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## AN ANALYSIS OF THE EFFECT MATERNAL AUTONOMY ON CHILD HEALTH IN CAMEROON USING IV2SLS

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### ABSTRACT

*This paper analyses the effect of maternal autonomy on child health in Cameroon using data extracted from the 2018 Cameroon Demographic and Health Survey (CDHS). The Instrumental Variable Two-Stage- Least Squares (IV2SLS) technique, which control for endogeneity was employed to attain the objective of the study. The results revealed that maternal autonomy had a positive and statistically significant effect on child health in Cameroon. Based on the results, the paper recommends that, need for enhancing government's effort in consolidating sustainable human capital investment effort and instigating the confidence of mothers included in self-directed decisions in the household; as it enable unity and belonging, ameliorate future living standards for children and reduces discrimination. Decision makers in Cameroon could establish obligatory laws to oblige mothers and fathers to be educated on the advantage of inclusive decision-making. This will manifest in good health, mental and psychological balance of children, and smooth and better knowledge intake of a child while in school.*

**KEYWORDS:** *Maternal Autonomy, Child Health, Cameroon*

## 1.INTRODUCTION

Recently, women's autonomy and its association with reproductive health and behavior have emerged as a focal point of researches and interventions around the world. Particularly, since the Cairo International Conference on Population and Development (ICPD) in 1994 (United Nations, 1994) women's role has been an urgency area not only for long term development, but also in reproductive health. At the ICPD, a general consensus was reached to ameliorate women's status, along with the related goals of improving women's reproductive health and securing their reproductive rights, which represents a model shift that emphasizes the reproductive self-sufficiency of individuals. Following the ICPD, there have been a number of recent studies that examine women's autonomy and its relationship with reproductive health and health consequences (Kishor, 2000, 2005; Bloom et al., 2001 and IUSSP, 1997).

Most of these studies found relationships between various aspects of autonomy and reproductive health and behavior, but there are many intricacies and contradictory findings among them, with different aspects of autonomy showing unexpected relationships with reproductive health and preferences in different settings and under different research designs. For example, lower fertility and fertility desire was observed among women with higher levels of autonomy in Bangladesh (Balk, 1994) and in many regions of India (Jejeebhoy, 1991), and lower fertility was found to be associated with women's greater self-sufficiency in Malaysia, the Philippines, and Thailand (Tfaily, 2004). These findings are accredited primarily to higher modern contraceptive use among women with higher autonomy (Schuler & Hashemi, 1994; Dharmalingam and Morgan, 1996; Morgan & Niraula, 1995). On the other hand, in their study of self-sufficiency of women and trends in fertility and contraceptive use in Egypt and Bangladesh (Amin & Lloyd, 1997) found that a low level of female autonomy was not a barrier to fertility change and contraceptive use in Egypt.

Very little experimental evidence is available about the relationship between women's status and maternal and child health utilization (Desai & Johnson, 2005). A study in Uttar Pradesh in North India shows that women's autonomy is the major determinant of maternal health care utilization (Bloom et al., 2001). These authors show that women with greater freedom of movement are more likely to receive antenatal care and to use delivery care and suggest that women's self-sufficiency are equally important as educational and economic characteristics. Another study in India has shown that women who score greater autonomy are more likely to use antenatal and delivery care for their last birth than women with lower autonomy (Basu, 1993). Women's reproductive health-seeking behavior was found to be linked positively with freedom of movement and decision-making power in South India, but these effects were reduced when puzzling factors were taken into account (Bhatia and Cleland, 1995).

The link between maternal autonomy and quality of child health cannot be over emphasised in this study. Women's autonomy which refers to a woman's ability to have control or influence over choices that affect herself and her family within her own particular context. This includes a woman's ability to influence decisions involving family, finances and expenditures, work, social outings, health care, travel, family planning and childcare, along with others. Recently, interest has been growing regarding how social constructs such as women's autonomy may be implicated in child malnutrition which is translated to the quality of child health worldwide and Cameroon in particular (Carlson et al., 2014).

Although largely a preventable condition, child malnutrition is estimated to affect one-third of children in developing countries and is responsible for one-third of under five childhood deaths worldwide (UNICEF & WHO, 2011). One underlying factor in child malnutrition is the lack of appropriate care for women and children (UNICEF, 1998). Care is important for child nutritional (health) status as it comprises measures and behaviours that translate available food and health resources into child growth and development (UNICEF, 1998). It is widely acknowledged that mothers play a vital role in determining the health status of their children.

Women's autonomy has received increased attention in this respect because a mother's degree of autonomy at the household level may affect her ability to make decisions in the best interest of her children or may limit her ability to divert household resources to children. When mothers have control over income, they tend to divert more towards health and nutrition related expenditures than men (Caldwell, 1986; Thomas, 1997; Quisumbing & Maluccio 2000; Quisumbing & Maluccio, 2003). Furthermore, an increase in women's autonomy is sometimes associated with a decrease in child mortality (increased quality of child health) (Boehmer & Williamson, 1996; Hossain et al., 2007).

The millennium development goals (MDGs) health targets over the 1990-2015 horizons were adopted to mend the health of Cameroonians by reducing infant mortality, enhancing maternal autonomy in blend with the other vital objectives. In 1992, the Ministry of Public Health published a national declaration aimed at employing the new health strategy which facilitates the enhancement of maternal autonomy. By 2000, the authorities adopted a comprehensive and ambitious health strategy based on extended consultations with the main actors. Its main objectives, as expressed in the 2003 Poverty Reduction Strategy Paper (PRSP) to clarify the roles and accountabilities of all stakeholders in the provision and financing of health services; and to prepare sub-sector strategies for addressing priority public health issues including infant health, and multiplicative and maternal health services.

Looking at the numerous efforts made by the government on child health as an indicator of well-being: improvement on environment, improved medical facilities, in vaccination campaigns against measles, and other childhood illnesses which reduces under-five (Infant) mortality, infant mortality is still very high as 55.436 deaths per 1000 live births in 2022 for Cameroon. However, it is noted that child well-being in most studies in Cameroon is captured either by health or nutritional outcomes (Fotso, 2017; Tambi 2017; CHE & Sundjo, 2018; Melie & Tambi, 2022). And have used already constructed indexes of weight-for-height Z-scores which measures body weight relative to height and is normally used as an indicator of current nutritional status (wasting), height-for-age Z-score which reflects cumulative linear growth (stunting) and weight-for-age Z-score which indicates body mass relative to age (underweight) as well as child mortality rate (Garti et al., 2018; Tambi, 2017; Fambon & Baye, 2017). These are all conventional methods of measuring child anthropometric. Despite all these measures put in place, child health still remain a major concern in Cameroon. This study therefore, looked at the part played maternal autonomy in the improvement of child health in Cameroon.

Based on the above mention that a paper like is looking at the role of maternal autonomy on child health in Cameroon and of course answer the question of if maternal autonomy actually affects child health in Cameroon.

## 2.LITERATURE

On the conceptual front, autonomy is a multiphase concept. In most studies autonomy has been defined as the capacity to influence one's personal environment through control over resources and information in order to make decisions about one's own concerns or about close family members (Dyson & Moore, 1983; Basu 1993). According to Bloom et al., (2001), maternal autonomy is defined as control over finances, decision making power, and extent of freedom of movement by women in a society. Also, women autonomy can be defined as a concept that has several dimensions which include both control over resources (that is, physical, human, intellectual, and financial) and ideologies (such as, beliefs, values, attitudes, internal strength, self-esteem, and self-confidence) (Pradhan, 2003). It was found out that some direct measures of women autonomy which include accessibility and control over resources, participating in economic decisions, self-esteem, and freedom of movement (ability to move freely without restrictions) play major role in the utilization of maternal health care services (Adhikari, 2016; Kishor & Subaiya, 2008). According to the World Health Organisation (WHO, 2012), child health is a state of physical, mental, intellectual, social, and emotional wellbeing of a child and not merely the absence of diseases or infirmity. This international organisation argues that children live in families, environments, and communities that provide them with opportunity to reach their fullest developmental potentials (Boachie et al., 2014, Rigby & Kohler, 2002 and Adhikari, 2016).

The most important and fundamental theory that explains the linkages and interactions between the concepts of maternal autonomy and quality of child is the “simple model on mothers’ autonomy, health inputs, and child health”, by Grossman, (1972) and Wagstaff, (1986). Augmented by Mandal et al., (2016), they modify the utility function of the representative individual in such a way that child health, which itself is a produced input, enters into the utility function, since a healthy baby probably gives significant amount of satisfaction to the parents. We assume that children are endowed with some initial stock of health, although such health stock is exogenous. Therefore, we have two different objective functions: one is the family utility function and the other one is the child health production function. The representative family or individual allocates resources among different health inputs for child health and the composite good.

On the empirical front, Salman et al., (2020), examined the influence of maternal autonomy on child nutrition in rural Nigeria. They saw that almost 43.3%, 29% and 18.7% of the children were stunted, underweight and wasted respectively. To Salman et al., (2020), higher percentage of mothers (71.53%) had low autonomy. So increase in mothers’ autonomy on own health and decision to visit friends and relatives would decrease the probability of negative child nutrition outcome by 0.058 and 0.1077 respectively. Similar studies with similar outcomes were carried out by (Gabeyehu et al., 2022; Sirois et al., 2021 and Paul &Saha, 2022) in Ethiopia, Canada and India respectively. In the same light, this paper examines the effect of maternal autonomy on child health, singling out high for age z-score in the context of Cameroon.

### 3.METHODOLOGY

#### Scope of Study

Looking at the time scope, the work used secondary data from the Cameroon Demographic Health Survey (CDHS, 2018) collected from 2015 and published for use by the National Institute of Statistics in 2018. CDHS, 2018 data set is relevant for this study because it comprises of information that can be used to construct detailed explanatory variables for maternal autonomy and child health. This can help in the identification of the effects of maternal autonomy on child health in Cameroon, which is the major objective that this study seeks to attain. Furthermore, the comprehensive information provided by this dataset can be useful in generating reasonable results, which can be valuable in deducing important policy implications.

In terms of conceptual scope, this study limits itself to the empirical analysis of women autonomy, and child health. With regards to the definitional scope, the study adopts the definition of (Mason, 1995) which defines and conceptualize as the ability of women to make and execute self-determining decisions pertaining to personal

matters of importance to their lives or their family, even though men and other people may be opposed to their wishes. This definition is adopted because it constitutes all the domains of enhancing women capabilities whose indicators are readily available in Cameroon. Indicators of maternal autonomy include; decision on how to spend earnings, decides on health care, decides on large household purchases, decides on visits to family or relatives and decides what to do with money husband earns. Therefore, maternal autonomy (MA) is an index constructed from the various indicators using multiple correspondent analysis (MCA) because the indicators are categorical in nature.

According to the World Health Organisation (WHO, 2012), child health is a state of physical, mental, intellectual, social, and emotional wellbeing of a child and not merely the absence of diseases or infirmity. This international organisation argues that children live in families, environments, and communities that provide them with opportunity to reach their fullest developmental potentials. (Boachie et al., 2014, Fambon&Baye, 2017 and Tambi, 2017) supported this contextual definition. They employed in their studies anthropometric indicators such as height for age (HAZ), weight for height (WHZ), weight for age (WAZ), leg length for age among others. This study therefore adopts the HAZ because it gives the state of the child (height for age indicator to measure long-term malnutrition effect and weight for height indicator to measure body mass in relation to height) for a long period. Therefore, various factors in which mother's ability to take decisions in the household is dominant can affect child's health.

### Estimation Framework

The adopted method for estimating the effect of household violence and maternal autonomy on child health is the two-stage Least Square (2SLS) using instrumental variables, maternal autonomy at the cluster level. We regress child health index on the maternal autonomy index together with individual characteristics, household-level variables. Modelling maternal autonomy and child health necessitates a model which resolves the econometric problem of endogeneity (Epo&Baye, 2011) that occurs between child health and the independent variable maternal autonomy.

The suggestion of the Dilution Theory by Blake, (1981) is that mothers' decision on bearing more children will deteriorate the child's health and the child's health in turn affects the mothers' level of autonomy. This can lead to a system of equations thus;

$$CH_i = \beta_0 + \beta_1 MA_i + \omega_1 \varphi_i + \mu_1 \quad 1$$

Where CH is child Health, which is our outcome variable of interest; MA stands for maternal Autonomy;  $\omega_1$  is a vector of other explanatory variables affecting child health, while  $\varphi_i$  is a vector of other explanatory variables affecting maternal autonomy. In the econometric model,  $\beta_1$  signifies the actual effect of maternal Autonomy on Child Health. Equally,  $\beta_0$  a parameters to be estimated, while  $\mu$  is the error term respectively. Given that, there can be some biases due to omitted variables, it will be possible that the covariance of maternal Autonomy and the error term ( $\mu$ ) is not equal to zero, hence making our result inconsistent. To redress this situation, we identify an instrument variable  $I$ . This instrument is a factor that affects maternal Autonomy without directly influencing child Health. In other words, a variable can partially determine maternal Autonomy but is uncorrelated with the error term. The maternal Autonomy generating function may take the following structural form:

$$MA_i = \beta_{0CH} + \beta_{1CH} I + \omega_{1CH} \varphi_i + \mu_2 \quad 2$$

The instruments  $I$  used in the model is mothers' education level, mother is employed and maternal earnings. With these instruments, we can estimate a two-stage regression model with the first stage equation as indicated in equation 2 above. As indicated by Morrill (2011), the consistency of the estimate of  $\beta_1$  relies on the validity of the instrument, which is the normalized ( $I$ ). In so far, as  $I$  has not correlated with the error term ( $\mu$ ), it implies that the instrumental variable estimate of the parameter  $\beta_1$  is consistent. In this light, Morrill noted that this is in reality an untestable assumption.

In this regard, the model can be estimated by taking the predicted value of maternal Autonomy from equation 2 and substitute for maternal Autonomy in equation 1 in an IV2SLS model. Based on the introduction of instrumental variables, Tambi (2014) explained that Mwabu (2009) mentioned three properties of an instrument that need to be noted: First, an instrument is relevant if its effect on a potentially endogenous explanatory variable is statistically significant. Second, an instrument is strong, if the size of its effect is 'large'. Last but not the least, the instrument used is exogenous if it is uncorrelated with the structural error term. When all these requirements are made, the instrumental variables concerned is said to be a valid instrument. Endogeneity can arise due to omitted variables, errors-in-variables and simultaneous causality (Bascle, 2008). Endogeneity and heterogeneity bias can compromise the validity of OLS estimators. The IV approach is intended to oxygenize the endogenous regressors using valid, relevant and strong instruments and the most commonly used IV estimation method is the single equation approach of two-stage least squares (2SLS) estimators (Jones, 2007). Considering the reduce form estimate, we remark that the 2SLS estimate of  $I$  can also be thought of as resulting from the division of the reduced form estimate  $\beta_{1CH}$  below, by the first-stage coefficient derived above  $I_{CH}$  (see Morrill, 2011). The reduced form equation is the regression of the child well-being on the instrument: This actually indicates whether the instrument is correlated with the outcome variable of interest.

$$CH_i = \beta_{0CH} + \beta_{1CH} I + \omega_{1CH}\varphi_i + \mu_3$$

3

Evaluating the endogenous variable, Angrist (1999) reveals that 2SLS estimate is a reasonable estimation strategy with limited dependent variables and a dichotomous endogenous variable. Since the variables of interest are all continuous variables with a dichotomous endogenous variable, this makes the model of instrumental variable robust in terms of estimations.

#### 4.PRESENTATION AND DISCUSSION OF RESULT

This section begins with descriptive statistics before the inferential analyses are presented and discussed.

##### 4.1 Weighted Descriptive Statistics

Table 1 shows the weighed sample statistics for short listed variables to be used for our regression results. The weighted descriptive statistics indicates that a random sample 31591 observations for most of the variables, but for the variable Child health, Maternal autonomy and mothers' meanings with different observations. Also, from the table above, the mean of height for age Z-score (HAZ) is -0.9303 and the maximum and minimum value is 5.18 and -59.8 respectively. Its standard deviation is 1.5980 indicating a high deviation from the mean. The min and max value of HAZ differs from others because this variable is not normalised like the other variables in the model. The table above is also use to test for normality, which is to test if the variables used in the model are normally distributed. The table above also shows that the standard deviations of the other variables used is smaller than their mean values. This is an indication that all the other variables used in the model are normally distributed, implying that the variables are perfect variables to be used in the model.

**Table 1Weighted Descriptive Statistics**

Variable	Obs	Mean	Std. dev.	Min	Max
<b>A). Outcome Variable of Interest</b>					
Child Health (Height for Age Z-Score)	31,591	-0.9303	1.5980	-5.98	5.18
<b>B). Endogenous Determinant of Child Health</b>					
Maternal Autonomy (1=Takes Decision, 0=otherwise)	31,591	0.6385	0.1938	0	1
<b>C). Endogenous Instruments</b>					
No Edu (1=Attainted, 0=otherwise)	31,591	0.2893	0.4535	0	1
Primary Edu (1=Attainted, 0=otherwise)	31,591	0.3657	0.4816	0	1
Secondary Edu (1=Attainted, 0=otherwise)	31,591	0.3147	0.4644	0	1
Higher Edu (1=Attainted, 0=otherwise)	31,591	0.0302	0.1712	0	1
Memp (1=Mother Employed, 0=otherwise)	31,591	0.7487	0.4338	0	1
Mearnings (1=Mother Earning, 0=otherwise)	15,592	2.1155	0.5037	0	1
<b>D). Exogenous Demographics</b>					



Type of cooking_fuel (1=wood(traditional) to 12= Solar (modern))	31,591	7.1508	2.15978	1	12
parent_smoke (1=Smokes, 0=otherwise)	31,586	0.0028	0.0524	0	1
Asset_TV (1=Watch TV, 0=otherwise)	31,591	0.4571	0.4982	0	1
Radio (1=Listen to Radio, 0=otherwise)	31,591	0.4016	0.4902	0	1

Source: Computed by the researcher from 2018 Cameroon Demographic Health Survey (DHS)

#### 4.2 Reduced-Form Estimate of the Effects of Maternal Autonomy

This section presents the results of the Ordinary Least Square (OLS), and instrumental variables (IV) approach to explain if the instruments used are valid. All these methods try to explain in clear terms if Maternal Autonomy affects the child health.

**Table 2 Reduced Form Estimates for Maternal Autonomy**

VARIABLES	(1) MA
<i>Instruments</i>	
Noedu	-0.1556*** (0.0094)
Pedu	-0.0672*** (0.0090)
Sedu	-0.0148* (0.0086)
Memp	0.0274*** (0.0081)
Mearnings	0.0177*** (0.0034)
<i>Control</i>	
tcooking_fuel	-0.0058*** (0.0008)
parent_smoke	-0.0913*** (0.0258)
Asset_TV	0.0071* (0.0040)
Radio	0.0075** (0.0032)
Constant	0.6858*** (0.0143)
Observations	15,297
R-squared	0.0982
r2_a	0.0976
F	166.5***

Standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: Author’s Computation Using Stata 17

Table 2 above presents the correlations of maternal autonomy from the reduced form equations. Table 2 indicates that mother’s education at all levels is significant and negatively associated with maternal autonomy. Mothers’ employment (Memp) and mothers’ earnings (Mearnings) on the other hand indicated a significant and positively associated with maternal autonomy. The aforementioned results indicate that our instruments are statistically relevant (Zanin et al., 2014 and Jafari et al., 2016). Hence, the instruments selected for this model are good instruments to be used in the model.

### 4.3 Parameter Estimates of the Maternal Autonomy and Child Health

Table 3 presents estimates of the child Health under different assumptions using maternal autonomy as the main independent variable, while controlling for other correlates. As seen in table 3, column 1 reports that the linear regression (OLS) estimates of the structural parameters; column 2 presents the instrumental variable two stage (IV2SLS) regression results, column 3 presents the control function without interaction which controls for endogeneity, column 4 presents the control function with interaction and is the point of focus in this study.

**Table 3 IV2SLS Parameter Estimates of the Maternal Autonomy and Child Health**

VARIABLES	CH(HAZ)	OLS (1)	2SLS (2)	Control function without interaction (3)	Control function with interaction (4)
<i>Endogenous var</i>					
MA		0.6719*** (0.1835)	3.5869*** (0.8044)	2.0033* (1.0416)	3.0233*** (0.6537)
<i>Included endo var</i>					
Noedu			-0.1868*** (0.2569)		
Pedu			-0.1406*** (0.2447)		
Sedu			-0.0716*** (0.0237)		
Memp			-0.0054 (0.7810)		
Mearnings			-0.0559 (0.0142)		
<i>Control Var</i>					
tcooking_fuel		-0.0982*** (0.0172)	-0.0592** (0.0239)	-0.0724*** (0.0214)	-0.0794*** (0.0204)
parent_smoke		1.4868* (0.7684)	1.2703* (0.7478)	1.4586** (0.6925)	1.5118** (0.6932)
Asset TV		0.3562*** (0.0877)	0.3600*** (0.0889)	0.0978	0.2795*** (0.0892)
Radio		-0.0323 (0.0756)	-0.1501* (0.0862)	0.0782	-0.1240 (0.0785)
<i>Control function var</i>					
MA_Res				-1.6600 (1.0490)	

MA times it predicted residual				-5.1429*** (1.2357)
Constant	-0.7958*** (0.2118)	-2.5513*** (0.5050)	-3.9013 (1.0425)	-2.2023*** (0.4184)
Observations	1,875	1,875	1875	1,875
R-squared	0.0606	-0.0697	0.0666	0.0634
Centered/Adjusted R <sup>2</sup>	0.0576	0.0501	0.3519	0.3497
Fisher test [p-value]	20.09[0.0000]	19.00[0.0000]	16.94(0.0000)	16.44[0.0000]
<i>Diagnostic Tests</i>				
Test of excluded instruments: F[P-value]		22.96 [0.0000]		
Test of Joint Significance of identifying Var/Cragg –Donald weak Identification Test F[10% Relative Bias]		22.96 [18.37] 108.78 [0.0000]		
Underidentification tests (Anderson Canon corr. LR statistics) Chi-Sq[p-value]		3.64 [0.4573]		
Sargan statistics (overidentification test of all instruments) Chi-Sq (1) [p-value]				
Endogeneity test of endogenous regressors Chi-Sq (2) [p-value]		17.96[0.0000]		

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: Author’s Computation Using Stata 17

Table 3 shows the OLS regression results in column 1, the two stage least square (IV2SLS) regression in column 2 and the control function estimates without and with interactions in column 3 and 4 respectively. Findings suggest that the IV2SLS and control function approach produce more robust results than the ordinary least square (OLS) approach because they account for the potential endogeneity bias. This observation indicates the importance of properly estimating the structural parameters to correctly attribute effects for policy guidance. Furthermore, the fitted residual of the composite variables for maternal autonomy in the control function approach estimates the significantly increases child health respectively. Controlling for non-linear interactions between maternal autonomy and unobservable, the interaction term was significant for maternal autonomy.

From the OLS regression result in column 1, maternal autonomy is to have a highly significant positive effect on child health in Cameroon as indicated by the coefficient of 0.6719 significant at 1% level. Among the control variables used in the model, type of cooking fuel (tcooking\_fuel) has a very significant negative effect on child health in Cameroon. Parent smokes and assess TV also has significant positive effects on child health, while radio

had an insignificant negative effect. The overall OLS model on its part was very significant as indicated by the F(P-value) of 0.0000.

As seen from the IV2SLS results column 2 above, maternal autonomy has a very significant positive relationship with child health. When there is an increase in the ability of women to make decision on her own, child health will increase by 3.5869. This is statistically significant at all levels. Among the control variable used in the model, type of cooking fuel, whether parent smokes and access to TV and Radio has significant effects on child health in Cameroon. The overall model too was seen to be highly significant as indicated by the F(P-value) of 0.0000.

The control functions without and with interactions was presented in column 3 and 4 of table 3 respectively. As suggested above, control function approach produce more robust results than the ordinary least square (OLS) approach because they account for the potential endogeneity bias. Looking at the effects of the main variables of maternal autonomy, control function with interaction gives a more robust result as opposed to control function without interaction. This is indicative of the magnitude and significant levels of the variables under consideration. The overall models were also seen to be very significant as their F(P-values) of 0.0000 in both cases.

The study also tests for the relevance, strength and exogeneity of instruments in Table 3 According to Shea (1997), the first-stage F statistics and the partial  $R^2$  convey vital information as to the validity and relevance of instruments in the case of a single endogenous variable. The first-stage F statistics on the excluded instruments are 22.96 and 18.37, respective (p-values=0.000) for the synthetic variables for maternal autonomy and household violence. The Cragg-Donald statistic is needed to assess the strength of excluded instruments (Stock and Yogo, 2004). This value was 22.96, greater than the Stock-Yogo weak ID test critical value at 10% maximal IV relative bias of 11.94. The Durbin-Wu-Hausman Chi-Square statistics of 17.96 which is significant at 1% indicates that maternal autonomy and household violence are indeed endogenous and as such, the OLS estimates are not reliable for inference, implying that the instrumental variables (IV) estimates are preferred. Finally, the reported Sargan Chi-square test statistic of 3.64 with p-value of 0.4573 casts no doubt on the validity of the excluded instruments. This is indication that excluded instruments are justifiably excludable, that is, are appropriately independent of the error process.

#### 4.4 Conclusion and Policy Recommendations

The aim of this paper was to analyse the effects of maternal autonomy on child health and exploring the heterogeneous effects of child health by other instrumental variables. This study however, revealed that little attention has been paid on child health in a multi-dimensional approach using DHS. The main objective of the study was to analyse the effects of maternal autonomy on child health. From the 2018 DHS data, the dimensions

and indicators of maternal autonomy and child health were identified by consensus, with justifications drawn from the child research literature and the United Nations Convention on the Rights of Children, and the child health was constructed using the anthropometric indicators such as height for age (HAZ), weight for height (WHZ), weight for age (WAZ), leg length for age among others. This study therefore adopts the HAZ because it gives the state of the child (height for age indicator to measure long-term malnutrition effect and weight for height indicator to measure body mass in relation to height) for a long period. The result of the IV2SLS shows that maternal autonomy is positively and significantly associated with child health. This implies that if a mother takes self directed decisions especially when she is employed and earns income, the household may benefit from assistance from additional income earned that will improve on the health of the child and the results are consistent with the human capital theory and the results found by Derviservic et al. (2021) and by Oddo and Ickes (2018).

The study also revealed that, the relationship between maternal autonomy and child health is a matter of maternal level of education, employment and earnings. Estimates of child health revealed that when a mother attained secondary education, child health improves. To better inform maternal autonomy-based policy practices with child health, from life course perspective, this study hypothesis that maternal autonomy has cumulative effect on child health. In terms of policy, maternal autonomy is a vital element to be included in the family upbringing of successful child health so that, families raising up children with improved health and mental balance should start early and last longer. This is enshrined in sustainable development goal 3 (SDG3) which is for good health and well-being of the population.

Policy suggestions also point to the need for child health to be captured in a multi-dimensional approach; need for enhancing government's effort in consolidating sustainable human capital investment effort and instigating the confidence of mothers included in self-directed decisions in the household; as it enable unity and belonging, ameliorate future living standards for children and reduces discrimination. Decision makers in Cameroon could establish obligatory laws to oblige mothers and fathers to be educated on the advantage of inclusive decision-making. This will manifest in good health, mental and psychological balance of children, and smooth and better knowledge intake of a child while in school.

The ministry of public health should increase awareness campaigns on the need for household heads to grant women some level of autonomy on their health, as the health of the mother influences that of her child.

Finally, it is necessary to engage community elders to educate household heads on the need to grant their wives some level of autonomy on visits so that they can get information beneficial to the health of their family members especially children

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