APRIL 2023
BxWP2023-04

BORDEAUX ECONOMICS WORKING PAPERS
CAHIERS D'ECONOMIE DE BORDEAUX

Child malnutrition in Nepal: Women's empowerment or promotion of their socioeconomic status?

Elodie ROSSI

Univ. Bordeaux, CNRS, BSE, UMR 6060, F-33600 Pessac, France

Bordeaux Sciences Economiques
Bordeaux School of Economics

BSE UMR CNRS 6060

Université de Bordeaux
Avenue Léon Duguit, Bât. H
33608 Pessac – France
Tel : +33 (0)5.56.84.25.75
http://bse.u-bordeaux.fr/

Abstract

After unsuccessful poverty alleviation policies to tackle the "Asian enigma," women's empowerment (WE) is now promoted as another strategy. However, the concept is still debated between pioneers defending more power for women and international institutions promoting it through improvements in their socio-economic status (SES). This paper proposes to advance this way by examining the impact of WE in terms of power on children's nutrition, also testing its interactive effects with the mothers' SES. Using the 2016 Nepal Demographic and Health Survey, we account for two measures of children's nutrition: height-for-age and dietary diversity scores. We use the multidimensional exploratory analysis to construct composite measures of WE and SES and tackle endogeneity issues through an instrumental variable approach. Our results demonstrate that the impact of WE is underestimated if endogeneity is not considered with a more positive effect on the fight against child malnutrition than women's SES promotion. Interactive effects between WE and SES also suggest that the positive impact of WE exists regardless of mothers' SES, mitigating the adverse effect of low maternal SES on children's nutrition. Besides, we highlight that if women's SES is a determinant in rural areas, promoting women's education is desirable, while women's participation in the labor market has mixed consequences on maternal and child health. Finally, promoting WE appears crucial in breaking gender inequalities in child malnutrition locally.

Keywords: Child undernutrition, Women's empowerment, Nepal, Socio-economic status, Multiple correspondence analysis, Instrumental variables.

JEL: I14, I15.

To cite this paper: **ROSSI, Elodie** (2023), **Child malnutrition in Nepal: Women's empowerment or promotion of their socioeconomic status?**, Bordeaux Economics Working Papers, BxWP2023-04

https://ideas.repec.org/p/grt/bdxewp/2023-04.html

Child malnutrition in Nepal: Women's empowerment or promotion of their socioeconomic status?

*Elodie ROSSI[1]

*Univ. Bordeaux, CNRS, BSE, UMR 6060, F-33600 Pessac, France

Abstract:

After unsuccessful poverty alleviation policies to tackle the "Asian enigma," women's empowerment (WE) is now promoted as another strategy. However, the concept is still debated between pioneers defending more power for women and international institutions promoting it through improvements in their socio-economic status (SES). This paper proposes to advance this way by examining the impact of WE in terms of power on children's nutrition, also testing its interactive effects with the mothers' SES. Using the 2016 Nepal Demographic and Health Survey, we account for two measures of children's nutrition: height-for-age and dietary diversity scores. We use the multidimensional exploratory analysis to construct composite measures of WE and SES and tackle endogeneity issues through an instrumental variable approach. Our results demonstrate that the impact of WE is underestimated if endogeneity is not considered with a more positive effect on the fight against child malnutrition than women's SES promotion. Interactive effects between WE and SES also suggest that the positive impact of WE exists regardless of mothers' SES, mitigating the adverse effect of low maternal SES on children's nutrition. Besides, we highlight that if women's SES is a determinant in rural areas, promoting women's education is desirable, while women's participation in the labor market has mixed consequences on maternal and child health. Finally, promoting WE appears crucial in breaking gender inequalities in child malnutrition locally.

Keywords: Child undernutrition; Women's empowerment; Nepal; Socio-economic status; Multiple correspondence analysis; Instrumental variables.

JEL classification: I14; I15.

[1] elodie.rossi@u-bordeaux.fr / ORCID : https://orcid.org/0000-0002-6117-8633

1. Introduction

Undernutrition limits educational attainment, adult work productivity, and lifetime earnings potential, perpetuating financial losses and poverty (*e.g.*, Black et al., 2008). Unfortunately, the goal of fighting hunger by 2030 is still a long way off, delayed by the COVID-19 pandemic. In 2020, 720 to 811 million people were still undernourished worldwide, with more than half (418 million) living in Asia (World Health Organization, 2021). Known as the "Asian enigma" (Ramalingaswami & al., 1997), Southern Asian countries have motivated a considerable stream of research on this issue.

The "Asian enigma" term appeared in the 1990s when the region had higher undernutrition levels than many Sub-Saharan African countries. Many poverty alleviations have been first implemented to face this situation, but with time, researchers realized that the roots of the problem mainly lay in non-economic factors (Ramachandran, 2006). Indeed, mothers' poor mental and physical health adversely affects children in the region (Pennington & al., 2018), mainly explained by low levels of women's empowerment (WE). Consequently, gender discrimination issues have progressively formed part of the literature on the determinants of child nutrition (*e.g.*, Fikree & Pasha, 2004). In this literature, all studies are unanimous about the positive impact of WE on household production diversity (*e.g.*, H. J. Malapit et al., 2015), children's nutrition (*e.g.*, Allendorf, 2007), and mothers' nutrition (*e.g.*, Jones et al., 2020). Nevertheless, the definition and measurement of the concept are still debated, as demonstrated by many approaches that have been tested to link WE to children's nutrition (*e.g.*, Carlson et al., 2015; Cunningham et al., 2015).

The concept of empowerment was initially developed in the 1980s by feminists from southern countries. The idea was to see how development could reduce poverty by helping women "to strengthen or acquire power" (Friedmann, 1992). However, by accusing the neoliberal, patriarchal, and neocolonial development model of reinforcing unequal power relations, the vision classified as "radical" did not receive much support initially (Parpart, 2002). It was not until the 1990s that the concept was finally promoted by the World Bank, which made it one of the pillars of the fight against poverty. Nevertheless, for the precursors of the concept, this new vision of empowerment is more interested in how the poor can contribute to development than how development can increase the power of the poor (Wong, 2003). For them, the vision promoted by the Millennium Development Goals (MDGs) is insufficient to capt how empowerment may influence women's lives (Kabeer, 2005) and those close to them. For instance, women's access to education can have limited effects if "women's role is purely defined in reproductive terms in the society, where education is seen in equipping girls to be better wives and women or increasing their chances of getting a suitable husband." The same is true for women's access to paid work, where many studies "highlight the exploitative conditions of work in which women are generally found" (e.g., Falquet, 2008). Ultimately, if women play a crucial role in ensuring their household food security and improving their socio-economic conditions (Quisumbing et al., 1996), their action capacity also depends on them. Hence, empowerment and poverty are closely linked, which explains why empowerment is often reduced to its economic dimension while the psychological and social dimensions of power are ignored (Wong, 2003). With the

knowledge of this fact, our research question is part of this context and tries to disentangle the effects of WE on child malnutrition in Nepal according to these two visions.

We choose Nepal since severe undernutrition issues still plague this society. Nepal had one of the highest levels of undernutrition in the 1990s, with almost two-thirds of young children being stunted (Cunningham & al., 2017). In 2016, the final report of the Nepal DHS pointed out that 36% of children were still stunted and that 17% of mothers were considered thin. Regarding anemia, 40% of women and 53% of children were also affected. Nepal is also a relevant case study about gender issues, characterized by profound discrimination toward women. Suicide, one of Nepal's leading causes of death for women of reproductive age, illustrates feminine distress (Simkhada & al., 2015). As such, Nepal was ranked 101st out of 144 on the Global Gender Gap Index in 2020, lagging in gender equality.

In this paper, we propose to use the 2016 Nepal DHS to analyze the relationship between WE (in its conception called “radical”) and children’s nutrition, testing the interactive effects with the mothers’ SES (as a measure of women’s economic empowerment). In this way, we contribute to the literature on different points. First, based on a theoretical framework (Rowlands, 1997) and field experiences (Lombardini et al., 2017), we propose a new measure of WE that dissociates improvements in women’s SES (as an expected result of the empowerment process) to their WE (regarding their power to make life choices). We use the multidimensional exploratory analysis to position children regarding their mother's empowerment level and socioeconomic conditions. Second, we study how this first conception of WE interacts with the new vision of WE axed at promoting women’s SES to fight children's malnutrition. It appears necessary to know to what extent the SES conditions the impact of WE on children’s nutrition for designing effective policies and programs encouraging the fight against child undernutrition. Third, we provide a disaggregated analysis of the impact of WE on children's dietary diversity and height-for-age scores, observing effects on different subsamples accounting for age, sex, and place of residence. We finally improve the existing literature by using instrumental variables regressions to consider endogeneity issues as much as possible.

Our results underline that the true impact of WE in a so-called “radical” conception is underestimated if endogeneity is not taken into account, with a more significant impact on child malnutrition than WE promoting women’s SES. Rural populations and girls in a patriarchal society like Nepal are specifically severely socio-economically disadvantaged. On this subject, we show that increasing women’s power is crucial in breaking gender inequalities in child malnutrition, with a stronger impact of WE on girls' nutrition than on boys. Besides, we validate the need to increase mothers’ SES in rural areas but are alert on what dimensions of SES are essential for true local empowerment. We insist on promoting women’s education and warn about their labor force participation and its mixed consequences on maternal and children's health. Finally, the study of interactive effects between WE and SES highlights the positive impact of WE on children’s nutrition, regardless of the mothers’ SES, by attenuating the harmful effects if this is low.

The rest of the article is structured as follows. Section 2 describes the data and variables. Sections 3 and 4 present the econometric framework and the main results. Finally, Section 5 discusses the results and Section 6 concludes.

2. Data and variables

This paper uses the 2016 Nepal DHS database, giving a wide range of monitoring indicators in demographics, health, and nutrition at the national level. We use the dataset of children born in the last five years (0-59 months), including data from their interviewed mothers aged 15-49. We exclude the less than six months for two reasons. First, children's dietary diversification, one of our dependent variables, starts at this age. Second, we want to avoid another research question measuring the long-term effects of mothers' breastfeeding practices choices on children's nutrition. Finally, this paper analyzes 2,161 mother-child pairs of children aged 6-59 months for dietary diversity and 2,090 for child anthropometry.

2.1 Women's empowerment

Among many definitions of WE, all agree on its relational, complex, and multidimensional aspects (Onah, 2021). The most influential of them is "the expansion in people's ability to make strategic life choices in a context where this ability was previously denied to them" (Kabeer, 1999, p. 437). Specifically, the empowerment process includes three steps: *resources* referring to pre-conditions or opportunity structures, *agency* which refers to the "freedom to achieve whatever the person, as a responsible agent, decides he or she should achieve" (Sen, 1985, p. 204), and *achievements* that are the realization of one's goals (Alsop & Heinsohn, 2005; Kabeer, 1999).

On the measurement, the consensus is more complex, with many discussions on which domains and indicators are most relevant to analyzing its impact on children's nutrition (Ibrahim and Alkire, 2007). Among the best-known attempts at measurement, we can cite the Women's Empowerment in Agriculture Index (WEAI) (Alkire, Malapit, et al., 2013), which is the most prominent direct and standardized measure for rural women in pastoral settings. We can also cite the Survey-based Women's empowerment (SWPER) index, which more recently addresses the need for a nationally representative index, easily usable for cross-country comparison (Ewerling et al., 2017, 2021). These two examples illustrate a solid temptation for creating universal indices. However, researchers must be cautious as translating the concept of empowerment into a measure that captures it poses several challenges. One of the recommendations is that indirect indicators (i.e., *resources* and *achievements*) can be problematic in measuring empowerment, especially with cross-sectional information (Richardson, 2018). Indeed, as mentioned in our introduction, resources/achievements (such as education, land ownership, employment, age at first marriage, and participation in microcredit) can reflect women's agency but also not ensure it (Kabeer, 1999, 2005). Besides, "the directionality of many of these relationships is unclear; these factors may be resources for empowerment, achievements of the empowerment process, or both" (Richardson, 2018). Researchers suggest using direct empowerment measures (i.e., agency) to overcome this problem. Thus, we strive to follow these recommendations here and propose a measure of WE based on the theory of power, which can be expressed in four complementary dimensions (Rowlands, 1997): the *power from within*, *the power to*, *the power with*, and *the power over*. This old theoretical framework was updated by OXFAM, which has recently created a guide for measuring WE using their field experience (*i.e.*, Lombardini et al., 2017). In our opinion, these works seem closer to the aspirations of so-called "radical" feminists," adopting the point of view of practicians who intend to promote a "bottom-up"

approach of WE. Hence, we relied on these works and the empowerment module included in DHS since 1999 to stand for each power through a direct measure of *agency*, as shown and discussed in Table 1 below.

Table 1: Components of the indicator of WE.

Dimensions	Survey questions	Code
Power "with"	(1) Is there a growth monitoring promotion group in the ward? (2) Is there a health mother's group in the ward?	0: No 1: Yes
Power from "within"	In your opinion, is a husband justified in hitting or beating his wife in the following situations; (1) If she goes without telling him? (2) If she neglects the children? (3) If she argues with him? (4) If she refuses to have sex with him? (5) If she burns the food?	0: No 1: Yes
Power "to"	When you are sick and want to get medical advice or treatment, is each of the following a big problem or not a big problem: (1) Getting permission to visit the doctor/health service provider? (2) Getting the money needed for advice or treatment? (3) The distance to the health facility? (4) Not wanting to go alone? (5) No female health provider?	2: Not a big problem 1: Big Problem
Power "over"	Who usually decides about: you, you and your (husband/partner) jointly, or another person? (1) Respondent's health care; (2) Making major household purchases; (3) Visit your family or relatives; (4) Children's education; (5) Using your husband's money.	1: Respondent alone; 2: Respondent and husband/partner; 4: Husband/partner alone; 5: Someone else; 6: Other

Source: Author's calculations.

According to Lombardini et al. (2017), the *power with* considers that empowerment is "a collective process requiring support and interaction between peers and organizations." We measure it by the presence (or not) of health mothers' groups (HMGs) and growth monitoring promotion groups (GMP) in the ward. These groups empower mothers to provide appropriate child care (e.g., Gyampoh et al., 2014; Perry et al., 2017). The *power from within* "looks at personal self-confidence as psychological strength,» allowing individuals to influence their lives and propose changes. We measure it by the acceptability (or not) of gender-based violence (e.g., Sandberg & Rafail, 2013). The *power to* "refers to individual agency, meaning their capacity to decide actions and carry them out." This power is attached to the personal sphere, and we measure it by barriers to women accessing health care (e.g., Htun et al., 2021). Finally, the *power over* measures « the strength of the strong over the weak, measuring power relationships between a woman and other individuals in the household or community where she lives.» This power refers to the relational sphere, and we measured it by mothers' involvement in different household decision-making (e.g., Alkire, Meinzen-Dick, et al., 2013).

As described in Table 1, we combine these variables in a Multiple Correspondence Analysis (MCA) to generate our index. The MCA is a data analysis technique for nominal categorical representing underlying structures in a data set. Following Lépine & Strobl (2013), we use the Burt method, which performs a correspondence analysis of the Burt matrix (a matrix of the two-way cross-tabulations of all pairs of variables). We keep the first three dimensions, where each provides more than 10% of the information, accounting for 60.16% of the total variance. Finally, the final index is standardized following a normal distribution between 0 and 1. The weights and contributions of the different variables included in the MCA are presented in Supplementary Tables A1-A2.

2.2 Mothers' socio-economic status

The SES is also a complex multidimensional concept with no consensus on its definition and measurement. According to the literature, wealth, education, and occupation are the main dimensions of the concept (Galobardes et al., 2007). Generally, most studies only use a single measure (income or education), whereas others analyze these three dimensions separately or combine them into a composite index (*e.g.*, Bonnefond et al., 2015). This paper follows the earlier suggestion by constructing one multidimensional synthetic indicator of the mother's SES, but we do the same for the father's SES to include it as a control in our estimates. The mother's SES integrates information on the household wealth, occupation and level of education of the mother (and vice versa for the father). As no household income or consumption information is available, we measure household wealth using the "wealth index" included in the DHS. The indicator of women's SES is constructed through an MCA procedure where we keep the first two dimensions accounting for 83.75% of the information (Supplementary Tables A3 and A4) and standardized between 0 and 1. Supplementary Table A5 reports the descriptive statistics of the variables composing this indicator.

2.3 Child's nutrition variables

On the one hand, we examine the dietary diversity scores (DD) of children aged 6-59 months, which correspond to the number of food groups consumed in the last 24 hours. According to the most recent guidelines, the eight food groups are: breast milk; grains, roots, and tubers; legumes and nuts; dairy products; flesh foods; eggs; vitamin A-rich fruits and vegetables; other fruits and vegetables (World Health Organization, 2017). On the other hand, we examine the Z-scores of height-for-age (HAZ) of children aged 6-59 months, which are defined from an international sample (Brazil, Ghana, India, Norway, Oman, and the USA) of ethnically, culturally, and genetically diverse healthy children who live under optimal conditions to achieve their full genetic growth potential (World Health Organization, 2006). These Z-scores are expressed in standard deviation units from the median of the reference population and capture the long-term effects of chronic malnutrition.

2.4 Control variables

The econometric model includes a set of covariates about children, mothers, and household characteristics. The characteristics of children include age in months, birth order, number of births in the past three years, size at birth (small, average, tall), child's sex, place of delivery (hospital vs. at home), and breastfeeding status (still or not).

The characteristics of mothers include their age (in years), body mass index (kg/m²), and the number of children less than five years old. The household's characteristics refer to the residence (urban vs. rural), religion, ecological region (mountain, hill, Terai), household size, father's SES and sex of the household head. It should be noted that the sex of the head of the household is included as a control variable because it simultaneously indicates the mothers' socioeconomic conditions and level of empowerment. Supplementary Table A6 presents the descriptive statistics for all control variables[2].

3. Methods

3.1 Econometric framework

To investigate the relationship between children's nutrition (N), women's empowerment (WE), their socio-economic status (SES), and the interaction term between both variables (WE*SES), we estimate the following Equation:

$$N = \beta_0 + \beta_1 WE + \beta_2 SES + \beta_3 (WE * SES) + \beta_4 \mathbf{I} + \beta_5 \mathbf{M} + \beta_6 \mathbf{H} + \varepsilon \quad (1)$$

where **I**, **M**, and **H** are individual, mother, and household vectors of characteristics, respectively, and ε is the error term.

We hypothesize that WE and their SES both improve the scores of DD and HAZ. We also assume that these two variables have potential interactive effects beyond their independent effects on child nutrition. We pay particular attention to the interaction term and its coefficient sign. A positive coefficient would mean a more significant impact of WE on children's nutrition whose mother has a higher SES. In opposition, a negative coefficient would indicate a more significant impact of WE on children's nutrition whose mother has a lower SES. In this case, the favorable effects of WE would decrease with improvements in mothers' SES until reaching a turning point where the effect would be negative. In other words, empowering women would mitigate the negative impact of low mothers' SES on their children's nutrition.

3.2 Endogeneity issues

As a first step, we estimate the previous Equation (1) via the Ordinary Least Squares (OLS) approach. However, the main methodological issue related to this reduced form model lies in the potential endogeneity in estimated coefficients regarding the impact of SES, WE, and their interaction with children's nutrition. First, endogeneity issues may come from unobserved characteristics. It could be, for instance, the case for genetic factors determinants at the prenatal stage that we cannot control for (Almond, 2006). Second, the OLS estimator could be

[2] Note: Estimations with the DD as the dependent variable exclude controls about the breastfeeding status and the mother's BMI.

biased in the case of reverse causality. For instance, stunting children affect the mothers' SES by delaying their entry to school, which represents a cost for lunch in countries where meals are free or subsidized at school and postpones the mothers' return to the labor market (e.g., Gelbach, 2002). Child malnutrition can also be interpreted as a failure to care for children that increases the risk of domestic violence for women, justifying it as a just retaliation for their failure to be responsible (Chowdhury & Mathur, 2021). We adopt an Instrumental Variable (IV) strategy to deal with such endogeneity issues.

In health economics, community aggregate variables are potentially good instruments and can be considered exogenous as they are outside the control of households and individuals (*i.e.*, Schultz, 1984). Hence, we consider the following instruments based on the 2016 NDHS: the PSU-level median of the indicators of SES and the PSU-level median of the type of combustible fuel (clean or not) as instruments of SES; the PSU-level median of respondents who have an account in a bank or other financial institution and the PSU-level median of the age at first cohabitation of respondents, as instruments of WE. Finally, we create another instrument for the interaction term by interacting: the median at the PSU-level of the type of cooking fuel with the median at the PSU-level of the indicator of mothers' SES. All of these instruments are resumed in Supplementary Table A7.

One crucial challenge is finding suitable instruments correlated with the endogenous variable and uncorrelated with the unobservable. Standards tests for IV validity (weak identification, instruments exogeneity, and relevance) are reported in Supplementary Tables A8-A9 and support our IV procedure's robustness. Finally, clustered standard errors are used at the PSU-level to have robust estimators.

4. Results

We present OLS and IV estimates (control variables non-reported), considering as dependent variables HAZ in Tables 2-3 and DD in Tables 4-5. The full regressions results are available in Supplementary Table A10.

4.1 Child anthropometry

Regarding OLS estimates, the first significant result is the positive correlation between WE and HAZ for the entire sample (at 5%), even if the coefficient is smaller and less significant than the association with the mother's SES (at 1%). By sub-sample, we show a positive correlation between WE and the HAZ of girls (at 10%), rural (at 5%), hills' population (at 1%) and children aged 6-23 months (at 5%). Finally, the interaction term is positive for children aged 6-23 months and negative for those aged 24-59 months (at 5%). These results suggest that WE and women's SES are simultaneously positively correlated to children's HAZ before two years old and that WE mitigates the negative effect of a low mother's SES for 80% of children between 24-59 months. After controlling endogeneity issues, WE positively and significantly impact children's HAZ for the entire sample (at 1%), with a coefficient superior to OLS estimates, whereas the mother's SES is non-significant. Thanks to the interaction term, we deduce that the positive effects of WE on HAZ decrease with improvements in the mother's SES while always remaining positive. By sub-sample, we confirm the positive impact of WE on girls' HAZ (at 5%) and in the hills

(at 5%). Interestingly, WE only positively affect the HAZ of urban (at 5%), contrary to previous estimates. For rural areas, improvements in HAZ are expected in the mother's SES (at 5%). Finally, WE positively affects the HAZ of children aged 24-59 months (at 1%), where the interaction term is negative (at 1%). This result suggests a positive and decreasing impact of WE on HAZ with improvements in the mother's SES until a turning point situated at the 87th distribution. Hence, WE mitigates the negative impact of a low mother's SES on children's HAZ for 95% of them.

4.2 Child dietary diversity

Regarding OLS estimates, we underline the positive correlation between WE and children's DD aged 6-23 months (at 5%), where women's SES and WE are also synergistically and positively correlated to DD (at 5%). This positive interactive effect is also observed for rural populations (at 10 %). Controlling for endogeneity issues, we demonstrate that WE positively affect the DD of the entire sample (at 1%), especially children aged 6-23 months (at 1%). Regarding the child's sex, we demonstrate a positive impact of WE on girls' DD decreasing with improvements in the mother's SES until a turning point at the 83rd percentile of the distribution. Hence, WE mitigate a low mother's SES for 95 % of girls (at 10%). We also observe a positive impact (significant at 10%) for boys. Concerning the place of residence, WE positively affect children's DD living in the Terai (at 1%) and have a positive but decreasing impact according to the mother's SES improvements in the hills (at 5%). The turning point of this positive effect is situated at the 38th percentile of the mother's SES distribution, which corresponds to a positive impact for approximately 65% of these children whose mothers have the lowest SES. Finally, no effects are observed for rural or urban areas where the mothers' SES is non-significant.

Table 2: OLS estimates by sub-samples for HAZ.

Dependent outcome:	Height-for-age																			
	Global		Boys		Girls		(6-23)		(24-59)		Urban		Rural		Mountain		Hill		Terai	
	Linear	Interacted	Linear	Interacted	Linear	Interacted	Linear	Interacted	Linear	Interacted	Linear	Interacted	Linear	Interacted	Linear	Interacted	Linear	Interacted	Linear	Interacted
Mother's SES	**0.487*** **	**0.789***	**0.532****	0.630	**0.434***	1.142	**0.913*** **	-0.301	0.247	**1.389****	**0.531****	**1.239****	0.483	0.884	**0.918***	-0.176	**0.573****	0.855	0.347	0.385
	(0.005)	(0.091)	(0.022)	(0.276)	(0.073)	(0.103)	(0.001)	(0.670)	(0.247)	(0.012)	(0.015)	(0.033)	(0.135)	(0.260)	(0.083)	(0.889)	(0.041)	(0.309)	(0.183)	(0.568)
Father's SES	0.246	0.253	0.257	0.260	0.261	0.277	-0.114	-0.212	**0.432***	**0.455***	0.206	0.233	0.348	0.212	0.0432	-0.199	-0.296	-0.262	**0.645****	**0.655****
	(0.197)	(0.185)	(0.284)	(0.281)	(0.359)	(0.330)	(0.696)	(0.475)	(0.080)	(0.064)	(0.408)	(0.349)	(0.264)	(0.513)	(0.930)	(0.658)	(0.313)	(0.391)	(0.026)	(0.024)
WE	**0.413****	**0.588***	0.283	0.341	**0.500***	**0.905***	**0.764****	-0.185	0.305	**0.942****	0.179	0.583	**0.575****	0.599	-0.658	-0.896	**0.867*****	**0.929***	0.212	0.239
	(0.016)	(0.060)	(0.200)	(0.376)	(0.074)	(0.076)	(0.013)	(0.713)	(0.152)	(0.013)	(0.405)	(0.141)	(0.044)	(0.250)	(0.309)	(0.252)	(0.006)	(0.057)	(0.328)	(0.609)
(Mother's SES * WE)		-0.469		-0.152		-1.112		**2.076***		**-1.741****		-1.084		-0.247		1.889		-0.399		-0.128
		(0.485)		(0.849)		(0.295)		(0.059)		(0.028)		(0.172)		(0.847)		(0.291)		(0.742)		(0.890)
Control variables	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes	
Observations	2090	2090	1100	1100	990	990	707	707	1383	1383	1182	1182	908	908	178	178	832	832	1080	1080
r2	0.147	0.147	0.152	0.152	0.170	0.171	0.203	0.191	0.121	0.125	0.152	0.153	0.144	0.126	0.292	0.266	0.168	0.158	0.129	0.121
F	15.79	15.29	8.912	8.583	8.738	8.364	7.312	10.19	9.376	9.104	11.83	11.44	7.075	8.413	13.11	6.033	6.718	8.597	8.718	10.74

Robust p-values in parentheses: *p<0.05, **p<0.01, ***p<0.001.
Source: Author's calculation.

Table 3: IV estimates by sub-samples for HAZ.

Dependent outcome:	Height-for-age																			
	Global		Boys		Girls		(6-23)		(24-59)		Urban		Rural		Mountain		Hill		Terai	
	Linear	Interacted	Linear	Interacted	Linear	Interacted	Linear	Interacted	Linear	Interacted	Linear	Interacted	Linear	Interacted	Linear	Interacted	Linear	Interacted	Linear	Interacted
Mother's SES	0.952	1.040*	0.312	0.461	**1.694****	1.672**	0.324	0.174	0.713	0.663	0.607	0.640	**2.555****	1.659	6.791	7.288	0.927	1.289	0.314	0.0951
	(0.109)	(0.089)	(0.721)	(0.606)	(0.041)	(0.050)	(0.741)	(0.867)	(0.347)	(0.422)	(0.413)	(0.392)	(0.023)	(0.132)	(0.156)	(0.209)	(0.313)	(0.191)	(0.757)	(0.929)
Father's SES	-0.0635	3.007*	0.418	3.135	-0.577	3.201	1.049	-0.465	-0.282	5.821**	-0.217	0.0852	-0.0487	4.195	-4.099	-0.146	-0.460	3.567	0.526	2.982
	(0.874)	(0.089)	(0.447)	(0.140)	(0.321)	(0.283)	(0.146)	(0.869)	(0.556)	(0.014)	(0.700)	(0.968)	(0.950)	(0.212)	(0.275)	(0.984)	(0.419)	(0.303)	(0.467)	(0.266)
WE	**2.800*****	5.040***	2.306	4.403*	**3.211****	5.783**	1.678	0.531	**3.770*****	8.147***	**3.647****	3.874*	1.542	4.827*	4.824	6.874	**4.974****	6.349***	**1.920***	4.183*
	(0.003)	(0.002)	(0.101)	(0.056)	(0.010)	(0.015)	(0.177)	(0.832)	(0.005)	(0.000)	(0.030)	(0.063)	(0.145)	(0.075)	(0.114)	(0.321)	(0.010)	(0.005)	(0.069)	(0.098)
(Mother's SES * WE)		**-4.851***		-4.349		-5.852		2.554		**-9.317*****		-0.497		-5.827		-6.453		-5.883		-3.854
		(0.073)		(0.178)		(0.198)		(0.590)		(0.007)		(0.877)		(0.255)		(0.642)		(0.239)		(0.337)
Control variables	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes	
Observations	2090	2090	1100	1100	990	990	707	707	1383	1383	1182	1182	908	908	178	178	832	832	1080	1080
r2	0.0521	-0.00357	0.0879	0.0337	0.0357	-0.0167	0.180	0.190	-0.0767	-0.267	-0.0285	-0.0321	0.0495	-0.00692	-0.711	-0.934	-0.0555	-0.0600	0.0759	0.0185
F	14.28	13.03	8.086	7.340	8.175	7.481	7.307	7.098	6.952	5.931	7.882	7.518	6.677	5.948	1.507	1.266	6.871	6.560	6.625	6.006
F-statistic	14.615	10.259	5.740	4.026	9.136	5.977	8.069	4.941	6.974	4.807	5.029	4.200	8.834	4.760	0.735	0.394	4.967	3.813	7.926	4.479

Robust p-values in parentheses: *p<0.05, **p<0.01, ***p<0.001.
Source: Author's calculation.

Table 4: OLS estimates by sub-samples for DD.

Dependent outcome:	Dietary diversity																			
	Global		Boys		Girls		(6-23)		(24-59)		Urban		Rural		Mountain		Hill		Terai	
	Linear	Interacted	Linear	Interacted	Linear	Interacted	Linear	Interacted	Linear	Interacted	Linear	Interacted	Linear	Interacted	Linear	Interacted	Linear	Interacted	Linear	Interacted
Mother's SES	**0.547****	0.104	**0.563***	0.000762	0.552	0.154	**0.560****	-1.242**	0.690	1.074	0.501	0.479	**0.895***	-2.023*	**1.169***	0.751	0.177	0.474	**0.830****	0.235
	(0.035)	(0.885)	(0.086)	(0.999)	(0.111)	(0.880)	(0.018)	(0.042)	(0.140)	(0.368)	(0.119)	(0.582)	(0.052)	(0.082)	(0.099)	(0.803)	(0.639)	(0.696)	(0.041)	(0.809)
Father's SES	**0.842*****	0.832***	**0.735****	0.721**	**1.000*****	0.991***	**0.754*****	0.905***	**0.903***	0.911*	**0.624***	0.623*	**1.230*****	1.536***	0.706	1.080*	**1.485*****	1.580***	0.360	0.357
	(0.002)	(0.002)	(0.029)	(0.034)	(0.005)	(0.006)	(0.002)	(0.000)	(0.064)	(0.064)	(0.070)	(0.077)	(0.003)	(0.001)	(0.246)	(0.073)	(0.000)	(0.000)	(0.368)	(0.381)
WE	0.422	0.163	0.259	-0.0680	0.521	0.286	**0.582****	0.0834	0.0805	0.300	0.318	0.305	0.516	-0.125	-0.926	-0.740	0.437	0.670	0.455	0.256
	(0.116)	(0.720)	(0.457)	(0.904)	(0.143)	(0.653)	(0.021)	(0.837)	(0.839)	(0.659)	(0.365)	(0.603)	(0.237)	(0.860)	(0.202)	(0.494)	(0.345)	(0.349)	(0.196)	(0.734)
(Mother's SES * WE)		0.710		0.895		0.645		**2.189****		-0.631		0.0341		**3.085***		0.0785		-0.541		0.817
		(0.516)		(0.511)		(0.675)		(0.016)		(0.725)		(0.980)		(0.082)		(0.985)		(0.753)		(0.615)
Control variables	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes	
Observations	2161	2161	1085	1085	1076	1076	1425	1425	736	736	1196	1196	965	965	195	195	823	823	1143	1143
r2	0.269	0.270	0.223	0.224	0.319	0.319	0.231	0.196	0.140	0.140	0.241	0.241	0.325	0.295	0.413	0.378	0.291	0.277	0.233	0.221
F	41.40	39.56	12.43	11.77	30.18	28.60	23.16	31.11	8.073	7.718	24.08	23.00	25.60	26.18	.	12.14	22.25	24.77	22.06	26.27

Robust p-values in parentheses: *p<0.05, **p<0.01, ***p<0.001.
Source: Author's calculation.

Table 5: IV estimates by sub-samples dor DD.

Dependent outcome:	Dietary diversity																			
	Global		Boys		Girls		(6-23)		(24-59)		Urban		Rural		Mountain		Hill		Terai	
	Linear	Interacted	Linear	Interacted	Linear	Interacted	Linear	Interacted	Linear	Interacted	Linear	Interacted	Linear	Interacted	Linear	Interacted	Linear	Interacted	Linear	Interacted
Mother's SES	-0.160	0.0498	-0.393	-0.598	0.0818	0.0762	0.0896	0.138	-0.398	-0.252	-1.378	-1.689	2.236	1.827	-0.557	-0.537	1.185	1.553	-2.223	-2.614*
	(0.838)	(0.952)	(0.702)	(0.588)	(0.947)	(0.955)	(0.919)	(0.883)	(0.773)	(0.859)	(0.140)	(0.104)	(0.121)	(0.214)	(0.809)	(0.845)	(0.245)	(0.172)	(0.103)	(0.064)
Father's SES	0.569	3.314	0.500	-0.951	0.818	7.895**	-0.187	0.346	**1.793***	7.548	**1.339***	-0.628	1.128	8.481*	**2.250****	4.710	-0.104	9.794**	1.372	-2.485
	(0.292)	(0.197)	(0.464)	(0.780)	(0.347)	(0.040)	(0.760)	(0.900)	(0.054)	(0.132)	(0.063)	(0.851)	(0.230)	(0.090)	(0.048)	(0.830)	(0.897)	(0.019)	(0.175)	(0.534)
WE	**3.171*****	5.383**	**2.729***	1.642	3.261	9.522**	**4.465*****	4.879*	-0.750	3.812	1.574	0.126	1.955	8.913*	-0.456	1.056	0.649	5.576*	**5.393*****	1.544
	(0.009)	(0.027)	(0.057)	(0.599)	(0.136)	(0.016)	(0.000)	(0.066)	(0.773)	(0.353)	(0.292)	(0.963)	(0.266)	(0.071)	(0.808)	(0.912)	(0.740)	(0.078)	(0.000)	(0.695)
(Mother's SES * WE)		-4.620		2.487		**-11.53***		-0.886		-9.741		3.319		-12.33		-4.476		**-14.62****		7.037
		(0.282)		(0.665)		(0.067)		(0.848)		(0.248)		(0.542)		(0.146)		(0.895)		(0.022)		(0.318)
Control variables	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes	
Observations	2161	2161	1085	1085	1076	1076	1425	1425	736	736	1196	1196	965	965	195	195	823	823	1143	1143
r2	0.211	0.177	0.167	0.170	0.269	0.108	0.0754	0.0672	0.120	0.0881	0.201	0.194	0.294	0.122	0.398	0.395	0.288	0.203	-0.00901	0.0237
F	32.90	30.13	13.36	12.79	21.90	17.29	15.26	14.43	4.897	4.569	16.87	15.87	21.10	16.23	6.543	6.064	16.49	14.18	13.57	13.33
F-statistic	14.663	8.878	9.812	4.995	4.601	3.368	11.726	6.173	3.107	2.739	10.121	6.622	5.390	2.576	3.044	0.234	6.212	4.297	9.721	5.387

Robust p-values in parentheses: *p<0.05, **p<0.01, ***p<0.001.
Source: Author's calculation.

5. Discussion

At first, standard OLS estimates show that the mothers' SES is a crucial determinant of children's dietary diversity, unlike WE, and more correlated with better HAZ than WE. These results justify poverty alleviation strategies implemented for a long time focusing on promoting women's SES. Nevertheless, correcting for endogeneity issues and measuring the impact of WE independently from SES effects, our analysis allows us to understand better why promoting women's power is the key strategy to go further on these challenges.

Using an IV strategy, we show that WE can positively affect children's HAZ (especially between 24-59 months) and children's DD (especially between 6-23 months), contrary to the mothers' SES, which has no significant effect. Besides, we highlight that WE can mitigate the negative impact of a low mother's SES on children's HAZ. Hence, the impact of WE on dietary diversity and chronic malnutrition of children appears locally more significant than treating women's poverty issues, where the effect of WE is underestimated if endogeneity is not considered.

Then, we are aware of the preference for sons in the Asian region, although it has not been demonstrated in Nepal (Finaret & al., 2018). In this regard, we contribute to the literature by showing a differentiated impact of WE on child malnutrition according to the child's sex. For chronic malnutrition, WE always positively affect girls, whereas results are non-significant for boys. For dietary diversity, we observe a positive impact of WE on boys and a positive impact that mitigates low mothers' SES for girls. These results suggest that boys are socio-economically advantaged and that women intend to counterbalance this preference. Therefore, WE appears vital in breaking gender inequalities in child malnutrition. Otherwise, we support Moestue's (2009) conclusion that Z-scores are insufficient to measure gender discrimination in children's growth. Further research needs to explore this possible gender bias through differentiated behavior of women in child nutrition when she acquires more autonomy.

Regarding our analysis by ecological zone, we demonstrate that WE positively impact the HAZ in the Hills and contributes by attenuating the negative impact of low mothers' SES on DD there. More important, WE increases the DD in the Terai. Indeed, the region is known for its geographical and cultural proximity to India, which implies an intense pressure exerted on women (restrictions on their mobility, decision-making etc.). However, we cannot conclude about empowerment benefits in the mountains, likely due to our small sample size.

Finally, we have investigated the rural-urban disparities in child malnutrition as demonstrated in many developing countries (*i.e.*, Smith et al., 2005). We demonstrate that WE does not impact the HAZ and DD scores in rural areas, as demonstrated in OLS estimates. In contrast, we show a positive effect of the mother's SES in fighting against stunting. The literature highlights that women in rural areas have low education levels compared to urban, with multiple adverse consequences on health-seeking, care practices, and child-feeding (Smith & al., 2005). Hence, we recommend investing in education to achieve better nutritional results with a special effort on girls, as their level of education will matter more than their future husbands to act for their child's health (Nepal, 2018). We also recommend increasing women's SES to increase children's HAZ, which corresponds to a cessation of their

agricultural activities according to our indicator of SES. Indeed, a transition takes place in agriculture with a "feminization" of the labor force (Grassi & al., 2015), where women need to compensate for the absence of husbands working abroad (Tamang & al., 2014). These labor-intensive activities do not exclude other women's activities, including domestic work and childcare, which harm women's and children's well-being (*i.e.*, Pattnaik & al., 2018). Thus, we encourage policies supporting these women in their new roles, considering their need to adapt to new economic constraints that can negatively affect their children's health (Brauner-Otto et al., 2019). Besides, the literature shows that WE (considered as women's participation in agricultural production through hours worked) is a way to increase children's DD in rural areas (Malapit et al., 2013). Considering these maternal characteristics relevant to women's SES here, our estimates corroborate this result even if our women's SES indicator is non-significant. Indeed, we justify this fact because the mother's agricultural occupation is situated at the start of the women's SES distribution, whereas a high level of education is at the end, both having a positive impact on children's DD.

6. Conclusion

While the role of WE in child nutrition is now well known, WE is often reduced to its economic dimension indirectly measured by women's education and employment. However, feminist pioneers of the concept criticize how WE is instrumented to promote women's SES, forgetting the initial idea to increase their power to better results. From this perspective, this article aims to analyze the relationship between WE, in a conception called "radical," and children's nutrition, testing for interaction effects with the mothers' SES. Based on the 2016 NDHS, we construct representative indices of these multidimensional phenomena using an MCA approach and assess their impact on children's HAZ and DD. Filling the literature gaps that do not address endogeneity issues through an IV strategy, we highlight the interactive effects of these two conceptions of empowerment, providing interesting conclusions in many respects.

First, we show that WE can positively affect the DD of children before 24 months and promote their HAZ in the long run, regardless of the impact of SES, also contributing to mitigating the negative effect of a low mother's SES on child nutritional outcomes. Second, we show the existence of gender disparities in malnutrition in Nepal, where boys are economically advantaged. We see that WE contributes to increasing girls' nutrition which has important implications, as two third of malnutrition issues are due to intergenerational transmission (Thompson, 2014). Thus, improving the nutritional situation of young girls can improve the nutritional status of future mothers who will give birth to healthier children and break the vicious circle of malnutrition locally, deeply rooted in the gender issue. Finally, we justify why policies nowadays take more interest in women's status to fight child malnutrition, as it is a crucial determinant in rural areas. We recommend policies that promote women's education and stress the need to support working women. Our results make it possible to qualify the literature where the participation of women in the labor market is seen as a factor of empowerment. Future research needs to pay attention to women agricultural workers (Komatsu et al., 2018) and, more broadly, to the increase in female labor force participation in agriculture since the mid-1900s. Future works must explore the challenge of increasing women's status in LMICS as Nepal and its multiple consequences, for instance, on breastfeeding practices.

Although our work does not address which are the most important dimensions of WE to fight child malnutrition, we highlight the value of implementing new policies focusing on WE in terms of power to solve this "Asian Enigma." Nevertheless, we call for a nuanced promotion of WE that does not alienate men, promoting healthy gender relationships to build healthy family dynamics beneficial to all (Murshid, 2016).

7. References

Alkire, S., Malapit, H., Meinzen-Dick, R., Peterman, A., Quisumbing, A., Seymour, G., & Vaz, A. (2013). *Instructional Guide on the Women's Empowerment in Agriculture Index. IFPIR, Washington DC USA (82pp).*

Alkire, S., Meinzen-Dick, R., Peterman, A., Quisumbing, A., Seymour, G., & Vaz, A. (2013). The women's empowerment in agriculture index. *World Development*, *52*, 71–91.

Allendorf, K. (2007). Do women's land rights promote empowerment and child health in Nepal? *World Development*, *35*(11), 1975–1988.

Almond, B. (2006). Genetic profiling of newborns: Ethical and social issues. *Nature Reviews Genetics*, *7*(1), 67–71.

Alsop, R., & Heinsohn, N. (2005). *Measuring empowerment in practice: Structuring analysis and framing indicators* (Vol. 3510). World Bank Publications.

Black, R. E., Allen, L. H., Bhutta, Z. A., Caulfield, L. E., De Onis, M., Ezzati, M., Mathers, C., Rivera, J., Maternal, & Group, C. U. S. (2008). Maternal and child undernutrition: Global and regional exposures and health consequences. *The Lancet*, *371*(9608), 243–260.

Bonnefond, C., Clément, M., & Combarnous, F. (2015). In search of the elusive Chinese urban middle class: An exploratory analysis. *Post-Communist Economies*, *27*(1), 41–59.

Brauner-Otto, S., Baird, S., & Ghimire, D. (2019). Maternal employment and child health in Nepal: The importance of job type and timing across the child's first five years. *Social Science & Medicine*, *224*, 94–105.

Carlson, G. J., Kordas, K., & Murray-Kolb, L. E. (2015). Associations between women's autonomy and child nutritional status: A review of the literature. *Maternal & Child Nutrition*, *11*(4), 452–482.

Chowdhury, S. R., & Mathur, K. (2021). Why Do Women Support Wife-Beating More Than Men in India? Evidence From the National Family Health Survey (2015–2016). *The Family Journal*, 10664807211022000.

Cunningham, K., Headey, D., Singh, A., Karmacharya, C., & Rana, P. P. (2017). Maternal and child nutrition in Nepal: Examining drivers of progress from the mid-1990s to 2010s. *Global Food Security*, *13*, 30–37.

Cunningham, K., Ruel, M., Ferguson, E., & Uauy, R. (2015). Women's empowerment and child nutritional status in South Asia: A synthesis of the literature. *Maternal & Child Nutrition*, *11*(1), 1–19.

Ewerling, F., Lynch, J. W., Victora, C. G., van Eerdewijk, A., Tyszler, M., & Barros, A. J. (2017). The SWPER index for women's empowerment in Africa: Development and validation of an index based on survey data. *The Lancet Global Health*, *5*(9), e916–e923.

Ewerling, F., Raj, A., Victora, C. G., Hellwig, F., Coll, C. V., & Barros, A. J. (2021). A Survey-Based Women's Empowerment Index for Low-and Middle-Income Countries: The SWPER Goes Global. *International Journal of Epidemiology*, *50*(Supplement_1), dyab168-193.

Falquet, J. (2008). De gré ou de force. Les femmes dans la mondialisation. *Lectures, Publications Reçues*.

Fikree, F. F., & Pasha, O. (2004). Role of gender in health disparity: The South Asian context. *Bmj*, *328*(7443), 823–826.

Finaret, A. B., Miller, L. C., Joshi, N., Mahato, S., Lohani, M., Drozdowsky, J., & Rogers, B. L. (2018). Longitudinal analysis of the intrahousehold distribution of foods in rural Nepal: Relative variability of child dietary quality across age and sex cohorts. *Food Policy*, *79*, 101–110.

Friedmann, J. (1992). *Empowerment: The politics of alternative development*. John Wiley & Sons.

Galobardes, B., Lynch, J., & Smith, G. D. (2007). *Measuring socioeconomic position in health research*.

Gelbach, J. B. (2002). Public schooling for young children and maternal labor supply. *American Economic Review*, *92*(1), 307–322.

Grassi, F., Landberg, J., & Huyer, S. (2015). Running out of time: The reduction of women's work burden in agricultural production. *Rome: Food and Agricultural Organization of the United Nations*.

Gyampoh, S., Otoo, G. E., & Aryeetey, R. N. O. (2014). Child feeding knowledge and practices among women participating in growth monitoring and promotion in Accra, Ghana. *BMC Pregnancy and Childbirth*, *14*(1), 1–7.

Htun, N. M. M., Hnin, Z. L., & Khaing, W. (2021). Empowerment and health care access barriers among currently married women in Myanmar. *BMC Public Health*, *21*(1), 1–9.

Ibrahim, S., & Alkire, S. (2007). Agency and empowerment: A proposal for internationally comparable indicators. *Oxford Development Studies*, *35*(4), 379–403.

Jones, R. E., Haardörfer, R., Ramakrishnan, U., Yount, K. M., Miedema, S. S., Roach, T. D., & Girard, A. W. (2020). Intrinsic and instrumental agency associated with nutritional status of East African women. *Social Science & Medicine*, *247*, 112803.

Kabeer, N. (1999). Resources, agency, achievements: Reflections on the measurement of women's empowerment. *Development and Change*, *30*(3), 435–464.

Kabeer, N. (2005). Gender equality and women's empowerment: A critical analysis of the third millennium development goal 1. *Gender & Development*, *13*(1), 13–24.

Komatsu, H., Malapit, H. J. L., & Theis, S. (2018). Does women's time in domestic work and agriculture affect women's and children's dietary diversity? Evidence from Bangladesh, Nepal, Cambodia, Ghana, and Mozambique. *Food Policy*, *79*, 256–270.

Lépine, A., & Strobl, E. (2013). The effect of women's bargaining power on child nutrition in rural Senegal. *World Development*, *45*, 17–30.

Lombardini, S., Bowman, K., & Garwood, R. (2017). *A'How To'Guide to Measuring Women's Empowerment: Sharing experience from Oxfam's impact evaluations*. Oxfam GB.

Malapit, H. J., Kadiyala, S., Quisumbing, A. R., Cunningham, K., & Tyagi, P. (2013). *Women's empowerment in agriculture, production diversity, and nutrition: Evidence from Nepal*.

Malapit, H. J., Kadiyala, S., Quisumbing, A. R., Cunningham, K., & Tyagi, P. (2015). Women's empowerment mitigates the negative effects of low production diversity on maternal and child nutrition in Nepal. *The Journal of Development Studies*, *51*(8), 1097–1123.

Moestue, H. (2009). Can anthropometry measure gender discrimination? An analysis using WHO standards to assess the growth of Bangladeshi children. *Public Health Nutrition*, *12*(8), 1085–1091.

Murshid, N. S. (2016). Mothers' empowerment and father involvement in child health care in Bangladesh. *Children and Youth Services Review*, *68*, 17–23.

Nepal, A. K. (2018). What matters more for child health: A father's education or mother's education? *World Development Perspectives*, *10–12*, 24–33.

Onah, M. N. (2021). Women's empowerment and child nutrition in South-Central Asia; how important is socioeconomic status? *SSM-Population Health*, *13*, 100718.

Parpart, J. (2002). Gender and empowerment: New thoughts, new approaches. *The Companion to Development Studies*, 338–342.

Pattnaik, I., Lahiri-Dutt, K., Lockie, S., & Pritchard, B. (2018). The feminization of agriculture or the feminization of agrarian distress? Tracking the trajectory of women in agriculture in India. *Journal of the Asia Pacific Economy*, *23*(1), 138–155.

Pennington, A., Orton, L., Nayak, S., Ring, A., Petticrew, M., Sowden, A., White, M., & Whitehead, M. (2018). The health impacts of women's low control in their living environment: A theory-based systematic review of observational studies in societies with profound gender discrimination. *Health & Place*, *51*, 1–10.

Perry, H. B., Sacks, E., Schleiff, M., Kumapley, R., Gupta, S., Rassekh, B. M., & Freeman, P. A. (2017). Comprehensive review of the evidence regarding the effectiveness of community–based primary health care in improving maternal, neonatal and child health: 6. strategies used by effective projects. *Journal of Global Health*, *7*(1).

Quisumbing, A. R., Brown, L. R., Feldstein, H. S., Haddad, L., & Peña, C. (1996). Women: The key to food security. *Food and Nutrition Bulletin*, *17*(1), 1–2.

Ramachandran, N. (2006). Women and food security in South Asia. *Research Paper Prepared for the UNU-WIDER (United Nations University World Institute for Development Economics Research). Helsinki*.

Ramalingaswami, V., Jonsson, U., & Rhode, J. (1997). Malnutrition: A south Asian enigma. *Malnutrition in South Asia: A Regional Profile. UNICEF Regional Office for South Asia*, 11–22.

Richardson, R. A. (2018). Measuring women's empowerment: A critical review of current practices and recommendations for researchers. *Social Indicators Research*, *137*(2), 539–557.

Rowlands, J. (1997). *Questioning empowerment: Working with women in Honduras*. Oxfam.

Sandberg, J., & Rafail, P. (2013). Measurement models of women's autonomy using the 1998/1999 India DHS. *Journal of Population Research*, *30*(4), 367–381.

Schultz, T. P. (1984). Studying the impact of household economic and community variables on child mortality. *Population and Development Review*, *10*, 215–235.

Sen, A. (1985). Freedom and agency. *The Journal of Philosophy*, *82*(4), 203–221.

Simkhada, P., Van Teijlingen, E., Winter, R. C., Fanning, C., Dhungel, A., & Marahatta, S. B. (2015). Why are so many Nepali women killing themselves? A review of key issues. *Journal of Manmohan Memorial Institute of Health Sciences*, *1*(4), 43–49.

Smith, L. C., Ruel, M. T., & Ndiaye, A. (2005). Why is child malnutrition lower in urban than in rural areas? Evidence from 36 developing countries. *World Development*, *33*(8), 1285–1305.

Tamang, S., Paudel, K. P., & Shrestha, K. K. (2014). Feminization of agriculture and its implications for food security in rural Nepal. *Journal of Forest and Livelihood*, *12*(1), 20–32.

Thompson, O. (2014). Genetic mechanisms in the intergenerational transmission of health. *Journal of Health Economics*, *35*, 132–146. https://doi.org/10.1016/j.jhealeco.2014.02.003

Wong, K.-F. (2003). Empowerment as a panacea for poverty-old wine in new bottles? Reflections on the World Bank's conception of power. *Progress in Development Studies*, *3*(4), 307–322.

World Health Organization. (2006). *WHO child growth standards: Length/height-for-age, weight-for-age, weight-for-length, weight-for-height and body mass index-for-age: methods and development*. World Health Organization.

World Health Organization. (2017). *Global Nutrition Monitoring Framework: Operational guidance for tracking progress in meeting targets for 2025*.

World Health Organization. (2021). *The State of Food Security and Nutrition in the World 2021: Transforming food systems for food security, improved nutrition and affordable healthy diets for all* (Vol. 2021). Food & Agriculture Org.

Appendix A. Supplementary data

Table A1: MCA's statistics for row and column categories in symmetric normalization (measure of WE).

		Overall		Dimension 1			Dimension 2			Dimension 3		
	mass	quality	%inert	coord	sqcorr	contrib	coord	sqcorr	contrib	coord	sqcorr	contrib
Beating if: goes out without permission												
No	0.052	0.365	0.003	0.014	0.043	0.000	0.035	0.254	0.004	0.018	0.068	0.002
Yes	0.007	0.365	0.021	-0.107	0.043	0.003	-0.260	0.254	0.027	-0.134	0.068	0.012
Beating if: neglects the children												
No	0.045	0.257	0.005	0.015	0.022	0.000	0.042	0.171	0.005	0.026	0.064	0.003
Yes	0.013	0.257	0.018	-0.050	0.022	0.001	-0.142	0.171	0.015	-0.087	0.064	0.010
Beating if: argues with him												
No	0.054	0.335	0.002	0.019	0.098	0.001	0.026	0.180	0.002	0.015	0.057	0.001
Yes	0.005	0.335	0.024	-0.203	0.098	0.008	-0.276	0.180	0.022	-0.155	0.057	0.012
Beating if: refuses sex												
No	0.057	0.322	0.001	0.009	0.075	0.000	0.014	0.201	0.001	0.007	0.046	0.000
Yes	0.002	0.322	0.021	-0.282	0.075	0.005	-0.461	0.201	0.021	-0.221	0.046	0.008
Beating if: burns the food												
No	0.057	0.324	0.001	0.010	0.103	0.000	0.013	0.175	0.001	0.007	0.046	0.000
Yes	0.002	0.324	0.019	-0.296	0.103	0.007	-0.385	0.175	0.016	-0.197	0.046	0.008
Health care: permission												
Big problem	0.017	0.707	0.018	-0.177	0.338	0.022	-0.180	0.348	0.032	-0.045	0.021	0.003
Not a big problem	0.041	0.707	0.008	0.074	0.338	0.009	0.075	0.348	0.013	0.019	0.021	0.001
Health care: money												
Big problem	0.035	0.602	0.013	-0.078	0.180	0.009	-0.115	0.397	0.026	-0.029	0.025	0.003
Not a big problem	0.023	0.602	0.020	0.117	0.180	0.013	0.174	0.397	0.040	0.044	0.025	0.004
Health care: distance												
Big problem	0.036	0.589	0.015	-0.073	0.143	0.008	-0.124	0.416	0.031	-0.033	0.031	0.004
Not a big problem	0.022	0.589	0.025	0.117	0.143	0.012	0.200	0.416	0.051	0.054	0.031	0.006
Health care: go alone												
Big problem	0.043	0.548	0.011	-0.060	0.155	0.006	-0.091	0.360	0.020	-0.028	0.033	0.003
Not a big problem	0.016	0.548	0.030	0.159	0.155	0.016	0.242	0.360	0.053	0.073	0.033	0.008
Health care: health provider												
Big problem	0.042	0.547	0.008	-0.052	0.161	0.005	-0.077	0.351	0.014	-0.024	0.034	0.002
Not a big problem	0.017	0.547	0.019	0.126	0.161	0.011	0.186	0.351	0.034	0.058	0.034	0.006
Health mothers' groups												
No	0.034	0.170	0.002	-0.032	0.162	0.001	-0.007	0.008	0.000	0.000	0.000	0.000
Yes	0.025	0.170	0.003	0.044	0.162	0.002	0.010	0.008	0.000	-0.000	0.000	0.000
Growth monitoring promotion groups												
No	0.042	0.187	0.002	-0.027	0.186	0.001	0.001	0.000	0.000	-0.001	0.000	0.000
Yes	0.016	0.187	0.005	0.069	0.186	0.003	-0.003	0.000	0.000	0.002	0.000	0.000
Decision: Respondent's healthcare												
Respondent alone	0.013	0.831	0.031	0.247	0.279	0.031	0.166	0.126	0.020	-0.305	0.426	0.116
Respondent and husband	0.017	0.600	0.025	0.185	0.255	0.023	-0.012	0.001	0.000	0.215	0.344	0.076
Husband	0.018	0.549	0.024	-0.010	0.001	0.000	-0.253	0.546	0.066	0.015	0.002	0.000
Someone else	0.011	0.833	0.052	-0.534	0.690	0.127	0.243	0.143	0.037	0.005	0.000	0.000
Other	0.000	0.019	0.025	-0.416	0.016	0.001	0.033	0.000	0.000	-0.173	0.003	0.001
Decision: Large household purchases												
Respondent alone	0.016	0.805	0.030	0.282	0.483	0.052	0.064	0.025	0.004	-0.221	0.297	0.078
Respondent and husband	0.009	0.756	0.022	0.267	0.316	0.025	-0.020	0.002	0.000	0.314	0.438	0.084
Husband	0.013	0.658	0.028	0.031	0.005	0.000	-0.346	0.643	0.088	0.043	0.010	0.002
Someone else	0.020	0.814	0.044	-0.352	0.651	0.101	0.175	0.161	0.035	0.018	0.002	0.001
Other	0.000	0.015	0.030	-0.216	0.008	0.001	0.163	0.005	0.001	-0.122	0.003	0.001
Decision: Visit family or relatives												
Respondent alone	0.012	0.813	0.031	0.282	0.347	0.038	0.107	0.050	0.008	-0.309	0.417	0.114
Respondent and husband	0.013	0.647	0.030	0.239	0.291	0.030	-0.031	0.005	0.001	0.263	0.351	0.090
Husband	0.015	0.565	0.028	0.040	0.009	0.001	-0.303	0.555	0.077	0.005	0.000	0.000
Someone else	0.018	0.810	0.049	-0.392	0.644	0.111	0.198	0.165	0.040	0.011	0.001	0.000
Other	0.000	0.009	0.031	-0.212	0.007	0.001	0.100	0.001	0.000	-0.092	0.001	0.000
Decision: Using husband earns												
Respondent alone	0.008	0.855	0.027	0.309	0.304	0.029	0.155	0.076	0.010	-0.386	0.474	0.111
Respondent and husband	0.022	0.667	0.020	0.178	0.405	0.028	-0.009	0.001	0.000	0.143	0.260	0.045
Husband	0.018	0.547	0.018	-0.049	0.027	0.002	-0.215	0.517	0.046	-0.017	0.003	0.000
Someone else	0.010	0.854	0.045	-0.508	0.680	0.107	0.256	0.174	0.038	0.003	0.000	0.000
Other	0.001	0.562	0.001	-0.189	0.384	0.001	0.127	0.175	0.001	-0.018	0.003	0.000
Decision: Children's education												
Respondent alone	0.010	0.829	0.028	0.229	0.209	0.021	0.150	0.090	0.013	-0.365	0.530	0.130
Respondent and husband	0.024	0.682	0.018	0.145	0.331	0.020	-0.013	0.003	0.000	0.149	0.348	0.053
Husband	0.013	0.501	0.024	-0.061	0.024	0.002	-0.273	0.477	0.056	-0.004	0.000	0.000
Someone else	0.008	0.873	0.039	-0.559	0.706	0.097	0.271	0.166	0.032	0.014	0.000	0.000
Other	0.004	0.456	0.004	-0.190	0.358	0.005	0.098	0.097	0.002	-0.010	0.001	0.000

Source: Author's calculations.

Table A2: Results from the MCA (measure of WE).

Dimensions	Principal Inertia	Percent	Cumul percent
dim 1	.025025	28.42	28.42
dim 2	.0177742	20.18	48.60
dim 3	.010184	11.56	60.16
dim 4	.0073836	8.38	68.54
dim 5	.0071277	8.09	76.64
dim 6	.0044804	5.09	81.73
dim 7	.0004806	0.55	82.27
dim 8	4.26e-06	0.00	82.28
dim 9	3.02e-08	0.00	82.28
Total	.0880694	100.00	

Source: Author's calculations.

Table A3: MCA's statistics for row and column categories in symmetric normalization (measure of the mother's SES).

		Overall		Dimension 1			Dimension 2		
	mass	quality	%inert	coord	sqcorr	contrib	coord	sqcorr	contrib
Wealth									
Poorest	0.088	0.809	0.156	0.389	0.802	0.155	0.035	0.006	0.029
Poorer	0.074	0.629	0.031	0.165	0.603	0.024	0.034	0.026	0.024
Middle	0.067	0.465	0.009	-0.075	0.399	0.004	-0.030	0.066	0.017
Richer	0.060	0.780	0.059	-0.271	0.701	0.052	-0.090	0.078	0.136
Richest	0.044	0.871	0.155	-0.572	0.866	0.167	0.044	0.005	0.023
Mother's level of education									
No education	0.113	0.861	0.049	0.197	0.838	0.051	-0.033	0.023	0.033
Premiary	0.067	0.711	0.019	0.146	0.694	0.017	0.022	0.016	0.009
Secondary	0.108	0.170	0.016	-0.047	0.136	0.003	-0.024	0.035	0.017
Higher	0.046	0.959	0.161	-0.591	0.930	0.186	0.105	0.029	0.138
Mother's occupation									
Did not work	0.121	0.669	0.088	-0.207	0.552	0.061	-0.095	0.117	0.304
Professionnal/managerial	0.046	0.962	0.111	-0.479	0.895	0.124	0.131	0.067	0.218
Agricultural	0.166	0.881	0.145	0.284	0.869	0.157	0.033	0.012	0.051

Source: Author's calculations.

Table A4: Results from the MCA (measure of the mother's SES).

Dimensions	Principal inertia	Percent	Cumul percent
dim 1	.0855205	80.34	80.34
dim 2	.0036255	3.41	83.75
dim 3	.0026922	2.53	86.28
dim 4	.0002605	0.24	86.52
dim 5	7.12e-06	0.01	86.53
Total	.1064459	100.00	

Source: Author's calculations.

Table A5: Descriptive statistics of constitutive elements of the measure of the mothers' SES.

Categorcial variables	Freq.	Percent
Wealth index		
First quintile	1,164	26.50
Second quintile	970	22.08
Third quintile	892	20.31
Fourth quintile	794	18.07
Fifth quintile	573	13.04
Total	4,348	100.00
Mother's occupation		
Not work	1,606	36.56
Agricultural/self-employed	604	13.75
Others categories	2,183	49.69
Total	4,393	100.00
Mother's level of education		
Education	1,495	34.03
Primary	880	20.03
Secondary	1,423	32.39
Higher	595	13.54
Total	4,393	100.00

Source: Author's calculations.

Table A6: Descriptive statistics of control variables.

	Variables	Obs.	Type of variable	Mean	Std. Dev.	Min.	Max.
Child's characteristics	Child's age (months)	4,393	Continuous	32.82677	15.68463	6	60
	Birth order	4,393	Continuous	2.273162	1.532154	1	14
	Birth interval (3 years)	4,393	Continuous	.8019577	.5835681	0	3
	Size at birth	4,383	Qualitative	2.856947	.889272	1	4
	Child's sex	4,393	Dummy	1.470749	.4992005	1	2
	Breastfeeding status	4,393	Dummy	.5688595	.495292	0	1
	Place of delivery	4,393	Dummy	.58229	.493238	0	1
Mother's characteristics	Mother's age	4,393	Continuous	26.50922	5.43943	15	49
	Mother's BMI	2,214	Continuous	21.49534	3.464771	14.23	38.05
	Number of children less than five years old	4,393	Continuous	1.048941	.8592258	0	6
Household's characteristics	Religion	4,393	Qualitative	1.273162	.783802	1	5
	Household's size	4,393	Continuous	6.181653	2.945662	2	38
	Sex of the household head	4,393	Dummy	1.310266	.4626552	1	2
	Father's SES	4,300	Continuous	0.30726	.2264715	0.01	1
	Type of residence	4,393	Dummy	1.427954	.4948384	1	2
	Ecological region	4,393	Qualitative	2.410653	.6467625	1	3

Source: Author's calculations.

Table A7: Full set of instruments used by endogenous variables.

Endogenous variables	Instruments
Mother's SES/ Father's SES	The PSU-level median of the indicator of SES considered; the PSU-level median of the type of combustible fuel.
Empowerment (WE)	The PSU-level median of respondents who have an account in a bank or other financial institution; the PSU-level median of respondents' age at first cohabitation.
Interaction term (Mother's SES * WE)	(The PSU-level median of the mother's SES indicator * the PSU-level median of the type of combustible fuel).

Source: Author's calculations.

Table A8: Tests of instrument validity.

Dependent variable		Height-for-age		Dietary diversity	
		Linear	Interacted	Linear	Interacted
Tests of over-identification (instrument exogenity)	*H0:*				
Over-identifying restrictions are valid					
Hansen J-statistic		0.316	0.113	1.388	0.918
Chi2 distribution p-value		0.8539	0.9449	0.4995	0.6320
Tests of under-identification (instrument relevance)	*H0:*				
Equations are under-identified					
Kleibergen Papp rk LM statistic		71.463	33.434	71.678	23.999
Chi2 distribution p-value		0.0000	0.0000	0.0000	0.0000
Tests of weak identification	*Weak*				
if: Wald F-stat< Stock-Yogo test					
Cragg-Donal Wald F-statistic		14.615	10.259	14.663	8.878
Stock-Yogo weak ID test critical values (10%)		9.53	Not available	9.53	Not available

Source: Author's calculations.

Table A9: First-stage regression results.

	Linear			Interacted			
HAZ	Father's SES	Mother's SES	WE	Father's SES	Mother's SES	WE	INTER
SESpère_PSU	**0.647*** **	0.0249	**0.145*** **	**0.649*** **	0.0234	0.134***	0.0334
	(0.000)	(0.592)	(0.001)	(0.000)	(0.639)	(0.003)	(0.410)
SESmère_PSU	0.0618	**0.705*** **	-0.0451	0.0620	**0.704*** **	-0.0473	**0.410*** **
	(0.102)	(0.000)	(0.176)	(0.103)	(0.000)	(0.158)	(0.000)
fuel_PSU	**0.0578*** **	**0.0700*** **	**0.0326*** **	**0.0597***	**0.0677** **	0.0156	-0.0199
	(0.000)	(0.000)	(0.007)	(0.064)	(0.031)	(0.584)	(0.436)
bank_PSU	-0.00335	0.00601	**0.0430*** **	-0.00337	0.00604	**0.0432*** **	**0.0218*** **
	(0.746)	(0.551)	(0.000)	(0.745)	(0.549)	(0.000)	(0.008)
agecohab_PSU	**-0.0120*** **	**-0.0103*** **	**0.0130*** **	**-0.0120*** **	**-0.0103*** **	**0.0128*** **	-0.00165
	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)	(0.000)	(0.495)
(SES_PSU *fuel_PSU)				-0.00457	0.00567	0.0418	**0.214*** **
				(0.949)	(0.935)	(0.507)	(0.000)
Observations	2090	2090	2090	2090	2090	2090	2090
Centered R2	0.0521	0.0521	0.0521	-0.0036	-0.0036	-0.0036	-0.0036
F-stat	154.60	282.71	28.40	128.77	235.48	23.73	192.54

			Linear			Interacted	
DD	Father's SES	Mother's SES	WE	Father's SES	Mother's SES	WE	INTER
SESpère_PSU	**0.719*** **	**0.126*** **	**0.156*** **	**0.718*** **	**0.151*** **	**0.152*** **	**0.151*** **
	(0.000)	(0.005)	(0.000)	(0.000)	(0.002)	(0.001)	(0.000)
SESmère_PSU	0.0485	**0.673*** **	-0.0306	0.0483	**0.677*** **	-0.0313	**0.375*** **
	(0.220)	(0.000)	(0.381)	(0.222)	(0.000)	(0.372)	(0.000)
fuel_PSU	0.0165	**0.0450*** **	**0.0241***	0.0148	**0.0852*** **	0.0166	0.000600
	(0.251)	(0.001)	(0.057)	(0.666)	(0.006)	(0.584)	(0.981)
bank_PSU	-0.000636	-0.000201	**0.0538*** **	-0.000625	-0.000459	**0.0538*** **	**0.0243*** **
	(0.954)	(0.984)	(0.000)	(0.955)	(0.963)	(0.000)	(0.002)
agecohab_PSU	**-0.00890*** **	**-0.00821*** **	**0.0126*** **	**-0.00892*** **	**-0.00775*** **	**0.0126*** **	0.0000945
	(0.003)	(0.003)	(0.000)	(0.003)	(0.005)	(0.000)	(0.966)
(SES_PSU *fuel_PSU)				0.00412	-0.0981	0.0185	**0.113** **
				(0.957)	(0.156)	(0.783)	(0.041)
Observations	2161	2161	2161	2161	2161	2161	2161
Centered R2	0.2112	0.2112	0.2112	0.1767	0.1767	0.1767	0.1767
F-stat	143.11	298.12	29.88	119.20	248.89	24.90	206.40

Robust p-values in parentheses: *p<0.05, **p<0.01, ***p<0.001.
Source: Author's calculations.

Table A10: OLS and IV estimates, all control variables included (measure of the mother's SES).

	Height-for-age				Dietary diversity			
	OLS	OLS	IV	IV	OLS	OLS	IV	IV
	Linear	Interacted	Linear	Interacted	Linear	Interacted	Linear	Interacted
Father's SES	0.246	0.253	0.952	**1.040***	**0.842*****	**0.832*****	-0.160	0.0498
	(0.197)	(0.185)	(0.109)	(0.089)	(0.002)	(0.002)	(0.838)	(0.952)
Mother's SES	**0.487*****	**0.789***	-0.0635	**3.007***	**0.547****	0.104	0.569	3.314
	(0.005)	(0.091)	(0.874)	(0.089)	(0.035)	(0.885)	(0.292)	(0.197)
Women's empowerment	**0.413****	**0.588***	**2.800*****	**5.040*****	0.422	0.163	**3.171*****	**5.383****
	(0.016)	(0.060)	(0.003)	(0.002)	(0.116)	(0.720)	(0.009)	(0.027)
Child's age	**-0.0271*****	**-0.0272*****	**-0.0268*****	**-0.0271*****	**-0.0366*****	**-0.0365*****	**-0.0371*****	**-0.0373*****
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Child's sex (girl)	0.0446	0.0436	0.0398	0.0263	**-0.142***	**-0.141***	-0.121	-0.123
	(0.502)	(0.513)	(0.571)	(0.718)	(0.069)	(0.072)	(0.196)	(0.196)
Birth order	**-0.0790*****	**-0.0801*****	-0.0418	-0.0483	**0.0750***	**0.0764***	0.0675	0.0664
	(0.010)	(0.009)	(0.168)	(0.123)	(0.059)	(0.052)	(0.110)	(0.124)
Births last 3 years	**-0.310*****	**-0.308*****	**-0.241*****	**-0.212*****	**-1.258*****	**-1.260*****	**-1.275*****	**-1.261*****
	(0.000)	(0.000)	(0.000)	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)
Size at birth (average)	**-0.167****	**-0.169****	**-0.200****	**-0.219*****	**-0.204***	**-0.202***	**-0.238****	**-0.258****
	(0.016)	(0.015)	(0.010)	(0.007)	(0.051)	(0.054)	(0.022)	(0.017)
Size at birth (smaller than average)	**-0.391*****	**-0.389*****	**-0.360*****	**-0.339*****	-0.166	-0.165	-0.132	-0.122
	(0.000)	(0.000)	(0.000)	(0.001)	(0.228)	(0.231)	(0.303)	(0.351)
Place of delivery (Hospital)	0.0930	0.0920	0.00305	-0.0198	0.123	0.123	0.105	0.0788
	(0.129)	(0.134)	(0.964)	(0.779)	(0.152)	(0.151)	(0.238)	(0.404)
Breastfeeding status (Yes)	**-0.307*****	**-0.308*****	**-0.330*****	**-0.345*****				
	(0.000)	(0.000)	(0.000)	(0.000)				
Mother's BMI	**0.0298*****	**0.0303*****	0.0150	**0.0175***				
	(0.001)	(0.000)	(0.120)	(0.079)				
Mother's age	0.00795	0.00837	-0.00862	-0.00698	-0.00922	-0.00991	**-0.0225***	**-0.0224***
	(0.277)	(0.252)	(0.326)	(0.441)	(0.416)	(0.378)	(0.069)	(0.076)
Number of children less than 5 years old	-0.0471	-0.0477	-0.0771	**-0.0904***	**-0.112***	**-0.111***	**-0.131****	**-0.138****
	(0.302)	(0.296)	(0.118)	(0.079)	(0.088)	(0.090)	(0.032)	(0.028)
Size of the household	-0.00220	-0.00239	0.0252	0.0288	0.0171	0.0177	**0.0558*****	**0.0568*****
	(0.833)	(0.819)	(0.140)	(0.106)	(0.293)	(0.274)	(0.009)	(0.009)
Place of residence (rural)	-0.0709	-0.0759	0.00809	-0.0292	-0.101	-0.0932	0.00757	-0.0188
	(0.302)	(0.277)	(0.902)	(0.676)	(0.263)	(0.305)	(0.933)	(0.843)
Region of development (Hill)	**0.264****	**0.261****	**0.260****	**0.227****	0.106	0.107	0.108	0.125
	(0.017)	(0.018)	(0.016)	(0.044)	(0.470)	(0.471)	(0.454)	(0.400)
Region of development (Terai)	**0.366*****	**0.358*****	**0.455*****	**0.387*****	**-0.485*****	**-0.477*****	**-0.345****	**-0.354****
	(0.001)	(0.001)	(0.000)	(0.002)	(0.001)	(0.001)	(0.048)	(0.047)
Religion (Buddhist)	**0.259***	**0.256***	**0.288****	**0.254***	**-0.445****	**-0.444****	**-0.530*****	**-0.531*****
	(0.071)	(0.074)	(0.038)	(0.079)	(0.045)	(0.045)	(0.006)	(0.007)
Religion (Muslim)	0.0696	0.0657	0.174	0.153	-0.0989	-0.0965	-0.00423	0.00193
	(0.650)	(0.669)	(0.180)	(0.251)	(0.500)	(0.513)	(0.977)	(0.990)
Religion (Kirat)	-0.112	-0.118	-0.111	-0.179	-0.430	-0.427	-0.401	-0.393
	(0.634)	(0.616)	(0.673)	(0.515)	(0.276)	(0.279)	(0.291)	(0.310)
Religion (Christian)	-0.243	-0.237	-0.311	-0.265	0.0356	0.0288	-0.0908	-0.0664
	(0.421)	(0.434)	(0.195)	(0.285)	(0.885)	(0.908)	(0.746)	(0.817)
Household head (female)	**-0.129****	**-0.132****	**-0.247*****	**-0.306*****	**0.278*****	**0.283*****	0.159	0.106
	(0.045)	(0.040)	(0.001)	(0.000)	(0.008)	(0.007)	(0.112)	(0.352)
Interaction term		-0.469		**-4.851***		0.710		-4.620
		(0.485)		(0.073)		(0.516)		(0.282)
Constant	**-1.571*****	**-1.687*****	**-2.523*****	**-3.884*****	**5.748*****	**5.904*****	**4.533*****	**3.245****
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.019)
Observations	2090	2090	2090	2090	2161	2161	2161	2161
R-squared	0.147	0.147			0.269	0.270		
F-statistic	15.79	15.29	14.28	13.03	41.40	39.56	32.90	30.13

Robust p-values in parentheses: *p<0.05, **p<0.01, ***p<0.001.
Source: Author's calculations.

BxWP2023-04

BSE UMR CNRS 6060

Université de
Bordeaux
Avenue Léon
Duguit, Bât.
H 33608
Pessac,
France

Tel : +33 (0)5.56.84.25.75
http://bse.u-bordeaux.fr/

Derniers numéros – Last issues

- 2023-03 **Digital divides among microsized firms: Evidence from Sub-Saharan Africa?** *by Damien GIROLLET*
- 2023-02 **Retombées du très haut débit sur les entreprises: Quels effets sur les performances des entreprises en France ?** *by Florian LEON & Laurent BERGE & Chloé DUVIVIER*
- 2023-01 **Les enjeux maritimes de l'Afrique coloniale française** *by Hubert BONIN*
- 2022-24 **Trains of Thought: High-Speed Rail and Innovation in China** *by Georgios TSIACHTSIRAS & Deyun YIN& Ernest MIGUELEZ &Rosina MORENO*
- 2022-23 **Experienced versus Decision Utility: Large-Scale Comparison for Income-Leisure Preferences** *by Alpaslan AKAY & Olivier BARGAIN & H. Xavier JARA*
- 2022-22 **The Economic Gains of closing the Employment Gender Gap: Evidence from Morocco** *by Olivier BARGAIN & Maria LO BUE*
- 2022-21 **Dynastic Measures of Intergenerational Mobility** *by Olivier BARGAIN & Maria C. LO BUE & Flaviana PALMISANO*
- 2022-20 **Liquidity matters when measuring bank output** *by Raphaël CHIAPPINI & Bertrand GROSLAMBERT & Olivier BRUNO*
- 2022-19 **Distributional National Accounts for Australia, 1991-2018** *by Matthew FISHER-POST & Nicolas HÉRAULT & Roger WILKINS*

Ernest MIGUELEZ is the scientific coordinators of the Bordeaux Economics Working Papers. The layout and distribution are provided by Cyril MESMER.