if empowerment in non-strategic choices improves in one unit. This impact is lower for economic decision-making (0.5) and for decisions about labor force participation (0.31).

The role played by values/preferences/traditions also varies per indicator. We see that living with in-laws, a tradition in Cambodia, has a positive impact on freedom of movement (0.042) and a negative impact on children's health related issues (-0.053). This result suggests that the presence of in-laws, mainly mother-in-law, would be prejudicial for a young mother's empowerment. Attitudes towards gender roles in household have a positive influence on all indicators of non-strategic choices, on decisions about children's education, and on decisions about the respondent's health care. With the strongest effect on economic decision-making. This highlights the importance to raise the critical consciousness of women regarding those traditions, norms that are taken for granted, but that have a negative impact on their own well-being or that support forms of gender discrimination.
Another appealing result is the awareness of AIDS. This variable influences positively decisions about the respondent’s health. Deciding about access to health care will improve in 0.02 units with each unit of extra AIDS awareness. Similarly, decisions about having a new child also improve in 0.02 units. Support from birth family turns out to be significant only for explaining freedom of movement decisions. Whereas attitudes towards female participation in money matters influence positively big purchase decisions. Both of these two variables have an impact of 0.07 on the respective indicator. Having a source of income (working status) has a positive impact on decisions about: large purchases, children’s education, and freedom of movement. This indicates that women will have greater freedom in deciding about important economic matters, about educating their children or moving freely. As expected, wife beating acceptance has a negative effect on freedom of movement. Women that suffer domestic violence will see limited their social and familiar contacts. Finally we see that being Buddhist has a negative influence on spouse selection, but a positive one on large (economic) and small (domestic) household purchases, and on children’s health and education decisions. This shows the impact that religion has on the three empowerment dimensions considered in our study.

The structural model results are reported in Table[7]. We see that parental education, especially the father’s has a strong enhancing effect on each of the three dimensions of empowerment. The causal effect of the education of the father ranges from 0.094 on non-strategic decisions, 0.087 on self decisions, to 0.069 on familial decisions. This shows that improvements in parental education will lead to greater decision-making ability of females. The mother’s education has also a positive causal effect. Empowerment on self choices will be enhanced in 0.09 units if mother’s education improves in one standard deviation unit. Similarly, empowerment on familial choices will also be improved but in a smaller value (0.069).

Household’s wealth is statistically significant in explaining self and familial decision-making ability. The effect is greater than parental education, thus showing the importance of material household resources on the ability to take decisions. Household’ assets are among the determinants of non-strategic choices, although their effect is half the effect of the wealth variable (0.06). The education of the respondent determines each of the three empowerment domains. The stronger effect being on self strategic choices (0.10), followed by non-strategic choices (0.08), and by familial choices (0.06). Hence we confirm the role that female education has as determinant of their degree of empowerment. Lastly, age at marriage has a causal impact only on non-strategic choices (0.067).
<table>
<thead>
<tr>
<th>Variable</th>
<th>Spouse selection</th>
<th>Own health care</th>
<th>Visiting family and friends</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\eta_1$</td>
<td>$y_2^*$</td>
<td>$y_3^*$</td>
</tr>
<tr>
<td>Self Strat. choices (A)</td>
<td>0.051</td>
<td>***</td>
<td>0.0597</td>
</tr>
<tr>
<td>Age (D)</td>
<td>-0.082</td>
<td>***</td>
<td>-</td>
</tr>
<tr>
<td>Being Buddhist (D)</td>
<td>-0.093</td>
<td>***</td>
<td>0.129</td>
</tr>
<tr>
<td>Being muslim (D)</td>
<td>-0.122</td>
<td>***</td>
<td>0.069</td>
</tr>
<tr>
<td>Being aware about AIDS (D)</td>
<td>-</td>
<td>0.025</td>
<td>***</td>
</tr>
<tr>
<td>Gender roles in household (D)</td>
<td>-</td>
<td>0.046</td>
<td>**</td>
</tr>
<tr>
<td>Living within laws (D)</td>
<td>-</td>
<td>-</td>
<td>0.079</td>
</tr>
<tr>
<td>Wife beating acceptance (D)</td>
<td>-</td>
<td>-</td>
<td>-0.067</td>
</tr>
<tr>
<td>Support from birth family (D)</td>
<td>-</td>
<td>-</td>
<td>0.071</td>
</tr>
<tr>
<td>Working status (D)</td>
<td>-</td>
<td>-</td>
<td>0.047</td>
</tr>
</tbody>
</table>

***, ** denote significance at 1%, 5% and 10% levels respectively.
- denotes non significance.
### Table 5: Measurement Model Results - Familial Strategic life choices

<table>
<thead>
<tr>
<th>Variable</th>
<th>Having another child $y_4^*$</th>
<th>Children's health $y_5^*$</th>
<th>Children's education $y_6^*$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\eta_2$ &quot;Familial&quot; Strat.choices (A)</td>
<td>0.334 **</td>
<td>0.716</td>
<td>0.550 ***</td>
</tr>
<tr>
<td>Age</td>
<td>-0.126 ***</td>
<td>0.032 -</td>
<td>0.446 ***</td>
</tr>
<tr>
<td>Crossed effect: Buddhist and rural (D)</td>
<td>-0.03 -</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Being Buddhist (D)</td>
<td>-</td>
<td>0.102 ***</td>
<td>0.068 ***</td>
</tr>
<tr>
<td>Being muslim (D)</td>
<td>-</td>
<td>0.071 ***</td>
<td>0.062 ***</td>
</tr>
<tr>
<td>Being aware about AIDS (D)</td>
<td>0.028 *</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Gender roles in household (D)</td>
<td>-</td>
<td>-</td>
<td>0.07 ***</td>
</tr>
<tr>
<td>Living within laws (D)</td>
<td>-</td>
<td>-0.053 ***</td>
<td>-</td>
</tr>
<tr>
<td>Living in rural areas (D)</td>
<td>-</td>
<td>-0.072 ***</td>
<td>-</td>
</tr>
<tr>
<td>Working status (D)</td>
<td>-</td>
<td>-</td>
<td>0.044 **</td>
</tr>
</tbody>
</table>

***, **, * denote significance at 1%, 5% and 10% levels respectively.
- denotes non significance.
Table 6: Measurement Model Results - Second order economic choices

<table>
<thead>
<tr>
<th>Variable</th>
<th>Economic decision-making</th>
<th>Domestic decision-making</th>
<th>Work decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \eta_3 ) Second-order &quot;economic&quot; choices (A)</td>
<td>( \chi )</td>
<td>0.509</td>
<td>***</td>
</tr>
<tr>
<td>Age (D)</td>
<td></td>
<td>0.207</td>
<td>***</td>
</tr>
<tr>
<td>Being Buddhist (D)</td>
<td></td>
<td>0.126</td>
<td>***</td>
</tr>
<tr>
<td>Being muslim (D)</td>
<td></td>
<td>0.117</td>
<td>***</td>
</tr>
<tr>
<td>Crossed effect: Buddhist and rural (D)</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Gender roles in household (D)</td>
<td></td>
<td>0.111</td>
<td>***</td>
</tr>
<tr>
<td>Working status (D)</td>
<td></td>
<td>0.056</td>
<td>***</td>
</tr>
<tr>
<td>Attitude towards discussions (D) about money matters (D)</td>
<td></td>
<td>0.071</td>
<td>***</td>
</tr>
</tbody>
</table>

***, **, * denote significance at 1%, 5% and 10% levels respectively.
- denotes non significance.
Table 7: Structural Model Results - Causes of empowerment

<table>
<thead>
<tr>
<th>Variable</th>
<th>( \eta_1 )</th>
<th>Signif.</th>
<th>( \eta_2 )</th>
<th>Signif.</th>
<th>( \eta_3 )</th>
<th>Signif.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at marriage (( \Gamma ))</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.067</td>
<td>**</td>
</tr>
<tr>
<td>Respondent's education (years) (( \Gamma ))</td>
<td>0.101</td>
<td>***</td>
<td>0.061</td>
<td>***</td>
<td>0.081</td>
<td>***</td>
</tr>
<tr>
<td>Household's wealth (( \Gamma ))</td>
<td>0.126</td>
<td>***</td>
<td>0.112</td>
<td>***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Household's assets (( \Gamma ))</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.064</td>
<td>***</td>
</tr>
<tr>
<td>Father's education (years) (( \Gamma ))</td>
<td>0.087</td>
<td>***</td>
<td>0.069</td>
<td>***</td>
<td>0.094</td>
<td>***</td>
</tr>
<tr>
<td>Mother's education (years) (( \Gamma ))</td>
<td>0.090</td>
<td>***</td>
<td>0.063</td>
<td>***</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

***, **, * denote significance at 1%, 5% and 10% levels respectively.
- denotes non significance.
5.2 Stochastic dominance analysis

In order to identify the relative importance of the three empowerment dimensions across the sample, we apply first order stochastic dominance analysis (Davidson and Duclos, 2000; Duclos and Araar, 2006). Higher orders of dominance are not feasible when dealing with latent variables due to the lack of cardinality of the scores. It is important to mention that the scores are purely ordinal (but continuous) in nature, and hence their actual value has no intrinsic meaning, but only in comparison with another value. A first order dominance uses only the ordinal information of the distributions in question however second or higher orders require cardinal information. This is the reason why we restrain our comparisons to the first order case. To proceed we first normalize the fitted distributions of factor scores so that their measurements scales become comparable. On the basis of these normalised distributions we compare the empowerment status across dimensions. This leads to three pairs of stochastic dominance comparisons. As it can be seen from the following stochastic dominance curves, there is only one dominance relationship that seems unambiguous in a first order sense. Hence we see that self strategic empowerment dominates the familial strategic one (Figure 2).

Figure 2: Stochastic dominance curves ($\tilde{\eta}_1$, $\tilde{\eta}_2$)
Figure 3: Stochastic dominance curves ($\hat{\eta}_1, \hat{\eta}_3$)

Normalized empowerment cdf

Legend:
- Blue: Self
- Red: Strategic life choices
- Red: Second-order "economic" choices
Figures 3 and 4 show the comparison between the the self, and familial strategic group of choices, with the non-strategic group. As shown it is not possible to conclude on full dominance over the entire range of values of the scores (horizontal axis). We can therefore conclude that cambodian women in 2005 have greater self decision-making ability than the altruistic component of familial choices.

6 Conclusions

In this paper we have attempted to relate the literature of intra-household gender dynamics with the Capability Approach. We proposed a structural model for measuring female empowerment in a capability perspective. We have taken a definition of empowerment that differentiates between feasible and actualized decision-making, concerning strategic and non-strategic life choices. The transformative process of feasible into actualized choice is influenced by values/traditions. Whereas resources (EEP’s) play an enhancing role. These elements interact into a system of structural equations where empowerment is specified as a latent variable. We have considered "self" and "familial" strategic life choices, and non-strategic life choices.
Each of them imperfectly measured by observed indicators of actualized decision-outcomes, and influenced by values and traditions.

The results of our measurement models show that traditions like living with in-laws could be prejudicial for young mother's empowerment when it comes to decide about children's health issues. Attitudes towards gender roles have a positive influence on several indicators. This highlights the importance to raise the critical consciousness of women regarding those traditions, that are taken for granted, but that have a negative impact on their own well-being or that support forms of gender discrimination. Awareness of AIDS confirms a positive effect on female health decision issues. Thus supporting the necessity of keeping women informed about AIDS' risks. Lastly, the negative effect of wife beating acceptance on female's freedom of movement clearly indicates that women suffering domestic violence will be limited in their daily social life. The results of our structural model confirm the importance of education of both the respondent's and her parents in pre-conditioning the ability to choose. As well we find empirical evidence of the causal influence of household's wealth in explaining self and familial decision-making ability, and of household's assets as the determinants of non-strategic choices.

The stochastic dominance analysis provides evidence of first order dominance between self and familial life choices. We can therefore conclude that cambodian women in 2005 have greater self decision-making ability than the altruistic component of familial choices. This holistic approach taken in this paper provides better insights for intra-family allocative processes, and successful development assistance programmes.
References


