Multidimensional Poverty Assessment of Internally Displaced Persons in Iraq

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Abstract

Decades of conflict have contributed to high flows of internal displacement in Iraq. The incidence of these flows on the welfare of internally displaced persons is not well understood. This paper attempts to fill this gap in the literature by investigating the link between internal displacement and multidimensional poverty, using one of the most comprehensive household surveys for poverty analysis in Iraq. The

results show crucial differences between internally displaced and non-displaced households with respect to multidimensional poverty. Furthermore, instrumental variable regression analysis suggests that the relationship is causal, that is, the probabilities of multidimensional and monetary poverty are higher because of internal displacement.

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1. Introduction

Iraq has a long-standing history of internal displacement. Before the Syrian refugee crisis beginning in 2010, Iraqi internally displaced populations (IDPs) and refugees were the world's second-largest forcibly displaced population, after Afghanistan (Doocy et al., 2009). As of 2008, the number of IDPs was estimated at 2.8 million (IOM, 2008). However, the number of displaced persons increased to over 3.3 million by 2016, following the onset of the 2014 Iraqi Civil War caused by the Islamic State of Iraq and the Levant (ISIL).

Several events in Iraq's history have triggered massive flows of internal displacement. The Iraqi-Kurdish conflicts caused major flows of displacement from the Kurdistan region in the 1970s. The Iran-Iraq war led to the displacement of populations from the south, mainly the Shi'ite group in the 1980s; the Marsh Arabs were forced to flee following Saddam Hussein's draining of the marshes in south-eastern Iraq as a repressive response to the Shia insurgents in early 1990s. It is estimated that around one million individuals were forcibly displaced prior to the 2003 US-led invasion. The pre-2003 period can be described as the first of four major forced displacement phases in Iraq.

The 2003 US-led invasion of Iraq marks the beginning of the second phase of displacement; hundreds of thousands of Iraqis were forcibly displaced due to the war (Cockburn, 2007; Stewart, 2007; Steele, 2008). The bombing of the Samarra Al-Askari mosque in February 2006 set off a new surge of violence and insecurity, causing a massive flow of people – third phase. Indeed, the peak of pre-ISIS displacement did not occur right after the US-led invasion but between 2006 and 2008, after the bombing of the Al-Askari mosque (Refugee Studies Center, 2012). The final phase of displacement marks the Daesh insurgency period spanning from 2014 to 2018. The post-2014 period represents one of the most important episodes of internal displacement in Iraq (IOM, 2016). However, the current paper focuses on internal displacement before 2012 due to the use of household data that were collected between 2012 and 2013.

Unlike refugees, IDPs are not covered by any protection within an internationally recognized legal framework. The IDPs in Iraq benefit from little support from the Iraqi government through targeted policies unless they volunteer to return to their original location. The Ministry of Displacement and Migration (MoDM), formed in 2003, has implemented new policies towards displacement in July 2008, mostly aiming at promoting the return of IDPs. However, most IDPs

wished to settle in and integrate with their host community, mainly because of security concerns in their place of origin and better opportunities at their destination (IOM, 2013).

Evidence shows IDPs live in precarious conditions. The majority of settlements are self-built overcrowded houses or illegally occupied houses, with limited access to basic services and poor infrastructure, which may lead to poor health outcomes (IOM, 2013). Besides, IDPs might have difficulties finding a formal job due to lack of an identity document, language or cultural barriers. Additionally, forced displacement may have damaging consequences on IDPs' family structure. For instance, family members may be separated, with working-age adults, and especially males, unable to return to their place of origin. Displacement may also disrupt children's schooling. This suggests IDPs may be more likely to be deprived in multiple dimensions of well-being; which calls for an in-depth analysis of the deprivation of IDPs to identify the dimensions that demand urgent intervention and to help design policies that are best-suited to the needs of IDPs.

The variation of exposure to violence and insecurity between IDPs and non-IDPs provides a unique quasi-experimental setting, with the war representing an exogenous shock to multiple components of household well-being. The dimensions may be analyzed separately, or combined into a single index of multidimensional poverty, enabling a consolidated analysis of multiple dimensions of deprivation. In the following analysis, we apply the Multidimensional Poverty Index (MPI) methodology developed by Alkire and Foster (2011)¹ to the 2012-2013 Iraqi Household Socio-Economic Survey (IHSES-II)² to investigate the effect of forced displacement on multidimensional poverty.

Although there have been numerous works on the macro-level implications of wars and conflicts (e.g. Collier, 1999; Barron et al., 2004; Collier and Hoeffler, 2004; Miguel et al., 2004),

¹ See also Alkire and Santos (2010).

²This survey is an outcome from the cooperation between the Central Organization for Statistics of Iraq and the Kurdistan Region Statistics Organization supported by the World Bank, which initiated in 2007 with the first IHSES. The IHSES-II is an update of the first round with additional data and information such as individuals' past migration history.

micro-level empirical research on the impact of conflict, and forced displacement in particular, is scant. However, in recent years there has been a growing interest in the literature on how displaced households or individuals are affected (Loaiza et al., 2018), with much of the empirical evidence from African countries (Kondylis, 2008; Ssewanyana et al., 2007). Conflict-related household displacement has been negatively associated with consumption (Ibáñez and Vélez, 2008; Fiala, 2015), wages and employment (Morales, 2018; Calderón and Ibáñez, 2009), asset ownership (Fransen et al., 2017) and food security (Verwimp and Muñoz-Mora, 2017). This paper intends to contribute to this growing field of literature by exploring the case of a Middle Eastern country, one of the most understudied regions in this empirical literature.

The rest of the paper is organized as follows. In the next section, we discuss various methodologies of poverty measurement. In the third section of the paper, we present our empirical strategy and the results. We conclude the paper in section four.

2. Poverty measurement

2.1 Monetary vs. Multidimensional Poverty measurements

Sen (1981) distinguishes between two main methods for measuring poverty: the direct and indirect methods. The direct method captures how deprived individuals are with respect to a set of specific basic needs, rights or functioning. The indirect method shows whether individuals' wealth falls below a certain level that can enable them to meet their basic needs, also known as the poverty line. The indirect method essentially uses monetary poverty measurements such as income, consumption or expenditure; which has the advantage of providing a more straightforward identification of poor individuals.

However, there are some basic limitations to this method, which can be encapsulated in the inability of monetary measurements to fully convey the extent of deprivation, or at least some of the essential needs.³ Moreover, income can be thought of as means to valuable ends and not

³Those basic limitations are mainly connected to comparability issues. For example, the accuracy of the indirect method might be compromised by the fact that people may be exposed to different prices; attaining the poverty

an end in itself. The ability to convert income into “functionings” also varies from one individual to another, i.e., even when faced with the same price, people’s needs and their ability to convert resources into “functionings” might differ, which is why it is preferable to measure the achievements directly. Furthermore, the monetary approach is not suited to capture the value of basic services not obtained through the market such as health, education, and water. Non-monetary indicators may also better identify those who are unable to fully participate in their society due to a lack of resources (Alkire and Santos, 2014). Hence, the use of the direct method has spread in response to these limitations. Multidimensional poverty measurements, for instance, represent variants of the direct method that have increasingly gained the attention of analysts and policy makers despite some criticisms on the way they are built.

Once it is acknowledged that poverty is multidimensional, it raises several practical questions like which poverty dimensions to consider and how to weigh them. There is no consensus on this question in the poverty literature. The construction of multidimensional poverty measures is also complicated by the fact that numerical indicators may not capture the subjective experience of deprivation and that the dimensions of deprivation themselves may be changing across space and over time. This limits the ability of an analyst to construct a universal measure for all social groups for all time periods. But a measure that fulfills all the desirable theoretical properties would come at the cost of simplicity; it would be difficult to convey the relevant information to policy makers. Therefore, scalar indices that aggregate the information from multiple dimensions of deprivation into one quantitative indicator have been widely used (Alkire and Foster, 2011; Maasoumi and Lugo, 2008). Scalar indices are particularly useful for ranking various population groups such as countries or regions (Ferreira and Lugo, 2013).

The Multidimensional Poverty Index (MPI) developed by the Oxford Poverty and Human Development Initiative (OPHI), in collaboration with the United Nations Development Program’s Human Development Report Office between 2009 and 2010, is one of the widely-used multidimensional poverty measures. The MPI was developed as a successor to the Human Poverty Index (HPI). While the HPI is built using aggregated information, the MPI uses

line does not seem like the best signal that an individual meets his essential needs to the extent that people may have different patterns of consumption. See Sen (1981) for a detailed description of these limitations.

individual-level data to identify individuals who are deprived in multiple dimensions (Alkire and Santos, 2014). Recently, the World Bank (WB) also proposed a global multidimensional poverty measure, which differs from the MPI in crucial ways. Most importantly, the World Bank's approach to multidimensional poverty measurement is informed by the living standard perspective (The World Bank, 2018). Inasmuch as standard monetary measures exclude critical components of welfare, supplementing them with non-monetary components gives a fuller picture of well-being. Our analysis also includes the World Bank multidimensional poverty measure for comparison. We use the MPI methodology proposed by OPHI and the World Bank as they are widely used and they incorporate dimensions and indicators that are globally comparable.

2.2 MPI definition

The initial step to estimating multidimensional poverty involves defining a set of indicators that belong to specific poverty dimensions, to which deprivation cutoffs are assigned in the second step. There are three equally weighted poverty dimensions considered in the global MPI analysis: education, health, and standard of living. Ten indicators are defined across these three dimensions, in line with the Millennium Development Goals (MDGs). These indicators are also equally weighted within each dimension as shown in Figure 1.⁴

⁴ The definitions of the indicators are provided in Table B1 in Appendix B. Appendix C explains how the weights are shifted across indicators when the necessary information is missing.

Figure 1 MPI dimensions and indicators assigned weights

Source: OHPI, 2015

The MPI methodology follows the mathematical structure of one measure of acute multidimensional poverty as proposed by Alkire and Foster (2007, 2011): the adjusted headcount ratio or the M_0 measure. To build the M_0 measure, it is necessary to go through a process that involves multiple steps. First, there is an evaluation of the household's standing relative to each indicator deprivation cutoff. Then the household's deprivations are weighted by the indicator weights. A household is considered MPI poor if the total of its weighted deprivations is 33 percent or more of all possible deprivations. See Santos and Alkire (2011) for a detailed technical description of the MPI, its dimensions, and the indicators.

2.3 MPI methodology

The MPI methodology also follows the two main steps for measuring poverty as conceptualized by Sen (1976): identification of poor individuals and the aggregation of the poverty information. One of the basic requirements of the MPI is to set a cutoff z_i for each indicator. A cutoff is intended as the minimum level of attainment associated with each indicator. Assuming x_i is the achievement of individual i in an indicator, that person is deprived in that indicator if x_i falls below the cutoff ($x_i < z_i$).

The next step is to determine the weight of each indicator. The three dimensions of the MPI are equally weighted so that each dimension weight is assigned a value of 1/3. Within each dimension, the indicators p are assigned equal weights w_p . The health and education dimensions have two indicators each, therefore each indicator's weight within these dimensions is 1/6. As for the living standard dimension, each of its six indicators receives a weight of 1/18.

The weights are used to calculate each individual's deprivation score c_i , a measure of total weighted deprivation which is obtained by a weighted sum of deprivations as follows:

$$c_i = \sum_{p=1}^{10} w_p I_{ip} \quad (1)$$

Where $0 \leq c_i \leq 1$, with $c_i = 1$ if individual i is deprived in all component indicators and $c_i = 0$ otherwise; $I_{ip} = 1$ if individual i is deprived in indicator p and $I_{ip} = 0$ otherwise; w_p is the weight assigned to the component indicator p so that:

$$\sum_{p=1}^{10} w_p = 1 \quad (2)$$

In the Alkire-Foster methodology, a poverty cutoff (k) is also defined. It is the threshold of total weighted deprivations above which a household is considered to be poor so that $c_i \geq k$. The value of k is set to 1/3.

Following the identification of deprived individuals, it is possible to compute the headcount ratio (H), which is the share of individuals experiencing multidimensional deprivation over the total population. The second measure we consider is the Multidimensional Poverty Index (MPI) or the M_0 measure, also known as the adjusted headcount ratio. It is the product of the headcount ratio H and the intensity of multidimensional poverty A :

$$\text{MPI} = H \times A \quad (3)$$

3. Methodology

3.1 Determinants of household deprivation

3.1.1 The binomial logistic model

To assess the relationship between multidimensional poverty and forced displacement, we formulate the following logit model:

Consider that a household j is poor ($Y=1$) if its deprivation score is $1/3$ or more, or non-poor ($Y=0$) if its deprivation score is below $1/3$. The state of deprivation is determined by factors depicting household forced displacement status along with a set of household socio-economic and demographic indicators. These factors are grouped into a vector X so that:

$$Y_j^* = \alpha + X_j' \beta + u_j \quad (4)$$

$$\text{Where } X_j = F_j + H_j \quad (5)$$

with Y_j^* being the underlying latent variable capturing the poverty index of household j ; F_j represents the displacement dummy, and H_j other socio-economic and demographic indicators; u_j is the stochastic error term; β is a column vector of parameters.

We assume the cumulative distribution of u_j is logistic (Greene, 1993) and therefore follows a logit model. We posit the probability of being poor as:

$$P_j(X) = \frac{e^{\alpha + \beta X}}{1 + e^{\alpha + \beta X}} \quad (6)$$

where β is the row vector of parameters and α is a scalar. The logit function to be estimated by the maximum likelihood method is expressed as follows:

$$D_j = \ln \frac{P_j}{1 - P_j} = \alpha + \sum_i \beta_i X_{ij} \quad (7)$$

The natural log of the odds of the household to be MPI poor is the logit variable D_j . The maximum likelihood method used for the estimation of equation (7) does not impose any assumption on the normality or homoskedasticity of errors in the predictors.

The marginal effect of an explanatory variable X_j on the probability of being poor is given by:

$$\frac{\partial P_j(X)}{\partial X_j} = \left[\frac{e^{\alpha + \beta X}}{1 + e^{\alpha + \beta X}} \right] \beta_k \quad (8)$$

where β_k is the k th element of β .

3.1.2 The general instrumental variable (IV) strategy

From the relationship in equation (6) it is difficult to draw inference regarding the causal effect of forced displacement on the probability of a household being in multidimensional poverty. Indeed, one could argue that the causality runs in the other directions, i.e., poor households are more likely to be displaced. Also, there may be unobservable factors that affect household deprivation while at the same time serving as the push factors for the household's movement. For instance, restrictive policies by the state towards certain regions could create uprisings and sectarian violence in these regions and simultaneously contribute to spreading vulnerability and deprivation. These policies might then be indirectly correlated with forced displacement through their strong correlation with conflict and violence. Hence, these issues must be accounted for to avoid attributing any effect of these unobservable factors on household poverty to their forced displacement status. To account for potential endogeneity, we add dummy variables for the interaction between origin and destination governorate fixed effect.⁵ Besides, we would need an instrument that explains household forced displacement without being correlated with household deprivation status.

Given that Iraq has a long history of conflict, it is a challenging exercise to find a credible instrument. Nevertheless, we use the Iraq Body Count (IBC), a unique publicly available fatality

⁵ The results are robust to including only destination FE – see Appendix D.

database compiling detailed civilian casualties from violence and conflict since 2003, to instrument for the probability of forced displacement. These data mainly come from media sources. The total fatality per governorate determines the intensity of exposure to conflict and as such represents a potentially good instrument to the probability of being forcibly displaced at the time of, or right after the violent outbreak. We assume there is no correlation between household current multidimensional poverty status and the intensity of violence at their governorate of residence at the time they migrated for two reasons: first, the dimensions and indicators of multidimensional poverty are less sensitive to any change caused by violence intensity, which may not be the case for monetary poverty; and second, the time lag between violence and the survey period would significantly mitigate any potential direct effect of violence intensity on multidimensional poverty.

For our IV strategy, we follow the two-stage residual inclusion (2SRI) method (Terza et al., 2008) which has been shown to produce unbiased estimates in a non-linear regression specification. The outcome and auxiliary regressions are formulated as in the following models respectively:

$$Y = \mu(X_e, X_o, X_u; \beta) + e \quad (8)$$

$$X_e = r(X_o, W; \alpha) + X_u \quad (9)$$

where Y denotes our dummy for the household deprivation status; X_e is the dummy for the household displacement status which is our endogenous regressor; X_o is the vector of observable exogenous regressors; X_u is the unobservable variable which is correlated with X_e but not correlated with X_o ; W is our instrumental variable (total fatalities in the household's governorate of origin two months⁶ prior to the migration date); β and α are the vectors of parameters to be estimated; e is the random error term.

⁶ It is important to define a good time window between violence and displacement times, to account for the level of aggregation of the IBC and IDP's origin places, which are recorded at the governorate level. In general, the closer the violence, the quicker people will be displaced. Since we do not know exactly how close people are to

In the first-stage regression, we apply a non-linear least squares (NLS) to equation (9) that enables us to obtain a consistent estimate of the parameter α ($\hat{\alpha}$) and compute the residual as follows:

$$\hat{X}_u = X_e - r(W\hat{\alpha}) \quad (10)$$

In the second stage, we consistently estimate β with an NLS regression on the following equation:

$$Y = \mu(X_e, X_o, \hat{X}_u; \beta) + e^{2SRI} \quad (11)$$

Where e^{2SRI} is the error term, which is different from e since X_u has been replaced with the residual $\hat{X}_u$ in the outcome regression.

3.1.3 Variable definitions

Our main explanatory variable – annotated IDH (Internally Displaced Household) – is a dummy variable taking value 1 when there is at least one IDP in the household and 0 otherwise.⁷ Our initial hypothesis is that households with IDPs are poorer. In addition, we add a set of controls capturing households' demographic and geographical characteristics, whose definition and summary statistics are reported in Table 1.

In an alternative model specification, we disentangle the effect of internal displacement based on the three major historical phases of forced displacement. These phases are proxied by variables Pre03IDH, O3_05IDH, and Post05IDH⁸ and we expect them to be positively

violence outbreak, we assume a two-month time window provides a good balance time and space wise if violence and so its impact were to spread geographically with time.

⁷ The distribution of IDPs within IDHs is shown in Figure B1 in Appendix B.

⁸ Note that there are only 53 IDHs with two or more IDPs who have migrated in more than one phase. For these households, only the latest phase will be considered.

correlated with household poverty status. Furthermore, we control for several household and household-head characteristics in the regression.⁹

Table 1 Variables' definition and basic statistics (Total observations = 25,145)

Variable	Definition	Mean	Std. Dev.	Min	Max
Dependent variable					
MP dummy	Multidimensional poverty dummy taking value 1 if household deprivation score is 1/3 or more and 0 otherwise	0.059	0.235	0	1
Alternative dependent variables					
Consumption per capita dummy	A dummy taking value 1 if household' spatially deflated monthly consumption per capita is lower than the poverty line which is 105,500.4 dinars ¹⁰ and 0 otherwise.	0.678	0.467	0	1
World Bank MP dummy	Multidimensional poverty dummy taking value 1 if household deprivation score is 1/3 or more and 0 otherwise	0.104	0.305	0	1
Explanatory variables					
IDH	Internally displaced household; a dummy taking value 1 if at least one household member is an IDP and 0 otherwise.	0.081	0.272	0	1
Pre03IDH	Internally displaced household pre-US-led invasion: taking value 1 if at least one household member is an IDP who migrated before 2003 and 0 otherwise.	0.046	0.210	0	1

⁹ The control variables include age, gender, education, and marital status of the household head, household dependency ratio, shares of working-age males and females in employment, location (rural vs. urban), and access to the public distribution system. We also include household's spatially deflated monthly consumption per capita to control for whether internal displacement drives multidimensional poverty independently of monetary poverty.

¹⁰ See Vishwanath et al. (2015) for a detailed description on the poverty line calculation.

O3_05IDH	Internally displaced household from the US-led invasion to the pre-Al-Askari mosque bombing: taking value 1 if at least one household member is an IDP who migrated between 2003-2005 and 0 otherwise.	0.012	0.111	0	1
Post05IDH	Internally displaced households post the Al-Askari mosque bombing: taking value 1 if at least one household member is an IDP who migrated after 2006 and 0 otherwise.	0.022	0.147	0	1
Head of household age in years	Head of household age	45.853	13.870	11	104
Head of household education ¹¹	Head of the household total number of years of schooling	2.604	2.235	1	11
Dependency ratio	It is the percentage of household members aged under 15 or over 64, over the total household population.	43.876	22.528	0	100
Head of household married	Dummy taking value 1 if the household head is married and 0 otherwise.	0.893	0.310	0	1
Head of the household male	Dummy taking value 1 if household head is male and 0 for female.	0.900	0.301	0	1
Household in the rural area	Dummy taking value 1 if the household located in the rural area and 0 for the urban area	0.408	0.491	0	1
Public distribution system	Dummy taking value 1 if the household receives ration under	0.986	0.119	0	1

¹¹ The control variable is household head's total years of schooling, while the dependent variable is constructed using individual's educational status. Moreover, the dependent variable is not the MPI but a dummy variable constructed using a threshold of deprivation score. Omitting household head's total years of schooling from the regression does not affect the results.

the public distribution system
and 0 otherwise.

Household males share	Share of working-age males who are working (aged 15 and over) in the household.	0.177	0.113	0	1
Household females share	Share of working-age females who are working (aged 15 and over) in the household.	0.029	0.078	0	1
Consumption per capita	Household' spatially deflated monthly consumption per capita in dinars	176,981	112,253	0	3,237,427

3.2 Descriptive statistics

In the present analysis, we use the data gathered in the second round of the IHSES-II which is one of the most comprehensive surveys that provides information on household characteristics and living conditions in Iraq. The fieldwork was conducted between January 2012 and February 2013. The final data cover 25,146 households across 18 governorates of Iraq organized into 2,832 clusters for a total of 176,042 individuals. The respondent in each household is usually the head of the household or an authorized family member, although there are also questions on household members' characteristics. One important feature of these data is the availability of information on household members' migration history. It is this information that enables us to identify IDPs. These are people who have lived in another governorate – or their current governorate of residence but a different environment (rural or urban) – for an uninterrupted period of six months, and who have moved from that previous place for one of the following reasons:

- Forced displacement: Individuals who have been deported or forced out of their usual place of residence.
- Conventional armed conflict: People who lived close to battlefronts.
- Civil conflict: People who lived in areas where there is internal insecurity.

According to these criteria, 5,939 IDPs are identified in 2,027 IDHs,¹² for a total of 14,402 people living in these households, including IDPs. It is necessary to account for the latter group in our analysis to get an insight into the impact of forced displacement on the whole IDH unit.

Table 2 shows some basic descriptive characteristics of the IDPs in our sample. We also add statistics on all IDH members, since they are the ones on which our analysis will be based.¹³ Besides, we include figures on non-IDPs to understand how their characteristics may differ from IDPs rather than for comparison. From the first row, we can see the average age of IDPs is 35 while that of all IDH members is considerably lower (23) and comparable to the one of the non-IDPs population which is 22. This suggests on average IDPs are adults from the working-age population group. Most of the IDPs are male – unlike IDH members and non-IDPs which have a slightly higher proportion of females – and most have not completed the primary level of education.¹⁴ A large majority of IDPs, IDHs members, and non-IDPs get food ration distributed under the public distribution system. In general, the main reason for leaving their place of origin is a general state of insecurity or targeting for persecution.

¹² We adopt a broad definition of an IDH, intended as a household unit hosting at least one IDP; since we assume vulnerability embedded in the forced displacement of one member to be a shock with potential externalities to all other members. However, one could think of different approaches to this definition. For instance, a household unit where the head of household is an IDP or more simply, a household unit where all members are IDPs. Following these definitions would reduce our IDH sample, to 1,863 according to the first definition and to 289 as per the second definition. Furthermore, we run the risk of omitting the potential externalities to the entire household and therefore underestimating the real impact of forced displacement on household deprivation status.

¹³ The IDH may include children born after their parents' migration.

¹⁴ However, IDPs have more education than non-IDPs.

Table 2. IDPs and IDHs members' characteristics

	IDPs (%)	IDH members (%)	Non-IDPs (%)
	N = 5,939	N = 14,402	N = 161,640
Age (mean)	35	23	22
Age range			
0 - 5	1.75	16.62	18.91
6 - 15	16.27	26.34	27.14
16 - 25	17.78	20.35	19.28
26 - 45	35.49	22.62	22.81
45 +	28.71	14.07	11.85
Gender			
Female	46.54	50.31	50.57
Male	53.46	49.69	49.43
Highest certificate			
Postgraduate level	0.24	0.13	0.13
Undergraduate level	6.43	4.21	4.61
Intermediate	8.07	5.17	5.57
Elementary	18.59	12.64	13.52
No certificate	66.67	77.84	71.17
Public distribution system	97.76	98.35	99.02
Displacement motive			
Forced displacement	71.09		
Conventional armed conflict	21.74		
Civil conflict	7.17		

Table 3 shows the distribution of IDPs and IDHs by the governorate of origin and residence. Baghdad is the governorate of origin for most of the IDPs and IDHs.¹⁵ Roughly 17 percent of

¹⁵ As share of total population, Baghdad is the fourth and third largest governorate for origin for IDPs and IDHs respectively.

IDPs come from that governorate and another 12 percent are originally from Nainawa. Muthanna and Qadisiya are the governorates that have experienced the lowest outflow of IDPs, altogether accounting for only 2 percent of IDPs. Both governorates are located in the south of Iraq with the least incidence of conflict in the previous decade. As for the governorate of residence, a good portion of IDPs and IDHs has settled in Sulaimaniya (approximately 13 and 17 percent respectively). Sulaimaniya is one of the three Kurdish governorates¹⁶ where there has been little violence after the 2003 US-led invasion. Nainawa and Basrah governorates host around 10 and 9 percent of IDPs respectively. It is interesting to note that Nainawa is an important source and destination governorate for IDPs, suggesting that a large number of individuals are displaced within the governorate. Overall, Table 3 figures show forced displacement has been a common phenomenon to all regions of Iraq since they have all been affected in some way, as both host and origin regions.

Table 3. IDPs' origin and destination locations

Governorate of residence	Total IDPs	%tage IDPs	%tage IDHs	Governorate of origin	Total IDPs	%tage IDPs	%tage IDHs
SULAIMANIYA	780	13.13	17.18	BAGHDAD	1,025	17.26	14.81
NAINAWA	576	9.7	8.86	NAINAWA	741	12.48	10.09
BASRAH	553	9.31	12.51	SULAIMANIYA	634	10.68	14.39
DUHOK	533	8.97	8.59	DIYALA	569	9.58	7.89
ERBIL	516	8.69	12.83	ERBIL	468	7.88	10.95
BAGHDAD	479	8.07	6.55	ANBAR	400	6.74	0.05
MAYSAN	412	6.94	5.64	MAYSAN	301	5.07	5.15
DIYALA	354	5.96	5.42	DUHOK	274	4.61	5.53
ANBAR	338	5.69	4.67	KIRKUK	242	4.07	4.46
WASIT	281	4.73	3.92	BASRAH	232	3.91	4.29
SALAH AL-DEEN	275	4.63	3.7	BABYLON	202	3.4	3.7
THI-QAR	229	3.86	2.58	SALAH AL-DEEN	192	3.23	1.93
KIRKUK	179	3.01	1.77	NAJAF	189	3.18	3.92
BABYLON	107	1.8	1.29	THI-QAR	123	2.07	2.68
KARBELA	105	1.77	1.5	KARBELA	114	1.92	2.15
MUTHANNA	94	1.58	0.75	WASIT	106	1.78	1.66
QADISIYA	79	1.33	1.13	QADISIYA	63	1.06	0.91
NAJAF	49	0.83	1.13	MUTHANNA	63	1.06	0.86
Total	5,939	100	100		5,939	100	100

¹⁶The two other ones are Duhok and Erbil.

Next, we compare the characteristics of IDHs and non-IDHs. Table 4 shows that while both groups are similar in several indicators, they are statistically different on other dimensions as indicated by the results from the t-test¹⁷ in the last column. Displaced households, on average, are slightly older, have an older household head who is also less educated, have lower dependency ratio, and are more likely to be in urban areas. One observation we can draw from these statistics is that internal displacement may not be exogenous to some of the household innate characteristics. These characteristics may drive any empirical relationship we may find between our main variables of interest. Hence, it would be necessary to account for this potential endogeneity with an IV analysis.

Table 4. IDHs and non-IDHs general statistics

	IDHs	Non-IDHs	P-value
	N = 2,027	N = 23,119	
Average household size	7.07	6.99	0.1741
Average age	23	22	0.0000
Head of household			
age	48	46	0.0000
Married (%)	88.41	89.35	0.1899
Male (%)	89.59	89.96	0.5911
Highest certificate (%)			
Postgraduate level	0.54	0.66	0.5229
Undergraduate level	10.36	12.47	0.0055
Intermediate	14.01	15.07	0.2021
Elementary	26.05	28.08	0.0505
No certificate	49.04	43.72	0.0000
Household dependency ratio	41.67	44.07	0.0000
Household environment (%)			
Rural (area of residence)	26.84	42.03	0.0000
Urban (area of residence)	73.16	57.97	0.0000
Household' spatially deflated monthly consumption per capita (Dinars)	176,122	186,625	0.0000

¹⁷ A p-value higher than 0.05 means the difference of the mean value of the characteristics between the two cohorts is not different from zero.

To get some more insight into the difference in deprivation patterns between IDHs and non-IDHs, we conduct a comparative analysis across dimensions, indicators, and regions. This is discussed in detail in Appendix A.

3.3. Results and discussion

3.3.1 Determinants of multidimensional poverty

In this section, we present the results of our empirical model on the relationship between a household's displacement status and multidimensional poverty. The estimates from the baseline logit regression for the multidimensional poverty dummy (MP dummy) are reported in column (1) of table 5. These are variations in the log-odds of the MP dummy from a one-unit change of the explanatory variable obtained through a maximum likelihood procedure. The results show that in general, the logit model fits the data quite well. This is supported by the chi-square test which strongly rejects the hypothesis that the model has no explanatory power and the percentage of correctly predicted observations by the model which is 92.46 percent. Our explanatory variable of interest, the IDH dummy, shows a positive and statistically significant coefficient.

To get further insight into the latter result, we compute the average marginal effect as the partial derivative of the non-linear probability function. We obtain a marginal effect of 0.017, meaning that on average the probability of falling below the poverty line is 1.7 percent higher for IDHs. This supports our initial argument that IDHs are more vulnerable. Households with highly educated head of household tend to be less deprived. Unsurprisingly, the correlation between multidimensional poverty and per capita consumption is negative. The association between share of working-age men and women is positive and negative respectively. In a context where women's labor force participation is very low and there are low social expectations of women working, a larger share of women in the household working may indicate working by necessity rather than choice.

Column (2) displays results from the linear probability model, which is an OLS regression run on a binary dependent variable. These regression results are reported purely for comparison with the marginal effect from the logit regression, as we cannot fully trust its standard errors since the homoskedasticity and normality of error assumptions of OLS regression are

violated.¹⁸ Yet we can comment on the result of the IDH dummy, whose coefficient shows the probability of being deprived is 1.6 percent higher for IDHs. This result is not far from the logit marginal effect of 1.7 percent.

When disentangling the effect of the IDH dummy with respect to the three main historical phases of forced displacement, we find that households with members displaced prior to 2003 do not seem to be affected by deprivation. In contrast, those who were displaced between 2003 and 2005 and after 2005 are significantly more likely to be deprived, 3.2 percent and 3.3 percent respectively. The recency of displacement might explain why those who migrated since 2003 tend to be poorer insofar as they still need some time to be integrated in the host communities.¹⁹

Next, we run a logit regression on another indicator of poverty/welfare, a poverty dummy based on the household monthly consumption per capita – see column (4). The positive sign and significance of the coefficient for the IDH dummy stand as additional evidence that substantiates our a priori argument. We indeed find that IDHs are 1.6 percent more likely to fall below the monetary poverty line as shown by the marginal effect coefficient.

Finally, the results from the logit regression on our alternative multidimensional poverty dummy developed by the WB are displayed in column (5). We get a marginal effect of the IDH dummy of 0.013, which is not too different from the marginal effect we get from the baseline regression with the Alkire and Foster multidimensional poverty dummy.

¹⁸ In an attempt to correct for this limitation, we run a linear probability model with robust standard errors.

¹⁹ To test if different types of households were affected by different waves of displacement, we look at the education level of the father of the household head. Most forcibly displaced households have household heads whose fathers have no education, so we cannot test if the education level of household head's father is significantly different across phases of displacement.

Table 5. Determinants of poverty

Column	(1)	(2)	(3)	(4)	(5)
VARIABLES	MP dummy	MP dummy	MP dummy	monetary dummy	WB MP dummy
	logit	Linear probability	logit	logit	logit
IDH	0.336*** (0.112)	0.016*** (0.005)		0.142* (0.076)	0.223** (0.103)
Pre03IDH			0.005 (0.168)		
O3_05IDH			0.657*** (0.216)		
Post05IDH			0.675*** (0.178)		
Head of household age	0.005** (0.002)	0.001*** (0.001)	0.005** (0.002)	0.001 (0.001)	-0.010*** (0.002)
Dependency ratio	-0.001 (0.002)	0.001 (0.002)	-0.001 (0.002)	0.015*** (0.001)	0.023*** (0.002)
Head of household education	-0.391*** (0.029)	-0.010*** (0.001)	-0.392*** (0.029)	-0.246*** (0.012)	-1.473*** (0.057)
Head of household married	-0.234* (0.142)	-0.009 (0.009)	-0.231 (0.142)	0.362*** (0.107)	0.036 (0.134)
Head of household male	0.124 (0.145)	0.004 (0.009)	0.131 (0.145)	0.388*** (0.106)	0.418*** (0.132)
Household in rural area	1.414*** (0.068)	0.076*** (0.003)	1.409*** (0.068)	0.692*** (0.039)	1.037*** (0.057)
Public distribution system	-0.386 (0.281)	-0.023** (0.011)	-0.365 (0.281)	-0.013 (0.199)	-0.594** (0.254)
Per capita consumption	-0.001*** (0.001)	-0.001*** (0.001)	-0.001*** (0.001)		
Household share males	-0.756*** (0.275)	-0.041*** (0.012)	-0.755*** (0.275)	-2.607*** (0.198)	-1.660*** (0.275)
Household share females	1.011*** (0.304)	0.043*** (0.015)	1.023*** (0.304)	-1.642*** (0.290)	-0.628* (0.356)
Constant	-1.512** (0.616)	0.085*** (0.023)	-1.724*** (0.596)	-1.978*** (0.420)	-0.782 (0.579)
Marginal effect of IDH	0.017*** (0.006)			0.016* (0.010)	0.013** (0.006)
Marginal effect of preUS_IDH			0.002		

Marginal effect of withinUShh1			(0.008)		
			0.032***		
			(0.011)		
Marginal effect of postAskari_IDH			0.033***		
			(0.009)		
Observations	25,145	25,145	25,145	25,145	25,145
LR chi2	2079.87***		2091.45***	4877.09***	3823.37***
Degrees of freedom	29		31	28	28
Log likelihood	-5613.97		-5613.99	-11481.24	-6991.08
McFadden R2	0.185		0.186	0.212	0.273
R-squared		0.074			
% Predicted right	92.46%		92.43%	88.16%	91.8%
Governorate of origin*governorate of residence FE	Yes	Yes	Yes	Yes	Yes

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

3.3.2 IV strategy to identify the impact of forced displacement

In this section, we present the findings from the models formulated to correct for potential endogeneity. The results are presented in Table 6. Since our instrumental variable is only available from 2003 onwards, our sample size is reduced to 23,983.²⁰ Column (1) displays outcomes from the auxiliary regression of the two-stage residual inclusion (2SRI) model where we instrument for the IDH dummy with the IBC variable – two months fatalities count²¹ – and run a generalized linear model (GLM) regression. Results from the first regression show a positive correlation between the total fatality at IDPs’ governorates of origin – two months prior

²⁰ We are left with 865 IDHs of the 2,027 IDHs in our full sample.

²¹ We did some robustness checks using total fatalities 1 month and 3 months prior to migration and the results did not change much – see Tables D3 and D4 in Appendix D.

to migration – and household displacement status. The marginal effect of this variable shows the probability of being displaced increases by 0.1 percentage point per additional person killed. In the second stage, we introduce the residual $Xu(hat)$ in the MP dummy model and run a GLM regression. Results from the second-stage regression are reported in column (2); the point estimate on the IDH dummy is positive and significant. On average, the probability of being deprived is 8.2 percent higher for IDHs, which is much higher than the 1.7 percent in the logit model in Table 5.

Proceeding further, we implement an IV analysis using a Generalized Method of Moments (GMM) model regression, whose results are displayed in column (3). Again, the estimate for the IDH dummy is positive and significant, indicating IDHs are 3 percent more likely to be poor.

The coefficients in columns 2 and 3 in Table 6 are not strictly comparable to those in Table 5 because the IV regression uses only part of the sample. The higher and positive coefficients of the IDH dummy from the GLM and GMM regressions might be attributed to the difference in the sample. Indeed, Appendix A shows that households displaced after 2003 are poorer than the pre-2003 IDHs. For comparison, column 4 reproduces the logit coefficients using the same subset of observations used in the IV regression. The marginal effect of being an IDH for those displaced after 2003 is 1.5 percent, slightly lower than the 1.7 percent obtained from the baseline regression with the full sample in Table 5. This negates the argument that the difference in the sample could be responsible for the difference in the relationship between household displacement status and multidimensional poverty between logit and IV regressions. However, it is still possible that this result does not generalize to those displaced before 2003, so we cannot draw a similar conclusion on pre-2003 IDHs as our data do not allow for a wider time coverage.

Columns (5) and (6) show the regression results for monetary poverty from the second stage of the 2SRI and GMM regressions respectively. In column (5), the marginal effect of the IDH dummy on the monetary poverty dummy returns a value of 0.068, meaning on average IDHs have a 6.8 percent higher probability of falling below the poverty line. From the GMM model in column (6) we get a lower marginal effect of 3.9 percent. Both coefficients from columns (5) and (6) are much higher than the 1.4 percent marginal effect in Table 5.

In the last two columns, we perform similar IV analysis with the WB MP dummy. Results from the 2SRI and GMM regressions point to a positive effect of internal forced displacement on that alternative indicator of multidimensional poverty. The second stage of the 2SRI regression returns a marginal effect of 0.071 as displayed in column (7), while the GMM model gives a marginal effect of 0.029 as we can see from column (8).²²

Table 6. IV regression

Column	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	IDH	MP dummy	MP dummy	MP dummy	monetary dummy	monetary dummy	WB MP dummy	WB MP dummy
	GLM	GLM	GMM	Logit	GLM	GMM	GLM	GMM
IBC	0.001*** (0.001)							
IDH		1.429*** (0.246)	0.030*** (0.014)	0.630*** (0.145)	0.385*** (0.112)	0.039** (0.020)	0.854*** (0.205)	0.029** (0.014)
Household in rural area (origin)	0.383*** (0.118)							
Head of household age	0.001 (0.003)	0.003 (0.002)	0.001*** (0.001)	0.005** (0.002)	-0.001 (0.002)	0.001 (0.001)	-0.006*** (0.001)	-0.001* (0.001)
Dependency ratio	-0.003* (0.002)	-0.001 (0.002)	-0.001 (0.001)	-0.001 (0.002)	0.007*** (0.002)	0.002*** (0.001)	0.015*** (0.001)	0.001*** (0.001)
Head of household education	0.004 (0.015)	-0.655*** (0.081)	-0.009*** (0.001)	-0.387*** (0.029)	-0.153*** (0.011)	-0.022*** (0.001)	-1.691*** (0.088)	-0.019*** (0.001)
Head of household married	-0.033 (0.386)	0.011 (0.158)	-0.003 (0.010)	-0.220 (0.144)	0.222*** (0.071)	0.036*** (0.012)	0.001 (0.089)	0.006 (0.010)
Head of household male	-0.316 (0.381)	0.131 (0.144)	-0.001 (0.010)	0.104 (0.146)	0.355*** (0.068)	0.034** (0.013)	0.373*** (0.086)	0.004 (0.011)
Household in rural area	-0.086 (0.100)	1.215*** (0.086)	0.066*** (0.003)	1.429*** (0.070)	0.393*** (0.029)	0.088*** (0.005)	0.667*** (0.052)	0.070*** (0.004)
Public distribution system	-0.493*** (0.125)	-0.103 (0.297)	-0.033*** (0.011)	-0.422 (0.281)	0.191	-0.014	-0.198 (0.188)	-0.046*** (0.012)

²² Again, for the monetary and WB MP dummies, we cannot attribute our positive and significant results in this section to our sample reduction. We ran logit regressions on the reduced sample for the two dummies separately and obtained significant marginal effect values of 0.019 and 0.006 respectively.

					(0.201)	(0.016)		
Per capita consumption	-0.001*** (0.001)	-0.001*** (0.001)	-0.001*** (0.001)	-0.001*** (0.001)				
Household share males	0.240 (0.281)	-0.862*** (0.334)	-0.040*** (0.012)	-0.727*** (0.280)	-1.575*** (0.126)	-0.221*** (0.016)	-1.381*** (0.235)	-0.080*** (0.012)
Household share females	-0.982** (0.473)	0.975*** (0.214)	0.029* (0.015)	0.941*** (0.313)	-1.130*** (0.208)	-0.108*** (0.017)	-0.126 (0.290)	-0.020 (0.014)
Xuhat		-1.136*** (0.316)			-0.363*** (0.123)		-0.564** (0.221)	
Constant	-1.074** (0.423)	-2.148** (0.844)	0.110*** (0.030)	-1.501** (0.692)	-1.566*** (0.341)	0.104*** (0.041)	-0.496 (0.508)	0.101*** (0.031)
Marginal effect of IBC	0.001*** (0.001)							
Marginal effect of IDH		0.082*** (0.014)		0.015*** (0.004)	0.068*** (0.020)		0.071*** (0.017)	
Observations	23,983	23,983	23,983	23,983	23,983	23,983	23,983	23,983
R-squared	0.171	0.126	0.072		0.202	0.181	0.221	0.116
McFadden R2				0.186				
LR chi2				2015***				
Degrees of freedom				29				
Log-likelihood				-4416.60				
Governorate of origin* governorate of residence FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes

4. Concluding remarks

This paper presents an analysis of the impact on multidimensional poverty for different waves of internally displaced persons (IDPs) in Iraq. More precisely, we estimate the long-term effects of displacement on multidimensional poverty – and alternatively other monetary measures of poverty – while accounting for potential endogeneity.

Our empirical analysis on the determinants of household multidimensional poverty confirms our initial hypothesis on the poverty vulnerability of IDHs. Findings from the logit model show that the probability of being deprived is 1.7 percent higher for IDPs. To account for potential endogeneity of deprivation, we use the total fatalities in a household's governorate of origin two months prior to the migration – only available from 2003 onwards – as an instrument to the probability of being displaced. Our IV analysis returns higher marginal coefficients than the simple linear and logit regressions, strengthening the relationship between displacement and multidimensional deprivation for households displaced after 2003. The analysis of alternative measurements of poverty based on consumption per capita and the World Bank's multidimensional poverty indicator respectively yields similar results. These results too are substantiated by the IV approach.

However, further analysis is needed to strengthen our knowledge of IDPs' poverty. More robustness checks are necessary, mainly in relation to the construction of our IDH dummy. Indeed, we can exploit the heterogeneity within the concept of IDHs and experiment with different approaches to its definition; such as a household unit where the head of household is an IDP or a household unit where all members are IDPs. This will help us in understanding if the IDH structure matters. Also, the current work can be extended with more up-to-date information, after the new IHSES update scheduled for 2020. This would enable an insight into recent trends of internal displacement and compare them with the ones prior to 2014. And finally, questions might be raised on the validity of the total fatalities count as an appropriate instrument. One might argue that conflicts are more likely to occur in poorer areas, hence it is unlikely that conflict affects poverty only through displacement. We acknowledge this possibility, which calls for exploring other instruments.

Bibliography

- Alkire, S. and Foster, J. E. (2007). Counting and Multidimensional Poverty Measures. OPHI Working Paper No 7.
- Alkire, S., and J. Foster. (2011). "Counting and Multidimensional Poverty Measurement." *Journal of Public Economics* 95 (7): 476–87.
- Alkire, S., & Santos, M. E. (2010). Acute multidimensional poverty: A new index for developing countries." Human Development Research Paper 2010/11. UNDP-HDRO. New York. http://hdr.undp.org/sites/default/files/hdrp_2010_11.pdf.
- Alkire, S., & Santos, M. E. (2014). Measuring acute poverty in the developing world: Robustness and scope of the multidimensional poverty index. *World Development*, 59, 251-274.
- Allawi, A., (2007). The Occupation of Iraq. Winning the War, Losing the Peace. United States of America: Yale University Press.
- Barron et al., (2004). Local conflict in Indonesia: Measuring incidence and identifying patterns. *World Bank Policy Research Working Paper Series*, (3384).
- Calderón, V., & Ibáñez, A. M. (2009). Labor market effects of migration-related supply shocks: Evidence from internally displaced populations in Colombia. Universidad de los Andes, Facultad de Economía, CEDE.
- Collier, P. (1999). On the economic consequences of civil war. *Oxford economic papers*, 51(1), 168-183.
- Collier and Hoeffler, (2004). Greed and Grievance in Civil War'. *Oxford Economic Papers*.
- Cockburn, P., (2007). The Occupation. War And Resistance in Iraq. Second ed. London, England: Verso.
- Doocy, S., Sirois, A., Anderson, J., Tileva, M., Biermann, E., Storey, J.D. and Burnham, G., (2011). Food security and humanitarian assistance among displaced Iraqi populations in Jordan and Syria. *Social Science & Medicine*, 72(2), pp.273-282.
- Ferreira, F. H., & Lugo, M. A. (2013). Multidimensional poverty analysis: Looking for a middle ground. *The World Bank Research Observer*, 28(2), 220-235.
- Fiala, N. (2015). Economic consequences of forced displacement. *The Journal of Development Studies*, 51(10), 1275-1293.

Fransen, S., Ruiz, I., & Vargas-Silva, C. (2017). Return migration and economic outcomes in the conflict context. *World Development*, 95, 196-210.

Greene, W.H. (1993): *Econometric Analysis* (2nd edition). Engelwood Cliffs, NJ, Prentice Hall.

Ibáñez, A. M., & Vélez, C. E. (2008). Civil conflict and forced migration: The micro determinants and welfare losses of displacement in Colombia. *World Development*, 36(4), 659-676.

International Organization for Migration, (2013) Internal Displacement in Iraq: Barriers to Integration, December 2013, s. 14, <http://www.internal-displacement.org/assets/publications/2013/201312-Internal-Displacement-in-Iraq-Barriers-to-Integration-eng.pdf>, (04.04.2015)

IOM, <http://www.iom.int/news/displacement-iraq-exceeds-33-million-iom>

Iraq Body Count. www.iraqbodycount.org. Accessed November 26, 2018

Kondylis, F. (2008). Agricultural outputs and conflict displacement: Evidence from a policy intervention in Rwanda. *Economic Development and Cultural Change*, 57(1), 31-66.

Maasoumi, E., and M.A. Lugo. (2008). "The Information Basis of Multivariate Poverty Assessments." In N. Kakwani and J. Silber, eds., *Quantitative Approaches to Multidimensional Poverty Measurement*. New York: Palgrave Macmillan.

Miguel et al., (2004). Economic Shocks and Civil Conflict: An Instrumental Variables Approach. *Journal of Political Economy*, 112 (4), pp. 725-753.

Morales, J. S. (2018). The impact of internal displacement on destination communities: Evidence from the Colombian conflict. *Journal of Development Economics*, 131, 132-150.

Oxford Poverty and Human Development Initiative (OPHI). (2015). OPHI Country Briefing June 2015: Iraq. University of Oxford.

Loaiza Quintero, O. L., Muñetón Santa, G., & Vanegas, J. G. (2018). Forced displacement and Multidimensional Poverty in Antioquia, Colombia: an assessment by means of a Seemingly Unrelated Regression.

Ravallion, M. (2011). "On Multidimensional Indices of Poverty." *Journal of Economic Inequality* 9 (2): 235-48.

Refugee Studies Center. (2012). Iraqi protracted displacement, Workshop report, 22 March 2012, Amman, Refugee Studies Center, Oxford Department of International Development, University of Oxford.

Santos, M. E., & Alkire, S. (2011). Training material for producing national human development reports. *MPI: Construction and analysis*. Oxford: Oxford Poverty and Human Development Initiative. *Google Scholar*.

- Sen, A. (1976). 'Poverty: An Ordinal Approach to Measurement'. *Econometrica*, 44(2): 219–231.
- Sen, A. K. (1981). *Poverty and Famines. An Essay on Entitlement and Deprivation*. Oxford: Oxford University Press.
- Steele, J., (2008). *Defeat. Why America and Britain Lost Iraq*. First edn. Great Britain: I.B. Tauris & Co Ltd.
- Ssewanyana, S., Younger, S., & Kasirye, I. (2007). *Poverty under conflict: The case for northern Uganda*. In CSAE conference, Oxford.
- Stewart, F. and Valpy, F., eds, (2001). *War and Underdevelopment. Volume 1: The Economic and Social Consequences of Conflict*. First edn. United States of America: Oxford University Press.
- Terza, J. V., Basu, A., & Rathouz, P. J. (2008). Two-stage residual inclusion estimation: addressing endogeneity in health econometric modeling. *Journal of health economics*, 27(3), 531-543.
- United Nations, Commission on Human Rights, *The Guiding Principles on Internal Displacement*, UN Doc. E/CN.4/1998/53/Add.2 (1998).
- Verwimp, P., and Muñoz-Mora, J. (2017): «Returning Home after Civil War: Food Security and Nutrition among Burundian Households», *The Journal of Development Studies*, 1-22.
- Vishwanath, T., Sharma, D., Krishnan, N., & Blankespoor, B. (2015). *Where are Iraq's Poor: Mapping Poverty in Iraq*. World Bank.

Appendix A: Iraqi household deprivation patterns: IDHs vs. non-IDHs' members

Following the Alkire-Foster methodology, we compute basic multidimensional poverty indicators for our sample population. Table A1 reports some key measures of the MPI methodology for our sample population, but also those measures are broken into IDH, Pre03IDH, 03_05IDH, Post05IDH and non-IDH members. The headcount ratio or the incidence of poverty (H) for the total population is 7.55, which means 7.55 percent are MPI poor or in acute poverty – also shown in Figure B2 in Appendix B. When distinguishing between IDH and non-IDH members, that percentage does not change much for the latter, while slightly increasing to 7.62 percent for IDH members. This shows there are 0.09 percentage point more people in acute poverty within IDHs than within non-IDHs. Breaking IDHs into the three different phases of forced displacement, we see the post-2005 period has the highest headcount ratio – 3.34 percent. The average proportion of indicators in which poor people of our entire sample are deprived is 39.6 percent, as shown in the second column for measure (A). The poor IDHs' members are deprived in 38.7 percent of the weighted indicators which is lower than the 39.4 percent that applies to the poor non-IDHs' members. That indicator has the highest value of 40.3 for IDH who were displaced between 2003 and 2005. We also see the adjusted headcount ratio (MPI) for the whole sample population is 0.0297. The MPI almost remains unchanged when computed separately for IDHs' and non-IDHs' members. However, the MPI is higher for IDHs from the post-2005 phase. There are 19.8 percent of people vulnerable to poverty – people who are deprived in 20 to 33.3 percent of the weighted indicators. Besides, 0.56 percentage point more non-IDHs' than IDHs' members are vulnerable to poverty. People in severe poverty or those deprived in 50 percent or more of the weighted indicators only represent 1 percent of the total population. The pre-2003 phase of internal displacement has the lowest share of IDHs in severe poverty of all the IDHs displaced in that period. The monetary poverty figures seem to show relatively higher statistics as presented in the last column. There are 23.8 percent of people living below the monetary poverty line. Around 24 percent of non-IDH members fail below the poverty line, so 2.7 percent more than the same figure for IDHs.

Overall, the analysis by IDHs' and non-IDHs' members suggests forced displacement status differences in general poverty measures are not compelling. However, if we limit ourselves to

these broad poverty measures, we are likely to miss some insightful elements that might point to relevant deprivation differences across these two cohorts. That is why further MPI analysis is required.

Table A1. MPI results

	Headcount s (H) (in%)	Average Deprivation Share (A) (in %)	MPI Adjusted Headcount Ratio	Percentage of population		
				Vulnerable to poverty 20%- 33.3%	In severe poverty > = 50%	Below the poverty line (105,500.4 ID)
IDHs	7.62	38.7	0.0295	19.31	1.	21.30
Pre03IDH	2.65	38.5	0.0102	20.28	0.12	17.70
03_05IDH	1.63	40.3	0.0065	18.43	0.59	25.33
Post05IDH	3.34	38.1	0.0128	17.62	0.59	26.07
non-IDHs	7.53	39.4	0.0297	19.87	1	24.04
Total population	7.55	39.3	0.0297	19.83	1	23.81

Hence, we proceed to examine the incidence of deprivation in each of the MPI indicators; which is intended as the proportion of the population that is poor and deprived in each indicator, also known as censored headcount ratios. The bar chart in Figure A1 shows these ratios for IDHs' and non-IDHs' members.²³ The top two indicators in which more MPI poor people are deprived are school attendance and sanitation. The proportions of poor people with respect to each of these two indicators are around 6 to 7 percent. School attendance appears on the top of the chart for IDHs' members as the indicator in which more MPI poor people are deprived. For non-IDHs' members, it is sanitation that drives the most deprivation. The dirt floor is the third indicator in which poor IDHs are concentrated; while for non-IDHs it is not having access to clean water. In general, there is no big difference in the proportion of MPI poor people across the two groups – the only notable differences are with the water, floor, and cooking fuel indicators. What differs is the ranking of each of these indicators, which is also a signal of their importance in the deprivation of poor people. Therefore, doing such analysis would help set

²³Figures for the total population are depicted in Figure B3 in Appendix B. We will not comment on those figures here as they are pretty similar to the ones shown in Figure A1 for non-IDHs' members.

forth priorities for operations and policy intervention towards specific groups, IDPs in particular.

Figure A1. Censored headcount ratios

When accounting for each indicator's weight, we get a slightly different picture than above as shown in Figure A2. School attendance appears as the indicator with the highest contribution to the total deprivation of poor people in both IDHs and non-IDHs.²⁴ Its weight is more than as twice the rate of the second indicator in the chart of contributors to deprivation – nutrition – irrespective of an individual's displacement status. However, school attendance has a higher percentage contribution of 38.3 percent in the deprivation of poor IDHs as compared to only 36.9 percent for poor non-IDHs' members. This indicates child education as the major driver of the poor's MPI, is more important for IDHs than for non-IDHs. Similarly, nutrition weight is also higher in the deprivation of poor IDHs – 16.0 percent – than in one of poor non-IDHs –

²⁴Again here, we do not comment on the indicators' contribution for the total sample population but report these numbers in Figure B4 in Appendix B as they are very close to what we get for non-IDHs.

13.9 percent. One striking observation from all the above is that the two major contributors to poverty account for over half of poor people's total deprivation. We get a higher percentage of 54.3 percent for IDHs and 50.8 percent for non-IDHs. Moreover, these two major contributors belong to two separate poverty dimensions: education and health. All this points to the necessity of adapting policy interventions to each specific group's needs while considering the intensity of deprivation they face. It is also critical to avoid focusing on one single sector, but rather favor an inclusive approach that will incorporate key dimensions of poverty into poverty eradication plans. Another notable point we can draw from Figure A2 is the third position of sanitation and its weights in the deprivation of poor IDHs and non-IDHs – 12.0 percent and 12.8 percent, respectively. Although this indicator's assigned weight is only 1/6 of the total deprivation score, it emerges as one of the major drivers of the intensity of deprivation of the poor. And again here, it belongs to a different poverty dimension than the first two poverty contributors.

Figure A2. Contribution of each indicator to overall poverty

In further analysis, we disentangle multidimensional poverty at the governorate level. This is depicted in the maps in Figures A3 and A4 for the incidence of poverty by the governorate. In

general, the bulk of the poor is localized in the south and center of Iraq, in governorates such as Muthanna, Wasit and Maysan; although there are some notable differences between the two maps. Some governorates with relatively low poverty headcount ratios for non-IDHs, in fact, host a sizeable share of IDHs' poor – like for instance Najaf, Diyala and Babylon. Paradoxically, there does not seem to be a correlation between hosting a high share of poor IDPs and hosting a high share of IDPs. Indeed, Sulaimaniya which is the IDPs' primary governorate of residence, appears as the second area with the lowest poverty headcount ratio for the group of IDHs, a percentage of 0.8. Two other top IDPs hosting governorates, Nainawa in the North and Basrah in the South-East, also host low shares of IDHs – 4.8 and 3.2 percent, respectively. This brings in some new perspective on the key aspects that should be taken into account when designing assistance programs towards IDPs at the geographical level. Areas with the highest shares of IDPs are not necessarily where there is the highest need for assistance, but rather areas where poor IDPs are concentrated should be the primary focus.

Figure A3. Multidimensional poverty headcount at the governorate level for IDHs.

MP Headcount at the governorate level

Figure A4. Multidimensional poverty headcount at the governorate level for non-IDHs.

MP Headcount at the governorate level

This section has enabled us to put into perspective some key aspects of IDHs' multidimensional deprivation. We indeed find that deprivation of the poor IDHs is multidimensional. The main indicators that drive up the poverty weight of poor IDHs belong to different dimensions. These indicators are school attendance and nutrition. We also find that the highest headcount **ratio <?>** of IDHs is found in the school attendance indicator while for non-IDHs it is in the sanitation indicator. Besides, one critical observation resulting from the multidimensional poverty geographical analysis is that areas with the highest shares of IDPs are not necessarily where poor IDPs are concentrated. The latter point highlights the importance of conducting specific poverty analysis for policy design instead of relying on general statistics.

Appendix B. Some additional tables and graphs

Table B1. MPI dimensions, indicators, cutoffs and weights

Dimension	Indicator	Deprived if...	Relative weight
Education	Years of Schooling/School attainment	No household member has completed five years of schooling	16.7%
	Child Attendance To School	Any school-aged child is not attending school in years 1 to 8	16.7%
Health	Mortality	Any child has died in the family	16.7%
	Nutrition	Any adult to child for whom there is nutritional information is malnourished*	16.7%
Living Standard	Electricity	The household has no electricity	5.6%
	Sanitation	The household's sanitation facility is not improved (according to MDG guidelines), or it is improved but shared with other households**	5.6%
	Water	The household does not have access to safe drinking water (according to MDG guidelines) or safe drinking water is more than 30 minutes walking from home, roundtrip.***	5.6%
	Floor	The household has dirt, sand or dung floor.	5.6%

Cooking Fuel	The household cooks with dung, wood or carbon.	5.6%
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Assets	The household does not own more than one of the following assets: radio, television, telephone, bicycle, scooter or refrigerator, and does not own a car or a truck.	5.6%
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*Adults are considered malnourished if their BMI is below 18.5. Children are considered malnourished if their z-score of height-for-age is below minus two standard deviations from the median of the reference population.

**A household is considered to have access to improved sanitation if it has some type of flush toilet or latrine, or ventilated improved pit or composting toilet, provided that they are not shared.

*** A household has access to safe drinking water if the water source is any of the following types: piped water, public tap, borehole or pump, protected well, protected spring or rainwater, and it is within a distance of 30 minutes' walk (roundtrip).

Source: Alkire and Santos, 2014

FigureB1. IDPs’ distribution within IDHs

Figure B2. Deprivation cutoffs and deprived population rates

Figure B3. Censored headcount ratios (total population)

Figure B4. Contribution of each indicator to overall poverty for the whole population

Figure B5. Multidimensional poverty headcount at the governorate level (entire population)

Appendix C: Data limitations

The IHSES data were not specifically designed for an Alkire-Foster type of multidimensional analysis; hence the data questions and output might not perfectly fit into the scope of each indicator as defined by the MPI methodology. In the latter, the specification of each indicator's deprivation cutoffs is very precise. Although some of the questions as formulated in the IHSES survey might help to capture an MPI indicator, the answering options may not incorporate the level of precision needed for the cutoffs. For the sanitation indicator, for instance, options provided to the respondent are not disaggregated to a level that would enable detailed choices such as latrine or ventilated improved pit or composting toilet. Instead, it is limited to the following possible options: siphon/without siphon, shared/not shared. Similar issues are encountered in the water dimension. In general, for such issues, the only available choice would be to accommodate the level of disaggregation offered by our survey. Yet, there is one important issue left to be sorted out with both indicators of the health dimension which is one of the dimensions that poses the main bottleneck. The child mortality indicator of the standard MPI captures whether a child has died in the household within the past 5 years prior to the survey. Our data only provide this information for the past 12 months, causing some potential underestimation of deprivation with respect to the child mortality indicator. Besides, anthropometrics information has only been recorded for a randomly selected subsample – three households per cluster – of the original sample. This means that information is only available for about 34% of our sample. Therefore, in line with Santos and Alkire (2011) recommendations we apply the following strategy as an attempt to account for this limitation:

- When we cannot observe the deprivation status about one of the health dimension indicators – nutrition or child mortality – for certain household types – for instance due to the absence of the applicable member in the household – the remaining indicator within the same dimension receives the entire dimension weight of 1/3.
- When there are no children under 5 in the household and no other household member's anthropometric was recorded, we cannot observe the nutritional status of any member. Therefore, child mortality gets the full dimension weight of 1/3.

Appendix D: Some robustness checks

Table D1. Determinants of poverty (with destination country FE instead of origin-destination FE)

Column	(1)	(2)	(3)	(4)	(5)
VARIABLES	MP dummy	MP dummy	MP dummy	monetary dummy	WB MP dummy
	logit	Linear probability	logit	logit	logit
IDH	0.313*** (0.110)	0.0127** (0.005)		0.124* (0.074)	0.189* (0.103)
preUS_IDH			-0.003 (0.169)		
withinUShh1			0.565*** (0.215)		
postAskari_IDH			0.639*** (0.178)		
Head of household age	0.001 (0.002)	0.001 (0.001)	0.002 (0.002)	-0.001 (0.001)	-0.0131*** (0.002)
Dependency ratio	-0.001 (0.002)	0.001 (0.001)	-0.001 (0.002)	0.015*** (0.001)	0.024*** (0.002)
Head of household education	-1.265*** (0.067)	-0.0671*** (0.00340)	-1.266*** (0.0667)	-0.701*** (0.0402)	-2.709*** (0.075)
Head of household married	-0.208 (0.142)	-0.005 (0.009)	-0.206 (0.142)	0.359*** (0.107)	0.0398 (0.135)
Head of household gender	0.208 (0.145)	0.0130 (0.009)	0.214 (0.145)	0.391*** (0.107)	0.494*** (0.134)
Household in rural area	1.415*** (0.068)	0.073*** (0.00317)	1.411*** (0.0683)	0.735*** (0.039)	1.069*** (0.058)
Public distribution system	-0.141 (0.278)	-0.0129 (0.0106)	-0.121 (0.278)	0.286 (0.197)	-0.360 (0.251)
Household total males	-0.765*** (0.277)	-0.0410*** (0.0118)	-0.767*** (0.277)	-2.598*** (0.198)	-1.710*** (0.279)
Household total females	0.941*** (0.307)	0.0358** (0.0148)	0.952*** (0.308)	-1.917*** (0.290)	-0.733** (0.363)
Per capita consumption	-0.001*** (0.001)	-0.001*** (0.001)	-0.001*** (0.001)		
Constant	-1.919*** (0.351)	0.080*** (0.017)	-1.910*** (0.351)	-2.952*** (0.244)	-2.573*** (0.312)
Marginal effect of IDH	0.015*** (0.004)				
Marginal effect of preUS_IDH			-0.001 (0.008)		

Marginal effect of withinUShh1			0.028*** (0.010)		
Marginal effect of postAskari_IDH			0.031*** (0.008)		
Observations	25,145	25,145	25,145	25,145	25,145
LR chi2	2183.618***		2193.559***	4658.19***	4150.926***
Degrees of freedom	28.000		30.000	27.000	27.000
Log likelihood	-5613.97		-5613.99	-11481.24	-6991.08
McFadden R2	0.189		0.190	0.200	0.293
R-squared		0.084			
% Predicted right Governorate of residence	0.924		0.924	0.883	0.917
FE	Yes	Yes	Yes	Yes	Yes

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

Table D2. IV regressions (with destination country FE instead of origin-destination FE)

Column1	(1)	(2)	(5)	(8)	(3)	(6)	(4)	(7)
VARIABLES	IDH	MP dummy	MP dummy	MP dummy	monetary dummy	monetary dummy	WB MP dummy	WB MP dummy
	GLM	GLM	GMM	Logit	GLM	GMM	GLM	GMM
IBC	0.001*** (0.001)							
IDH		1.392*** (0.156)	0.023* (0.013)	0.584*** (0.140)	0.391*** (0.109)	0.0359* (0.021)	0.871*** (0.182)	0.027** (0.013)
Household in rural area (origin)	0.414*** (0.120)							
Head of household age	-0.001 (0.003)	0.002 (0.002)	0.001 (0.001)	0.001 (0.002)	-0.001 (0.001)	-0.001 (0.001)	-0.007*** (0.001)	-0.001*** (0.001)
Dependency ratio	-0.003* (0.002)	-0.001 (0.002)	-0.001 (0.001)	-0.001 (0.002)	0.008*** (0.001)	0.002*** (0.001)	0.015*** (0.001)	0.001*** (0.001)
Head of household education	-0.073 (0.076)	-0.919*** (0.079)	-0.064*** (0.004)	-1.272*** (0.068)	-0.353*** (0.028)	-0.087*** (0.005)	-1.997*** (0.082)	-0.156*** (0.004)
Head of household married	-0.072 (0.332)	-0.016 (0.158)	0.001 (0.001)	-0.195 (0.144)	0.200*** (0.071)	0.039*** (0.012)	-0.002 (0.089)	0.015 (0.010)
Head of household male	-0.243 (0.330)	0.148 (0.144)	0.008 (0.010)	0.192 (0.146)	0.362*** (0.068)	0.034** (0.013)	0.372*** (0.086)	0.027** (0.011)
Household in rural area	-0.121 (0.101)	1.229*** (0.082)	0.064*** (0.003)	1.430*** (0.070)	0.432*** (0.030)	0.094*** (0.005)	0.673*** (0.052)	0.063*** (0.004)

Public distribution system	-0.464*** (0.117)	-0.045 (0.287)	-0.023** (0.011)	-0.178 (0.278)	0.462** (0.202)	0.016 (0.016)	-0.171 (0.187)	-0.026** (0.012)
Household share males	0.197 (0.293)	-0.804** (0.336)	-0.041*** (0.012)	-0.746*** (0.282)	-1.585*** (0.128)	-0.222*** (0.016)	-1.391*** (0.235)	-0.082*** (0.012)
Household share females	-1.378*** (0.320)	0.994*** (0.213)	0.0223 (0.015)	0.870*** (0.316)	-1.362*** (0.216)	-0.140*** (0.017)	-0.155 (0.293)	-0.0263** (0.013)
Per capita consumption	-0.001*** (0.001)	-0.001*** (0.001)	-0.001*** (0.001)	-0.001*** (0.001)				
Xuhat		-1.231*** (0.223)			-0.359*** (0.123)		-0.592*** (0.205)	
Constant	-2.886*** (0.372)	-2.043*** (0.414)	0.113*** (0.017)	-1.785*** (0.353)	-2.891*** (0.234)	0.0556** (0.023)	-2.378*** (0.243)	0.145*** (0.018)
Marginal effect of IBC	0.001*** (0.001)	0.082*** (0.009)		0.028*** (0.007)	0.070*** (0.019)		0.075*** (0.016)	
Marginal effect of IDH								
Observations	23,983	23,983	23,983	23,983	23,983	23,983	23,983	23,983
R-squared	0.171	0.126	0.137		0.193	0.317	0.221	0.2288
McFadden R2				0.19				
LR chi2				2121***				
Degrees of freedom				28				
Log likelihood				-4363.63				
Governorate of origin FE	Yes							
Governorate of residence FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table D3. IV regressions with total body count 1-month prior migration as an instrument

Column1	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	IDH GLM	MP dummy GLM	MP dummy GMM	MP dummy Logit	Monetary dummy GLM	Monetary dummy GMM	WB MP dummy GLM	WB MP dummy GMM
IBC	0.002*** (0.001)							
IDH		0.810*** (0.283)	0.034** (0.015)	0.584*** (0.140)	0.357*** (0.118)	0.035 (0.023)	0.699*** (0.184)	0.0315* (0.016)
Household in rural area (origin)	0.371*** (0.132)							

Head of household age	-0.000320 (0.00283)	0.002 (0.001)	0.001 (0.001)	0.001 (0.002)	-0.001 (0.001)	-0.001 (0.001)	-0.006*** (0.001)	-0.001*** (0.001)
Dependency ratio	-0.002 (0.002)	-0.001 (0.002)	-0.001 (0.001)	-0.001 (0.002)	0.008*** (0.001)	0.002*** (0.001)	0.015*** (0.001)	0.001*** (0.001)
Head of household education	-0.0265 (0.078)	-0.914*** (0.076)	-0.069*** (0.003)	-1.272*** (0.068)	-0.354*** (0.028)	-0.087*** (0.005)	-1.995*** (0.082)	-0.158*** (0.004)
Head of household married	0.0115 (0.361)	-0.0221 (0.158)	-0.005 (0.008)	-0.195 (0.144)	0.199*** (0.071)	0.039*** (0.012)	-0.004 (0.0888)	0.015* (0.009)
Head of household male	-0.229 (0.359)	0.139 (0.144)	0.0121 (0.008)	0.192 (0.146)	0.361*** (0.068)	0.033*** (0.013)	0.370*** (0.086)	0.027*** (0.009)
Household in rural area	-0.0587 (0.102)	1.189*** (0.079)	0.073*** (0.003)	1.430*** (0.070)	0.431*** (0.030)	0.094*** (0.005)	0.668*** (0.052)	0.064*** (0.003)
Public distribution system	-0.594*** (0.107)	-0.067 (0.286)	-0.014 (0.012)	-0.178 (0.278)	0.462** (0.202)	0.017 (0.019)	-0.171 (0.188)	-0.025* (0.014)
Household share male	0.500* (0.296)	-0.759** (0.336)	-0.041*** (0.013)	-0.746*** (0.282)	-1.587*** (0.128)	-0.221*** (0.019)	-1.386*** (0.235)	-0.080*** (0.014)
Household share female	-1.481*** (0.396)	0.983*** (0.214)	0.033** (0.016)	0.870*** (0.316)	-1.361*** (0.216)	-0.133*** (0.024)	-0.158 (0.293)	-0.019 (0.017)
Per capita consumption	-0.001*** (0.001)	-0.001*** (0.001)	-0.001*** (0.001)	-0.001*** (0.001)				
Xuhat		-0.555* (0.318)			-0.318** (0.135)		-0.399* (0.203)	
Constant	-3.102*** (0.448)	-1.958*** (0.416)	0.110*** (0.017)	-1.785*** (0.353)	-2.887*** (0.234)	0.057** (0.024)	-2.366*** (0.244)	0.147*** (0.018)
Marginal effect of IBC	0.001*** (0.001)							
Marginal effect of IDH		0.049*** (0.017)			0.064*** (0.021)		0.060*** (0.016)	
Observations	23,983	23,983	23,983	23,983	23,983	23,983	23,983	23,983
R-squared	0.162	0.125	0.084		0.193	0.173	0.221	0.161
McFadden R2				0.196				
LR chi2				2121***				
Degrees of freedom				28				
Log likelihood				-4363.63				
Governorate of origin* governorate of residence FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table D4. IV regressions with total body count 3 months prior migration as an instrument

Column1	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	IDH	MP dummy	MP dummy	MP dummy	Monetary dummy	Monetary dummy	WB MP dummy	WB MP dummy
	GLM	GLM	GMM	Logit	GLM	GMM	GLM	GMM
IBC	0.001*** (0.001)							
IDH		1.423*** (0.151)	0.025* (0.014)	0.584*** (0.140)	0.392*** (0.107)	0.039* (0.021)	0.911*** (0.168)	0.027** (0.013)
Household in rural area (origin)	0.494*** (0.123)							
Head of household age	-0.001 (0.003)	0.002 (0.002)	0.01 (0.001)	0.001 (0.002)	-0.001 (0.001)	-0.001 (0.001)	-0.006*** (0.001)	-0.001*** (0.001)
Dependency ratio	-0.002 (0.002)	-0.001 (0.001)	-0.001 (0.001)	-0.002 (0.001)	0.008*** (0.001)	0.002*** (0.001)	0.015*** (0.001)	0.001*** (0.001)
Head of household education	0.005 (0.088)	-0.922*** (0.075)	-0.064*** (0.004)	-1.272*** (0.068)	-0.354*** (0.028)	-0.087*** (0.005)	-1.999*** (0.081)	-0.156*** (0.004)
Head of household married	-0.094 (0.339)	-0.018 (0.158)	0.001 (0.009)	-0.195 (0.144)	0.200*** (0.071)	0.039*** (0.012)	-0.002 (0.089)	0.015 (0.009)
Head of household male	-0.265 (0.338)	0.147 (0.143)	0.008 (0.009)	0.192 (0.146)	0.362*** (0.068)	0.034** (0.013)	0.372*** (0.0857)	0.027** (0.011)
Household in rural area	-0.183* (0.105)	1.238*** (0.082)	0.064*** (0.003)	1.430*** (0.070)	0.432*** (0.030)	0.094*** (0.005)	0.675*** (0.0518)	0.0626*** (0.003)
Public distribution system	-0.308* (0.158)	-0.050 (0.289)	-0.023** (0.010)	-0.178 (0.278)	0.460** (0.202)	0.017 (0.016)	-0.175 (0.187)	-0.026** (0.012)
Household share male	0.121 (0.293)	-0.804** (0.337)	-0.040*** (0.012)	-0.746*** (0.282)	-1.584*** (0.128)	-0.222*** (0.016)	-1.389*** (0.235)	-0.082*** (0.012)
Household share female	-1.136*** (0.283)	0.983*** (0.213)	0.022 (0.015)	0.870*** (0.316)	-1.367*** (0.216)	-0.140*** (0.017)	-0.165 (0.294)	-0.026** (0.013)
Per capita consumption	-0.001** (0.001)	-0.001*** (0.001)	-0.001*** (0.001)	-0.001*** (0.001)				
Xuhat		-1.272*** (0.217)			-0.363*** (0.119)		-0.636*** (0.189)	
Constant	-3.167*** (0.396)	-2.040*** (0.416)	0.113*** (0.017)	-1.785*** (0.353)	-2.887*** (0.234)	0.055** (0.023)	-2.373*** (0.243)	0.145*** (0.017)
Marginal effect of IBC	0.001*** (0.001)							
Marginal effect of IDH		0.085*** (0.009)		0.029*** (0.007)	0.070*** (0.019)		0.078*** (0.014)	
Observations	23,983	23,983	23,983	23,983	23,983	23,983	23,983	23,983

R-squared	0.171	0.127	0.083		0.193	0.173	0.222	0.161
McFadden R2				0.196				
LR chi2				2121				
Degrees of freedom				28				
Log-likelihood				-4363.63				
Governorate of origin*governorate of residence FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Robust standard errors in parentheses								
*** p<0.01, ** p<0.05, * p<0.1								