# Undernourishment in North and Sub-Saharan Africa

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## Abstract

Undernourishment has continued to occur globally in recent years; the spread of this phenomenon shows that inequalities, between and within countries, are increasing. After a good period of stability since 2015, the prevalence of undernourishment (PoU) dropped from 8.0 percent to 9.3 percent between 2019 and 2020, then increased at a less sustained rate in 2021, rising to 9.8 percent. The causal factors to eliminate or reduce its severity differ from one country to another. The causes of hunger in the countries of North Africa are: independence from food imports of primary products, loss of marine biodiversity, climate change (projected change in warm periods) and poverty in terms of available water resources cause while malnutrition or moderate food insecurity comes down to the lack of commitments in international conventions on the environment and the respect and enforcement of the law against trafficking in natural resources. The causal variables of these two phenomena in the countries of sub-Saharan Africa are identical. The great pressure that the population exerts on their environment and the enormous consumption of resources without having them protected, also the total deterioration of the agricultural sector and the Emigration to urban areas has greatly worsened the situation of bunger and malnutrition in these countries. The projects implemented to resolve these issues must be designed according to the causes identified in each country. In general, the reorientation of public support must currently be provided to strengthen the primary sector (food and agriculture), by implementing complementing to agrif-food systems, promoting healthy food environments and providing consumers with the means to adopt a healthy diet.

Keywords: North and Sub-Saharan Africa, Food Security.

## Introduction

The world today finds itself facing a problem despite hopes of an end to undernourishment and a start to improve food security. Malnutrition and even hunger still occurs in most countries. The circumstances that the world has experienced in recent years such as the COVID 19 pandemic, the war between Ukraine and Russia and especially climate change have worsened the situation in the food sector.

A lot of support provided by the public sector in order to save food and agriculture but it remains insufficient. We must necessarily have complementary policies which encourage healthy eating. The excessively high costs of this type of nutrition and the remarkable deterioration of the purchasing power cannot help establish healthy food environments.

According to the 2030 Sustainable Development Goal, there are only seven years left to completely eliminate hunger and all forms of malnutrition, but on a practical level, we find that we are too far from these goals and the world is heading towards Wrong direction. Hunger still had a place in the world from 2019 despite having recorded such stability since 2015. The variable of the prevalence of undernourishment recorded a sharp increase in 2019 to reach 9.3 percent against 8.0 percent in 2015. We are then talking about an increase of 1.3 percentage points between 2015 and 2020. This increase was continued but at a slow pace between 2020-2021, an evolution of only 0.5%.

A strong inequality recorded today regardless of between countries or within each one. It must be said that the least developed countries are more affected than others by the problem of food insecurity. African countries are at the top of the list with one in five people experiencing undernourishment, almost 20% in 2021 suffering from hunger while the percentage in advanced countries is 2.5% lower but that is not the case. This prevents malnutrition from evolving but at different rates between and within countries.

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A significant part of aid is currently allocated to food and agriculture. The public authorities must direct all policies towards the achievement of food security, good nutrition and the total elimination of hunger. These objectives can only be achievable through the efficient use of public budgets to minimize the high costs of healthy food so that it is accessible to everyone. Consequently, and in relation to salary levels, they should raise awareness among people and direct them towards the consumption of organic products.

Food security is ultimately a responsibility of the public authorities, it is part of the general context of human rights.

## Theoretical Consideration

## Definition of Food Security

The concept of food security appeared in 1970. According to the Committee on World Food Security, several factors were at the origin of the appearance of this concept citing: the remarkable increase in the prices of cereals on international markets caused by a bad harvest season and the deterioration of agriculture, the shortage of oil stocks and the rise in these prices. At that time several regions were suffering from a lack of basic food products to feed the population because of the climate change (drought, global warming, etc.) as well as a total imbalance in the natural system. Thus the definition adopted by the World Food Conference in 1974 reflects this context: "To have at all times, an adequate level of basic products to satisfy the increase in consumption and mitigate fluctuations in production and prices. »

## Theoretical Consideration

The risk factors for hunger mainly come down to the internal conditions that a nation can face, the lack of financial means to satisfy the basic needs of the population, the absence of hygiene and good manners and places to store food. These conditions can in turn sometimes lead to fatal illnesses. The isolation of a group of individuals in an unfavorable environment to habitation and who lack the necessary means to live in good conditions. The deterioration of the agricultural sector and the suffering of farmers are caused by the lack of means, whether financial or material.

Other factors of food insecurity may fall outside the responsibility of man or we can say that the latter's participation is indirect, such as the impact of climate change on production in all sectors and also pollution and its negative effects on the environment.

In this context, many other empirical works have been developed in this area to show the causes of hunger. Thomas Malthus showed that the relationship between demographic growth and the slowdown in the agricultural sector gives rise to a remarkable gap difficult to fill by the nation without having to make additional efforts. While Amartya Sen finds that the relationship between production and population is insignificant, a country with high production does not necessarily mean that it beats hunger, citing as an example of a country like China and India. These producing countries at the base and with a high growth rate, however cannot make hunger disappear. Time has shown that other countries have shown that it is not enough to produce enough food in a country or region to overcome hunger. Countries like India, Brazil and China have managed to produce enough food to feed their entire population, or even to export surpluses, without having made hunger disappear. On the other hand, other countries which do not resort to food production but benefit from oil revenues, feed their populations and completely eliminate hunger by resorting to the international market.

Over time the concept of food insecurity has been modified, which does not necessarily mean hunger but rather the quality of the diet and the number of calories obtained by the individual per day or over a given period. So it is not a problem to eat or not, but above all what to eat? In this context, the committee for world food security in 2012 adopts the integration of the concept of nutritional security; this proposal is based on the fact that malnutrition that has been recorded for a long time today causes food insecurity and diseases (diarrhea, malaria, lack of vitamins, etc.).

In recent years and precisely since 2015, food insecurity affects a significant number of people and the situation has become more serious with the 2019 pandemic, the FAO (Food and Agriculture Organization) shows that around 702 million and 828 million people globally in 2021 suffered from hunger. The number recorded an increase of 46 million in 2021 compared to 2020, and an additional 105 million in 2020 compared to 2019.

According to the FAO, hunger refers to a feeling of physical lack caused by the insufficient quantity of energy received by the human body; it can often be painful and causes several diseases. The prevalence of undernourishment is the famous indicator used by the FAO for a long time to measure "hunger".

The prevalence of undernutrition "Is an estimate of the proportion of the population whose usual food consumption is insufficient to provide the levels of dietary energy required to maintain a healthy and active life. It is expressed as a percentage. It measures progress towards target 2.1. SDGs » FAO since 1974.

The individual is considered in a situation of food insecurity, if he does not have regular and daily access to nutritious food because of the lack of resources necessary to have it, but at this level the FAO has carefully distinguished between levels of hunger severity. We therefore distinguish between two levels, severe and moderate food insecurity:



Figure 1: Levels Of Food Insecurity FAO, IFAD, WHO, WFP And UNICEF. 2022.

Food insecurity refers to hunger when it reaches a too high level (going days without eating), otherwise we speak of moderate food insecurity when the individual is unable to achieve a balanced diet and have the healthy diet, that means he does not have access to sufficient protein and energy.



Figure 2: The Evolution of Severe and Moderate Food Insecurity in The World Over the Period 2014-2021 (Pou).

Over the period 2014-2021 hunger experienced a remarkable expansion, especially in terms of severe food insecurity. The situation became more serious with the events of covid-2019, the percentage of PoU rose by 2.4 percentage points between 2019-2021 so the rate increases from 9.3% to 11.7%.

Moderate food insecurity also increased but at a slower rate, only 1.5 percentage points. So the world has recorded a remarkable evolution in hunger, the overall rate increased by 5 percentage points over 2019-2021. The hunger rate in general increases from 25.4% in 2019 to 29.3% in 2021. What is happening in the world is totally far from the sustainable development objective which aims to completely eliminate hunger, a percentage of 0% in 2030. We can therefore say that this notion in the world is tending in the wrong direction. But it must be said that there is a strong disparity between regions and within them in terms of food insecurity and the causes of the latter differ from one place to another.

African countries suffer much more from the problem of hunger than others, a too high percentage of serious food insecurity exceeds 23.4% in 2021, the time that the countries of North America and Europe the percentage does not does not exceed 1.5%. A very remarkable disparity.





Figure 3: The Evolution of Severe and Moderate Food Insecurity in Africa, Asia, Latin America and The Caribbean and North America and Europe Over the Period 2014-2021 (Pou).

Hunger is highly prevalent in poor and developing countries compared to advanced countries. We find that Africa takes the first place in terms of severe and moderate food insecurity, the percentages in 2021 are respectively 23.4% and 34.4%. More than 50% of the population suffers from the problem of food insecurity. Although this phenomenon experienced a remarkable increase over the period 2014-2021 a total increase of around 14 percentage point. This critical situation and horrible spread of hunger are caused by multiple effects: we find, the multi-year droughts in the Horn of Africa and East Africa, the internal conflict in Ethiopia, a swarm of locusts. Also the last four years we are talking about international shocks associated with the pandemic and the war in Ukraine. Which subsequently causes an increase in unemployment, poverty and degradation of human capital.

The group of Latin American and Caribbean countries is in the second place with a much lower percentage compared to the African countries. A percentage of severe and moderate hunger of 14.2% and 26.4%, we speak of approximately 40% of the population suffering from food insecurity. The problem in this region is rather malnutrition and the lack of access to healthy food, problems in the functioning of agricultural and food services. This confirms that families have difficulty eating healthy and many children sometimes find themselves either hungry or overweight. For children to grow up healthy, they must ensure that all families have access to affordable and nutritious food.

Food insecurity is also found in Asia, it reaches 24.6% of the population in 2021 distributed between 10.5% who suffer from severe hunger and 14.2% from moderate hunger. These percentages have been increased very remarkably especially after the covid-19 pandemic. Furthermore, a remarkable slowdown in economic activity in Asia and the Pacific and economic contractions, have had a greater effect on the accessibility of food as the increase in food prices.

Hunger is almost absent in the countries of North America and Europe. In 2021, only 8.1% suffer from the problem of hunger, including 1.5% the percentage of severe food insecurity and 6.4% moderate. Also, the percentage is almost stable over the period 2014-2021, a slight and even negligible increase from 2019 of 0.6%. The problem in this country maybe in the access to healthy food, quantity of energy received per day etc.

These countries suffer less than others from the problem of people not having regular access to healthy, nutritious and sufficient food. The food security is due to the strong legislative frameworks that provide an enabling environment to minimize hunger across the approval of laws and budgets regarding food and nutrition security.

## Model and Estimation

Undernourishment is a phenomenon that painfully affects human beings. This phenomenon is widely distributed in poor and developing countries compared to advanced countries. This empirical work takes into consideration the case of Africa since it has recorded the highest rates in terms of severe and moderate hunger according to the FAO classification. Our objective at this level is to know the causal variables of food insecurity, and the difference in terms of causality between the countries of North Africa and sub-Saharan Africa.

## Empirical Model

## Analysis Samples

The countries of Africa are the subject of our sample which includes 19 countries (data fault). The geographical distribution of the countries of Africa and their economic and environmental differences prompted us to break down the sample into two groups of countries (North Africa and sub-Saharan Africa).

## Variables

In terms of variables, our model includes two endogenous or explanatory variables and fifteen exogenous variables. The analysis period extends from 2015 to 2021, i.e. 7 years.

Endogenous variables	Exogenous variables
Y1 : Prevalence of	x1: water stress/x2: efficient use of water/x3:food
severe	price/x4:dependence on food imports/x5:Agriculture
undernourishment	capacity/x6:projected change in biome distribution/x7:projected
	change in marine biodiversity/ x8:dependence on natural
	capital/x9:Ecological footprint/x10:commitment to international
	environmental conventions/x11:projected change in hot periods /
	x12:projected change in flood risk/ x13:Urban concentration/
	x14:GDP /h/x15:protected biome
Y2: Prevalence of	x1: water stress/x2: efficient use of water/x3:food
moderate	price/x4:dependence on food imports/x5:Agriculture
undernourishment	capacity/x6:projected change in biome distribution/x7:projected
	change in marine biodiversity/ x8:dependence on natural
	capital/x9:Ecological footprint/x10:commitment to international
	environmental conventions/x11:projected change in hot periods /
	x12:projected change in flood risk/ x13:Urban concentration/
	x14:GDP /h/x15:protected biome

Source: Data collected from the Food and Agriculture Organization of the United Nations. And the World Bank.

### Models to Estimate

The existence of two endogenous variables necessarily requires two empirical models at the level of the first equation. We will test the effect of environmental and economic variables on severe food insecurity then their effects on moderate food insecurity.

### Analysis Hypotheses

H1: a difference in terms of causality exists between the two levels of food insecurity (severe and moderate).

H2: the causes of undernourishment in North African countries are different from those in sub-Saharan African countries.

#### Equations

Severe food insecurity

Moderate food insecurity

 $Y1_{it} = \alpha_i + \sum \beta x_{it} + \dot{\epsilon}_{it} \qquad Y2_{it} = \alpha_i + \sum \beta x_{it} + \dot{\epsilon}_{it}$ 

of which :i=1.....19 of which: i=1.....19

t=2015....2021

Empirical Investigations

Severe Food Insecurity

Severe Food Insecurity in African Countries

Variables	Coefficients	p-value
x9: Ecological footprint	1.07	0.002
x11projected change in hot	0.761	0.033
periods		
x13: Urban concentration	0. 682	0.071
x15: protected biome	1.889	0.008

t=2015....2021

Source: Author's Calculation

### Interpretation

Most African countries suffer from environmental problems such as temperature instability and fluctuating precipitation which subsequently causes natural disasters that hit the population hard. Theterm «yukiotanaka" often refers to people who died because of this phenomenon in the Horn of Africa, the drought causes a famine which has cost the lives of a significant number of inhabitants. Also in East Africa especially the countries which are located at the level of the Nile basin, suffered catastrophic floods which affected up to millions of people in 2020. The drought of these countries is an obstacle to the crop cycle and livestock breeding and generally to any investment in nature which is caused by the continuation of the vicious circles of serious hunger. The deterioration of the agricultural sector and the worsening of the food insecurity situation are pushing people to move to urban areas, that is why our empirical work shows the positive effect of the variable of urban concentration on insecurity. The severe food crisis, leads to an increase in the rate of urbanization in Africa increases from 15% in 1960 to 40.43% in 2015 and it is expected to reach more than half of the population in 2035. Most theories find that urbanization has only improved the standard of living of the population, but according to "Bruno Emmanuelongo and Jacque Simon Song" this situation in Africa has not only increased pressure on housing, but also deterioration in the standard of living and the development of slums, poverty as well is increasing. All these problems lead obviously to severe food insecurity and hunger. Turok (2012) in his way finds that the relationship between urbanization and economic development in African countries is purely negative and the latter can only worsen the hunger situation.

Still speaking in the environmental context, we can confirm that the great pressure of the rapid demographic expansion and the remarkable degradation of the ecosystem exerting on the environment, push the world to react immediately to protect natural spaces because the positive ecological footprint can help decrease the severity of huger. Despite the efforts made by African countries to conserve parts of their territories according to VICN (2.4 million km2 approximately 5.2% of protected areas), but it still

remains insufficient given the value that the fauna and flora of these countries carry, and the poorly exploited renewable resources. This is why our results show a positive effect of protected biome on serious food insecurity, the integration of these resources into economic activity can improve the standard of living of the population because it represents sources of income in several areas, tourism (areas to visit, sports hunting etc.), commercial (artisanal products to market and also good quality of consumer products such as meat and fish), celestine Mengue-medou (2002). Therefore the protection of the natural resources of these countries and its proper exploitation in economic activity seems an obstacle to the risk of serious food insecurity of these populations.

Variables	Coefficients	p-value
X1 water stress	0.094	0.066
x7: projected change in	1.492	0.000
marine biodiversity		
x9: Ecological footprint	-3.159	0.095
X2: efficient use of water	-0.29	0.002
x11: expected change in hot	6.556	0.002
periods		
x12: predicted change in flood	-12.943	0.004
risk		
x4: dependence on food	1.361	0.001
imports		

Serious Food Insecurity in North African Countries

Source: Author's Calculation

### Interpretation

The countries of North Africa are among the regions affected by serious food insecurity. The causes of the spread of this phenomenon return according to our empirical work to economic factors such as:dependence on food imports which has a direct effect of this variable on hunger. Dependence on national markets in these countries is also too important in terms of the most consumed primary products such as cereals, oil, etc. The percentage in 2018 according to Jacques Berthelot is 29%.

In the environmental context, the loss of marine biodiversity, climate change (expected change in hot periods) and the availability of water resources represent the three major evils which affect serious food security in the countries of North Africa. However, this groupof countries find themselves a little bit protected until now, compared to other African countries in terms of hunger because of the efficient use of water in these countries. Our work shows that the variable of the efficient use of Water in these countries has a negative effect on severe food insecurity. The ecological footprint of an individual depends on their lifestyle and the pressure that a person can exert on the earth. It must be said that this variable does not directly cause hunger in the countries of North Africa, knowledge and reduction of the ecological footprint can improve the food security situation; therefore, this variable has a negative effect on hunger. It is true that the risk of flooding is global but it must be said that the countries of North Africa are the least affected by the risk of flooding compared to the others, that is why this variable minimizes hunger or helps at least to cope with its increase.

Severe Food Insecurity in Sub-Saharan African Countries

Variables	Coefficients	p-value
X9: Ecological footprint	0.967	0.019
x12: predicted change in flood	1.132	0.007
risk		

		DOI: https://doi.org/10.62754/joe.v3i6.4165
x13: Urban concentration	1.204	0.022
X4: dependence on food	3.273	0.007
imports		
X10: commitment to	-10.474	0.000
international environmental		
conventions		
X15: protected biome	10.912	0.000

Source: Author's Calculation

### Interpretation

Hunger in sub-Saharan African countries is much higher compared to that in North African countries and this comes down to dependence on food imports of which these countries occupy the first place in terms of imports of food products. The percentage is 32.7% that early means half of Africa's total imports. Therefore, improving the productivity of agricultural labor is a necessity today in order to minimize hunger in Africa. The environmental pillar also poses a major problem with regard to the spread of hunger. The need to preserve savannahs and forests to mitigate this change and protect biodiversity is a priority in order to minimize serious food insecurity in the countries of the Sub-Saharan Africa. A positive effect of the protected biome variable on severe food insecurity, also that of predicted change in the risk of flooding which destroys the lives and land of a significant number of the population. The demographic pressure in these countries compared to the low level of development also poses a big problem with regard to the increase in hunger which is not really the case in the countries of North Africa.We observe here a positive effect of the ecological footprint on hunger. Also the variable of urban concentration has a positive effect on the variable of serious food insecurity. In SSA countries, the diffusion of the phenomenon of urbanization causes pressure on housing, a deterioration in standard of living, development of slums and poverty increase which obviously cause serious food insecurity and hunger. Thisproblem does not directly concern the countries of North Africa where the results showed no effect of this variable on the food insecurity.

The presence of international conventions on the environment is the only protection today in SSA against hunger, but it remains insufficient compared to the situation of serious food insecurity affecting this region. A negative effect of the variable of commitment to international environmental conventions on hunger.

### Moderate Food Insecurity

Moderate Food Insecurity in African Countries

Variables	Coefficients	p-value
X4: dependence on food	0.261	0.013
imports		
x9: Ecologicalfootprint	-2.398	0.013
X12: predicted change in	-3.057	0.017
flood risk		
x11: expected change in hot	-3.497	0.017
periods		
x13: Urban concentration	0.468	0.055
x15:protected biome	-3.510	0.000

Source: Author's Calculation

## Interpretation

The explanatory indicator of the level of moderate food insecurity in African countries mainly comes down to the low level of income from agriculture which necessarily pushes the population to move towards urban areas. We can confirm therefore that the urban concentration has a positive effect on moderate food insecurity. Dependence on food imports of primary products especially is a resulting effect of the degradation of agriculture which subsequently causes an unsatisfactory diet.

Intervention by public authorities to implement agricultural modernization policies is a priority today in order to increase household income on the one hand and on the other hand improve the quality of agricultural products so that these countries can put on the market products. Consequently, this can guarantee a healthy nutritional balance and eliminate the shortage of necessary food products.

We note here that the variables that cause moderate food insecurity are different from those that cause hunger, a negative effect of the ecological footprint, expected a change in flood risk, expected change in hot periods and protected biome. These variables do not directly cause food shortages and poor nutrition, but it must be said that our results have already shown that they cause hunger.

Variables	Coefficients	p_value
valiables		p-value
X1 water stress	-0.065	0.050
X4: dependence on food	0.507	0.012
imports		
I		
x7:projected change in	1.543	0.003
marine biodiversity		
x8:dependence on natural	1.133	0.000
capital		
x9: Ecologicalfootprint	-2.338	0.013
-		
x10:commitment to	22.110	0.041
international environmental		
conventions		
x11: expected change in hot	-0.642	0.000
periods		
x12: predicted change in flood	-4.222	0.056
risk		
X15:protected biome	-7.128	0.099
X2: efficient use of water	-0.081	0.089

Moderate Food Insecurity in North African Countries

Source: Author's Calculation

### Interpretation

The insufficiency in terms of energy and healthy food in the countries of North Africa mainly comes down to the dependence on food imports. This variable which causes hunger in these countries also affects malnourished people and causes insufficiency in terms of food. healthy eating, a positive effect of dependence on food imports on moderate food insecurity.

Commitments to international conventions on the environment, respect and enforcement of the law against trafficking in natural resources poses a problem throughout Africa, including North Africa, which necessarily causes a positive effect of the projected change in marine biodiversity on food insecurity and total disruption in the marine riches which represent the source of healthy and nutritious food. The

dependence on natural capitals in these countries against the decline of biodiversity requires the immediate intervention of power, resident populations and local communities in order to monitor the application of existing laws. In addition, they must put in place new measures to protect and improve the future of certain animals and plants based on nutrients, and especially the creation of organic and sustainable agriculture programs in order to ensure healthy foods rich in vitamins and energy

Variables	Coefficients	p-value
x7: projected change in	1.057	0.020
marine biodiversity		
x9: Ecologicalfootprint	0.406	0.030
x12: predicted change in flood	0.614	0.018
risk		
x13: Urban concentration	0.550	0.010
x15:protected biome	5.364	0.000
X10:commitment to	-5.149	0.000
international environnemental		
conventions		
X4: dependence on food	1.430	0.022
imports		

#### Moderate Food Insecurity in Sub-Saharan African Countries

Source: Author's Calculation

#### Interpretation

At the level of the countries of sub-Saharan Africa the causal variables of hunger in these countries are almost the same which causes moderate food insecurity, a positive effect of the ecological footprint. There's a great pressure as well exerted by the population on their environment necessarily generated by a large consumption of natural resources by man without having the protected or renewed loss of healthy foods. Theseproblems also justified by the urban concentration and the deterioration of the agricultural sector: There's less and less food, which generates subsequently countries that are necessarily dependent on food imports in order to satisfy the minimum of their needs. Still in the environmental context, the lack of protected areas which can guarantee the survival of fauna and flora associated with projected change in marine biodiversity and anticipated change in flood risk can only aggravate the situation of food insecurity and hungry as we have already shown. Corrective measures are necessary today in order to put in place effective policies to protect the environment such as commitment to international conventions on the environment and especially the application of the law.Note that this variable is the only one which can have a direct negative effect on moderate and severe food insecurity. The development of the agricultural sector is one of the most powerful levels on which we must act to put an end to malnutrition.

## Conclusion

The problem of food insecurity, whether serious or moderate, is a major force affecting African countries. The problem is the same but the causes differ from one region to another. The causes of hunger in North African countries are dependence on food imports of primary products, which makes prices necessarily high in relation to the purchasing power of the population. In the environmental context, the loss of marine biodiversity, climate change (expected change in hot periods) and poverty in terms of available water resources are causing hunger in one way or another in these countries. The causes of malnutrition are different from those of hunger.Our work shows that commitment to international conventions on the environment and respect and enforcement of the law against trafficking in natural resources is among the major problems of moderate food insecurity, which confirms our first hypothesis.

Severe and moderate food insecurity in sub-Saharan African countries is represented in the form of a single problem with the causes and solutions being identical. Hypothesis 1 invalidated "a difference in terms of causality exists between the two levels of food insecurity (severe and moderate)". The great pressure that the population exerts on their environment and the enormous consumption of resources without having the protected ones, also the total deterioration of the agricultural sector and the emigration towards urban areas have greatly aggravated the situation of hunger and malnutrition in those countries.

We can therefore conclude that the solutions to undernourishment must be adopted according to the causes because they differ from one region to another, which confirms our second hypothesis "the causes of undernourishment in the countries of the "North Africa is different from those in sub-Saharan African countries.

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#### Annex

Errorautocorrelation test

correlate x1	L x2 x3 x4	x5 x6 x7	x8 x9 x10	x11 x12	x13 x14 x	15									
obe=1321															
000 102)															
	l x1	×2	×3	×4	x 5	хб	×7	×8	×٩	×10	x11	x12	x13	x14	×15
x1	1.0000														
x2	-0.0816	1.0000													
×3	-0.0234	0.2369	1.0000												
x4	0.6557	-0.1614	-0.1822	1.0000											
x5	-0.1872	0.0779	0.2061	-0.5524	1.0000										
x6	-0.0020	0.1844	0.0211	-0.2797	0.0624	1.0000									
x7	0.5777	-0.0038	-0.0458	0.5352	-0.4252	-0.2301	1.0000								
×8	0.5777	-0.0038	-0.0458	0.5352	-0.4252	-0.2301	1.0000	1.0000							
x 9	0.6601	0.0660	-0.0471	0.6173	-0.4157	-0.0934	0.4652	0.4652	1.0000						
x10	-0.0219	-0.1986	0.1567	-0.3740	0.5588	-0.1554	-0.0933	-0.0933	-0.3631	1.0000					
x11	-0.4638	0.3462	0.1646	-0.5860	0.4690	-0.1471	-0.1304	-0.1304	-0.3740	0.2648	1.0000				
x12	-0.3935	0.1436	0.1561	-0.6227	0.3959	0.4045	-0.6560	-0.6560	-0.4111	0.1582	0.1653	1.0000			
x13	0.5410	0.0910	-0.0383	0.4699	-0.1125	-0.1597	0.7383	0.7383	0.4938	-0.0599	-0.1714	-0.7289	1.0000		
x14	0.8618	-0.0189	-0.0784	0.8010	-0.4795	-0.0736	0.6993	0.6993	0.7667	-0.2798	-0.5974	-0.6276	0.7014	1.0000	
x15	-0.3356	-0.0984	0.0570	-0.4693	0.5209	-0.1131	-0.5746	-0.5746	-0.5581	0.4632	0.3919	0.5458	-0.6338	-0.6819	1.0000

## Severe Food Insecurity in African Countries (Global Sample)

. xtreg ln_y1	ln_x1 ln_x2	ln_x3 ln	_x4 ln_:	ĸ5, re		
Random-effects	s GLS regressi	on		Number	of obs =	14
Group variable	e:p			Number	of groups =	6
				-1		
R-sq: within between	= 0.0249 = 0.9272			Obs per	group: min =	2.3
overall	1 = 0.6488				max =	4
	- 0 (			Wald ch	12(5) =	14.78
COII(u_1, X)	= 0 (assumed	1)		PIOD >	- cni2 =	0.0114
ln_y1	Coef.	Std. Err.	Z	₽>   z	[95% Conf.	Interval]
ln v1	0751705	1499305	0.50	0.616	= 2186878	3690289
ln x2	4388872	.1166666	-3.76	0.000	6675496	2102249
ln_x3	.2748058	.2740126	1.00	0.316	262249	.8118605
ln_x4	.6950617	.4305733	1.61	0.106	1488466	1.53897
1n_x5	2 003764	6924702	2 89	0.645	-2.569074	4.14/41
	21003704	.0524702	2.05	0.004		5.50050
sigma_u	0					
sigma_e	.29554638	16				
	0	(ifaction	or varia	ice due c	0 u_1)	
. xtreg ln_y1	ln_x6 ln_x7	ln_x9 ln_	x10 ln_:	kll ln_x	12, re	
Pandom-offoot	CIE rogrocoi			Number	of obs =	112
Group variable	e: p	.011		Number	of groups =	16
R-sq: within	= 0.1375			Obs per	group: min =	7
overall	h = 0.3633 l = 0.3357				avg = max =	7.0
				Wald ch	i2(6) =	17.52
corr(u_i, X)	= 0 (assumed	i)		Prob >	chi2 =	0.0076
ln_y1	Coef.	Std. Err.	z	₽>   z	[95% Conf.	Interval]
ln_x6	-1.912368	1.168562	-1.64	0.102	-4.202708	.3779723
1n_x7 1n_x9	1.078396	.8371793	0.91	0.363	879698	2.401985
ln_x10	1.206571	.7611118	1.59	0.113	2851806	2.698323
ln_x11	.7618003	.3578881	2.13	0.033	.0603524	1.463248
ln_x12	.113378	.5552067	0.20	0.838	974807	1.201563
	5.5855551	1.4/90/3	3.70	0.000	2.004021	0.402402
sigma_u	.58969843					
	0400000					
sigma_e	.21089029					
sigma_e rho	.88660743	(fraction	of varia	nce due t	o u_i)	
sigma_e rho	.88660743	(fraction	of varia	nce due t	o u_i)	
sigma_e rho	.88660743	(fraction	of varian	nce due t	o u_i)	
sigma_e rho . xtreg ln_y1	.21089029 .88660743	(fraction	of varian	Number	o u_i)	
. xtreg ln_y1 Random-effects Group variable	.21089029 .88660743 ln_x13 ln_x1 a GLS regressi e: p	(fraction 44 ln_x15,	of varian	Number Number	o u_i) of obs = of groups =	133
. xtreg ln_y1 Random-effects Group variable	.88660743 ln_x13 ln_x1 s GLS regressi e: p	(fraction	of varian	Number Number	o u_i) of obs = of groups =	133 19
. xtreg ln_y1 Random-effects Group variable R-sq: within	.21089029 .88660743 ln_x13 ln_x1 s GLS regressi e: p = 0.2554	(fraction	of varian	Number Number Obs per	of obs = of groups = group: min =	133 19 7
. xtreg ln_y1 Random-effects Group variable R-sq: within betweer overall	.21089029 .88660743 ln_x13 ln_x1 s GLS regressi e: p = 0.2554 n = 0.0147 l = 0.0162	(fraction 4	of varian	Number Number Obs per	of obs = of groups = group: min = avg = max =	133 19 7.0 7
sigma_e rho . xtreg ln_y1 Random-effects Group variable R-sg: within between overall	.11089029 .88660743 ln_x13 ln_x1 s GLS regressi e: p = 0.2554 n = 0.0147 l = 0.0162	(fraction	of varian	Number Number Obs per	of obs = of groups = group: min = avg = max =	133 19 7.0 7
sigma_e rho . xtreg ln_y1 Random-effects Group variable R-sq: within between overall	.21089029 .88660743 ln_x13 ln_x1 s GLS regressi e: p = 0.2554 n = 0.0147 l = 0.0162	(fraction 4 ln_x15,	of varian	Number Number Obs per Wald ch	o u_i) of obs = of groups = group: min = avg = max = i2(3) =	133 19 7.0 7 9.09
sigma_e rho . xtreq ln_yl Random-effect: Group variable R-sq: within between overall	.21039029 .88660743 ln_x13 ln_x1 s GLS regressi e: p = 0.2554 h = 0.0147 l = 0.0162 = 0 (assumed	(fraction 14 ln_x15, 10n	of varian	Number Number Obs per Wald ch Prob >	o u_i) of obs - of groups - group: min - avg - max - i2(3) - chi2 -	133 19 7.0 7 9.09 0.0282
sigma_e rho . xtreg ln_y1 Random-effect. Group variable R-sq: within between overall corr(u_i, X)	.21039029 .88660743 ln_x13 ln_x1 s GLS regressi e: p = 0.2554 n = 0.0147 l = 0.0162 = 0 (assumed	(fraction 14 ln_x15, ion	of varian	Number Number Obs per Wald ch Prob >	o u_i) of obs - of groups - avg - max - i2(3) - chi2 -	133 19 7.0 7 9.09 0.0282
sigma_e rho . xtreg ln_y1 Random-effects Group variable R-sq: within between overall corr(u_i, X) ln_y1	.21099029 .88660743 ln_x13 ln_x1 a GLS regressl a: p = 0.2554 h = 0.0147 l = 0.0162 = 0 (assumed Coef.	(fraction 4 ln_x15, .on i) Std. Err.	of varian	Number Number Obs per Wald ch Prob >	o u_i) of obs - of groups - group: min - avg - max - 12(3) - chi2 - [95% Conf.	133 19 7.0 7 9.09 0.0282 Interval]
sigma_e rho . xtreq ln_y1 Random-effect: Group variable R-sq: within between overall corr(u_i, X)	.21093029 .88660743 ln_x13 ln_x1 s GLS regressi t p = 0.2554 n = 0.0147 l = 0.0162 = 0 (assumed Coef.	(fraction 14 ln_x15, 10 1) Std. Err.	of varian	Number Number Obs per Wald ch Prob > P> z	o u_i) of obs = of groups = group: min = avg = max = i2(3) = (95% Conf.	133 19 7.0 9.09 0.0282 Interval]
sigma_e rho . xtreg ln_y1 Random-effect: Group variable R-sq: within between overall corr(u_i, X) <u>ln_y1</u> in_x13	.21099029 .88660743 ln_x13 ln_x1 s GLS regressl t p = 0.2554 a = 0.0147 l = 0.0162 = 0 (assumed Coef. .6823232 .1494692	(fraction 4 1n_x15, ion 5td. Err. .3780568 .2131377	of varian re 	Number Number Obs per Wald ch Prob > P> z  0.071 0.483	o u_i) of obs - of groups - group: min - max - i2(3) - chi2 - (95% Conf. 0586545	133 19 7.0 7.0 7 9.09 0.0282 Interval] 1.423301 .5672114
sigma_e rho rho . xtreq ln_y1 Random=effect: Group variable R=sq! within betweer overall corr(u_i, x) <u>ln_y1</u> ln_x13 ln_x14 ln_x14	.21093029 .88660743 ln_x13 ln_x1 a GLS regressl a: p = 0.2554 a = 0.0147 l = 0.0162 = 0 (assumed Coef. .6823232 .14946924 1.889744	(fraction 4 ln_x15, .on 5td. Err. .3780568 .2131377 .7151336	of varias re z 1.80 0.70 2.64	Number Number Obs per Wald ch Prob > P> z  0.071 0.483 0.008	o u_i) of obs = of groups = avg = max = i2(3) chi2 = [95% Conf. 056545 2662731 .4881076	133 19 7.00 7.00 0.0282 Interval] 1.423301 5.5672114 3.29138
sigma_e rho rho . xtreg ln_y1 Random-effect: Group variable R-sq: within betweer overall corr(u_i, X) ln_y1 in_x13 in_x14 in_x15 cons	.21039029 .88660743 ln_x13 ln_x1 s GLS regressi : p = 0.2554 h = 0.0162 = 0 (assumed Coef. .6823232 .1494692 1.889744 2.927519	(fraction 4 1n_x15, 500 5td. Err. .3780568 .2131377 .7151336	cof varias re 2 1.80 0.70 2.64 1.61	Number Number Obs per Wald ch Prob > P> z  0.071 0.483 0.008	o u_i) of obs - of groups - group: min - max - i2(3) - chi2 - (95% Conf. 0586545 2682731 .4891076 6410285	133 19 7.0 7 9.09 0.0282 Interval) 1.423301 1.5672114 3.29138 6.496067
sigma_e rho rho . xtreq ln_y1 Random-effectr Group variable R-sq: within betweer overall corr(u_i, X) ln_y1 ln_x13 ln_x14 ln_x15 	.21039029 .88660743 ln_x13 ln_x1 s GLS regressi t p = 0.2554 n = 0.0147 l = 0.0162 = 0 (assumed .6823232 .1494692 1.889744 2.927519	(fraction 4 1n_x15, ion 3) 5td. Err. .2131377 .7151336 1.820721	cof varian re 1.80 0.70 2.64 1.61	Number Number Obs per Wald ch Prob > P> z  0.071 0.483 0.008	o u_i) of obs - of groups min - avg - max - 12(3) - chi2 - (95% Conf. 0586545 2682731 .4881076 6410285	133 19 7.0 7 9.09 0.0282 Interval] 1.423301 .5672114 3.29138 6.496067
sigma_e rho . xtreg ln_y1 Random-effect: Group variable R-sq: within between overall corr(u_i, x) <u>ln_y1</u> <u>ln_x14</u> <u>ln_x15</u> coms sigma_u	.21039029 .88660743 ln_x13 ln_x1 a GLS regressl r p = 0.2554 a = 0.0147 l = 0.0162 = 0 (assumed Coef. .6823232 .1494692 1.889744 2.927519 .50821513 .20721291	(fraction 4 1n_x15, .on 3) 5td. Err. .378056 .2131377 .7151336 1.820721	cof varias re 1.80 0.70 2.64 1.61	Number Number Obs per Wald ch Prob > P> z  0.071 0.483 0.008 0.108	o u_i) of obs - of groups - avg - max - i2(3) - chi2 - (95% Conf. 2682731 .4881076 6410285	133 19 7 7.0 7 9.09 0.0282 Interval] 1.423301 5.672114 3.29138 6.496067
sigma_e rho rho . xtreg ln_y1 Random-effect Group variable R-sq: within between overall corr(u_i, X) <u>ln_y1</u> <u>ln_y1</u> <u>ln_x13</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x15</u> <u>cons</u> sigma_u sigma_u rho	.21093029 .88660743 ln_x13 ln_x1 a GLS regressi e: p = 0.2554 h = 0.0147 l = 0.0162 = 0 (assumed Coef. .6823232 .1494692 1.889744 2.927519 .50821513 .20721291 .88745562	(fraction 4 1n_x15, 100 1) 5td. Err. .3780568 .2131377 .7151336 1.820721 (fraction	z 1.80 0.70 2.64 1.61	Number Number Obs per Wald ch Prob > P> z  0.071 0.403 0.008 0.108	o u_i) of obs = of groups = group: min = max = 12(3) = (95% Conf. 0586545 2682731 .4881076 6410285 o u_i)	133 19 7 7.00 9.09 0.0282 Interval] 1.423301 1.5672114 3.29138 6.496067
sigma_e rho rho . xtreg ln_y1 Random-effect: Group variable R-sq: within betweer overall corr(u_i, X) ln_y1 in_x13 in_x14 in_x15 cons sigma_u sigma_e rho	.21093029 .88660743 ln_x13 ln_x1 s GLS regressi : p = 0.2554 n = 0.0162 = 0 (assumed Coef. .6823232 .1494692 1.889744 2.927519 .50821513 .20721291 .85745562	(fraction 4 1n_x15, 	z 1.80 0.70 2.61 1.61	Number Number Obs per Wald ch Prob > P> z  0.071 0.483 0.108	o u_i) of obs - of groups min - max - 12(3) - chi2 - (95% Conf. 0586545 2682731 .4881076 6410285 o u_i)	133 19 7 0.0 0.0282 Interval] 1.423301 5672114 3.29138 6.496067
sigma_e rho . xtreg ln_y1 Random-effect: Group variable R-sq: within betwee: overall corr(u_i, X) ln_x13 ln_x14 ln_x15 cons cons sigma_e rho . xtreg ln y1	.21039029 .88660743 ln_x13 ln_x1 s GLS regressi : p = 0.2554 n = 0.0162 = 0 (assumed Coef. .6823232 1.494692 1.494692 1.494692 1.494692 1.494692 1.494692 1.889744 2.927519 .50821513 .20721291 .85745562 ln x1 ln x2	(fraction 4 1n_x15, 500 300 300 300 300 300 300 300 300 300	cf varia: re 1.80 0.70 2.64 1.61 of varia:	Number Number Obs per Wald ch Prob > P> z  0.071 0.483 0.008 0.108	o u_i) of obs - of groups min - avg - max - 12(3) -	133 19 7.0 7 9.09 0.0282 Interval) 1.423301 5.672114 3.29138 6.496067
sigma_e rho rho . xtreq ln_y1 Random-effect: Group variable R=sq: within between overall corr(u_i, X) <u>ln_y1</u> <u>ln_x13</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14 <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14 <u>ln_x14</u> <u>ln_x14</u> <u>ln_x14 <u>ln_x14 <u>ln_x14</u> <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14</u> <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u>ln_x14 <u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u>	.21093029 .88660743 ln_x13 ln_x1 a GLS regressl e: p = 0.2554 h = 0.0147 l = 0.0162 = 0 (assumed Coef. .6823232 .14946924 1.889744 2.927519 .50821513 .2072129 .85745562 ln_x1 ln_x2	(fraction 4 ln_x15, ion 5td. Err. .23780568 .2131377 .2131377 .2131377 .2131377 .2131377 .2131377 .2131377 .2131377 .2131377 .2131377 .2131377 .2131377 .2131377 .2131377 .213157 .215	z 1.80 0.70 2.64 1.61	Number Number Obs per Wald ch Prob > P> z  0.071 0.483 0.483 0.483 0.483	o u_i) of obs - of groups - group: min - avg - max - 12(3) - (95% Conf. 0586545 2682731 .4881076 6410285 o u_i)	133 19 7 7.0 7.0 9.09 0.0282 Interval] 1.423301 5.672114 3.29138 6.496067
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sigma_e rho rho . xtreq ln_y1 Random-effect: Group variable R-sq: within betweer overall corr(u_i, X) ln_y1 ln_x13 ln_x14 ln_x15  	.21039029 .88660743 ln_x13 ln_x1 s GLS regressi : p = 0.2554 a = 0.0147 l = 0.0162 = 0 (assumed Coef. .6623232 .1494692 l.889744 2.927519 .50821513 .20721291 .85745562 ln_x1 ln_x2 s GLS regressi s: p	(fraction 4 ln_x15, 100 5td. Err. .3780568 .2131377 .7151336 1.820721 (fraction ln_x8, re 100	z 1.80 0.70 2.64 1.61	Number Number Obs per Wald ch Prob > P> z  0.071 0.483 0.008 0.108 nce due t	o u_i) of obs - of groups min - avg - max - 12(3) - chi2 - (95% Conf. 0586545 2682731 .4881076 6410285 o u_i) of obs - of groups -	133 19 7 0.0 0.0282 Interval) 1.423301 1.423301 5.672114 3.29138 6.496067
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sigma_e rho rho . xtreq ln_y1 Random-effect: Group variable corr(u_i, X) in_x13 in_x13 in_x14 in_x13 in_x14 in_x13 in_x14 in_x13 sigma_u sigma_u rho . xtreq ln_y1 Random-effect: Group variable R-aq: within betweer overall corr(u_i, X) in_u, x1 sigma_u s	.2109303 .88660743 ln_x13 ln_x1 s GLS regressi : p = 0.2554 h = 0.0147 l = 0.0162 = 0 (assumed Coef. .6823232 .1494692 1.889744 2.927519 .50821513 .20721291 .85745562 ln_x1 ln_x2 s GLS regressi : p = 0.0019 a = 0.2254 l = 0.2291 = 0.001945 0566544	(fraction 4 ln_x15, 10 5td. Err. 	cf variat re 2 1.80 0.70 2.64 1.61 0.70 2.64 1.61 0 of variat 0 of variat	Number Number Obs per Wald ch Prob > P> z  0.071 0.483 0.008 0.108 0.108 nce due t Number Number Obs per Wald ch Prob > P> z  0.658 0.339	o u_i) of obs - of groups min - arg - max - 12(3) - chi2 - (95% Conf. 0586545 2682731 .4881076 6410285 o u_i) of obs - of groups min - arg - max - 12(3) - chi2 - (95% Conf. 0596231 1729116	133 19 7 .0 0 0.0282 1.423301 1.423301 1.423301 1.5672114 3.29138 6.496067 1.423301 .667214 3.29138 6.496067 1.130 0.7280 Interval] 1.130 0.7280
sigma_e rho rho . xtreq ln_y1 Random=effect: Group variable corr(u_i, X) <u>ln_y1</u> <u>ln_x13</u> <u>ln_x14</u> <u>ln_x15</u> <u></u>	.2109903 .88660743 ln_x13 ln_x1 a GLS regressl e p = 0.2554 a = 0.0147 l = 0.0147 l = 0.0162 = 0 (assumed Coef. .6823232 .1494692 l.889744 2.927519 .50821513 .2072129 .85745562 ln_x1 ln_x2 stJ regressl : p = 0.0019 a = 0.2454 l = 0.2291 = 0 (assumed Coef. .0266634 010945 .0566634 010945	(fraction 4 ln_x15, ion 3 5td. Err. 4 5td. Err. 5 6 1,820721 1 1,x8, re 5 1,820721 1 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 1,820721 1 1,220 1 1,200 1 1,200 1 1,200 1 1,200 1,200 1 1,200 1 1,200 1,200 1 1,200 1,200 1 1,200 1 1,200 1,	z 2 1.80 0.70 2.64 1.61 0 varia 1.61 0 varia	Number Number Obs per Wald ch Prob > P> z  0.071 0.483 0.008 0.108 Number Number Obs per Wald ch Prob > P> z  0.58 0.108	o u_i) of obs - of group: min - avg - max - [2 (3) - chi2 - (95% Conf. 0586545 2682731 .4881076 6410285 o u_i) of obs - of group: min - avg - max - [2 (3) - chi2 - [95% Conf. 1596231 1596231 1596231 1596231 1596231 1596231 1596231	133 19 7,0 7,0 1,0 1,423301 1,423301 1,5672114 3,29138 6,496067 11,423301 1,423301 1,423301 1,423301 1,423301 1,423301 7,70 7 1,30 0,7280 1,12245 1,30 0,7534 1,2245 2,324000
sigma_e rho rho . xtreg ln_y1 Random-effect: Group variable corr(u_i, X) in_x13 in_x13 in_x14 in_x15 	.21093029 .88660743 ln_x13 ln_x1 a GLS regressi P = 0.2554 h = 0.0147 l = 0.0162 = 0 (assumed Coef. .6823232 .1494692 1.88744 2.927519 .50621513 .20721291 as745562 ln_x1 ln_x2 a GLS regressi P = 0.0019 h = 0.2454 l = 0.2291 = 0 (assumed Coef. .0109945 0566634 019945 .538552	(fraction 4 ln_x15, ion 3780568 .2131377 .7151336 1.820721 (fraction ln_x8, re ion 58td. Err. .0248109 .0599141	of variat re 2 1.80 0.70 2.64 1.61 1.61 0.70 2.64 -0.96 2 2 -0.44 -0.96 4.23	Number Number Obs per Wald ch Prob > P> z  0.071 0.483 0.108 Number Number Obs per Wald ch Prob > P> z  0.658 0.339 0.339	o u_i) of obs = of groups = max = m	133 19 7,00 7,00 0.0282 Interval] 1.423301 5672114 3.29188 6.496067 1118 17 6 6.496067 7 1.30 0.7280 Interval] .037634 .12245 3.714003
sigma_e rho rho . xtreq ln_y1 Random-effect: Group variable corr(u_i, X) ln_y1 ln_y1 ln_x13 ln_x14 ln_x14 ln_x14 ln_x13 cons xtreq ln_y1 Random-effect: Group variable R-sq: within R-sq: within betweer overall corr(u_i, X) ln_y1 xtreq ln_y1 xtreq ln_y1	.2109303 .88660743 ln_x13 ln_x1 s GLS regressi = 0 = 0.2554 = 0.26252 = 0.2017 = 0.0019 = 0.2019 = 0.0019 = 0.2291 = 0.0019 = 0.2291 = 0.0019 = 0.2556 = 0.2556 = 0.0019 = 0.2556 = 0.2556 = 0.2556 = 0.2556 = 0.2556 = 0.2556 = 0.2019 = 0.2556 = 0.2556 = 0.2556 = 0.2019 = 0.2556 = 0.2556	(fraction 4 1n_x15, con 5td. Err. .3780568 .2131377 .7151326 (fraction 1.1e20721 1.1e20721 (fraction 1.n_x8, re con 3) 5td. Err. .0248109 .0593114 .5797968	2 1.80 0.70 2.64 1.61 0.70 2.64 1.61 0.70 2.64 1.61 0.70 2.64 1.61 0.70 2.64 1.61 0.70 2.64 1.90 0.70 2.64 1.90 0.70 2.64 1.90 0.70 2.64 1.90 0.70 2.64 1.90 0.70 2.64 1.90 0.70 2.64 1.90 2.90 2.64 1.90 2.90 2.90 2.90 2.90 2.90 2.90 2.90 2	Number Number Obs per Wald ch Prob > P> z  0.071 0.483 0.008 0.108 0.108 0.108 0.108 0.108 0.108 0.108 0.108 0.108 0.108 0.108 0.108 0.108 0.108 0.108 0.108 0.58 0.339 0.981 0.000	o u_i) of obs - of groups min - max - max - 12(3) - chi2 - (95% Conf. 0586545 2682731 .4881076 6410285 o u_i) of obs - of groups min - max - max - 12(3) - chi2 - (95% Conf. 0596231 1729116 -1.150312 1.363101	133 19 7 .0 9.09 0.0282 Interval] 1.423301 .5672114 3.29138 6.496067 1.423301 .5672114 3.29138 6.496067 1.423301 .027634 0.7280 Interval] .037634 1.12245 3.714003
sigma_e rho rho . xtreq ln_y1 Random=effect: Group variable corr(u_i, X) . n_y1 ln_y1 ln_y1 ln_x13 ln_x14 ln_x15 cons . xtreq ln_y1 Random=effect: corr(u_i, X) . xtreq ln_y1 Random=effect: corr(u_i, X) ln_y1 ln_y1 ln_y1 ln_y1 ln_y2 ln_y2 corr(u_i, X) ln_y2 ln_y2 sigma_u sigma_u	.21099029 .88660743 ln_x13 ln_x1 a GLS regressl e p = 0.2554 h = 0.0147 l = 0.0147 l = 0.0147 l = 0.0147 l = 0.0147 l = 0.0162 .6823232 .1494692 l.889744 2.927519 .50821513 .20721291 .85745562 ln_x1 ln_x2 m GLS regressl e: p = 0.0019 h = 0.2454 l = 0.2291 = 0 (assumed Coef. 0109945 .0566534 013931 2.5589552 .55895532 .25995332	(fraction 4 ln_x15, ion 3) 5td. Err. .3780568 .2131377 .2131777 .213177 .2131777 .213177777777777777777777777777777777777	2 2 1.80 0.70 2.64 1.61 0.70 2.64 1.61 0 varial 0 varial 0 varial	Number Number Obs per Wald ch Prob > P> z  0.071 0.483 0.008 0.108 nce due t Number Obs per Wald ch Prob > P> z  0.658 0.339 0.981 0.000	o u_i) of obs - of groups min - avg - max - 12(3) - chi2 - (95% Conf. 0586545 2682731 .4881076 6410285 o u_i) of obs - of groups min - avg - max - 12(3) - (95% Conf. 0596231 1729116 1729116 150312 1.363101	133 19 7 .00 0.0282 Interval] 1.423301 5.672114 3.29138 6.496067 11.423301 .667 9 7 1.30 0.7280 Interval] .037634 .0595848 1.12245 3.714003

## Insécurité Alimentaire Dans Les Pays De l'Afrique Du Nord

			5		5 1	
Random-effects Group variable	s GLS regressi e: p	lon		Number Number	of obs = of groups =	28 4
B-sq: within	= 0.0263			Obs per	group: min =	7
betweer	a = 0.9841				avg =	7.0
overall	= 0.5863				max =	7
				Wald ch	i2(2) =	35.43
corr(u i, X)	= 0 (assumed	i)		Prob >	chi2 =	0.0000
-						
ln_y1	Coef.	Std. Err.	Z	₽>   z	[95% Conf.	Interval]
ln_x1	.0945018	.0513808	1.84	0.066	0062026	.1952063
1n_x2	2399134	.079248	-3.03	0.002	3952366	0845902
-cons	1.043913	.21/92/0	/.54	0.000	1.210/03	2.0/1045
oigma u	0					
sigma_u	.24020496					
rho	0	(fraction o	of variar	nce due t	oui)	
					_	
Random-effects Group variable	s GLS regressi 2: p	ion		Number Number	of obs = of groups =	28 4
						_
K-sq: Within	= 0.0564			ops per	group: min =	7 0
Detweer	h = 0.9973				avg =	7.0
overall	1 = 0.6074				max =	/
				Wald ch	i2(3) =	37 14
corr(u i, X)	= 0 (assumed	i)		Prob >	chi2 =	0.0000
ln_y1	Coef.	Std. Err.	z	₽>   z	[95% Conf.	Interval]
				0.477		
ln_x6	1.594519	1.076342	1.48	0.138	5150728	3.70411
ln_x7	1.492971	.4149301	3.60	0.000	.6797232	2.306219
in_x5	.2901163	0207540	0.46	0.645	9451688	6 20026
- <sup>cons</sup>	4.304014	.930/349	4.90	0.000	2./39/00	0.30020
oigma u	0					
sigma_u	22260000					
sigma_e	.23200303	(fraction (	of varia	ice due t	o u i)	
	-	(			,	
Random-effects Group variable	s GLS regressi e: p	ion		Number Number	of obs = of groups =	28 4
R-sq: within	= 0.0564			Obs per	group: min =	7
between	a = 0.9973			opp ber	avg =	7.0
overall	1 = 0.6074				max =	7
				Wald ch	i2(3) =	37.14
corr(u_i, X)	= 0 (assumed	i)		Prob >	chi2 =	0.0000
ln_y1	Coef.	Std. Err.	z	P>   z	[95% Conf.	Interval]
3	1 504510	1 076242	1 40	0 1 2 0	- 5150200	2 20.414
1n_x6	1 402071	1140201	1.48	0.138	JIJU/28 6707020	2 306210
111_X7	2001162	6202501	0.46	0.000	- 0/51699	1 525401
cons	4.564014	9307549	4.90	0.000	2.739768	6.38826
sigma u	0					
sigma e	.23268989					
rho	0	(fraction d	of variar	nce due t	o u_i)	
Random-effects Group variable	s GLS regressi e: p	lon		Number Number	of obs = of groups =	28
					-	
R-sq: within	= 0.0564			Obs per	group: min =	7
betweer	n = 0.9999				avg =	7.0
overall	1 = 0.6233				max =	7
				Wald ch	i2(3) =	39.71
corr(u_1, X)	= 0 (assumed	1)		Prob >	ch12 =	0.0000
		a		DAL 1	1050	T
in_y1	Coef.	std. Err.	Z	£>   Z	[95% Conf.	interval]
10 110	1 752407	8030754	2 1 0	0.029	177722	3 300050
10_412	=1 509440	4474194	=3 27	0.001	=2 395594	= 6317370
10 V5	1.576611	3265006	4 83	0.0001	. 9364877	2.216795
cons	.9641206	.3493373	2.76	0.006	.2794321	1.648809
sigma u	0					
sigma e	.23268989					
	0	(fraction c	of varia	nce due t	o n i)	
rho	-	(			,	

Random-effects	GLS regress	ion		Number	of obs	-	28
Group variable	e: p			Number	of groups	в =	4
R-sq: within	- 0.1080			Obs per	group: n	nin =	7
betweer	n = 1.0000				ā	avg =	7.0
overall	L = 0.6470				r	nax =	7
				Wald ch	i2(4)	-	42.15
corr(u_i, X)	= 0 (assume	d)		Prob >	chi2	-	0.0000
ln_y1	Coef.	Std. Err.	z	₽> z	[95% 0	Conf.	Interval]
ln_x4	1.361387	.4040767	3.37	0.001	.5694	L16	2.153363
ln_x9	-3.159381	1.892897	-1.67	0.095	-6.869	939	.5506286
ln_x11	6.556098	2.159896	3.04	0.002	2.322	278	10.78942
ln_x12	-12.94371	4.438151	-2.92	0.004	-21.642	233	-4.245099
_cons	3838532	2.435787	-0.16	0.875	-5.1579	908	4.390201
sigma u	0						
sigma_e	.22622908						
rho	0	(fraction	of varia	nce due t	o u_i)		

# Countries ire Grave Dans Les Pays De l'Afrique Subsaharien

Random-effect Group variabl	s GLS regressi e: p	lon		Number Number	of obs	90 14
R-sg: within	- 0.0066			Obs per	group: min .	- 1
betwee	n = 0.1977				avg	- 6.4
overal	1 = 0.1899				max	- 7
				Wald ch	i2(3)	0.24
corr(u_i, X)	= 0 (assumed	i)		Prob >	chi2	0.9716
ln_y1	Coef.	Std. Err.	z	₽>   z	[95% Conf	. Interval]
ln x1	0070444	.0272701	-0.26	0.796	0604928	.0464039
ln_x2	0225404	.0688993	-0.33	0.744	1575806	.1124998
ln_x8	.2264216	1.017836	0.22	0.824	-1.768501	2.221344
_cons	2.943651	1.118178	2.63	0.008	.7520619	5.13524
sigma_u	.63191014					
sigma_e	.22439346	(fraction	of working	an dun t		
	.00002005	(ITACCION	or varia	ice uue c	5 u_1)	
Random-effect	s GLS regressi	lon		Number	of obs	- 84
Group variabl	e: p			Number	of groups	- 13
R-sq: within	= 0.0002			Obs per	group: min	- 1
betwee	n = 0.1800				avg ·	- 6.5
overal	1 = 0.2548				max ·	- 7
	- 0 /			Waid ch	12(3)	- 2.18
corr(u_r, x)	- o (assumed	1)		FIOD >		- 0.5554
ln_y1	Coef.	Std. Err.	Z	₽> z	[95% Conf	. Interval]
ln x5	2733377	10.73726	-0.03	0.980	-21.31798	20.77131
ln_x6	-1.533352	1.338974	-1.15	0.252	-4.157693	1.09099
ln_x7	1.476576	1.34011	1.10	0.271	-1.149991	4.103143
_cons	3.400336	1.661789	2.05	0.041	.1432896	6.657381
sigma_u	.68108548					
sigma_e	90083846	(fraction	of varia	nce due t	o. n. i.)	
		(114001011				
Bandom-effect	s GLS regressi	on		Number	of obs	9.8
Group variabl	.e: p			Number	of groups ·	- 15
-	-					
R-sq: within	= 0.4197			Obs per	group: min	- 1
betwee	n = 0.0227				avg (	- 6.5
overal	1 = 0.0243				max ·	- 7
				Wald ch	i2(5) ·	- 20.97
corr(u_1, X)	= U (assumed	1)		ProD >	cn12 ·	- 0.0008
ln_y1	Coef.	Std. Err.	Z	₽> z	[95% Conf	Interval]
ln x14	.0264179	.2874058	0.09	0.927	536887	.5897228
1n x9	.9674909	.4121623	2.35	0.019	.1596678	1.775314
ln_x11	.1885693	.4222284	0.45	0.655	638983	1.016122
ln_x13	1.204308	.5249082	2.29	0.022	.1755069	2.233109
ln_x12	1.132076	.6407273	1.77	0.077	1237263	2.387879
_cons	6.174303	2.688687	2.30	0.022	.9045735	11.44403
	40000005					
sigma_u	17679254					
sigmd_e	.88064476	(fraction	of varia	nce due +	oui)	
2110	1					

Random-effect:	s GLS regress	lon		Number	of obs =	84
Group variable	≥: p			Number	of groups =	13
R-sq: within	= 0.0002			Obs per	group: min =	1
between	n = 0.1800				avg =	6.5
overal	1 = 0.2548				max =	7
				Wald ch	i2(3) =	2.18
corr(u_i, X)	= 0 (assume	d)		Prob >	chi2 =	0.5354
ln_y1	Coef.	Std. Err.	z	₽> z	[95% Conf.	Interval]
ln x5	2733377	10.73726	-0.03	0.980	-21.31798	20.77131
ln x6	-1.533352	1.338974	-1.15	0.252	-4.157693	1.09099
ln_x7	1.476576	1.34011	1.10	0.271	-1.149991	4.103143
_cons	3.400336	1.661789	2.05	0.041	.1432896	6.657381
	C0100540					
sigma_u	22596949					
sigma_e	00002046	(fraction	of working	an dun t	o 11 i)	
Pandom=effect	. GIS rearess	ion		Number	of obs	8.4
Group variable	e: p	2011		Number	of groups =	13
-	-					
R-sq: within	= 0.0002			Obs per	group: min =	1
between	n = 0.1800				avg =	6.5
overal	1 = 0.2548				max =	7
				Mald ob	÷2(2) =	2 1 9
corr(n i V)	= 0 (20000000	d)		Brob >		0 5254
corr(u_r, x)	- o (assume			1100 /		0.0004
In_YI	Coef.	Std. Err.	Z	P>   z	[95% Conf.	Interval]
ln_x5	Coef.	Std. Err.	z	P> z	-21.31798	20.77131
ln_x5 ln_x6	Coef. 2733377 -1.533352	Std. Err. 10.73726 1.338974	-0.03 -1.15	P> z  0.980 0.252	-21.31798 -4.157693	20.77131 1.09099
	Coef. 2733377 -1.533352 1.476576	Std. Err. 10.73726 1.338974 1.34011	-0.03 -1.15 1.10	P> z  0.980 0.252 0.271	-21.31798 -4.157693 -1.149991	20.77131 1.09099 4.103143
ln_y1 ln_x5 ln_x6 ln_x7 _cons	Coef. 2733377 -1.533352 1.476576 3.400336	Std. Err. 10.73726 1.338974 1.34011 1.661789	2 -0.03 -1.15 1.10 2.05	P> z  0.980 0.252 0.271 0.041	21.31798 -4.157693 -1.149991 .1432896	20.77131 1.09099 4.103143 6.657381
ln_y1 ln_x5 ln_x6 ln_x7 cons	Coef. 2733377 -1.533352 1.476576 3.400336	Std. Err. 10.73726 1.338974 1.34011 1.661789	z -0.03 -1.15 1.10 2.05	P> 2  0.980 0.252 0.271 0.041	-21.31798 -4.157693 -1.149991 .1432896	Interval] 20.77131 1.09099 4.103143 6.657381
ln_y1 ln_x5 ln_x6 ln_x7 _cons 	Coef. 2733377 -1.533352 1.476576 3.400336 .68108548	Std. Err. 10.73726 1.338974 1.34011 1.661789	2 -0.03 -1.15 1.10 2.05	P> 2  0.980 0.252 0.271 0.041	-21.31798 -4.157693 -1.149991 .1432896	Interval) 20.77131 1.09099 4.103143 6.657381
ln_yi ln_x5 ln_x6 ln_x7 _cons sigma_u sigma_e	Coef. 2733377 -1.533352 1.476576 3.400336 .68108548 .22596949	Std. Err. 10.73726 1.338974 1.34011 1.661789	z -0.03 -1.15 1.10 2.05	<pre>P&gt; z  0.980 0.252 0.271 0.041</pre>	(95% Conf. -21.31798 -4.157693 -1.149991 .1432896	Interval) 20.77131 1.09099 4.103143 6.657381

. xtreg ln\_y1 ln\_x14 ln\_x9 ln\_x11 ln\_x11 ln\_x12, re

note: ln_x11 (	omitted becaus	se of colline	earity			
Random-effect: Group variable	s GLS regress: e: p	Lon		Number Number	of obs of groups	98
R-sq: within	= 0.2946			Obs per	group: min ·	- 1
between	n = 0.0087				avq	- 6.5
overal	1 = 0.0138				max	- 7
						40.84
and the state of the state	- 0 (			Waid ch	12(4)	- 12.76
corr(u_r, x)	- o (assumed	1)		1100 /	CH12 .	- 0.0125
ln_y1	Coef.	Std. Err.	z	₽>   z	[95% Conf	. Interval]
ln x14	.332352	.225547	1.47	0.141	109712	.7744159
1n x9	8048642	409077	1.97	0.049	0030881	1.60664
ln x11	.5958113	3540134	1.68	0.092	0980422	1.289665
ln x11	0	(omitted)				
ln x12	4813645	5488549	0.88	0.380	- 5943713	1.5571
cons	2.599129	1.95037	1.33	0.183	-1.223526	6.421784
. xtreg ln_y	.85217233	(fraction c	x13 ln	_x12, re	o u_i)	
Pandom=effect	GIS rearess	ion		Number	of obe	
Group variable	э одо гедтеро. э: р			Number	of groups .	- 15
R-sq: within	= 0.4197			Obs per	group: min ·	- 1
between	n = 0.0227				avg	- 6.5
overal	1 = 0.0243				max	- 7
					10.151	
corr(n i V)	= 0 (20000000	4.		Waid Ch	12(5) ·	- 20.97
corr(u_r, x)	- o (assumed	1)		1100 /	CH12 .	- 0.0000
ln_y1	Coef.	Std. Err.	z	₽>   z	[95% Conf	. Interval]
ln x14	.0264179	.2874058	0.09	0.927	536887	.5897228
ln x9	.9674909	.4121623	2.35	0.019	.1596678	1.775314
ln x11	.1885693	.4222284	0.45	0.655	638983	1.016122
ln x13	1.204308	.5249082	2.29	0.022	.1755069	2.233109
ln_x12	1.132076	.6407273	1.77	0.077	1237263	2.387879
_cons	6.174303	2.688687	2.30	0.022	.9045735	11.44403
sigma u	.48022375					
sigma e	.17679256					
c	88064476	(fraction c	f waria	ana dua t	(	

Random-effects	s GLS regress:	Lon		Number	of obs =	10
Group variable	e: p			Number	of groups =	3
R-sq: within	- 0.0996			Obs per	group: min =	3
betweer	n = 1.0000				avg =	3.3
overall	1 = 0.7332				max =	4
				Wald ch	i2(3) =	16.49
corr(u_i, X)	= 0 (assumed	i)		Prob >	chi2 =	0.0009
ln_y1	Coef.	Std. Err.	z	₽>   z	[95% Conf.	Interval]
ln_x4	3.273303	1.206395	2.71	0.007	.9088118	5.637795
ln_x10	-10.47493	2.813726	-3.72	0.000	-15.98973	-4.960124
ln_x3	.240339	.2950752	0.81	0.415	3379977	.8186758
_cons	2.165785	.63266	3.42	0.001	.9257946	3.405776
sigma_u	0					
sigma_e	.35789846					
rho	0	(fraction o	of variar	nce due t	o u_i)	
Random-effects	s GLS regress:	lon		Number	of obs =	10
Group variable	e: p			Number	of groups =	3
R-sq: within	= 0.0996			Obs per	group: min =	3
betweer	n = 1.0000				avg =	3.3
overall	1 = 0.7332				max =	4
				Wald ch	i2(3) =	16.49
corr(u_i, X)	= 0 (assumed	i)		Prob >	chi2 =	0.0009
ln_y1	Coef.	Std. Err.	z	₽>   z	[95% Conf.	Interval]
10.84	4 225054	1 465412	2.96	0.003	1 462700	7 20911
1n_x15	10 91297	2 931391	3 72	0.000	5 167547	16 65839
1n_x3	240339	2950752	0.81	0 415	= 3379977	8186758
_cons	9.388102	2.157748	4.35	0.000	5.158995	13.61721
sigma u	0					
sigma e	.35789846					
rho	0	(fraction o	of variar	nce due t	o u_i)	

Moderate Food Insecurity in African Countries

. xtreg ln_y2	ln_x9 ln_x4	ln_x15 ln_x	12 , re			
Random-effects	3 GLS regressi	on		Number	of obs	- 28
Group variable	e: p			Number	of groups	- 4
R-sq: within	= 0.2108			Obs per	group: min	- 7
between	n = 1.0000				avg	- 7.0
overall	L = 0.8337				max	- 7
				Mala - 6	10/41	115 00
corr(n i X)	= 0 (assumer	0		Rrob >	12(4) ·	- 115.29
corr(u_r) n)	o (abbailed	.,		1100 /		0.0000
ln_y2	Coef.	Std. Err.	Z	₽>   z	[95% Conf	. Interval]
ln_x9	-2.338589	.9435563	-2.48	0.013	-4.187925	4892523
ln_x4	.2616443	.0351033	7.45	0.000	.1928431	.3304455
1n_x13	= 3 057507	1 281442	=2.39	0.214	=2.503492	- 5459277
Cons	-4.107739	3.369545	-1.22	0.223	-10.71193	2.496448
sigma_u	0					
sigma_e	.11276889					
rho	0	(fraction o	f variar	ice due t	o u_i)	
wtrog lp u2	10 20 10 24	ln vii ln v	15 70			
. Acrey in_yz	111_X 9 111_X4	10_111 10_1	15,10			
Random-effects	3 GLS regressi	on		Number	of obs	- 28
Group variable	e: p			Number	of groups	- 4
R-sq: within	= 0.2108			Obs per	group: min	- 7
betweer	n = 1.0000				avg	- 7.0
overal	L = 0.8337				max ·	- 7
corr(n i V)	= 0 (20000000			Waid Ch	12(4) ·	- 115.29
corr(u_r, x)	- o (assumed	.)		FIOD >		- 0.0000
ln_y2	Coef.	Std. Err.	z	₽>   z	[95% Conf	. Interval]
ln_x9	-2.338589	.9435563	-2.48	0.013	-4.187925	4892523
in_x4	=.380823	.2/030/9	-1.41	0.159	9106168	.1489707
in_xii	-3.49/526	1.46586	-2.39	0.017	-6.3/0558	6244946
11_X13	= 11 62815	6 517988	=1.91	0.036	= 24 40317	1 146873
	-11.02015	0.517500	-1.70	0.074	-24.40317	1.140075
sigma u	0					
sigma_e	.11276889					
rho	0	(fraction o	f variar	ice due t	o u_i)	
wtrog lp u2	10 20 10 24	ln vii ln v	12 20			
. Acrey in_yz	111_X9 111_X4	111_x11 111_x	15,16			
Random-effects	3 GLS regressi	on		Number	of obs	- 28
Group variable	e: p			Number	of groups	- 4
R-sq: within	= 0.2119			Obs per	group: min	- 7
betweer	n = 1.0000				avg (	- 7.0
overall	L = 0.8339				max	- 7
				Mala ak	10/10	115 40
corr(u i, X)	= 0 (assumed	i)		Prob >	chi2	- 0.0000
corr(u_r, x)	o (abbamee	.,		1100 /		0.0000
				DNIGI	[95% Conf	. Interval]
ln_y2	Coef.	Std. Err.	Z	2/121		
ln_y2	Coef.	Std. Err.	2	E /   2		
ln_y2	Coef.	Std. Err.	-2.52	0.012	-3.946506	4946973
ln_y2	Coef. -2.220602 .1002927	Std. Err. .8805797 .042537	z -2.52 2.36	0.012	-3.946506	4946973
ln_y2 ln_x9 ln_x4 ln_x11	Coef. -2.220602 .1002927 -1.203271	Std. Err. .8805797 .042537 .2855486	2 -2.52 2.36 -4.21	0.012 0.018 0.000	-3.946506 .0169218 -1.762936	4946973 .1836636 6436062
1n_y2 1n_x9 1n_x4 1n_x11 1n_x13 core	Coef. -2.220602 .1002927 -1.203271 .4669073 -2.228541	Std. Err. .8805797 .042537 .2855486 .2431232 1 677241	-2.52 2.36 -4.21 1.92 -1.32	0.012 0.018 0.000 0.055 0.184	-3.946506 .0169218 -1.762936 0096053 -5.515872	4946973 .1836636 6436062 .9434199
ln_y2 ln_x9 ln_x4 ln_x11 ln_x13 cons	Coef. -2.220602 .1002927 -1.203271 .4669073 -2.228541	Std. Err. .8805797 .042537 .2855486 .2431232 1.677241	z -2.52 2.36 -4.21 1.92 -1.33	0.012 0.018 0.000 0.055 0.184	-3.946506 .0169218 -1.762936 0096053 -5.515872	4946973 .1836636 6436062 .9434199 1.058791
ln_y2 ln_x4 ln_x11 ln_x13 cons	Coef. -2.220602 .1002927 -1.203271 .4669073 -2.228541 0	Std. Err. .8805797 .042537 .2855486 .2431232 1.677241	z -2.52 2.36 -4.21 1.92 -1.33	0.012 0.018 0.000 0.055 0.184	-3.946506 .0169218 -1.762936 0096053 -5.515872	4946973 .1836636 6436062 .9434199 1.058791
ln_y2 ln_x4 ln_x11 ln_x13 cons sigma_u sigma_e	Coef. -2.220602 .1002927 -1.203271 .4669073 -2.228541 0 .11522021	Std. Err. .8805797 .042537 .2855486 .2431232 1.677241	z -2.52 2.36 -4.21 1.92 -1.33	0.012 0.018 0.000 0.055 0.184	-3.946506 .0169218 -1.762936 0096053 -5.515872	4946973 .1836636 6436062 .9434199 1.058791
ln_y2 ln_x4 ln_x11 ln_x13 _cons 	Coef. -2.220602 .1002927 -1.203271 .4669073 -2.228541 0 .11522021 0	Std. Err. .8805797 .042537 .2855486 .2431232 1.677241 (fraction o	z -2.52 2.36 -4.21 1.92 -1.33 f variar	0.012 0.018 0.000 0.055 0.184	-3.946506 .0169218 -1.762936 0096053 -5.515872	4946973 .1836636 6436062 .9434199 1.058791

# Moderate Food Insecurity in North African Countries

Random-effects Group variable	s GLS regress: e: p	Lon		Number Number	of obs = of groups =	28
R-sq: within between overal:	= 0.1530 n = 0.9987 L = 0.8190			Obs per	group: min = avg = max =	7 7.0 7
corr(u_i, X)	= 0 (assumed	1)		Wald ch Prob >	i2(4) = chi2 =	104.08
ln_y2	Coef.	Std. Err.	Z	₽> z	[95% Conf.	Interval]
ln_x9 ln_x4 ln_x11 ln_x14 _cons	-1.268717 .1060359 6424671 .3466821 -3.179535	.608257 .0457863 .1367236 .2838896 3.296435	-2.09 2.32 -4.70 1.22 -0.96	0.037 0.021 0.000 0.222 0.335	-2.460879 .0162965 9104404 2097314 -9.640429	0765555 .1957753 3744938 .9030956 3.281359
sigma_u sigma_e rho	0 .11489488 0	(fraction	of variar	nce due t	o u_i)	

. xtreg ln_y2	ln_x1 ln_x2	ln_x8 , re				
Random-effects	GLS regressi	lon		Number	of obs =	28
GLOUP VALIABLE	- P			Number	or groups -	4
R-sq: within	= 0.0019			Obs per	group: min =	7
betweer	1 = 0.9666				avg =	7.0
overall	- 0.7450				max -	,
				Wald ch	i2(3) =	69.38
corr(u_i, X)	= 0 (assumed	i)		Prob >	chi2 =	0.0000
ln_y2	Coef.	Std. Err.	Z	₽> z	[95% Conf.	Interval]
ln x1	0652926	.0333596	-1.96	0.050	1306762	.000091
ln_x2	0821612	.0482835	-1.70	0.089	1767951	.0124726
ln_x8	1.133203	.1835075	6.18	0.000	.7735348	1.492871
_cons	4.277584	.2460291	17.39	0.000	3.795376	4.759792
sigma u	0					
sigma_e	.12718251					
rho	0	(fraction	of variar	ice due t	o u_i)	
. xtreg ln y2	ln x3 ln x4	ln x9 , re				
note: ln_x9 or	nitted because	e of colline	arity			
insufficient o	observations					
r(2001);						
. xtreg ln_y2	ln_x9 ln_x4	ln_x11 ln_:	x12 , re			
Random-effects	GLS regressi	lon		Number	of obs =	28
Group Variable	e: p			Number	of groups =	4
R-sq: within	= 0.2108			Obs per	group: min =	7
betweer	n = 1.0000				avg =	7.0
overall	L = 0.8337				max =	7
				Mald ab	i 2 ( 4 ) -	115 20
corr(u i, X)	= 0 (assumed	i)		Prob > /	chi2 =	0.0000
ln_y2	Coef.	Std. Err.	z	₽>   z	[95% Conf.	Interval]
1n_x9	-2.338589	.9435563	-2.48	0.013	-4.187925	4892523
ln x11	1.337416	1.076648	1.24	0.214	7727749	3.447607
ln_x12	-4.226664	2.212294	-1.91	0.056	-8.562682	.1093532
_cons	-1.232016	1.214172	-1.01	0.310	-3.611749	1.147717
ciamo u	0					
sigma_u sigma_e	.11276889					
rho	0	(fraction	of variar	ice due t	o u_i)	
Random-effects	s GLS regressi	lon		Number	of obs =	28
Group variable	e: p			Number	of groups =	4
B-sg: within	= 0.0856			Obs per	group: min =	7
between	1 = 1.0000			obb per	avg =	7.0
overall	L = 0.8073				max =	7
corr(u i X)	= 0 (2881)mer	•		Waid Ch.	12(b) =	87.98
corr(u_r) x)	o (abbance	.,		1200 /		0.0000
ln_y2	Coef.	Std. Err.	Z	P> 2	[95% Conf.	Interval]
ln_x5	.6920994	1.227164	0.56	0.573	-1.713099	3.097298
ln_x6	-14.01576	9.36704	-1.50	0.135	-32.37482	4.343302
ln_x7	1.543115	.5119541	3.01	0.003	.5397032	2.546527
ln_x13	2.735791	2.243038	1.22	0.223	-1.660483	7.132064
in_x14	.0671387	.3626898	0.19	0.853	6437201	.7779976
cons	-11.42832	10.52975	-1.09	0.278	-32.06625	9.209618
sigma_u	0					
sigma_e	.12702982	(fraction -	of varior	en duna +	0 U i)	
1110	U U	(TTACLTOD )	~r vdriar	we use to		

Moderate Food Insecurity in Sub-Saharan African Countries

Random-effects Group variable	s GLS regressi e: p	lon		Number Number	of obs of group	=	90 14
R-sq: within betweer overall	= 0.0111 n = 0.0372 L = 0.0249			Obs per	group:	min = avg = max =	1 6.4 7
corr(u_i, X)	= 0 (assumed	i)		Wald ch Prob >	i2(3) chi2	-	0.25
ln_y2	Coef.	Std. Err.	Z	₽> z	[95%	Conf.	Interval]
ln_x1 ln_x2 ln_x8 _cons	0013463 0026742 .2150626 4.21517	.01445 .0329754 .4440405 .4861513	-0.09 -0.08 0.48 8.67	0.926 0.935 0.628 0.000	0296 0673 6552 3.262	678 049 407 331	.0269752 .0619565 1.085366 5.168009
sigma_u sigma_e rho	.27191915 .12007948 .83681273	(fraction	of varia	nce due t	o u_i)		

Number of obs = Number of groups =	Number o Number o		lon	GLS regress: : p	Random-effects Group variable
Obs per group: min =	Obs per			= 0.0004	8-sa: within
avg =	000 pc1			= 0.3617	betweer
max =				= 0.3379	overall
Wald chi2(3) =	Wald chi				
Prob > chi2 = 0.	Prob > c		i)	= 0 (assumed	corr(u_i, X)
P> z  [95% Conf. Inter	₽>   z	z	Std. Err.	Coef.	ln_y2
0.786 -9.986095 13.1	0.786	0.27	5.912233	1.601669	ln x5
0.153 -1.533306 .240	0.153	-1.43	.4524698	6464813	ln_x6
0.020 .1697494 1.94 0.000 3.668626 5.89	0.020	2.33	.4531867	4.78102	ln_x7
				.22133149	sigma_u
e due to u_i)	nce due to	of variar	(fraction d	.75910171	rho
Number of obs =	Number o		lon	GLS regress:	Random-effects
Hamber of groups	Humber (			• P	oroup variable
Obs per group: min =	Obs per			- 0.5291	R-sq: within
avg = max =	avg = max =			= 0.1123	betweer overall
Wald chi2(5) = 2 Prob > chi2 = 0.	Wald chi Prob > c		i)	= 0 (assume	corr(u i, X)
P> z  [95% Conf. Inter	₽>   z	Z	Std. Err.	Coef.	ln_y2
0.5553281535 .176	0.555	-0.59	.1286918	0759222	ln_x14
0.030 .0390653 .773	0.030	2.17	.1873655	.406295	1n_x9
0.010 .1325619 .983	0.010	2.57	.2170699	.558011	ln_x13
	0.018	2.36	.2608576	.6147768	ln_x12
0.018 .1035053 1.12	0 000	5.27	1.186152	6.249002	_cons
0.018 .1035053 1.12 0.000 3.924187 8.57	0.000				
0.018 .1035053 1.12 0.000 3.924187 8.57	0.000			.15312136	sigma_u
0.018 .1035053 1.12 0.000 3.924187 8.57 e due to u_i)	nce due to	of variar	(fraction d	.15312136 .07214649 .8183286	sigma_u sigma_e rho
0.018 .1035053 1.12 0.000 3.924187 8.57 e due to u_i)	nce due to	of varian	(fraction o	.15312136 .07214649 .8183286	sigma_u sigma_e rho
0.018 .1035053 1.12 0.000 3.924187 8.57 e due to u_i) Number of obs =	Number o	of varian	(fraction o	.15312136 .07214649 .8183286	sigma_u sigma_e rho Random-effects
0.018 .1035053 1.12 0.000 3.924187 8.57 e due to u_i) Number of obs - Number of groups -	Number of	of varian	(fraction o	.15312136 .07214649 .8183286 GLS regress: :: p	sigma_u sigma_e rho Random-effects Group variable
0.018 .1035053 1.12 0.000 3.924187 8.57 e due to u_i) Number of obs = Number of groups = Obs per group: min =	Number of Number of Obs per	of varian	(fraction o	.15312136 .07214649 .8183286 GLS regress: : p = 0.1338	sigma_u sigma_e rho Random-effects Group variable R-sq: within
0.018 .1035053 1.12 0.000 3.924187 8.57 e due to u_i) Number of obs = Number of groups = Obs per group: min = awg = max =	Number of Number of Number of	of varian	(fraction o	.15312136 .07214649 .8183286 GLS regress: : p = 0.1338 = 1.0000 = 0.7530	sigma_u sigma_e rho Random-effects Group variable R-sq: within betweer overall
0.018 .1035053 1.12 0.000 3.924187 8.57 e due to u_i) Number of obs = Number of groups = Obs per group: min = avg = max =	Number of Number of Number of	of varian	(fraction o	.15312136 .07214649 .8183286 GLS regress: : p = 0.1338 = 1.0000 = 0.7530	sigma_u sigma_e rho Random-effects Group variable R-sq: within betweer overall
0.018 .1035053 1.12 0.000 3.924187 8.57 e due to u_i) Number of obs = Number of groups = Obs per group: min = avg = max = Wald chi2(3) = 1	Number of Number	of varian	(fraction o	.15312136 .07214649 .8183286 GLS regress: : p = 0.1338 = 1.0000 = 0.7530	sigma_u sigma_e rho Random-effects Froup variable R-sq: within betweer overall
0.018 .1035053 1.12 0.000 3.924187 8.57 e due to u_i) Number of obs = Number of groups = Obs per groups min = avg = max = Wald ch12(3) = 1 Prob > ch12 = 0.	Number of Number of Obs per Wald chil Prob > of	of varian	(fraction d	.15312136 .07214649 .8183286 GLS regress: : p = 0.1338 = 1.0000 = 0.7530 = 0 (assumed	sigma_u sigma_e rho Random-effects Group variable R=sq: within betweer overall corr(u_i, X)
0.018 .1035053 1.12 0.000 3.924187 8.57 e due to u_i) Number of obs = Number of groups = Obs per group: min = avg = max = Wald chi2(3) = 1 Prob > chi2 = 0. F> z  [95% Conf. Inter	Number of Number of Obs per Wald chi Prob > of P> z	of varian	(fraction of ion Std. Err.	.15312136 .07214649 .8183286 CGLS regress: : p = 0.1338 = 0.000 = 0.7530 Coef.	sigma_u sigma_e rho Random-effects Sroup variable R-sq: within betweer overall corr(u_i, X) ln_y2
0.018 .1035053 1.12 0.000 3.924187 8.57 e due to u_1) Number of obs = Number of groups = obs per group: min = avg = max = Wald ch12(3) = 1 Prob > ch12 = 0. P> z  [95% Conf. Inter 0.022 .2095128 2.65	Number of Number of Number of Obs per Wald chi Prob > of P> z  0.022	z 2.30	(fraction of ion 5td. Err. .6231429	.15312136 .07214649 .8183286 GLS regress: : p = 0.1338 = 1.0000 = 0.7530 = 0 (assume) Coef. 1.43085	sigma_u sigma_e rho Random-effects Sroup variable R-sq: within betweer overall corr(u_i, X) <u>ln_y2</u> ln_x4
0.018 .1035053 1.12 0.000 3.924187 8.57 e due to u_i) Number of obs - Number of groups - Obs per group: min - avg - max = Wald chi2(3) = 1 Prob > chi2 = 0. P> z  [95% Conf. Inter 0.022 .2095128 2.65 0.000 -7.997647 -2.30	Number of Number of Obs per Wald chi Prob > of P> z  0.022 0.22	z 2.30 -3.54 0.00	(fraction of ion i) 5td. Err. .6231429 1.453362	.15312136 .07214649 .8183286 GLS regress: : p = 0.1338 = 1.0000 = 0.7530 = 0 (assume) Ccef. 1.43085 -5.14907	sigma_u sigma_e rho Aandom-effects froup variable (-sq: within betweer overall corr(u_i, X) ln_y2 ln_x4 ln_x10 
0.018 .1035053 1.12 0.000 3.924187 8.57 e due to u_1) Number of obs = Number of groups = Obs per group: min = avg = max = Wald ch12(3) = 1 Prob > ch12 = 0. P> z  (95% Conf. Inter 0.022 .2095128 2.65 0.000 -7.997647 -2.30 0.3361520258 .445	0.000           nce due to           Number of           Obs per           Wald chi           Prob > of           0.002           0.000           0.336           0.000	z 2.30 -3.54 0.96	(fraction o on )) 5td. Err. .6231429 1.453382 .152416 .3267897	.15312136 .07214649 .8183286 GLS regress: p = 0.1338 = 1.0000 = 0.7530 = 0 (assumed Coef. 1.43085 -5.14907 .1467042 3.567784	sigma_u sigma_e rho Random-effects Froup variable R-sq: within betweer overall Forr(u_i, X) ln_y2 ln_y2 ln_x4 ln_x10 ln_x3 cons
0.018 .1035053 1.12 0.000 3.924187 8.57 e due to u_1) Number of obs = Number of groups = Obs per group: min = avg = max = Wald chi2(3) = 1 Prob > chi2 = 0. P> z  (95% Conf. Inter 0.022 .2095128 2.65 0.000 -7.997647 -2.3 0.3361520258 .445 0.000 2.927288 4.2	0.000 Number of Number of Obs per Wald chi Prob > of P> z  0.020 0.336 0.000	z 2.30 -3.54 0.96 10.92	(fraction of ion i) Std. Err. .6231429 .152416 .3267897	.15312136 .07214649 .8183286 0 GLS regress: : p = 0.1338 = 1.0000 = 0.7530 = 0 (assumed Coef. 1.43085 -5.14907 .1467042 3.567784	sigma_u sigma_e rho Random-effects Sroup variable R-sq: within betweer overall corr(u_i, X) <u>ln_y2</u> <u>ln_x4</u> in_x10 <u>ln_x3</u> ons
0.018 .1035053 1.12 0.000 3.924187 8.57 e due to u_1) Number of obs = Number of groups = Obs per groups min = avg = max = Wald chi2(3) = 1 Prob > chi2 = 0. P> z  [95% Conf. Inter 0.022 .2095128 2.65 0.000 -7.997647 -2.30 0.36 - 1.520258 4.2	0.000 Number of Number of Obs per Wald chi Prob > of P> z  0.020 0.336 0.000	z 2.30 -3.54 0.96 10.92	(fraction of ion 5td. Err. .6231429 1.45382 .152416 .3267897	.15312136 .07214649 .8183286 GLS regress: : p = 0.1338 = 1.0000 = 0.7530 = 0 (assume: Coef. 1.43085 14907 .1457042 3.567784 0 .18486634	sigma_u sigma_e rho Random-effects sroup variable R-sq: within betweer overall corr(u_i, X) <u>ln_y2</u> <u>ln_x4</u> <u>ln_x10</u> <u>ln_x3</u> _cons sigma_u
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0.018 .1035053 1.12 0.000 3.924187 8.57 e due to u_i) Number of obs = Number of groups = Obs per group: min = avg = max = Wald chi2(3) = 1 Prob > chi2 = 0. P> z  [95% Conf. Inter 0.022 .2095128 2.65 0.000 -7.997647 -2.30 0.3361520258 .42 0.3361520258 .42 e due to u_i)	Number of Number of Number of Number of Number of Number of Obs per Nald chi Prob > of P> z  0.022 0.000 0.336 0.000	z 2.30 -3.54 0.96 10.92	(fraction of ion 5td. Err. .6231429 1.453382 .152416 .3267897 (fraction of	.15312136 .07214649 .8183286 GLS regress: : p = 0.1338 = 1.0000 = 0.7530 = 0 (assumed Coef. 1.43085 -5.14907 .1457042 3.567784 0 .18486634 0	sigma_u sigma_e rho Random-effects froup variable determine coverall corr(u_i, X) <u>ln_y2</u> <u>ln_x4</u> <u>ln_x10</u> <u>ln_x4</u> <u>ln_x10</u> <u>ln_x4</u> <u>ln_x10</u> <u>ln_x4</u> <u>ln_x10</u> <u>ln_x4</u> <u>ln_x10</u> <u>ln_x4</u> <u>ln_x10</u> <u>ln_x4</u> <u>ln_x10</u> <u>ln_x4</u> <u>ln_x10</u> <u>ln_x4</u> <u>ln_x10</u> <u>ln_x4</u> <u>ln_x10</u> <u>ln_x4</u> <u>ln_x10</u> <u>ln_x4</u> <u>ln_x10</u> <u>ln_x4</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10 <u>ln_x10</u> <u>ln_x10 <u>ln_x10 <u>ln_x10 <u>ln_x10</u> <u>ln_x10 <u>ln_x10 <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10 <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10 <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10</u> <u>ln_x10 ln_x10</u></u></u></u></u></u></u></u></u>
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0.018 .1035053 1.12 0.000 3.924187 8.57 e due to u_i) Number of obs - Number of groups - Obs per group: min - avg - max - Wald chi2(3) = 1 Prob > chi2 = 0. P> z  [95% Conf. Inter 0.022 .2095128 2.65 0.000 -7.997647 -2.30 0.3361520258 .445 0.000 2.927288 4.2 e due to u_i) Number of obs - Number of obs - Number of groups - Obs per group: min - avg - max -	Number of Number of Number of Obs per Wald chi Prob > of P> z  0.022 0.000 0.336 0.000 0.336 0.000 nce due to Number of Obs per	2 2,30 -3,54 0.96 10,92	(fraction of ion )) Std. Err. .6231429 1.453322 .152416 .3267897 (fraction of ion	.15312136 .07214649 .8183286 CLS regress: : p = 0.1338 = 1.0000 = 0.7530 = 0 (assumed Coef. 1.43085 -5.14907 .1467042 3.567784 0 .18486634 0 CLS regress: : p = 0.1338 = 1.0000 = 0.7530	sigma_u sigma_e rho tandom-effects froup variable torr(u_i, x) in_y2 in_x4 in_x10 in_x3 _cons _sigma_u sigma_e rho tandom-effects forup variable
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0.018 .1035053 1.12 0.000 3.924187 8.57 e due to u_1) Number of obs - Number of groups - Obs per group: min - avg - max - Nald chi2(3) - 1 Prob > chi2 - 0. P>[z] (95% Conf. Inter 0.022 .2095128 2.65 0.000 -7.997647 -2.30 0.3361520258 .445 0.000 2.927288 4.2 e due to u_1) Number of obs - Number of groups - Obs per group: min - avg - max - Number of obs - Number of groups - 0.012 - 0.02 0.022 - 0.0212 - 0.0 Number of obs - Number of obs - Number of cons - Number of groups - 0.02 - 0.0212 - 0.0 Number of groups - Madd chi2(3) - 1 Prob > chi2 - 0.	Number of Number of Number of Obs per Wald chi Prob > of 0.022 0.000 0.336 0.000 0.336 0.000 Number of Obs per Wald chi Prob > of P> z	2 2,30 0,96 10,92 2) f variar	(fraction of in) Std. Err. .623129 .152416 .3267897 (fraction of in) Std. Err.	.15312136 .07214649 .8183286 0 GLS regress: : p = 0.1338 = 1.0000 = 0.7530 = 0 (assumed 0.18486634 0 0.18486634 0 0 .18486634 0 0 0 .18486634 0 0 = 0.1338 = 1.0000 = 0.7530 = 0 (assumed Coef.	<pre>sigma_u sigma_e rho tandom-effects proup variable sroup variable the structure overall corr(u_i, X) ln_x4 ln_x10 ln_x3 _cons _cons _cons _cons _cons sigma_u sigma_e rho tandom-effects sroup variable tandom-effects sroup variable the structure coverall corr(u_i, X) ln_y2 ln_</pre>
0.018 .1035053 1.12 0.000 3.924187 8.57 e due to u_1) Number of obs = Number of groups = Obs per group: min = avg = max = Wald chi2(3) = 1 Prob > chi2 = 0. P> z  [95% Conf. Inter 0.022 .2095128 2.65 0.000 -7.997647 -2.30 0.036152028 4.2 e due to u_1) Number of obs = Number of groups = Obs per group: min = avg = max = Wald chi2(3) = 1 Puber of groups = Obs per group: min = avg = max = Wald chi2(3) = 1 Puber of groups = Obs per group: min = avg = max = Wald chi2(3) = 1 Prob > chi2 = 0.	Number of Number of Number of Number of Obs per Wald chi Prob > of P> z  0.022 0.000 0.336 0.000 nce due to Number of Obs per Wald chi Prob > of P> z  0.010	2 2,30 -3,54 0.96 10.92 sf variat	(fraction of ion 5td. Err. .623142 .152416 .3267897 (fraction of ion 5td. Err. .756938	.15312136 .07214649 .8183286 0 GLS regress: : p = 0.1338 = 1.0000 = 0.7530 = 0 (assumed Coef. 1.43085 -5.14907 .1467042 3.567784 0 .18486634 0 0 GLS regress: : p = 0.1338 = 1.0000 = 0.7530 = 0 (assumed Coef. 1.953200	sigma_u sigma_e rho andom-effects froup variable variable variable verall toorr(u_i, X) in_x3 
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0.018 .1035053 1.12 0.000 3.924187 8.57 e due to u_1) Number of obs = Number of groups = Obs per group: min = avg = max = Wald chi2(3) = 1 Prob > chi2 = 0. P> z  (95% Conf. Inter 0.022 .2095128 2.65 0.000 -7.997647 -2.30 0.3361520258 4.2 e due to u_1) Number of obs = Number of groups = Obs per group: min = avg = max = Wald chi2(3) = 1 Prob > chi2 = 0. P> z  (95% Conf. Inter 0.000 2.927288 4.2 e due to u_1) Number of obs = Number of groups = Obs per group: min = avg = max = Wald chi2(3) = 1 Prob > chi2 = 0. P> z  (95% Conf. Inter 0.010 .4696459 3.43 0.000 2.39666 8.33 0.3361520258 445 0.3361520258 445 0.3361520258 445 0.3361520258 45 0.3361520258 45 0.336152	0.000           nce due to           Number of           Number of           Obs per           Wald chi           Prob > c           0.022           0.000           0.336           0.000           nce due to           Number of           Obs per           Wald chi           Prob > c           Number of           Obs per           Wald chi           Prob > c           Obs per           Wald chi           Prob > c           Prob > c           P> z            0.010           0.336	2 2,30 -3,54 0,96 10,92 2,58 3,54 0,96 6,39	(fraction of in) Std. Err. .6231429 .152416 .3267897 (fraction of in) Std. Err. .7569338 1.51416 .152416 .152416 1.114548	.15312136 .07214649 .8183286 0 GLS regress: : p = 0.1338 = 1.0000 = 0.7530 = 0 (assumed Ccef. 1.43085 -5.14907 .1467042 3.567784 0 .1848634 0 0 .1848634 0 0 .1848634 0 0 .1848634 0 .1948634 0 .1848634 0 .1848634 0 .1848634 0 .1848634 0 .1848634 0 .1948644 0 .1948644 0 .1948644 0 .1948644 0 .1948644 0 .1948644 0 .1948644 0 .1948644 0 .1948644 0 .1948644 0 .1948644 0 .1949644644 0 .19496446446446446446446446446446464464464	sigma_u sigma_e rho andom-effects roup variable overall corr(u_i, X) in_x3 